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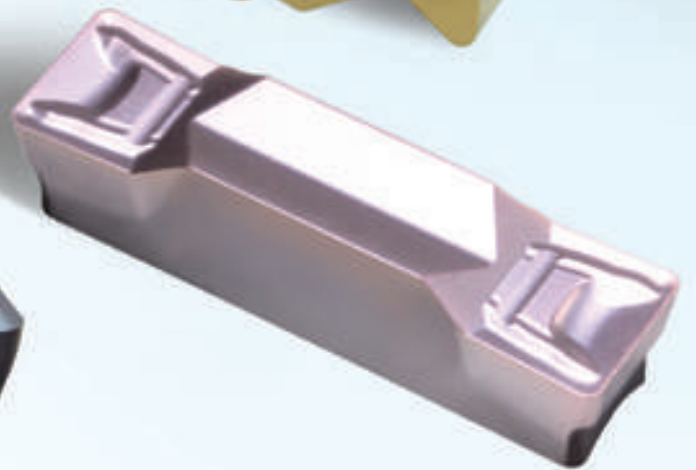
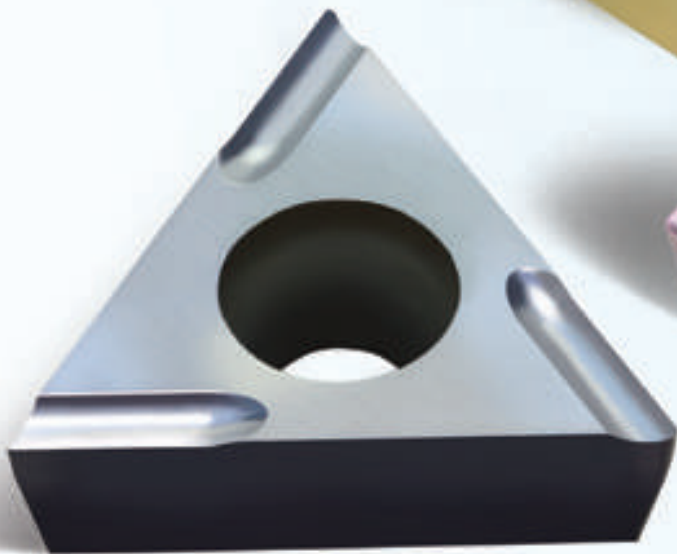
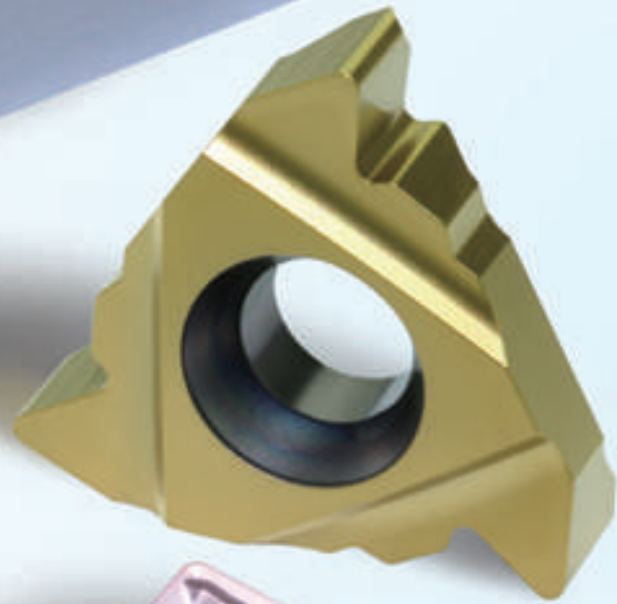
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Turning Tools

*General turning tools
Parting and grooving tools
Threading tools*



Turning



| | |
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Guide to selecting general turning tools

Selection B

D-type clamping system

| | | | | | | |
|---------------------|--------|--------|--------|--------|--------|--------|
| DCLNRL | DDJNRL | DSBNRL | DTGNRL | DVJNRL | DVJNRL | DVLNRL |
| Approach angle: 95° | 95° | 75° | 91° | 72°30' | 93° | 95° |
| Page: A166 | A167 | A168 | A169 | A170 | A171 | A172 |

P-type clamping system

| | | | | | | |
|---------------------|--------|-------|--------|-------|-------|-------|
| PCBNRL | PCLNRL | PJNRL | PPNRL | PSNRL | PSNRL | PSNRL |
| Approach angle: 75° | 90° | 83° | 62°30' | 75° | 45° | 75° |
| Page: A172 | A173 | A174 | A175 | A176 | A177 | A178 |

| | | | | |
|---------------------|-------|-------|-------|--------|
| PSNRL | PTNRL | PTNRL | PTNRL | PVLNRL |
| Approach angle: 45° | 90° | 60° | 90° | 95° |
| Page: A179 | A180 | A181 | A182 | A183 |

S-type clamping system

| | | | | | | |
|---------------------|--------|--------|--------|--------|-------|-------|
| SCACRL | SCACRL | SDACRL | SDACRL | SDCN | SVJCR | SVARL |
| Approach angle: 90° | 95° | 90° | 93° | 62°30' | 93° | 90° |
| Page: A184 | A185 | A186 | A187 | A188 | A189 | A190 |

| | | | | | | |
|------------------------|--------|-------|-------|------|-------|-------|
| SVN | SVN | SVJCR | SBCRL | SBCN | SACRL | SBCRL |
| Approach angle: 72°30' | 72°30' | 93° | 75° | 45° | 75° | 45° |
| Page: A191 | A192 | A193 | A194 | A195 | A196 | A197 |

DCLNRL/L

Approach angle: 95°
Page: A166

Step 1: I want to order tool holders
• Approach angle, • Clamping system

Corresponding tool holders of insert CN P-type clamping

PCBNRL
Kcr: 7.5°

| Type | Stock | | Basic dimensions (mm) | | | | | | Screw | Shim | Wrench | Lever | Shim pin |
|----------|-------|----|-----------------------|-----|----|----|----|------------|----------|-------|--------|-------|----------|
| | R | L | a | b | L | h | s | r | | | | | |
| PCBNRL12 | A | 20 | 20 | 125 | 20 | 17 | 27 | | | | | | |
| PCBNRL12 | A | 25 | 20 | 150 | 20 | 22 | 27 | LEM11-21 | C12AP | WH3DL | L4 | SP4 | |
| PCBNRL12 | A | 30 | 20 | 125 | 20 | 22 | 27 | | | | | | |
| PCBNRL16 | A | 30 | 30 | 100 | 30 | 22 | 33 | | | | | | |
| PCBNRL16 | A | 32 | 32 | 110 | 32 | 27 | 33 | LEM11-25 | C15AP | WH3DL | L6 | SP6 | |
| PCBNRL16 | A | 40 | 40 | 200 | 40 | 35 | 38 | | | | | | |
| PCBNRL16 | A | 45 | 40 | 200 | 40 | 35 | 38 | | | | | | |
| PCBNRL19 | A | 32 | 32 | 170 | 32 | 27 | 38 | LEM101-27 | C18AP | WH4DL | L6 | SP6 | |
| PCBNRL19 | A | 40 | 40 | 200 | 40 | 35 | 42 | | | | | | |
| PCBNRL19 | A | 40 | 40 | 200 | 40 | 35 | 35 | | | | | | |
| PCBNRL19 | A | 40 | 40 | 200 | 40 | 35 | 35 | LEM121-35A | C22AP-C2 | WH5DL | L8 | SP8 | |

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining |
|-------------|---------------|--------------------|--------------|---------------------|-------------------------|
| DF | WDM | DR | HDR | | |
| SP | PM | DR | HPR | | |
| WGF | DM | ER | | | |
| EF | EM | ER | | | |
| NF | NM | SNC | | | |
| LR | | LR | | | |

For finishing
DF
A54

Step 2: Details of tool holder
• Tool holder type, Size, • Operation genre
• Applicable inserts

Dimensions (mm)

| L | IC | S | d | r |
|------|------|------|------|-----|
| 12.9 | 12.7 | 4.76 | 5.16 | 0.4 |

Step 3: Details of insert
• Shape, • Size, • Chipbreaker, • Grade, • Stock
Applicable tool holders
• Approach angle, • Page

CN (Negative inserts)

| Inserts shape | Type | Dimensions (mm) | | | | | Coated cemented carbide | | | | | | | | | |
|---------------|--------------|-----------------|------|------|------|-----|-------------------------|-------------|-------|-------|-------------|-------|-------|-------------|-------|--|
| | | L | IC | S | d | r | Grade | Chipbreaker | Stock | Grade | Chipbreaker | Stock | Grade | Chipbreaker | Stock | |
| NM | CNM012044-NM | 12.9 | 12.7 | 4.76 | 5.16 | 0.4 | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| | CNM012045-NM | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| | CNM012041-NM | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| LR | CNM012140-LR | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| | CNM012141-LR | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| | CNM012142-LR | 12.9 | 12.7 | 4.76 | 5.16 | 1.6 | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| | CNM012143-LR | 12.9 | 12.7 | 4.76 | 5.16 | 2.0 | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| | CNM012144-LR | 12.9 | 12.7 | 4.76 | 5.16 | 2.4 | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| | CNM012145-LR | 12.9 | 12.7 | 4.76 | 5.16 | 2.8 | ... | ... | ... | ... | ... | ... | ... | ... | ... | |

Applicable tool

| | |
|------------------|-----------------|
| PCBNRL Kcr: 7.5° | PCLNRL Kcr: 95° |
| Page: A172 | A173 |

Applicable tool
PCBNRL Kcr: 7.5°
PCLNRL Kcr: 95°
Page: A172 A173

Step 4: Return to locate tool holder

General turning
Guide to selecting turning tools



Guide to selecting parting and grooving tools

General turning

Guide to selecting turning tools

External parting, grooving and turning tools

| Type | Stock | Basic dimension(mm) | | | | Applicable inserts | Screw | Thread | | |
|----------|----------|---------------------|-------|------|--------|--------------------|------------|------------|-----------------|------|
| | | W | H | D | Length | | | | | |
| QEAD | 1218RL07 | A | 12-14 | 125 | 18.4 | 5.5 | 7 | ZC14051020 | GB70 65-M4 x 12 | WH3L |
| | 1218RL12 | A | 12-12 | 125 | 18.4 | 12 | 10 | ZC14051020 | | |
| | 1618RL07 | A | 16-16 | 125 | 15.4 | 13 | 7 | ZC14051020 | | |
| | 1618RL12 | A | 16-16 | 125 | 15.4 | 13 | 10 | ZC14051020 | | |
| | 2028RL07 | A | 20-20 | 125 | 18.4 | 15.5 | 7 | ZC14051020 | GB70 65-M4 x 16 | WH4L |
| 2028RL12 | A | 20-20 | 125 | 18.4 | 13 | 10 | ZC14051020 | | | |
| QEED | 1218EL07 | A | 12-14 | 125 | 18.2 | 2 | 7 | ZC14051020 | | |
| | 1218EL12 | A | 12-12 | 125 | 18.2 | 2 | 10 | ZC14051020 | GB70 65-M4 x 12 | WH3L |
| | 1618EL07 | A | 16-16 | 125 | 15.2 | 2 | 7 | ZC14051020 | | |
| | 1618EL12 | A | 16-16 | 125 | 15.2 | 2 | 10 | ZC14051020 | | |
| | 2028EL07 | A | 20-20 | 125 | 18.2 | 2 | 7 | ZC14051020 | GB70 65-M4 x 16 | WH4L |
| 2028EL12 | A | 20-20 | 125 | 18.2 | 2 | 10 | ZC14051020 | | | |
| QEED | 1618EL10 | A | 16-16 | 125 | 15.2 | 2 | 10 | ZC14051020 | | |
| | 1618EL12 | A | 16-16 | 125 | 15.2 | 2 | 10 | ZC14051020 | GB70 65-M4 x 10 | WH4L |
| | 2028EL10 | A | 20-20 | 125 | 18.2 | 2 | 10 | ZC14051020 | | |
| | 2028EL12 | A | 20-20 | 125 | 18.2 | 2 | 10 | ZC14051020 | GB70 65-M4 x 10 | WH4L |
| | 2028EL14 | A | 20-20 | 125 | 18.2 | 2 | 14 | ZC14051020 | | |
| QEED | 1618EL10 | A | 16-16 | 125 | 15.2 | 2 | 10 | ZC14051020 | | |
| | 1618EL12 | A | 16-16 | 125 | 15.2 | 2 | 10 | ZC14051020 | GB70 65-M4 x 10 | WH4L |
| | 2028EL10 | A | 20-20 | 125 | 18.2 | 2 | 10 | ZC14051020 | | |
| | 2028EL12 | A | 20-20 | 125 | 18.2 | 2 | 10 | ZC14051020 | GB70 65-M4 x 10 | WH4L |
| | 2028EL14 | A | 20-20 | 125 | 18.2 | 2 | 14 | ZC14051020 | | |
| QEED | 1618EL10 | A | 16-16 | 125 | 15.2 | 2 | 10 | ZC14051020 | | |
| | 1618EL12 | A | 16-16 | 125 | 15.2 | 2 | 10 | ZC14051020 | GB70 65-M4 x 10 | WH4L |
| | 2028EL10 | A | 20-20 | 125 | 18.2 | 2 | 10 | ZC14051020 | | |
| | 2028EL12 | A | 20-20 | 125 | 18.2 | 2 | 10 | ZC14051020 | GB70 65-M4 x 10 | WH4L |
| | 2028EL14 | A | 20-20 | 125 | 18.2 | 2 | 14 | ZC14051020 | | |

Parting and grooving tools



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Page A278-281

A282-283

Parting inserts

| Type | Basic dimension(mm) | | | CVD Coating | | PVD Coating | | Cornered carbide |
|-------------|---------------------|------------------|------------------|-------------|--------|-------------|--------|------------------|
| | W ⁽¹⁾ | R ⁽¹⁾ | Chip-break Layer | YBC151 | YBC251 | YBC200 | YBC202 | |
| ZPAC1502-MG | 1.5 | 0.2 | 12 | □ | □ | □ | □ | □ |
| ZPFC0302-MG | 2.0 | 0.2 | 14 | □ | □ | □ | □ | □ |
| ZPFD0302-MG | 2.5 | 0.2 | 17 | □ | □ | □ | □ | □ |
| ZPFE0302-MG | 3.0 | 0.2 | 17 | □ | □ | □ | □ | □ |
| ZPFG0302-MG | 4.0 | 0.2 | 22 | □ | □ | □ | □ | □ |
| ZPH0302-MG | 5.0 | 0.2 | 22 | □ | □ | □ | □ | □ |
| ZPFS0302-MG | 6.0 | 0.4 | 22 | □ | □ | □ | □ | □ |
| ZPFS0302-MG | 2.5 | 0.2 | 17 | □ | □ | □ | □ | □ |
| ZPFS0402-MG | 4.0 | 0.2 | 22 | □ | □ | □ | □ | □ |
| ZPFS0502-MG | 5.0 | 0.2 | 22 | □ | □ | □ | □ | □ |
| ZPFS0604-MG | 6.0 | 0.4 | 22 | □ | □ | □ | □ | □ |

1 Selection of tool holder type

2 Tool holder type, Size and applicable inserts

3 Insert type, Chip-breaker, Size and grade

Parting and grooving inserts

| Little squirrel series | ZP□□-MG | ZP□□S-MG | ZT□□-MG |
|------------------------|-----------------------|-----------------|-----------------|
| Cutting edge width | 1.5, 2.2, 5.3, 4.5, 6 | 2.5, 3, 4, 5, 6 | 2.5, 3, 4, 5, 6 |
| Page | A259 | A259 | A260 |

Parting inserts

| Type | Basic dimension(mm) | | | CVD Coating | | PVD Coating | | Cornered carbide |
|-------------|---------------------|------------------|------------------|-------------|--------|-------------|--------|------------------|
| | W ⁽¹⁾ | R ⁽¹⁾ | Chip-break Layer | YBC151 | YBC251 | YBC200 | YBC202 | |
| ZPAC0302-MG | 1.5 | 0.2 | 12 | □ | □ | □ | □ | □ |
| ZPFC0302-MG | 2.0 | 0.2 | 14 | □ | □ | □ | □ | □ |
| ZPFD0302-MG | 2.5 | 0.2 | 17 | □ | □ | □ | □ | □ |
| ZPFE0302-MG | 3.0 | 0.2 | 17 | □ | □ | □ | □ | □ |
| ZPFG0302-MG | 4.0 | 0.2 | 22 | □ | □ | □ | □ | □ |
| ZPH0302-MG | 5.0 | 0.2 | 22 | □ | □ | □ | □ | □ |
| ZPFS0302-MG | 6.0 | 0.4 | 22 | □ | □ | □ | □ | □ |
| ZPFS0302-MG | 2.5 | 0.2 | 17 | □ | □ | □ | □ | □ |
| ZPFS0402-MG | 4.0 | 0.2 | 22 | □ | □ | □ | □ | □ |
| ZPFS0502-MG | 5.0 | 0.2 | 22 | □ | □ | □ | □ | □ |
| ZPFS0604-MG | 6.0 | 0.4 | 22 | □ | □ | □ | □ | □ |

1 Selecting insert type

2 Insert type, Chip-breaker, Size and grade



Guide of selecting threading tools

Threading tools

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External threading tools

| Type | Stock | Basic dimensions(mm) | Applicable inserts | Inserts sizes | Chip | Chip breaker | Wrench |
|---------|-------|----------------------|--------------------|---------------|------------|--------------|--------|
| | φ | h | D | L | φ | | |
| 1618016 | A | 16 16 16 100 20 | | | | | |
| 2030A16 | A | 20 20 20 120 20 | Z16ERD200 | 80 M3.5X17 | MT16-CC3AN | 8M40C | WT10P |
| 2030P16 | A | 20 20 20 100 20 | Z20ERD200 | 80 M5X17 | MT20-CC3AN | 8M50L5 | WT10P |
| 3030P16 | A | 30 30 30 170 40 | | | | | |
| 3030P22 | A | 30 30 30 170 40 | | | | | |
| 4040S22 | A | 40 40 40 200 50 | | | | | |
| 1618016 | A | 16 16 16 100 20 | Z16ELD200 | 80 M3.5X17 | MT16-CC3AN | 8M40C | WT10P |
| 2030P16 | A | 20 20 20 100 20 | Z20ELD200 | 80 M5X17 | MT20-CC3AN | 8M50L5 | WT10P |
| 3030P16 | A | 30 30 30 170 40 | | | | | |
| 3030P22 | A | 30 30 30 170 40 | | | | | |
| 4040S22 | A | 40 40 40 200 50 | Z20ELD200 | 80 M5X17 | MT20-CC3AN | 8M50L5 | WT10P |

ISO metric thread (with end)

ISO 965-1980 DIN 13
GB/T 197-2003 Tolerance class: 6g/6H

| Type | Basic dimensions(mm) | Recommended cutting speed |
|------------|----------------------|---------------------------|
| | Pitch | S (m/min) |
| Z16ERD ISO | Z16ELD ISO | 0.50 3.00 0.50 4.0 |
| Z16ERL ISO | Z16ELR ISO | 0.75 3.00 0.50 4.0 |
| Z16ERD ISO | Z16ELD ISO | 1.00 3.00 0.50 4.0 |
| Z16ERL ISO | Z16ELR ISO | 1.25 3.00 0.50 4.0 |
| Z16ERD ISO | Z16ELD ISO | 1.50 3.00 0.50 4.0 |
| Z16ERL ISO | Z16ELR ISO | 1.75 3.00 0.50 4.0 |
| Z16ERD ISO | Z16ELD ISO | 2.00 3.00 0.50 4.0 |
| Z16ERL ISO | Z16ELR ISO | 2.50 3.00 0.50 4.0 |
| Z16ERD ISO | Z16ELD ISO | 3.00 3.00 0.50 4.0 |
| Z16ERL ISO | Z16ELR ISO | 3.50 4.00 12.7 5.0 |
| Z20ERD ISO | Z20ELD ISO | 4.00 4.00 12.7 5.0 |
| Z20ERL ISO | Z20ELR ISO | 4.50 4.00 12.7 5.0 |
| Z20ERD ISO | Z20ELD ISO | 5.00 4.00 12.7 5.0 |
| Z20ERL ISO | Z20ELR ISO | 5.50 4.00 12.7 5.0 |
| Z30ERD ISO | Z30ELD ISO | 6.00 4.00 12.7 5.0 |
| Z30ERL ISO | Z30ELR ISO | 6.50 4.00 12.7 5.0 |

1 Selection of tool holder type

2 Tool holder type, Size and applicable inserts

3 Insert type, Chip-breaker, Size and grade

Threading inserts

Right hand type shown

ISO metric thread

General pitch thread

General pitch thread

| | External thread | Internal thread | External thread | Internal thread |
|------|-----------------|-----------------|-----------------|-----------------|
| Page | 0.5-6 | 0.5-6 | 0.5-5 | 0.5-5 |
| Page | A298 | A299 | A300 | A300 |

1 Selecting insert category

ISO metric thread (with end)

ISO 965-1980 DIN 13
GB/T 197-2003 Tolerance class: 6g/6H

| Type | Basic dimensions(mm) | Recommended cutting speed |
|------------|----------------------|---------------------------|
| | Pitch | S (m/min) |
| Z16ERD ISO | Z16ELD ISO | 0.50 3.00 0.50 4.0 |
| Z16ERL ISO | Z16ELR ISO | 0.75 3.00 0.50 4.0 |
| Z16ERD ISO | Z16ELD ISO | 1.00 3.00 0.50 4.0 |
| Z16ERL ISO | Z16ELR ISO | 1.25 3.00 0.50 4.0 |
| Z16ERD ISO | Z16ELD ISO | 1.50 3.00 0.50 4.0 |
| Z16ERL ISO | Z16ELR ISO | 1.75 3.00 0.50 4.0 |
| Z16ERD ISO | Z16ELD ISO | 2.00 3.00 0.50 4.0 |
| Z16ERL ISO | Z16ELR ISO | 2.50 3.00 0.50 4.0 |
| Z16ERD ISO | Z16ELD ISO | 3.00 3.00 0.50 4.0 |
| Z16ERL ISO | Z16ELR ISO | 3.50 4.00 12.7 5.0 |
| Z20ERD ISO | Z20ELD ISO | 4.00 4.00 12.7 5.0 |
| Z20ERL ISO | Z20ELR ISO | 4.50 4.00 12.7 5.0 |
| Z20ERD ISO | Z20ELD ISO | 5.00 4.00 12.7 5.0 |
| Z20ERL ISO | Z20ELR ISO | 5.50 4.00 12.7 5.0 |
| Z30ERD ISO | Z30ELD ISO | 6.00 4.00 12.7 5.0 |
| Z30ERL ISO | Z30ELR ISO | 6.50 4.00 12.7 5.0 |

2 Insert type, Chip-breaker, Size and grade



TURNING Turning Inserts Overview

Cemented carbide and cermet inserts

General turning

Turning inserts overview

Negative inserts

| | | | | | | | | | |
|----------------------------------|-----------------|-----------------|-----------------|----------------------|---------------------------|-----------------|-----------------|-----------------|-----------------|
| For finishing | | | | | | | | | |
| | | | | | | | | | |
| DNEG-NGF | VNEG-NGF | CNMG-DF | CNMG-SF | CNMG-EF | CNEG-NF | DNMG-DF | | | |
| Cutting edge length: 15 | 16 | 09,12 | 09,12 | 09,12 | 12 | 11,15 | | | |
| Page: A62 | A81 | A54 | A54 | A54 | A55 | A61 | | | |
| | | | | | | | | | |
| DNMG-SF | DNMG-EF | DNEG-NF | SNMG-DF | SNMG-EF | SNMG-SF | TNMG-DF | TNMG-SF | | |
| Cutting edge length: 11,15 | 11,15 | 15 | 09,12 | 09,12,15 | 09,12,15 | 16,22 | 11,16,22 | | |
| Page: A62 | A62 | A62 | A67 | A67 | A67 | A75 | A75 | | |
| | | | | | | | | | |
| TNMG-EF | VNMG-DF | VNMG-EF | VNEG-NF | VNMG-SF | WNMG-DF | WNMG-SF | WNMG-EF | | |
| Cutting edge length: 11,16,22 | 16 | 16 | 16 | 16 | 06,08 | 06,08 | 06,08 | | |
| Page: A76 | A81 | A81 | A81 | A81 | A83 | A83 | A84 | | |
| | Wiper | | | For finishing | | | | | |
| WNEG-NF | | | | | | CNMG-WGF | DNMX-WGF | TNMX-WGF | WNMG-WGF |
| Cutting edge length: 08 | | | | | | 12 | 11,15 | 16 | 06,08 |
| Page: A84 | | | | | | A54 | A61 | A75 | A83 |
| For semi-finishing | | | | | For semi-finishing | | | | |
| | CNMG-WGM | DNMX-WGM | TNMX-WGM | WNMG-WGM | | | | CNMG-PM | |
| Cutting edge length: 12 | 15 | 16 | 06,08 | | | | | 09,12,16,19 | |
| Page: A55 | A63 | A76 | A84 | | | | | A55 | |
| | | | | | | | | | |
| CNMG-DM | CNMG-EM | CNMG-NM | DNMG-PM | DNMG-DM | DNMG-EM | DNMG-NM | SNMG-PM | | |
| Cutting edge length: 09,12,16,19 | 12,16 | 12 | 11,15 | 11,15 | 11,15 | 15 | 09,12,15,19 | | |
| Page: A56 | A56 | A57 | A63 | A64 | A64 | A64 | A68 | | |
| | | | | | | | | | |
| SNMG-DM | SNMG-EM | SNMG-NM | TNMG-PM | TNMG-DM | TNMG-EM | VNMG-PM | VNMG-DM | | |
| Cutting edge length: 09,12,15,19 | 12,15 | 12 | 11,16,22 | 11,16,22 | 16,22 | 16 | 16 | | |
| Page: A68 | A69 | A69 | A76 | A77 | A77 | A82 | A82 | | |



Negative inserts

General turning

Turning inserts overview

| | | | | | | |
|---------------------|----------------|----------------|----------------|----------------|----------------|-----|
| | | | | | | |
| VNMG-EM | VNMG-NM | WNMG-PM | WNMG-DM | WNMG-EM | WNMG-NM | |
| Cutting edge length | 16 | 16 | 06,08 | 06,08 | 06,08 | 08 |
| Page | A82 | A82 | A85 | A85 | A85 | A86 |

For roughing

| | | | | | | |
|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----|
| | | | | | | |
| CNMG-SNR | DNMG-SNR | SNMG-SNR | TNMG-SNR | VNMG-SNR | WNMG-SNR | |
| Cutting edge length | 12, 16, 19 | 15 | 12 | 16 | 16 | 08 |
| Page | A58 | A65 | A71 | A78 | A82 | A86 |

| | | | | | | | | |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----|
| | | | | | | | | |
| CNMM-LR | DNMM-LR | SNMM-LR | TNMM-LR | CNMG-DR | CNMM-DR | CNMG-ER | CNMM-ER | |
| Cutting edge length | 12, 16, 19, 25 | 15 | 12, 15, 19, 25 | 16, 22 | 12, 16, 19 | 12, 16, 19, 25 | 12, 16, 19 | 25 |
| Page | A57 | A65 | A69 | A77 | A58 | A58 | A58 | A58 |

| | | | | | | | | |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----|
| | | | | | | | | |
| DNMG-DR | DNMM-DR | DNMG-ER | DNMM-ER | SNMG-DR | SNMM-DR | SNMG-ER | SNMM-ER | |
| Cutting edge length | 15 | 15 | 15 | 15 | 12, 15, 19 | 12, 15, 19, 25 | 12, 15, 19 | 25 |
| Page | A65 | A65 | A65 | A65 | A70 | A70-A71 | A71 | A71 |

| | | | | |
|---------------------|----------------|----------------|----------------|--------|
| | | | | |
| TNMG-DR | TNMM-DR | TNMG-ER | WNMG-DR | |
| Cutting edge length | 16, 22, 27 | 16, 22, 27 | 16, 22 | 06, 08 |
| Page | A78 | A78 | A78 | A86 |

For heavy machining

| | | | | | | |
|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------|
| | | | | | | |
| CNMM-HPR | SNMM-HPR | CNMM-HDR | DNMM-HDR | SNMM-HDR | TNMM-HDR | |
| Cutting edge length | 19, 25 | 19, 25 | 12, 16, 19 | 15 | 12, 15, 19, 25 | 16, 22, 27 |
| Page | A59 | A72 | A59 | A66 | A72 | A79 |

For profiling **All round**

| | | | | | | |
|----------------------|------------------|------------------|------------------|-------------|-------------|------------|
| | | | | | | |
| 175.32-22/227 | 175.32-24 | 175.32-25 | 175.32-28 | KNUX | CNMG | |
| Cutting edge length | 19 | 19, 30 | 19 | 19 | 16 | 12, 16, 19 |
| Page | A88 | A88 | A88 | A88 | A87 | A60 |

| | | | | | | | |
|---------------------|-------------|-------------|--------------------|----------------|--------------------|-------------|-----|
| | | | | | | | |
| CNMM | DNMG | SNMG | SNMM | TNMG | TNMM | VNMG | |
| Cutting edge length | 12, 19 | 15, 19 | 09, 12, 15, 19, 25 | 09, 12, 19, 25 | 11, 16, 22, 27, 33 | 16, 22, 27 | 16 |
| Page | A60 | A66 | A73 | A73-74 | A79 | A80 | A82 |



TURNING / Turning Inserts Overview

General turning

Turning inserts overview

Negative inserts

Without chipbreaker

| | | | | | |
|---------------------|-------------|-------------|-------------|-------------|-------------|
| | | | | | |
| | CNMA | DNMA | SNMA | TNMA | WNMA |
| Cutting edge length | 12,16,19 | 11,15 | 09,12,15,19 | 16,22,27 | 06,08 |
| Page | A59 | A66 | A74 | A80 | A86 |

For extra finishing **-USF**

| | | | | | | |
|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | | | | | |
| | CCGT-USF | DCGT-USF | TCGT-USF | VCGT-USF | DPGT-USF | VPGT-USF |
| Cutting edge length | | 09 | 07,11 | 11 | 08,11 | 07,11 |
| Page | | A89 | A93 | A100 | A105 | A111 |

| | | | | | | | | |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|
| | | | | | | | | |
| | CCGT-SF | DCGT-SF | TCGT-SF | VCGT-SF | VBGT-SF | CPGT-SF | DPGT-SF | TBGH-L |
| Cutting edge length | 06,09 | 07,11 | 06,09,11 | 11 | 11 | 06,09 | 07,11 | 06 |
| Page | A89 | A93 | A100 | A105 | A108 | A110 | A111 | A112 |

| | | |
|---------------------|----------------|---------------|
| | | |
| | TPGT-SF | TPGH-L |
| Cutting edge length | 09,11 | 09,11 |
| Page | A113 | A113 |

Positive inserts

For finishing

| | | | | | | | |
|---------------------|-----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | | | | | | | |
| | VCGT-NGF | VBET-NGF | CCMT-HF | CCMT-EF | DCMT-HF | DCMT-EF | SCMT-HF |
| Cutting edge length | 16 | 16 | 06,09,12 | 06,09,12 | 07,11 | 07,11 | 09 |
| Page | A105 | A108 | A89 | A90 | A93 | A94 | A98 |

| | | | | | | | | |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | | | | | | | | |
| | SCMT-EF | TCMT-HF | TCMT-EF | VCGT-HF | VCGT-NF | VBMT-EF | VBMT-HF | VBET-NF |
| Cutting edge length | 09 | 06,09,11,16 | 09,11,16 | 11 | 16 | 11,16 | 11 | 16 |
| Page | A98 | A101 | A102 | A105 | A105 | A108 | A108 | A108 |

For semi-finishing

| | | | | | | | |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | | | | | | | |
| | CCMT-HM | CCMT-EM | DCMT-HM | DCMT-EM | SCMT-HM | SCMT-EM | TCMT-HM |
| Cutting edge length | 06,09,12 | 06,09,12 | 07,11 | 07,11 | 09,12 | 09,12 | 09,11,16 |
| Page | A90 | A90 | A94 | A94 | A98 | A98 | A103 |



Positive inserts

| | | | |
|---------------------|----------------|----------------|------|
| | | | |
| TCMT-EM | VBMT-EM | VBMT-HM | |
| Cutting edge length | 09,11,16 | 11 | 16 |
| Page | A102 | A109 | A109 |

For roughing

| | | | | | | |
|---------------------|----------------|----------------|----------------|----------------|----------------|------|
| | | | | | | |
| VBMT-SNR | CCMT-HR | DCMT-HR | SCMT-HR | TCMT-HR | VBMT-HR | |
| Cutting edge length | 16 | 06,09,12 | 11 | 09,12 | 09,11,16,22 | 16 |
| Page | A109 | A91 | A95 | A99 | A103 | A109 |

For Al machining

| | | | | | | | |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|-------|
| | | | | | | | |
| CCGX-LC | DCGX-LC | SCGX-LC | TCGX-LC | VCGX-LC | CCGX-LH | DCGX-LH | |
| Cutting edge length | 06,09,12 | 07,11 | 09,12 | 09,11,16 | 11,16,22 | 06,09,12 | 07,11 |
| Page | A91 | A95 | A99 | A103 | A106 | A91-92 | A95 |

All round

| | | | | | | | |
|---------------------|----------------|----------------|----------------|----------------|-------------|----------------------|-------|
| | | | | | | | |
| RCGX-LH | SCGX-LH | TCGX-LH | VCGX-LH | RCM(G)T | RCMX | SCMT | |
| Cutting edge length | 08 | 09,12 | 09,11,16 | 11,16,22 | 08,10,12,16 | 08,10,12,16,20,25,32 | 09,12 |
| Page | A96 | A99 | A104 | A106 | A96 | A97 | A99 |

Without chipbreaker

| | | | | | | | |
|---------------------|----------------|-------------|-------------|-------------|-------------|-------------|-------|
| | | | | | | | |
| TCMT | WCMX-53 | CCMW | DCMW | SCMW | TCMW | SPMW | |
| Cutting edge length | 22 | 04,06,08 | 06,09,12 | 07,11 | 06,09,12 | 11,16,22 | 09,12 |
| Page | A104 | A107 | A92 | A95 | A99 | A104 | A112 |

New **PCBN&PCD inserts**

Negative inserts

PCBN inserts

| | | | | | | |
|---------------------|-------------|-------------|-------------|-------------|-------------|------|
| | | | | | | |
| CNGA | DNGA | SNGA | TNGA | VNGA | WNGA | |
| Cutting edge length | 12 | 15 | 12 | 16 | 16 | 08 |
| Page | A118 | A121 | A126 | A130 | A133 | A136 |

PCBN inserts turning case

| | | | | | | |
|---------------------|-------------|-------------|-------------|-------------|-------------|------|
| | | | | | | |
| CNGN | DNGN | SNGN | TNGN | VNGN | WNGN | |
| Cutting edge length | 12 | 15 | 12 | 16 | 16 | 08 |
| Page | A120 | A125 | A129 | A132 | A135 | A138 |

General turning

Turning inserts overview



TURNING / Turning Inserts Overview

General turning

Turning inserts overview

Positive inserts

PCBN inserts

| | CCGW | DCGW | TCGW | VBGW | VCGW |
|--------------------|----------|-------|-------|------|------|
| Cutting edge width | 06,09,12 | 07,11 | 09,11 | 16 | 16 |
| Page | A139 | A140 | A141 | A142 | A143 |

PCD 0° Front Angle Blade

| | CCGW□□AF | DCGW□□AF | TCGW□□AF | VBGW□□AF | VCGW□□AF |
|---------------------|----------|----------|----------|----------|----------|
| Cutting edge length | 06,09,12 | 07,11 | 09,11 | 16 | 16 |
| Page | A144 | A145 | A146 | A147 | A148 |

PCD 7° Front Angle Blade

| | CCMX□□AF | DCMX□□AF | TCMX□□AF | VBMX□□AF | VCMX□□AF |
|--------------------|----------|----------|----------|----------|----------|
| Cutting edge width | 06,09,12 | 07,11 | 09,11 | 16 | 16 |
| Page | A144 | A145 | A146 | A147 | A148 |

Ceramic inserts

| | RCGN | RPGN |
|--------------------|-------|-------|
| Cutting edge width | 09,12 | 09,12 |
| Page | A152 | A152 |

Parting and grooving inserts

Little squirrel series QC series shallow grooving inserts

| | QC□□R/L | QC□□R/L□□□R | ZP□D-MG | ZP□S-MG |
|--------------------|----------|-------------|---------------------|-------------|
| Cutting edge width | 1.1~4.8 | 1.0~4.0 | 1.5,2.0,2.5,3,4,5,6 | 2.5,3,4,5,6 |
| Page | A267-268 | A268 | A259 | A259 |

| | ZT□D-MG | ZT□D-MM | ZT□S-MG | ZT□D-EG | ZT□D-EG | ZIMF-NM | ZIMF-SM |
|--------------------|-------------|-----------------|---------|--------------------|----------------------|---------|---------|
| Cutting edge width | 2.5,3,4,5,6 | 1.5,2,3,4,5,6,8 | 5,6 | 1-2.4(tailor-made) | 2.4-6.5(tailor-made) | 3,4,5,6 | 3,4,5,6 |
| Page | A260 | A260 | A260 | A261 | A261 | A262 | A262 |

| | ZR□D-MG | ZR□D-NM | ZR□D-EG | ZIGQ-NM | ZIGQ-NF | ZR□D-LH | ZILD-LC |
|--------------------|-------------|---------|---------|---------|---------|---------|---------|
| Cutting edge width | 2.5,3,4,5,6 | 3,4,5,6 | 3,4,5,6 | 3,4,5,6 | 3,4,5,6 | 6,8 | 8 |
| Page | A263 | A263 | A263 | A264 | A264 | A265 | A265 |



Supplemental series



ZQMX-1E

| | |
|--------------------|--------------------------------|
| Cutting edge width | 3.125, 4.125, 5.125, 6.4, 7.05 |
| Page | A269 |

General turning

Turning inserts overview

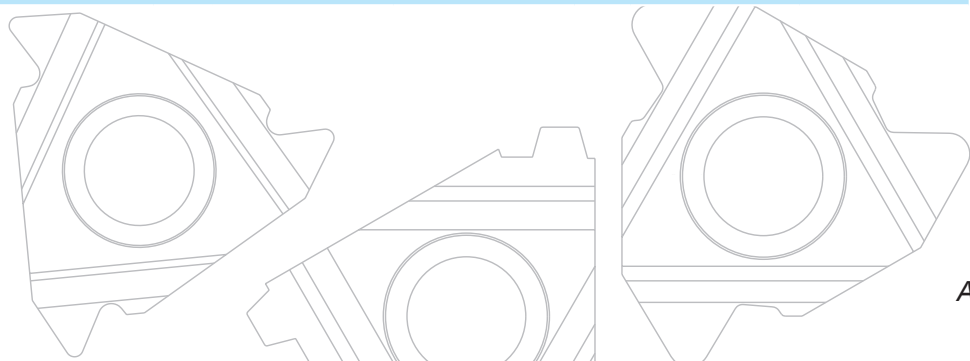
Threading inserts

| Right hand type shown | ISO metric thread | | General pitch thread | | Whitworth thread | |
|---------------------------|-------------------|-----------------|----------------------|-----------------|------------------|-----------------|
| | | | | | | |
| | External thread | Internal thread | External thread | Internal thread | External thread | Internal thread |
| Pitch/ Number of pitch | 0.5~6 | 0.5~6 | 0.5~5 | 0.5~5 | 8~19 | 8~19 |
| Page | A298 | A299 | A300 | A300 | A301 | A301 |

| Right hand type shown | Unified thread | | British Standard pipe thread | | American standard pipe thread | |
|---------------------------|-----------------|-----------------|------------------------------|-----------------|-------------------------------|-----------------|
| | | | | | | |
| | External thread | Internal thread | External thread | Internal thread | External thread | Internal thread |
| Pitch/ Number of pitch | 8~24 | 8~24 | 11~28 | 11~28 | 8~27 | 8~27 |
| Page | A302 | A302 | A303 | A303 | A304 | A304 |

| Right hand type shown | ISO metric thread (Thin type) | | General pitch thread (Thin type) | | Whitworth thread (Thin type) | |
|---------------------------|-------------------------------|-----------------|----------------------------------|-----------------|------------------------------|-----------------|
| | | | | | | |
| | External thread | Internal thread | External thread | Internal thread | External thread | Internal thread |
| Pitch/ Number of pitch | 0.5~3.0 | 0.5~3.0 | 0.5~5.0(5~48) | 0.5~5.0(5~48) | 8~16 | 8~16 |
| Page | A306 | A306 | A307 | A307 | A308 | A308 |

| Right hand type shown | Unified thread (Thin type) | | British Standard pipe thread (Thin type) | | American standard pipe thread (Thin type) | |
|---------------------------|----------------------------|-----------------|--|-----------------|---|-----------------|
| | | | | | | |
| | External thread | Internal thread | External thread | Internal thread | External thread | Internal thread |
| Pitch/ Number of pitch | 8~20 | 8~20 | 11~28 | 11~28 | 8~27 | 8~27 |
| Page | A309 | A309 | A310 | A310 | A311 | A311 |












Tool holders for external turning

D-type clamping system

| | | | | | | | |
|---|---|---|---|--|---|---|--------------------|
|  |  |  |  |  |  |  | |
| Approach angle Page | 95° A166 | 93° A167 | 75° A168 | 91° A169 | 72°30' A170 | 93° A170 | 95° A171 |

P-type clamping system

| | | | | | | | |
|---|---|---|---|--|---|---|--------------------|
|  |  |  |  |  |  |  | |
| Approach angle Page | 75° A172 | 95° A173 | 93° A174 | 62°30' A175 | 75° A176 | 45° A177 | 75° A178 |

| | | | | | |
|--|--|--|--|---|--------------------|
|  |  |  |  |  | |
| Approach angle Page | 45° A179 | 90° A180 | 60° A181 | 90° A182 | 95° A183 |

S-type clamping system

| | | | | | | | |
|---|---|---|---|--|---|---|--------------------|
|  |  |  |  |  |  |  | |
| Approach angle Page | 90° A184 | 95° A185 | 90° A186 | 93° A187 | 62°30' A188 | 93° A189 | 90° A190 |

| | | | | | | | |
|---|---|---|---|--|---|---|--------------------|
|  |  |  |  |  |  |  | |
| Approach angle Page | 72°30' A191 | 72°30' A192 | 93° A193 | 75° A194 | 45° A195 | 75° A196 | 45° A197 |

| | | | | | | | |
|---|---|---|---|--|---|---|------|
|  |  |  |  |  |  |  | |
| Approach angle Page | 90° A198 | 90° A198 | 91° A199 | 60° A200 | 90° A201 | A202 | A203 |



C-type clamping system



| | | |
|----------------|------------|------------|
| Approach angle | 93° | 63° |
| Page | A204 | A204 |

Turning tool holders for ceramic inserts



| | | |
|----------------|------|------|
| Approach angle | | |
| Page | A205 | A205 |

Turning tool holders for internal machining

P-type clamping system



| | | | | | | |
|----------------|------------|---------------|------------|------------|------------|------------|
| Approach angle | 95° | 62°30' | 93° | 75° | 90° | 95° |
| Page | A212 | A213 | A214 | A215 | A216 | A217 |

S-type clamping system



| | | | | | | | |
|----------------|------------|----------------|------------|------------|------------|------------|----------------|
| Approach angle | 95° | 107°30' | 93° | 95° | 75° | 90° | 107°30' |
| Page | A218 | A219 | A220 | A221 | A222 | A223 | A224 |



| | | | | | | | |
|----------------|------------|----------------|------------|------------|----------------|------------|------------|
| Approach angle | 93° | 107°30' | 93° | 95° | 107°30' | 93° | 93° |
| Page | A225 | A226 | A227 | A228 | A229 | A230 | A231 |



| | | |
|----------------|------------|------------|
| Approach angle | 90° | 95° |
| Page | A232 | A233 |

Damping tool holders



| | | | | | | |
|----------------|------------|----------------|------------|------------|----------------|------------|
| Approach angle | 95° | 107°30' | 93° | 93° | 107°30' | 93° |
| Page | A235 | A236 | A237 | A238 | A239 | A240 |

Parting and grooving tools



| | | | | | | | |
|------|-----------|------|------|------|------|------|-----------|
| Page | A272-A273 | A273 | A274 | A274 | A275 | A275 | A276-A277 |
|------|-----------|------|------|------|------|------|-----------|



| | | | | | | | |
|------|-----------|-----------|------|------|------|------|------|
| Page | A278-A281 | A282-A283 | A284 | A284 | A288 | A286 | A286 |
|------|-----------|-----------|------|------|------|------|------|

Threading tools



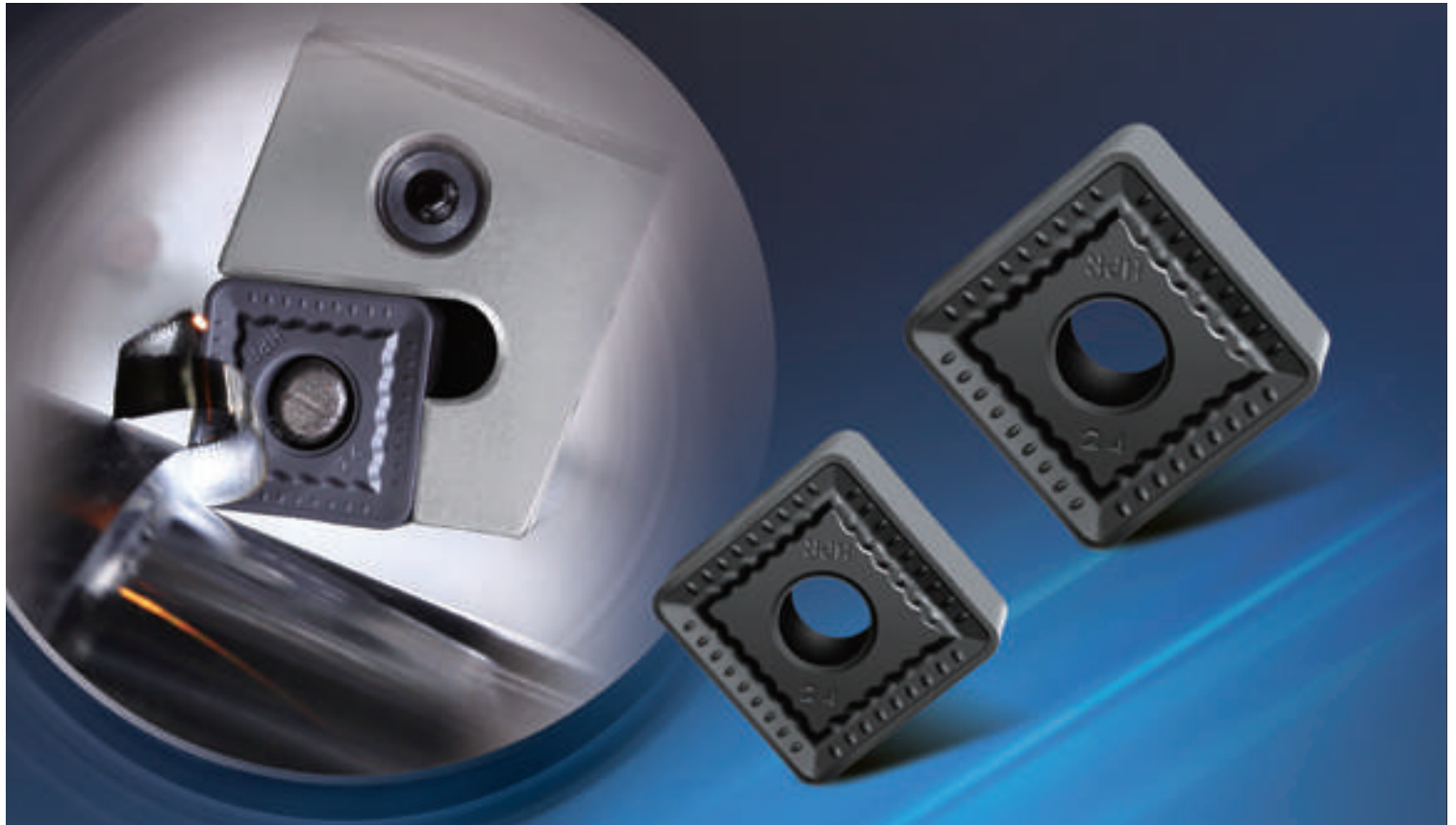
| | | |
|------|------|------|
| Page | A313 | A314 |
|------|------|------|



-WGM

Wiper

-WGF



-HPR

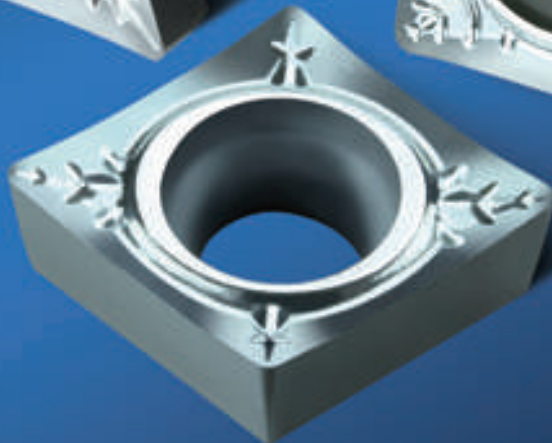
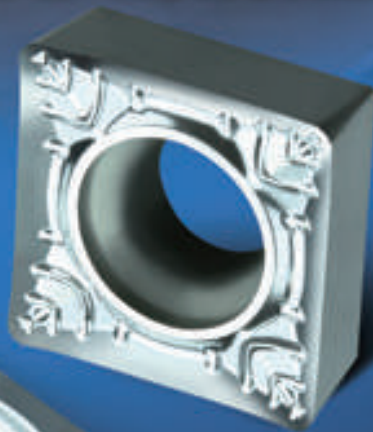
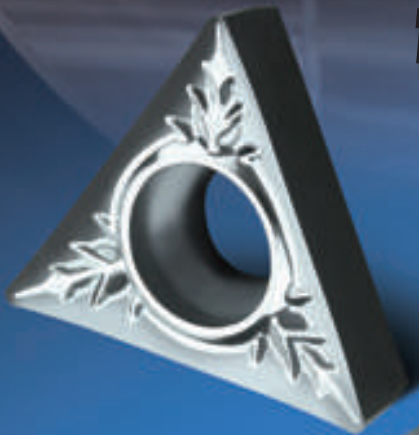
**New Generation of
Roughing Chipbreaker**

-LR





**-LC chipbreaker
for Al machining**





YBM215

Outstanding wear resistance, extends the tool life
achieves high efficient processing

**Grade for stainless
steel machining**

YBM153

Best choice for cutting stainless steel
with high speed under good working condition



| ISO | Code | General turning | | | | | | | Threading | Parting and grooving | | | |
|---|------|-----------------|--------|--------|---------------|---------|------------------|------|-----------|----------------------|------------------|-----|------|
| | | Coating | | Cermet | Coated cermet | Ceramic | Cemented carbide | PCBN | PCD | Coating | Cemented carbide | | |
| | | CVD | PVD | | | | | | | PVD | | CVD | PVD |
| P Steel | 01 | | | | | | | | | | | | |
| | 10 | YBC151 | | | | | | | | | | | |
| | 20 | YBC251 | YBC152 | | | | | | | | | | |
| | 30 | YBC252 | YBC351 | | | | | | YBG202 | | | | YC10 |
| | 40 | | YBC352 | | | | | | YBG203 | | | | YC40 |
| M Stainless steel | 01 | | | | | | | | | | | | |
| | 10 | YBM151 | | | | | | | | | | | |
| | 20 | YBM153 | YBM251 | | | | | | | | | | |
| | 30 | YBM253 | | | | | | | YBG202 | | | | |
| | 40 | | | | | | | | YBG203 | | | | |
| K Cast iron | 01 | | | | | | | | | | | | |
| | 10 | YBD052 | YBD102 | YBD152 | | | | | | | | | |
| | 20 | | | | | | | | | | | | |
| | 30 | | | | | | | | YBG202 | | | | |
| | 40 | | | | | | | | YBG203 | | | | |
| N Non ferrous metal | 01 | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | |
| | 30 | | | | | | | | YBG202 | | | | |
| | 40 | | | | | | | | YBG203 | | | | |
| S Heat resistant alloy & Ti alloy | 01 | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | |
| | 40 | | | | | | | | YBG202 | | | | |
| H Super hard material | 01 | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | |
| | 40 | | | | | | | | YBG202 | | | | |

General turning

Recommended overview for turning inserts



TURNING Guide to selecting turning tools

How to select general turning inserts

How to select general turning inserts

Turning inserts list

- Turning inserts listed according to shape
- Sequence of listed inserts
 - ▶ Negative inserts (with hole – without hole)
 - ▶ Positive inserts (with hole – without hole)
- Sequence of listed chipbreaker
 - For finishing – For semi-finishing – For roughing – For heavy cutting – Without chipbreaker – Through chipbreaker

Selecting grade according to workpiece material and working condition

Prior to select grade for insert according to working condition that is suitable for workpiece material

😊 Good working condition: machine works well and stably. There are high requirements for dimensional precision of components and quality surface.

😐 Normal working condition: machine works normally. There are certain requirements for dimensional precision of components and surface quality.

😞 Bad working condition: machine works with bad stability. There are high requirements for metal evacuation rate.

Main category of products

Positive or negative inserts

CN (Negative inserts)

Steel
Stainless steel
Cast iron
Non-ferrous metal
Heat resistant alloy, Ti-alloy

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

Shape and dimensions

L: cutting edge length
 ØI.C: diameter of inscribed circle
 S: Thickness
 ød: Hole diameter
 r: Nose radius

Type

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|---------------|----------------|--------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|--|--|
| | | L | ØI.C | S | ød | r | VMC151 | VMC252 | VMC351 | VMC102 | VMC205 | VMC302 | VMC151 | VMC251 | VMC351 | VMC102 | VMC205 | VMC302 | VMC151 | VMC252 | VMC351 | VMC102 | VMC205 | VMC302 | | | | |
| NM For semi-finishing | CNMG120404-NM | 12.9 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG120408-NM | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG120412-NM | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | |
| LR Light-load roughing | CNMM120408-LR | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | * | | | | | | | | | | | | | | | | | | | | | |
| | CNMM120412-LR | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | * | | | | | | | | | | | | | | | | | | | | | |
| | CNMM120416-LR | 12.9 | 12.7 | 4.76 | 5.16 | 1.6 | * | | | | | | | | | | | | | | | | | | | | | |
| | CNMM160608-LR | 16.1 | 15.875 | 6.35 | 6.35 | 0.8 | * | | | | | | | | | | | | | | | | | | | | | |
| | CNMM160612-LR | 16.1 | 15.875 | 6.35 | 6.35 | 1.2 | * | | | | | | | | | | | | | | | | | | | | | |
| | CNMM160616-LR | 16.1 | 15.875 | 6.35 | 6.35 | 1.6 | * | | | | | | | | | | | | | | | | | | | | | |
| | CNMM160624-LR | 16.1 | 15.875 | 6.35 | 6.35 | 2.4 | * | | | | | | | | | | | | | | | | | | | | | |
| | CNMM190612-LR | 19.3 | 19.05 | 6.35 | 7.94 | 1.2 | * | | | | | | | | | | | | | | | | | | | | | |
| | CNMM190616-LR | 19.3 | 19.05 | 6.35 | 7.94 | 1.6 | * | | | | | | | | | | | | | | | | | | | | | |
| | CNMM190624-LR | 19.3 | 19.05 | 6.35 | 7.94 | 2.4 | * | | | | | | | | | | | | | | | | | | | | | |
| CNMM250924-LR | 25.79 | 25.4 | 9.525 | 9.12 | 2.4 | * | | | | | | | | | | | | | | | | | | | | | | |

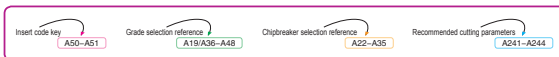
* Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Grade

Size

Stock

Illustration of stock



Reference page of tool holders

Application of inserts

Shape

Insert chipbreaker
Chipbreaker code

Recommended cutting parameters
Chipbreaker selection reference
Grade selection reference
Insert code key

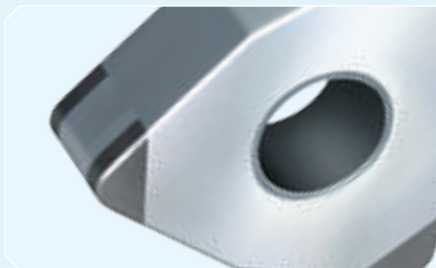
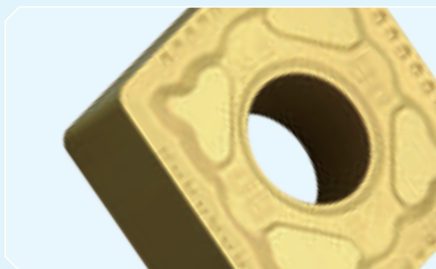
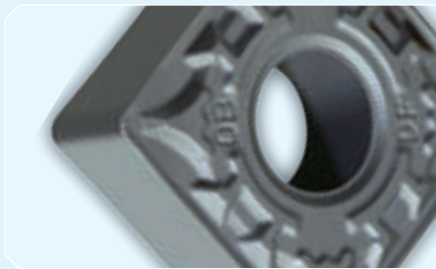


TURNING



General turning inserts

| | | |
|---|---|-----------|
| General turning inserts overview | • | A22-A26 |
| Application instruction of general turning inserts | • | A27-A49 |
| General turning inserts | • | A50-A152 |
| General turning inserts code key | • | A50-A51 |
| Metric-Inch comparison table for general turning inserts | • | A52-A53 |
| Cemented carbide and cermet inserts | • | A54-A114 |
| Negative inserts | | A54-A88 |
| Positive inserts | | A89-A114 |
| PCBN&PCD inserts | • | A115-A149 |
| PCBN&PCD inserts code key | | A116-A117 |
| PCBN&PCD inserts | | A118-A149 |
| Ceramic inserts | • | A150-A152 |
| Ceramic inserts code key | | A150-A151 |
| Ceramic inserts | • | A152 |






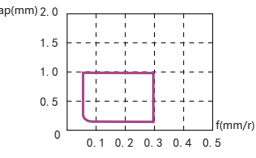
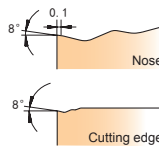


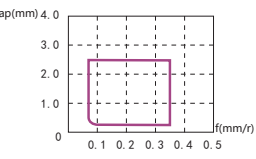
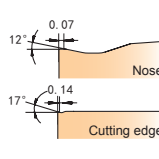


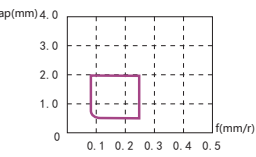
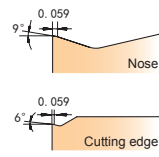


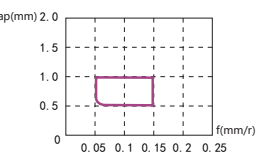
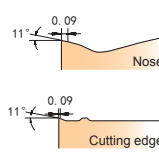


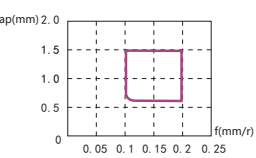
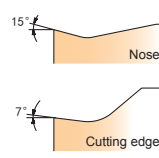


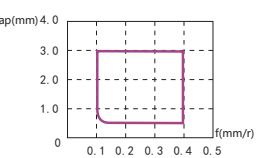
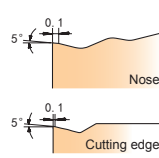


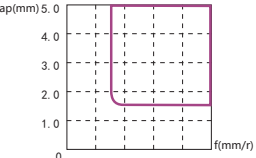
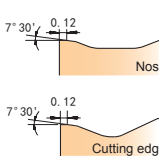


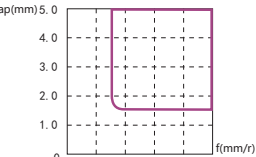
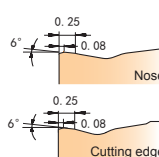

TURNING / General Turning Inserts

General turning inserts overview

General turning

General turning inserts overview

Negative inserts with hole

| Appli- cation | Chipbreaker | Preci- sion | Recommended cutting parameters | Chipbreaker profile | Feature/Shape of insert |
|--------------------|---|----------------|---|---|---|
| For finishing | SF  | M |  |  | Recommended chipbreaker for finishing of P-type materials Double-sided chipbreaker with M-level tolerance has outstanding performance in finishing, achieving good surface quality.  |
| | DF  | M |  |  | Recommended chipbreaker for finishing of P-type materials Double-sided chipbreaker with M-level tolerance has sharp edges, which can effectively cut off stainless steel and avoid adhering and surface hardening, achieving high surface quality.  |
| | EF  | M |  |  | Recommended chipbreaker for finishing of M-type materials Double-sided chipbreaker with M-level tolerance can prevent wear and hardening to achieve high machining precision and good surface quality.  |
| | NF  | E |  |  | Recommended chipbreaker for finishing of S-type materials Double-sided chipbreaker with E-level tolerance can prevent wear and hardening to achieve high machining precision and good surface quality.  |
| | NGF  | E |  |  | Recommended chipbreaker for finishing of S-materials E-class double side chip breaker with excellent sharp edge. High positioning accuracy, light cutting force. -NGF is recommended chip breaker for S series material general finishing.  |
| | WGF  | M |  |  | Recommended chipbreaker for finishing of S-materials E-class double side chip breaker with excellent sharp edge. High positioning accuracy, light cutting force. -NGF is recommended chip breaker for S series material general finishing.  |
| For semi-finishing | DM  | M |  |  | Recommended chipbreaker for semi-finishing of P-type materials Double-sided chipbreaker with M-level tolerance produces small cutting forces and has large chip breaking range, which ensures good performance for machining highly adhesive alloy steel.  |
| | PM  | M |  |  | Recommended chipbreaker for semi-finishing of P-type materials Double-sided chipbreaker with M-level tolerance has higher strength of cutting edge than chipbreaker DM. It is suitable for semi-finishing under unstable working conditions as well as machining cast iron with small cutting forces.  |



Negative inserts with hole

| Application | Chipbreaker | Precision | Recommended cutting parameters | Chipbreaker profile | Feature/Shape of insert |
|---------------------|------------------------------|-----------|--------------------------------|---------------------|--|
| For semi-finishing | NM | M | | | <p>Recommended chipbreaker for semi-finishing of S-type materials</p> <p>Double-sided chipbreaker with M-class tolerance keeps high precision after inserts are turned, with good capability to prevent wear and hardening to achieve higher machining efficiency than chipbreaker NF.</p> |
| | EM | | | | <p>Recommended chipbreaker for semi-finishing of M-type materials</p> <p>Double-sided chipbreaker with M-level tolerance can solve the processing problems such as chip breaking and adhering of stainless steel, achieving higher machining efficiency than chipbreaker EF.</p> |
| | WGM | | | | <p>Wiper chipbreaker for semi-finishing</p> <p>Double-sided chipbreaker with M-level tolerance, semi-finishing chipbreaker with wiper designed, perfect combination of good wiper result and sturdy cutting edge structure, which perfectly meet the requirement of high efficiency and good surface quality.</p> |
| | All round | | | | <p>From semi-finishing to roughing of P-type, M-type, K-type materials</p> <p>Double-sided chipbreaker with M-level tolerance has good cutting edge strength and wide application.</p> |
| Light-load roughing | DR Double-side | M | | | <p>Recommended chipbreaker for light roughing of P-type and K-type materials</p> <p>Double-sided chipbreaker with M-level tolerance is the first choice for light roughing, can achieve high evacuation rate and efficiency of cutting edge.</p> |
| | LR Single-side | | | | <p>Recommended chipbreaker for light-load roughing of P-type materials</p> <p>Single-sided general chipbreaker with M-level tolerance, has wide chip breaking range and sharp cutting edge is designed with inclined angle, which enables it to cut lightly and easily and control the chipping flow direction. Chip-leaded-stages can reduce the contact area with chips, so that heat can easily be dissipated.</p> |
| For roughing | ER Single/Double side | M | | <p>Double sided</p> | <p>Recommended chipbreaker for roughing of M-type materials</p> <p>Single / double-sided chipbreaker with M-level tolerance has good capacity of impact-resistance. It is designed to achieve balance between security and sharpness of the cutting edge, and it can achieve high efficiency by preventing the problems of adhering and high cutting heat when roughing stainless steel.</p> |
| | | | | <p>Single sided</p> | |

General turning

General turning inserts overview




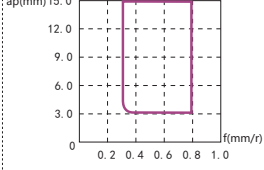
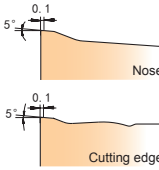


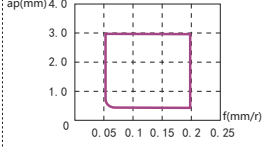
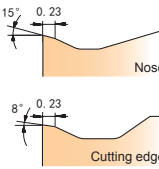


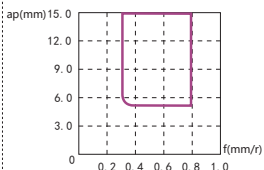
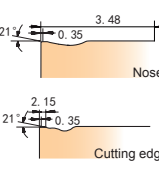


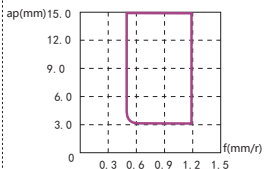
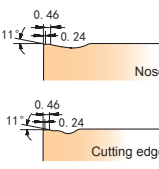


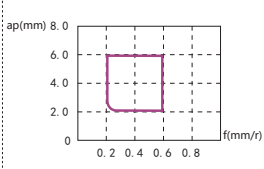
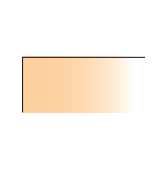


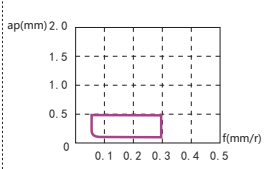
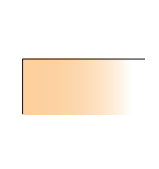


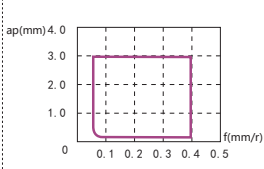
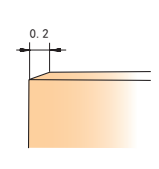

TURNING / General Turning Inserts

General turning inserts overview

General turning


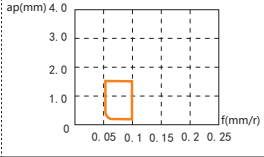
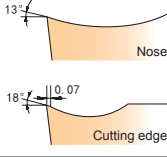


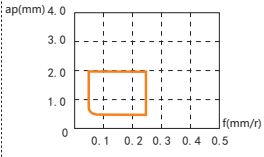
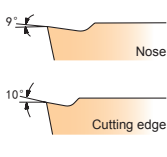


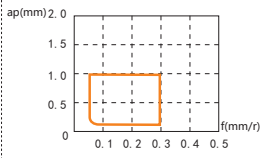
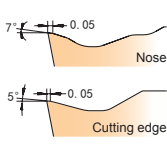


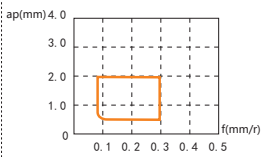
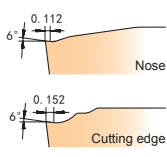


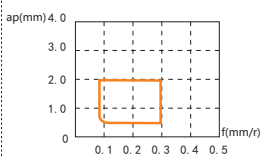
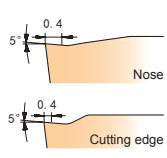


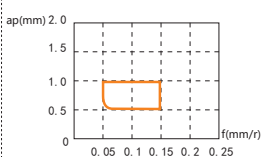
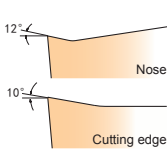


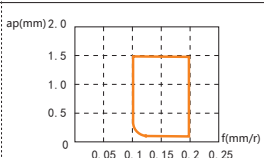
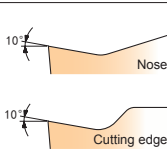


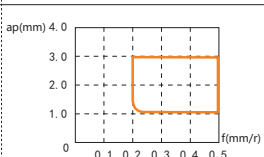
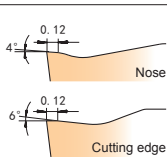


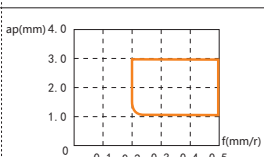
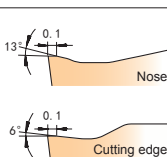

General turning inserts overview

Negative inserts with hole

| Application | Chipbreaker | Precision | Recommended cutting parameters | Chipbreaker profile | Feature/Shape of insert |
|----------------------|---|-----------|---|---|---|
| For roughing | DR Single-side  | M |  |  | Recommended chipbreaker for roughing of P-type materials Single-sided chipbreaker with M-level tolerance has high security of cutting edge, which can achieve high feed rate and low cutting forces at great cutting depth and high feed rate.  |
| | SNR  | M |  |  | Recommended chipbreaker for S-material high efficiency roughing M-level double-sided chipbreaker perfectly combines sharpness and strength of the cutting edge, with small cutting resistance and high edge strength can effectively reduce groove wear. SNR is recommended chipbreaker for high depth roughing of S- materials.  |
| Heavy-load machining | HDR Single-side  | M |  |  | Recommended chipbreaker for heavy load machining of P materials M level single-sided chip breaker with strengthen cutting edges, high safety and excellent plastic deformation resistance under high metal removal rate.  |
| | HPR Single-side  | M |  |  | Recommended chipbreaker for heavy-load machining of P-type materials Single-sided chipbreaker with M-level tolerance, strong cutting edge. Multi-stages chipbreaker ensures the flowing of chip and heat dissipation of insert. It is suitable for machining under unstable and relatively bad working condition, especially for external roughing of work piece with a rough oxidized surfaces.  |
| Cast iron machining | Without chipbreaker  | M |  |  | For cast iron machining Double-sided chipbreaker with M-level tolerance has high cutting edge strength. It can overcome inferior factors such as interruption and vibration, etc. when machining cast iron.  |
| Super hard inserts | Without chipbreaker  | G |  |  | For machining of non-ferrous metal and high-hardness metal G-level tolerance is the best choice for machining non-ferrous metals and high-hardness material by welding PCBN and PCD material to cemented carbide substrate.  |
| Ceramic inserts | Without chipbreaker  | G |  |  | For roughing of K-, H- high-temperature alloy roughing Sialon Ceramics, V-positioning, solution for high-speed machining of cast iron, hardened steel and superalloy.  |



Positive inserts with hole

| Application | Chipbreaker | Precision | Recommended cutting parameters | Chipbreaker profile | Feature/Shape of insert |
|---------------------|---|----------------|---|---|---|
| For extra finishing | USF  | G |  |  | Precision turning chipbreaker With G-level tolerance, large rake angle, sharp cutting edge, for soft cutting action, this is the first choice for precision turning of small shaft parts.  |
| | R/L  | G |  |  | Recommended chipbreaker for precise boring inserts With G-level tolerance, sharp cutting edge and small nose radius, it can effectively reduce the vibration in machining and is suitable for boring and external turning.  |
| | SF  | G |  |  | First choice for finishing with high requirements on chipbreaker With G-level tolerance, it is the first choice for precise finishing due to its excellent performance on chip breaking.  |
| For finishing | HF  | M |  |  | Chipbreaker for finishing with wide application With M-level tolerance, it is suitable for internal and external finishing of various materials such as steel and cast iron.  |
| | EF  | M |  |  | Recommended chipbreaker for finishing of M-type materials With M-level tolerance, it has sharp cutting edges and is suitable for cutting adhesive materials such as stainless steel, soft steel, etc.  |
| | NF  | E G |  |  | Recommended chipbreaker for finishing S-type materials With E and G-level tolerance and sharp cutting edges, it is suitable for internal and external finishing of high-temperature alloy materials.  |
| | NGF  | E G |  |  | Recommended chipbreaker for S-material general finishing E, G grade accuracy, for inner hole finishing of S materials.  |
| For semi-finishing | HM  | M |  |  | Chipbreaker for semi-finishing with wide application With M-level tolerance, it is suitable for internal and external semi-finishing of materials like steel, cast iron, etc.  |
| | EM  | M |  |  | Recommended chipbreaker for semi-finishing of M-Type materials With M-level tolerance, it has higher hardness of cutting edge than EF and can achieve higher efficiency.  |

General turning

General turning inserts overview



TURNING / General Turning Inserts

General turning inserts overview

General turning

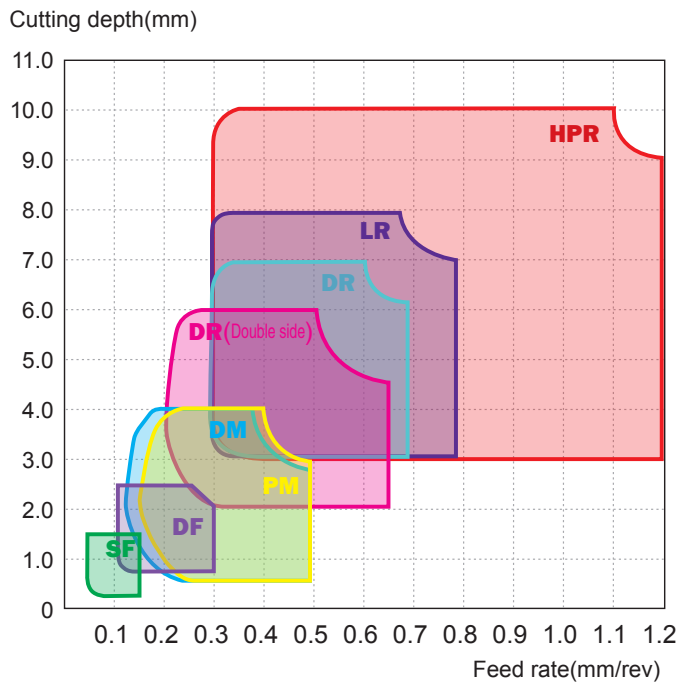
General turning inserts overview

| Positive inserts with hole | | | | | |
|----------------------------|---------------------|----------------|--------------------------------|------------------------|--|
| Appli- cation | Chipbreaker | Preci- sion | Recommended cutting parameters | Chipbreaker profile | Feature/Shape of insert |
| For semi-finishing | All round | M | | | Recommended chipbreaker for semi-finishing of M-type materials With M-level tolerance, it is suitable for profile machining materials like steel, cast iron, etc. |
| | Without chipbreaker | M G | | | Chipbreaker for machining of cast iron With M- and G- level tolerance, it has high cutting edge strength and is suitable for internal and external machining of cast iron. |
| For roughing | HR | M | | | General chipbreaker for roughing With M-level tolerance, it is suitable for both internal and external roughing of materials such as steel, stainless steel, cast iron, etc. |
| | Special chipbreaker | M | | | Recommended chipbreaker for heavy machining of P-type materials Single-sided with M-level tolerance, it has good cutting edge strength with high security. It is the first choice for profile roughing. |
| | SNR | M | | | Recommended chipbreaker for S-material high-efficiency roughing M-level accuracy, for inner hole roughing of S materials. |
| For Al machining | LC | G | | | Chipbreaker for machining of Al alloy With G-level tolerance, large rake angle and clearance angle make the cutting edge sharper, ensuring easy and fast cutting while remaining effective chip breaking. |
| | LH | G | | | Special chipbreaker for machining of Al alloy With G-level tolerance, large rake angle and polishing treatment on surface, it can effectively prevent built-up edge and achieve high workpiece surface quality while maintaining long life. |
| Super hard inserts | Without chipbreaker | G | | | Special chipbreaker for non-ferrous metals and materials with high hardness With G-level tolerance, it is the best choice for machining of non-ferrous metals and materials with high-hardness by welding PCBN and PCD material to cemented carbide substrate. |

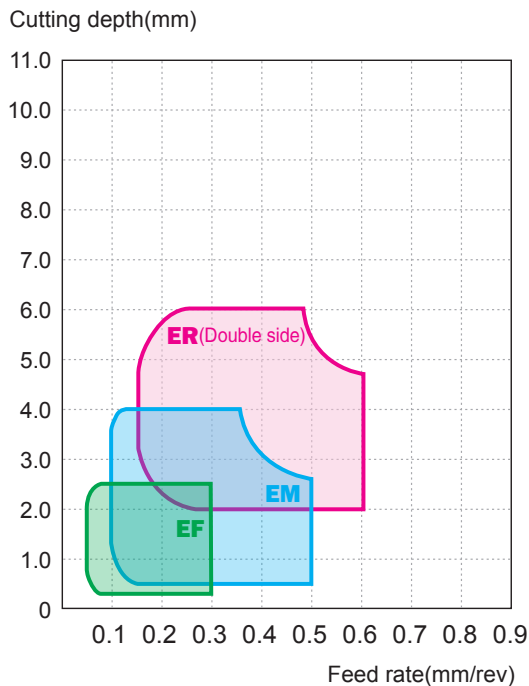


Chip breaking range reference for general turning inserts

Negative inserts



▶ Workpiece material: 45# steel

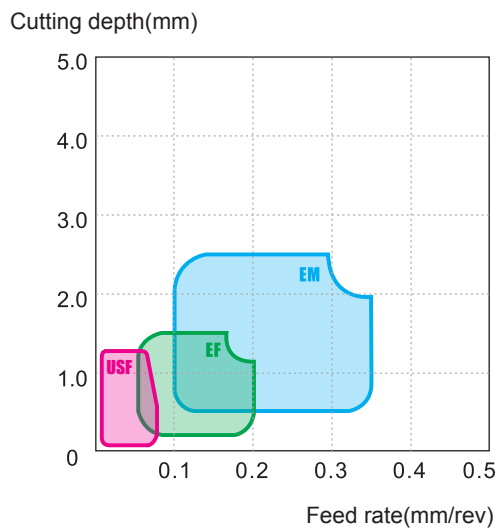


▶ Workpiece material: stainless steel (1Cr18Ni9Ti)

Positive inserts



▶ Workpiece material: 45# steel



▶ Workpiece material: stainless steel (1Cr18Ni9Ti)



TURNING / General Turning Inserts

Application instruction for general turning tools

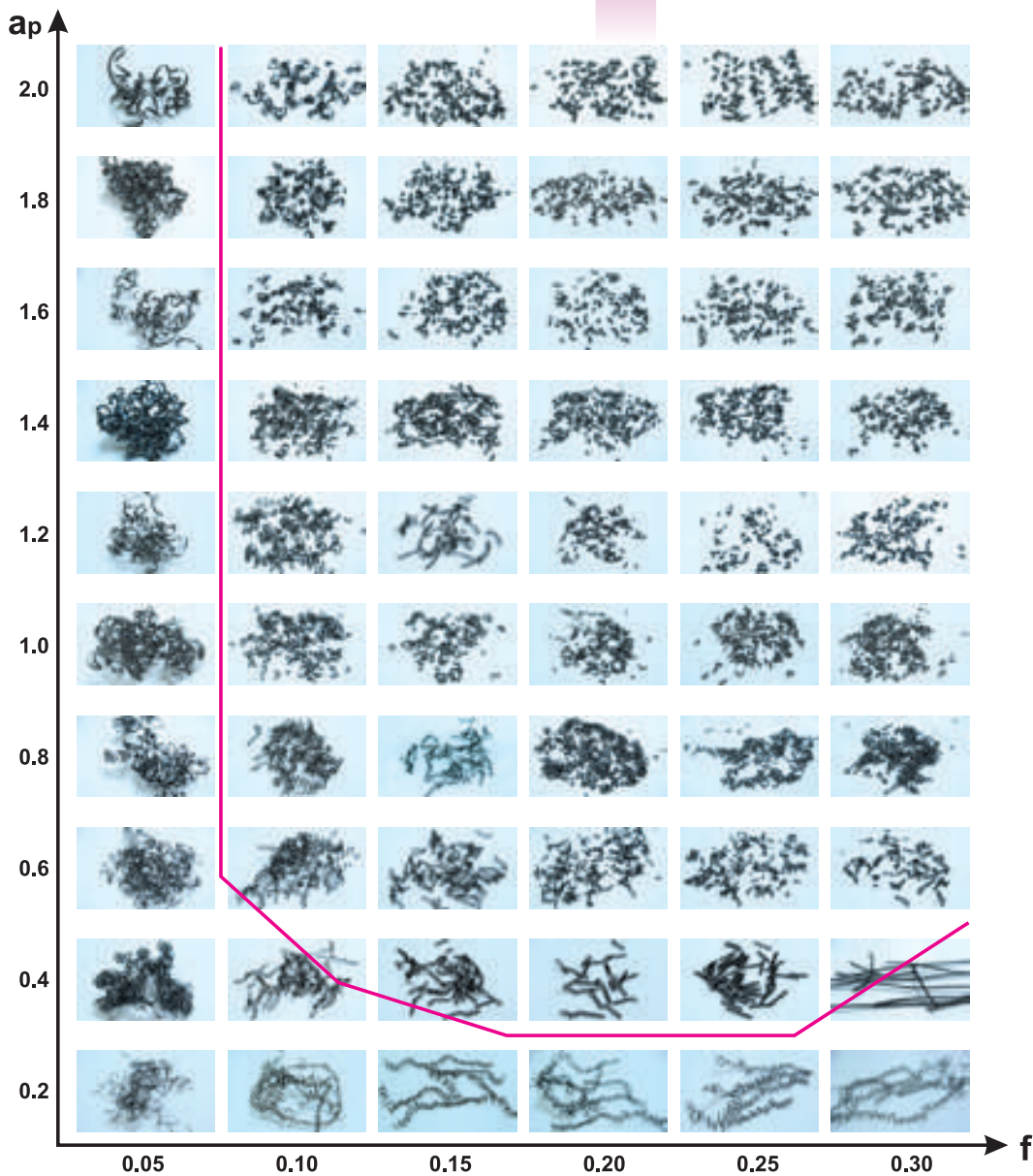
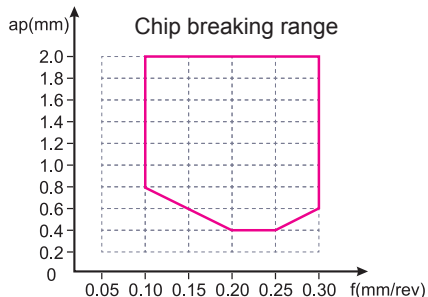
Cutting test for chip breaking range of general turning inserts

General turning

Application instruction for general turning tools

Case

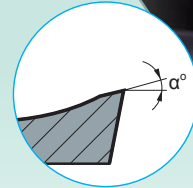
Insert: CNMG120408-DF
Toolholder: PCLNL2525M12
Workpiece material: 45# steel
Cutting speed: 200m/min



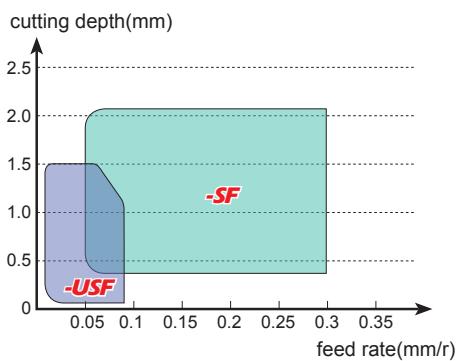
-USF

Precision turning chipbreaker

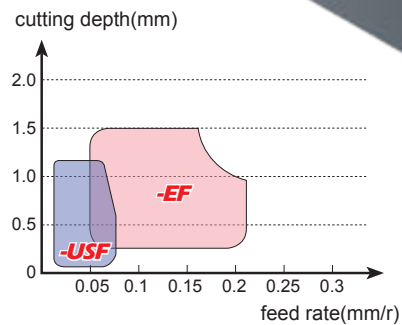
- Effective chip control due to the proper chipbreaker.
- Large rake angle makes cutting easier and faster.
- Nose radius precision controlled within 0.02mm for excellent machining precision.
- Special surface after-treatment for better surface quality.
- High strength screw clamping ensures good repeatability and accuracy .



Application range of USF chipbreaker



Workpiece material: 42CrMo



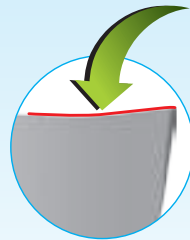
Workpiece material: 1Cr18Ni9Ti

-LC

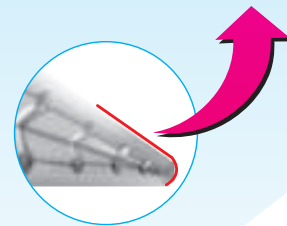
chipbreaker for aluminum

- LC inserts are designed with a special chipbreaker. Large rake angle and clearance angle make the cutting edge sharper, ensuring easier cutting while remaining effective chip breaking.
- Achieved the mirror rake face after special treatment. Reduced the friction resistance, and stick free. Accordingly, make the chip removal fluently and improve the surface quality and tool life.
- The G-class tolerance of insert, higher Repeated Position Accuracy, at the same time, it can effectively avoid the vibration during the machining process.

Optimized inclined angel makes controlling the chipping flow direction valid.

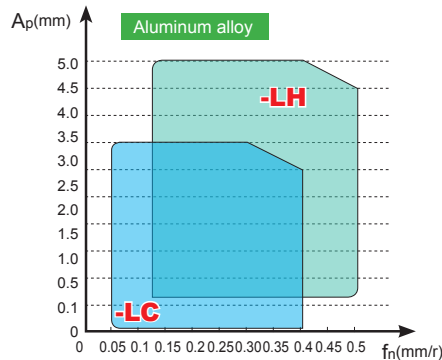
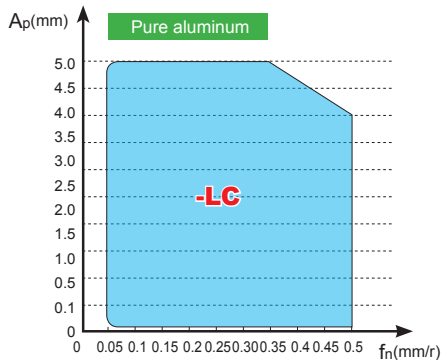


Smooth connection of insert nose and cutting edge makes rake face smoother.



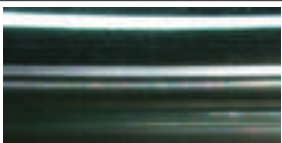
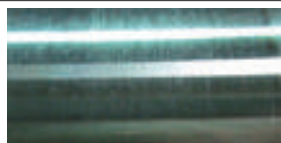


-LC and -LH chipbreaker characteristics and machining range

- LC chipbreaker can be used in machining of pure Al, while -LH chipbreaker can not.
- LC chipbreaker expand the chip breaking range of Al alloy machining.

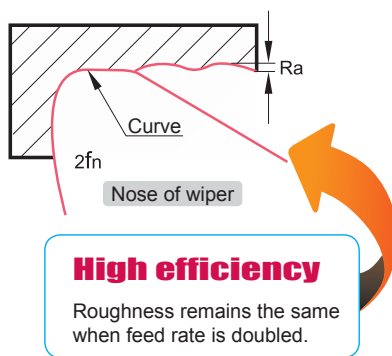


Workpiece material: Pure aluminum

| Cutting parameters | V=350m/min Ap=0.2mm F=0.2mm/r | |
|--------------------|--|--|
| Chips |  |  |
| Surface quality |  |  |
| | -LC chipbreaker | similar products from overseas manufacturers |
| | <ul style="list-style-type: none"> -LH chipbreaker is more suitable for machining aluminum alloy in condition of large cutting depth and high feed rate. -LC chipbreaker is more suitable for machining aluminum alloy in condition of small cutting depth and low feed rate. -LC chipbreaker can be used in machining pure aluminum. | |

-WGF/WGM

chipbreaker series Turning inserts with wiper

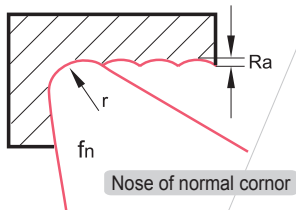
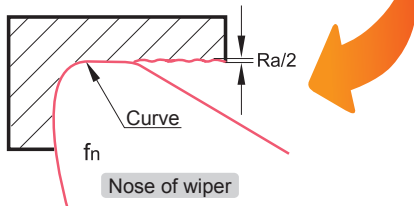


Wiper is assembled by three curves to form a circular arc edge. The nose of wiper provides less profile height on the surface that is formed by the cutting edge, resulting in a smooth turning surface.

Inserts with wiper has high efficiency when used for finish and semi-finish turning. The surface quality remains the same even at double feed rate.

Wiper technique =
high machining efficiency + high surface quality

High quality
Roughness value is reduced to half when feed rate remains the same.



When used for finishing, it can improve roughness of workpiece surface and achieve turning instead of grinding.

When used for semi-finishing, efficiency could be improved by doubling the feed rate, the roughness of workpiece surface remaining the same.

Guide to use

● Select reasonable approach angle of the tools

Minor angle being close to 0 degree is the reason that inserts with wiper can reduce roughness of the surface, which is determined by the shape of insert and approach angle of the tool holder. Therefore, acceptable roughness of surface is the result of reasonable approach (minor) angle. The finishing function of wiper would be reduced or invalid if unreasonable approach (minor) angle is chosen. For example, the approach angle should be 95° for CNMG / WNMG inserts, while 93° is the best for DNMX.TNMX inserts.

● Be careful with DNMX / TNMX inserts

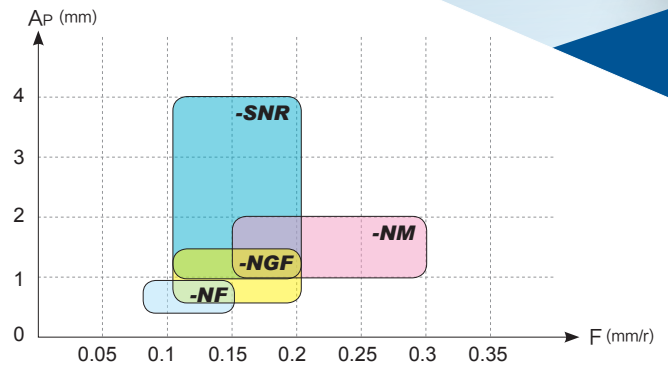
DNMX / TNMX inserts with wiper don't have wide application. It cannot achieve a wiper result when minor angle is not 0 degree, like chamfer and profile surface, and will even cause over-cutting or no-cutting on workpiece, affecting the shape and size precision of workpiece. Please contact technical service regarding these problems.

S- Ni-based Superalloy Machining Difficulties Overcame

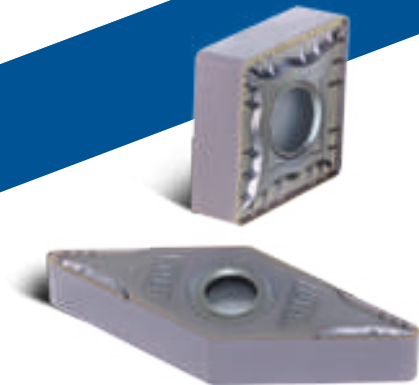
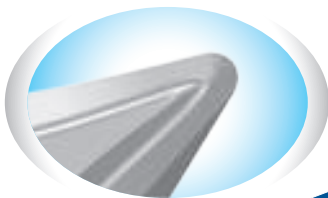
Features of Ni-based superalloy machining

- High cutting resistance (containing a large amount of alloying elements, severe hardening, great plastic deformation ;
- High cutting temperature;
- Severe wear of inserts.

Chipbreaker for machining of Ni-based superalloy should have tough and sharp insert nose, smooth rake face and proper inclination angle.




-NM for semi-finishing -SNR for high efficiency roughing
-NF for finishing -NGF for general finishing



-SNR Chipbreaker for roughing with large depth of cut

- Positive rake angle design, sharp cutting edge, low cutting resistance, effectively reducing groove wear;
- Cutting edge with variable rake angles increase cutting edge strength at large depths of cut. Edge strength increases as the depth of cut increases;
- Large slot width combined with unique edge rib design not only provides excellent chip breaking performance but also can effectively improve edge strength.



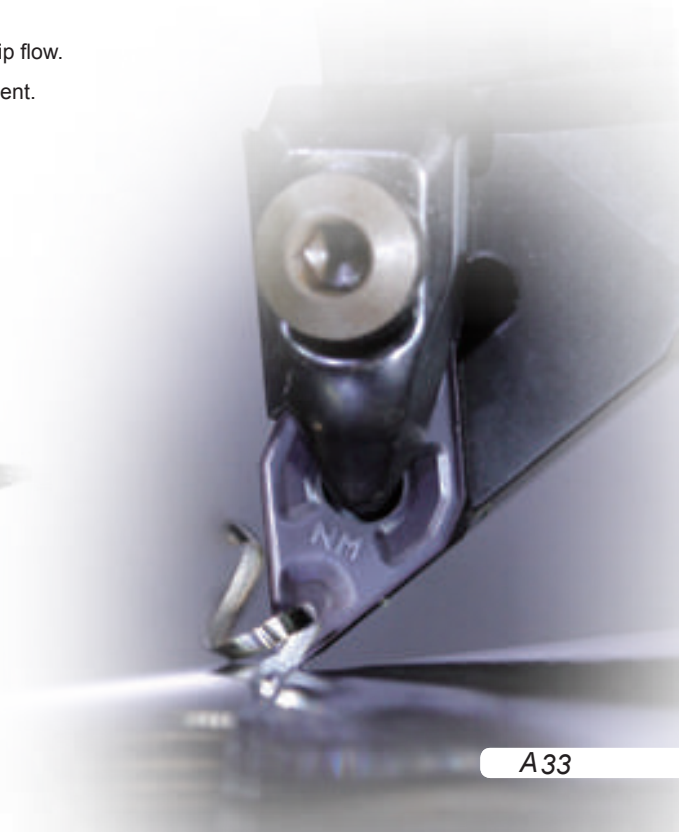
-NGF Chipbreaker for General Finishing

- Proper inclination angle design, sharp cutting edge, small cutting resistance;
- E-level tolerance of insert, high clamping accuracy, proper chipbreaker width, good chip breaking performance, excellent surface quality;
- Special edge treatment, high wear resistance.



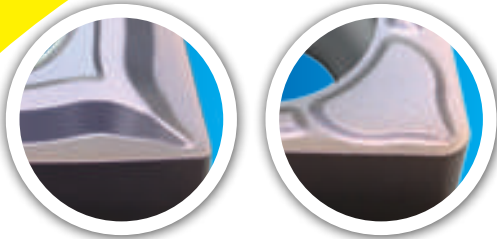
-NF/NM Chipbreaker for General Finishing

- -NF chipbreaker has sharp cutting edge, while -NM chipbreaker high cutting edge strength.
- Smooth surface of chipbreaker ensures unobstructed chip flow.
- High wear resistance of cutting edge after special treatment.



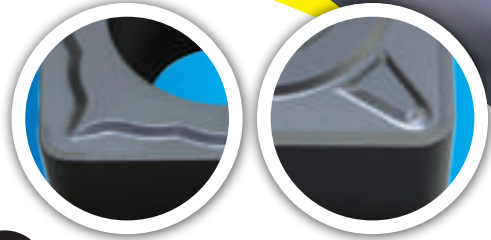
-EF -EM -ER

Specially designed for machining intensively adhesive and high-plasticity materials such as stainless steel, etc



-EF

Rake angle and inclined angle are specially designed for intensively adhesive stainless steel and high-plasticity materials which are hard to be machined. Sharp cutting edge enables it to cut lightly and easily and achieve good surface quality by well controlling chip breaking. It is especially suitable for finishing these kinds of materials.

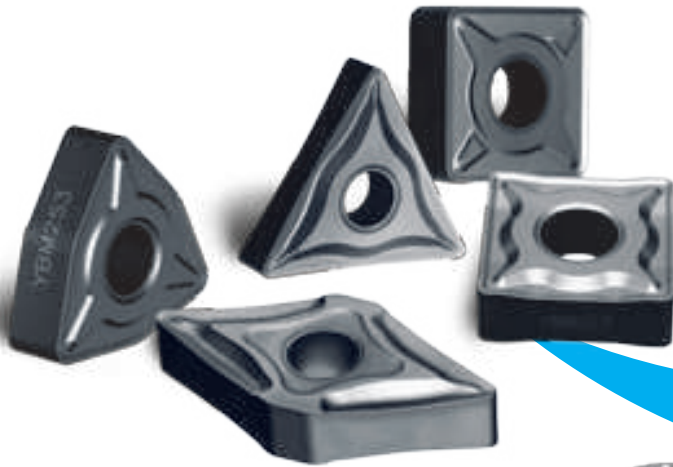


-EM

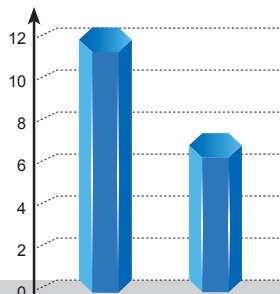
Inserts meet the requirements of machining intensively adhesive materials. Impact resistance of cutting edge is improved in addition to sharpness, which makes it suitable for semi-finishing and intermittent machining of adhesive materials such as austenitic stainless steel, etc.

-ER

Specially designed double rake angle with wide land achieves balance between edge security and sharpness, and effectively reduces cutting resistance and wear on groove.



Number of machined parts / Cutting edge



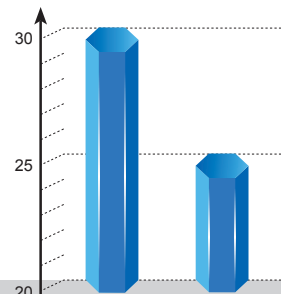
CNMG120408-EM / YBG202 A company



Machining external of valve

Machining end surface of valve (intermittent machining)
Workpiece diameter:135mm
Rotating speed:350rpm
Feed rate:0.25mm/r
Cutting depth:1.5mm

Number of machined parts / Cutting edge



CNMG120408-EF / YBG202 A company

Machining external of valve
Workpiece diameter:89mm
Rotating speed:635rpm
Feed rate:0.15mm/r
Cutting depth:1.0mm



-SF Chipbreaker for finishing

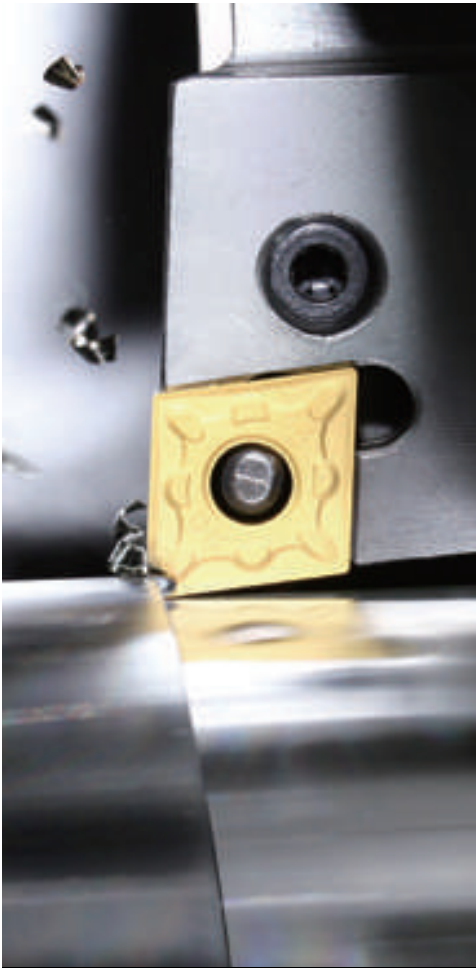
Unique nose design and sharp cutting edge lead to small cutting resistance and effectively reduce vibration of the tool holder.

With high re-positioning precision, the insert is compatible with specially developed cemented carbide tool holders, which can increase the capability of vibration resistance and improve machining quality.

Special treatment on insert's surface can reduce the possibility of chips adhering to the rake face of insert. Good performance of chip breaking and chip flowing ensures improved surface quality of workpiece.

By adopting excellent grade, it is suitable for extra finishing of various materials.





YBC151

The combination of substrate with excellent wear resistance and coating composed of MT-TiCN, thick layer of Al₂O₃ and TiN makes it suitable for finishing steel.

YBC251

The substrate with good toughness and high security of cutting edge, in optimal combination with coating composed of MT-TiCN, thick layer of Al₂O₃ and TiN makes it suitable for steel semi-finishing.

YBC351

The best combination of substrate with high wear resistance and coating composed of MT-Ti (CN), thick Al₂O₃ layer and TiN makes it suitable for finishing and semi-finishing of cast iron materials.

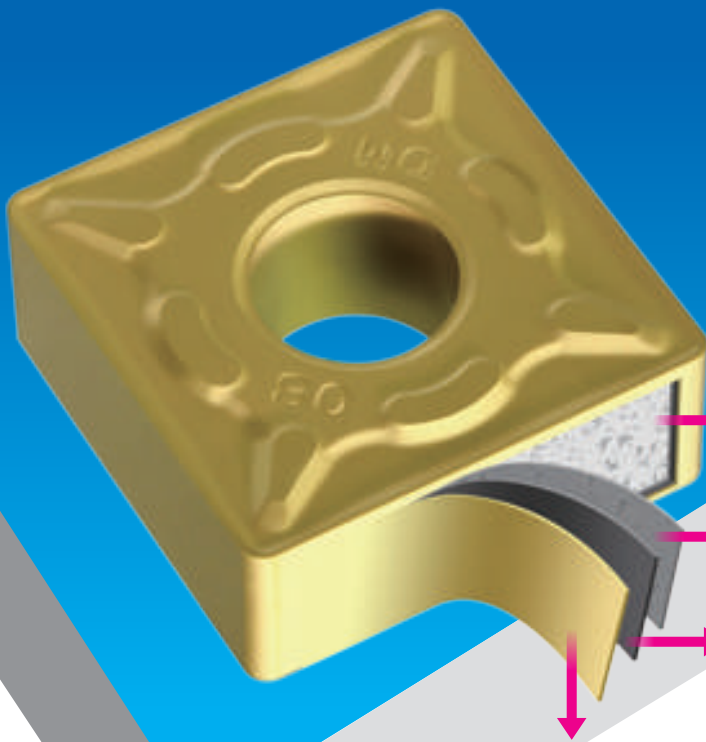
YBM151

Substrate with special structure, in combination with coating composed of TiCN, thin Al₂O₃ layer and TiN, with excellent resistance against diffusive wear and plastic deformation makes it suitable for finishing, semi-finishing and roughing of stainless steel.

YBM251

Combination of substrate with good toughness and strength and coating composed of TiCN, thin Al₂O₃ layer and TiN makes it suitable for semi-finishing and roughing of stainless steel.

Coated Cemented Carbide **CVD**



YBC251 Coating

Thanks to the technology of gradient sintering, impact resistance of cutting edge and wear resistance are improved which lead to improved capability of cutting edge against damage. Carbide with special crystal structure improves the Red Hardness of substrate and strengthens heat resistance of insert.

TiCN layer acts against abrasion, which leads to the best wear resistance of the flank.

Special structure of Al₂O₃ deposit layer acts as a thermal barrier and strengthens the capability of substrate against plastic deformation under dry and high-speed cutting conditions.

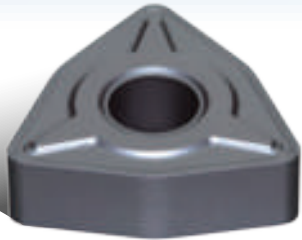
Golden surface of TiN can reduce friction and enable easy distinction of the variety of wear.

BLACK DIAMOND INSERTS

Innovation of machining techniques for stainless steel turning



YBM153



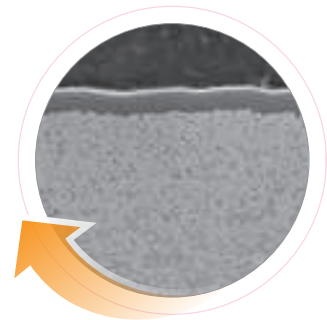
Best choice for roughing of stainless steel with high-speed under good working condition

Coating

- ✓ CVD coating with advanced ultra-fine grain coating technology, greatly improves wear resistance of inserts.
- ✓ Thanks to special treatment on transition layer, multi-layer coating are combined firmly.
- ✓ The exceptionally smooth coating surface and good low friction ability can reduce the occurrence of built-up edges.

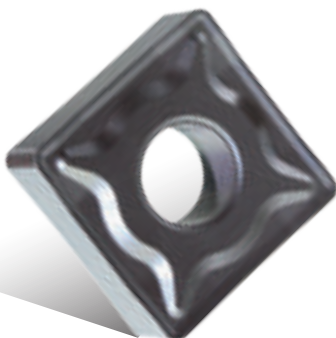
Substrate

- ✓ Added with resist high temperature rare element, inserts shows a good capability against plastic deformation and good capability of Red Hardness.
- ✓ Unique manufacturing technology improves high temperature toughness and wear resistance of substrate.



Application fields YBM153 is suitable for finishing and semi-finishing of stainless steel with high cutting efficiency under stable working condition. Such as medium-size fluid valve components in petrochemical industry, flange and other parts in auto pipeline, valve and valve body in auto engine systems, ship mechanical parts, aviation hydraulic parts, adapting pieces in IT and semiconductor industry, medium and long-axis in food processing machinery, construction machinery and general machinery.

YBM253



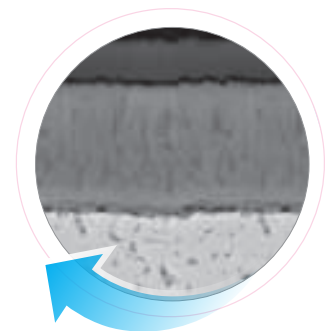
Ideal grade for turning of stainless steel with high cutting depth and high feed rate under bad working condition

Coating

- ✓ Ultra-fine grain coating technology provides better wear resistance and toughness;
- ✓ Improved remain internal stress design ensures good toughness and anti-cracking performance;
- ✓ Polishing treatment on coating surface makes it suitable for cutting adhesive materials.

Substrate

- ✓ With gradient carbide substrate insert has better impact resistance and cutting edge strength.



Application fields YBM253 grade is suitable for roughing of heavy stainless steel parts with high cutting depth and high feed rate under the condition with great impact.



Coated Cemented Carbide CVD

BLACK DIAMOND INSERTS

Achieving both higher cutting speed and longer tool life

Second generation of



Coated Cemented Carbide CVD

YBC152

Thick TiCN and thick Al₂O₃ coatings improve the impact toughness and abrasion resistance, which makes it suitable for finishing and semi-finishing of steel at high speed. Cutting speed can increase by more than 25%, while the tool life can increase by more than 30% at the same cutting speed.

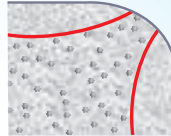
YBC252

Comprising of thick TiCN and thick Al₂O₃ coatings, the grade has high capability against plastic deformation and good hardness of cutting edge. It is preferred grade for machining of steel from finishing to roughing. Under the same cutting conditions, the cutting speed can be increased by more than 25%, while the tool life can be 30% longer under the same cutting speed.

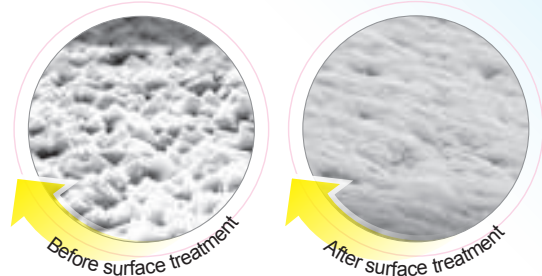
YBC352

Thickness TiCN and Al₂O₃ coating, with strongest toughness and plastic deformation resistance, the ideal grade for high efficient steel rough machining under the bad condition.

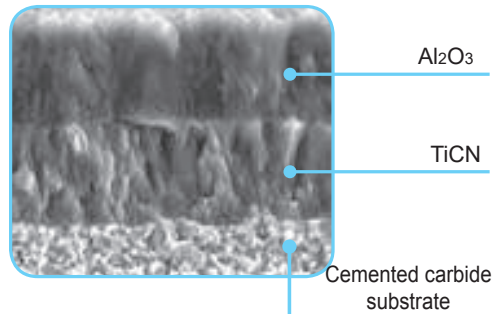
Perfect unification of toughness and anti-plastic deformation. Specially designed cutting edge with "skeleton" realizes perfect unification of toughness and anti-plastic deformation.



Roughness of insert surface is improved after special treatment on surface, which effectively reduces cutting forces, prevents workpiece adhering to surface of inserts and improves operation stability of inserts.

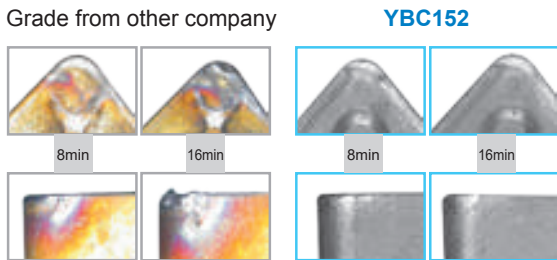


The perfect combination of fibrous TiCN and fine grain Al₂O₃ obviously improves abrasion resistance and anti-breakage of inserts.



Test comparison of inserts abrasion

Workpiece material : 45[#] steel
 Inserts: CNMG120408-DM
 Cutting parameters: Vc=400m/min ap=1mm fn=0.2mm/r



YBD052

CVD coated grade, which is characterized by super fine grain and smooth surface, is the combination of hard substrate and coating (extra thick Al_2O_3 + thick TiCN). The grade is optimized for best wear resistance when machining gray cast iron at high speed under dry condition.

YBD102

CVD coated grade, which is the combination of hard substrate and coating (thick Al_2O_3 + thick TiCN), shows excellent wear resistance and impact resistance when machining nodular cast iron at high speed.

YBD152

CVD coated grade, which is the combination of hard substrate and coating (medium thick Al_2O_3 + thick TiCN), has good flaking resistance. It is suitable for turning of cast iron at high speed, and light intermittent cutting can be supported even at moderate speed. It is also suitable for milling of cast iron.

YBD252

CVD coated grade, which is the combination of hard substrate and coating (medium thick Al_2O_3 + thick TiCN), achieves the balance between wear resistance and toughness. It is suitable for wet milling of cast iron, which requires toughness (such as nodular cast iron) at moderate or low speed. It is also suitable for intermittent turning.

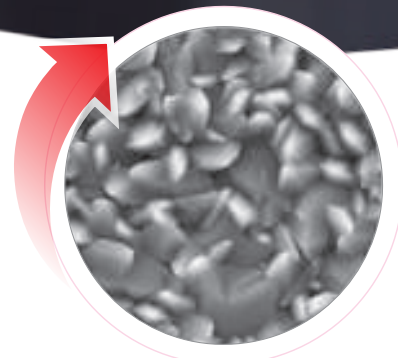
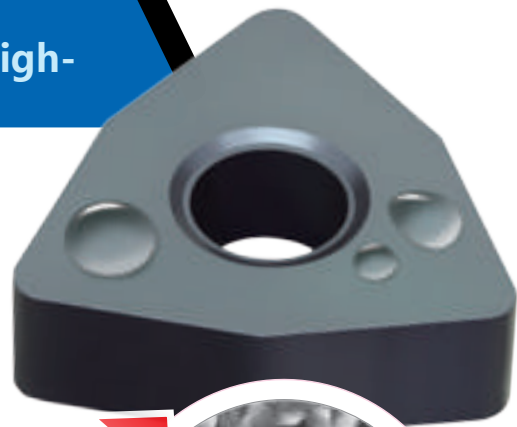
BLACK DIAMOND INSERTS YBD

First choice for high-efficiency and high-speed machining of cast iron

- The combination of thick coating and substrate with good hardness and impact resistance gives the inserts excellent impact resistance and stability under high temperature, and improves wear resistance of inserts. Inserts also satisfy the requirements of high speed and high feed rate when machining cast iron.
- The appearance of shining full black is easily identified.

Significant results

- Working efficiency has been improved. Both the coating and the substrate are suitable for machining cast iron at high speed and high feed rate. Cutting speed can be increased by **30% to 40%**.
- Cost is reduced as tool life is increased by **40%-50%**.
- High machining stability.



Layer of fine grain with compact surface

Coated Cemented Carbide CVD

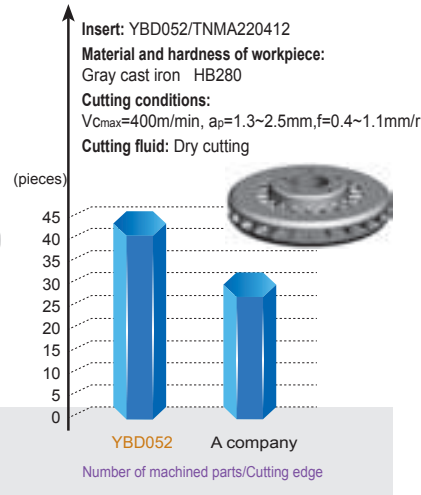
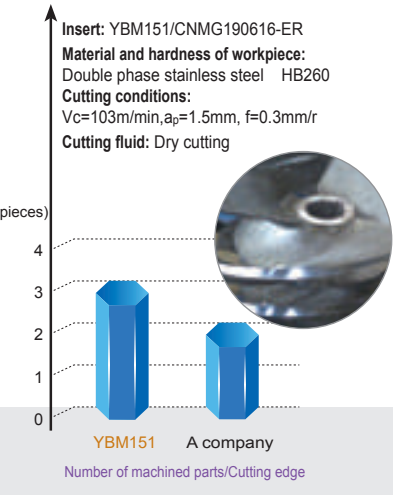
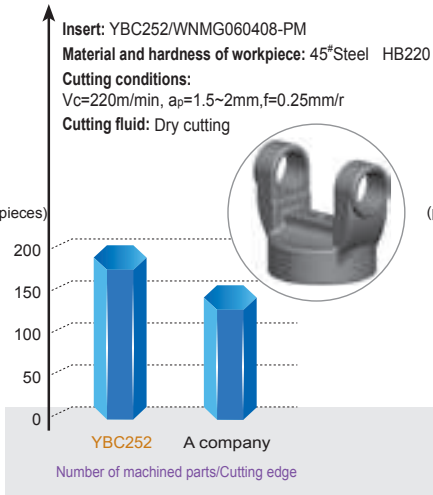
Recommended combination of grade and chipbreaker

| For machining of P-type materials | | For machining of M-type materials | | For machining of K-type materials | |
|-----------------------------------|------|-----------------------------------|------|-----------------------------------|---------------------|
| Grade | Type | Grade | Type | Grade | Type |
| YBC151 | DF | YBM151 | EF | YBD052 | Without chipbreaker |
| YBC152 | | | EM | | PM |
| YBC251 | DM | | ER | YBD102 | Without chipbreaker |
| YBC252 | | PM | PM | | |
| YBC251 | DR | YBM153 | EF | YBD152 | Without chipbreaker |
| YBC252 | | | EM | | PM |
| YBC252 (Double-side) | | | EM | | Without chipbreaker |
| YBC351 | DR | YBM251 | EM | YBD252 | Without chipbreaker |
| YBC351 | HPR | | ER | | Without chipbreaker |
| YBC352 | | | EM | | |
| | | ER | | | |

Recommended cutting parameters

| Workpiece material | Range of machining | Grade | Recommended cutting speed(m/min) |
|----------------------|--------------------|--------|----------------------------------|
| P Steel | For finishing | YBC151 | 180-460 |
| | | YBC152 | 220-500 |
| | For semi-finishing | YBC251 | 160-440 |
| | | YBC252 | 180-480 |
| | For roughing | YBC351 | 130-380 |
| | YBC352 | | |
| M Stainless steel | For finishing | YBM151 | 110-280 |
| | For semi-finishing | YBM153 | |
| | For roughing | YBM251 | |
| | | YBM253 | |
| K Cast iron | For finishing | YBD052 | 200-500 |
| | For semi-finishing | YBD102 | 200-480 |
| | | YBD151 | 180-450 |
| | For roughing | YBD152 | 190-450 |
| | | YBD252 | 150-380 |

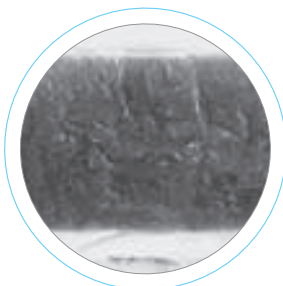
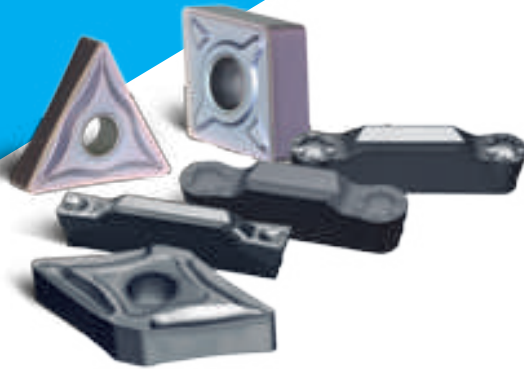
Case



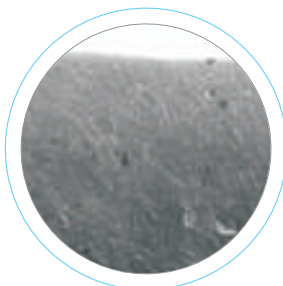
Coated Cemented Carbide **PVD** **makes it easy to machine materials which are hard to be machined**

New nano coating grade

- Special coating techniques make inserts smooth, which leads to low friction and unobstructed chip flow.
- Unique coating with nano structure closely integrates with substrate, ensuring higher hardness and toughness.
- Excellent thermal stability and chemical stability can effectively protect cutting edge.



nc-TiAlN coating(YBG202)



TiAlN base multi-elements coating (YBG105)

High-performance nanostructure coating guarantees good toughness and hardness of inserts. Special coating technology guarantees smooth surface and excellent wear resistance. Outstanding thermal stability and chemical stability effectively protect cutting edge.

▶ **YBG102**

The combination of nc-TiAlN coating and fine grain substrate makes it suitable for turning of various materials and finishing and semi-finishing of high-temperature alloys.

▶ **YBG202**

nc-TiAlN coating and ultra-fine grain substrate makes it suitable for finishing and semi-finishing of various materials and turning of super alloy.

▶ **YBG302**

The combination of nc-TiAlN coating and tough cemented carbide substrate, which integrates security and wear resistance, makes it suitable for parting and grooving of various materials.

▶ **YBG105**

Finishing and semi-finishing for materials difficult to cut PVD coated grade

PVD coated grade, new TiAlN based multilayer coating, has higher wear resistance and Anti-thermal-oxidation ability. It is suitable for finishing and semi-finishing turning of various materials difficult to cut, such as high temperature alloy, heat resistant alloy, etc.

▶ **YBG205**

PVD coating grade for finishing of stainless steel

Suitable for relatively small workpieces which require high surface smoothness.

Superfine TiAlN nano coating added with wear-resistant and heat-resistant rare elements has high hardness and excellent heat-resistance, providing effective protection for the cutting edge. Special coating technology ensures stronger combination of coating and substrate. It is suitable for extra finishing of stainless steel.

▶ **YBG212**

Nc-TiAlN coating combined with super tough substrate which made of super fine grain. It's suitable for finishing and roughing materials which are hard to be machined.

▶ **YBS103** *New*

Turning grade for Ni-based S material

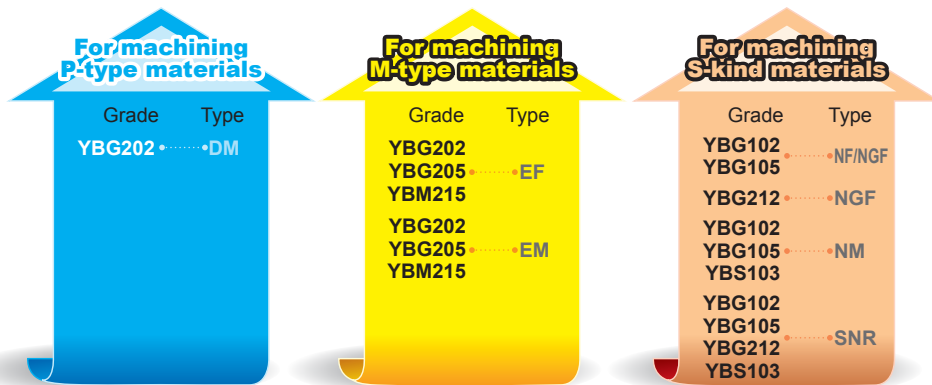
Fine wear resistance, and good capability against built-up edge and heat resistance. Suitable for turning of Ni-based materials.

▶ **YBM215** *New*

PVD coating of multiple layer nanometer

Improved capability of grade's wear resistance and anti-high temperature increases the strength between grade and substrate and the tool stability. This grade is very suitable for turning for stainless steel.

Recommended combination of grade and chipbreaker



Recommended cutting parameters

| Workpiece material | Range of machining | Grade | Recommended cutting speed(m/min) |
|---------------------------------------|------------------------------------|----------------------------|----------------------------------|
| P Steel | For finishing | YBG102 | 180-460 |
| | For semi-finishing | YBG202 YBG205 | 150-380 |
| M Stainless steel | For finishing ~ for semi-finishing | YBG202 YBG205 YBM215 | 170-300 |
| S Heat resistant Alloy Ti alloy | For finishing ~ for semi-finishing | YBG102 | 30-60 |
| | | YBG105 | 40-70 |
| | | YBG212 | 30-50 |
| | For roughing | YBS103 | 40-90 |
| | | YBG102 | 20-40 |
| | | YBG105 | 30-40 |
| YBG212 | 20-40 | | |
| YBS103 | 20-50 | | |

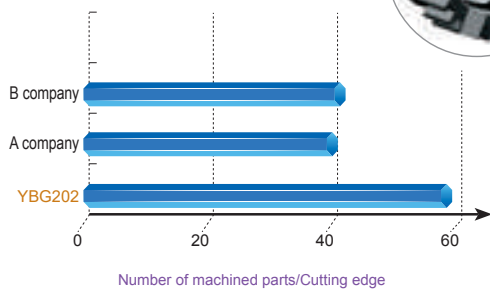
Case

Insert : YBG202/TNMG120404-EF

Hardness and material of workpiece : 0Cr18Ni9 HB240

Cutting conditions : $V_c=200\text{m/min}$, $a_p=1\text{mm}$,
 $f=0.15\text{mm/r}$

Cutting fluid : Dry cutting

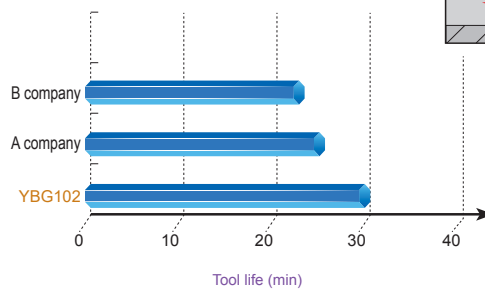


Insert : YBG102/DNEG150404-NF

Hardness and material of workpiece : High temperature alloy Inconel 718 HRC \geq 39

Cutting conditions : $V_c=80\text{m/min}$, $a_p=0.3\text{mm}$,
 $f=0.15\text{mm/r}$

Cutting fluid : Dry cutting



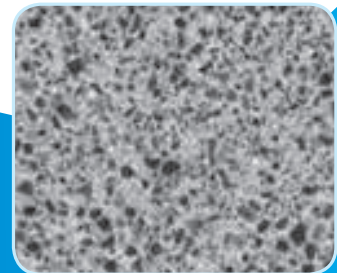
Cermet & Coated Cermet

The chemical stability between Ti(CN) base cermet inserts and workpieces is relatively high, which reduces the friction and temperature of the cutting edge during cutting, preventing mutual diffusion of atoms of the workpiece material and the inserts, and improving resistance to bonding abrasion. Therefore, Ti(CN) base cermet shows good capability of Red Hardness and resistance to crater wear. It is an optimal material for high-speed finishing and semi-finishing of steel. High temperature strength of cermet is higher than that of WC-Co, and toughness better than that of Al₂O₃ and Si₃N₄ ceramic. This fulfils the application blank of WC-base cemented carbide and Al₂O₃ and Si₃N₄ ceramic from finishing to semi-finishing at high speed.

Product features

Scientifically designed structure ensures good material performance and long tool life. Refined production management assures the stability of product quality.

- Symmetrical fine grain organization, together with the control of symmetrical organization and toric phase structure, improves the strength and hardness of cermet.
- Intensified bonding phase and well-designed grain boundary improve the high temperature capacity, heat conductivity and thermal vibration resistance.
- Coating of Physical Vapor Deposition (PVD) is applied to cermet substrate with high toughness, so that the grade has high hardness and toughness with wide-range application.



Substrate of cermet grade of YNG151 (homogenized ultra-fine structure)



PVD coating organization structure of cermet

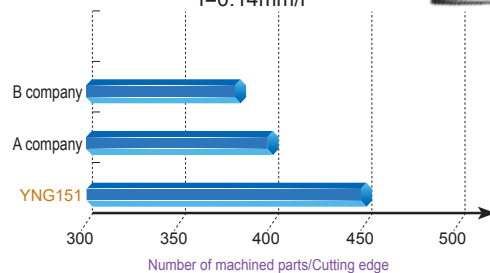
Recommended cutting parameters

| Workpiece material | Range of machining | Grade | Recommended cutting speed(m/min) |
|-----------------------------|--------------------|---------|----------------------------------|
| P Steel | | YNG151 | 260-550 |
| | | YNG151C | 260-580 |
| M Stainless steel | For finishing | YNG151 | 170-330 |
| | | YNG151C | 160-350 |
| K Cast iron | | YNG151 | 250-400 |
| | | YNG151C | 270-420 |

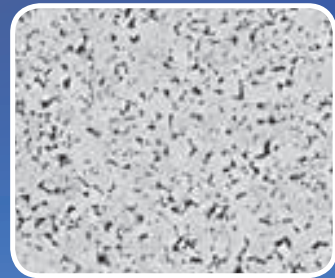
Case

Insert: YNG151/CNMG120404-SF
 Hardness and material of workpiece:
 20CrMnTi HB180-223
 Cutting parameters: $V_c=220\text{m/min}$

$a_p=0.5\sim 1.0\text{mm}$
 $f=0.14\text{mm/r}$



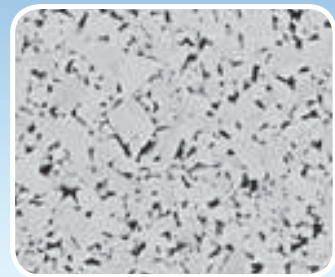
Outstanding chip breaking Good surface quality



Substrate of YD101: the combination of cemented carbide phase WC of fine grain and bonding phase Co

Cemented Carbide Grade

Uncoated cemented carbide grade is widely used for machining of non-ferrous metal, high temperature alloy, etc. It is economical and can be universally applied.



Substrate of YD201: the combination of cemented carbide phase WC of middle grain and bonding phase Co

Recommended cutting parameters

| Workpiece material | Range of machining | Grade | Recommended cutting speed(m/min) |
|--|-------------------------------------|-------|----------------------------------|
| K Cast iron | For semi-finishing For roughing | YD201 | 60-130 |
| N Non-ferrous metal | For finishing For semi-finishing | YD101 | 110-1750 |
| S Heat resistant Alloy Ti alloy | For finishing | YD101 | 20-50 |

Case

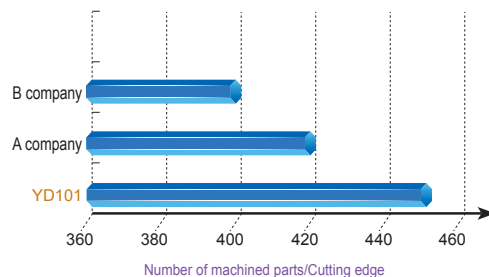
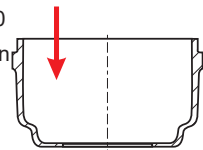
Insert: YD101/CCGX09T304-LH

Workpiece material: ZL105 HB70

Cutting parameters: $V_c=400\text{m/min}$

$a_p=1\text{mm}$

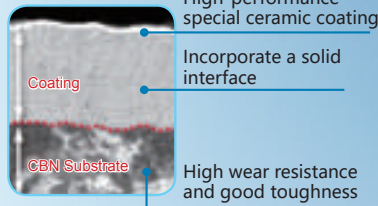
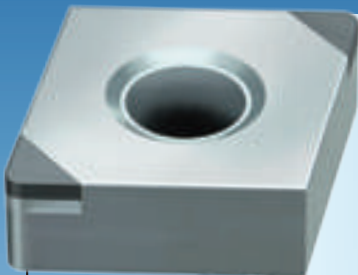
$f=0.3\text{mm/r}$



Workpiece has high surface quality and high dimensional precision.

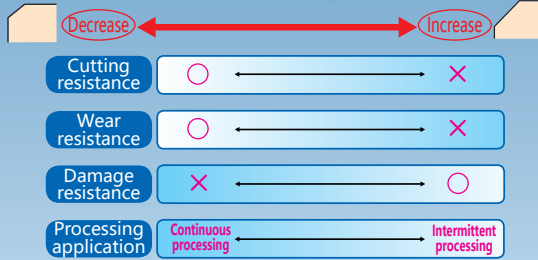
PCBN

PCBN tool material has high hardness, high thermal stability and high chemical inertness, There will be no chemical reaction with iron materials under the high temperature, the cutting temperature can reach 1200-1300°C, Suitable for cutting hardened steel, cast iron, powder metallurgy and high temperature alloys.

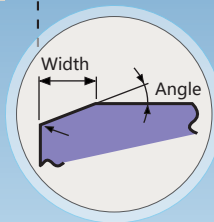


- High hardness and high heat resistance to achieve tool long life and high-speed processing;
- Effectively inhibit crater wear and realize stable processing;
- Improve the stress of the matrix and reduce the micro chipping and spalling of the cutting edge.

Chamfer width and angle



The shape of chamfering



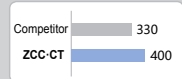
Cutting edge specifications of PCBN inserts

(The form below is just for typical example, the actual application shall be adjusted according to the corresponding situation.)

| | Low cutting force | Universal type | Highly damage resistance |
|-----------------------------------|------------------------|-----------------------|--------------------------|
| High hardness material processing | 15° 0.08 R=0.015 | 25° 0.12 R=0.02 | 35° 0.17 R=0.02 |
| Cast iron processing | 10° 0.05 R=0 | 15° 0.12 R=0 | 25° 0.12 R=0.02 |

Machining differential gears

Workpiece material: carburizing steel 20CrMnTi, HRC58-62
 Insert model: VNGA160404AS01225-2
 Grade: BH0121
 Cutting parameters: Vc=130m/min; f=0.1mm/r; ap=0.15mm
 Processing method: turning the side of the inner groove
 Cooling method: dry cutting
 Processing requirements: surface finish Ra < 0.8μm



- 21% increase in processing life
- 42% savings in insert cost



Case

Machining cylinder liner

Workpiece material: gray cast iron HT250, HB220
 Insert model: CNGA120416AS01015-2
 Insert grade: BK1011
 Cutting parameters: Vc=600m/min; f=0.2mm/r; ap=0.15mm
 Processing method: turning outer circle
 Cooling method: wet cutting
 Processing requirements: surface finish Ra < 1.6μm and no dimension deviation.



- Machining life increased by 5 times
- Processing efficiency increased by 1 times

Machining of high-temperature alloy bars

Workpiece material: nickel-based alloy Inconel 718, 43-48HRC
 Insert model: VBGW160404AT01225-2
 Insert grade: BS3011
 Cutting parameters: Vc=150m/min; f=0.15mm/r; ap=0.25mm
 Processing method: turning outer circle
 Cooling method: dry cutting
 Processing requirements: flank wear ≤ 0.2mm



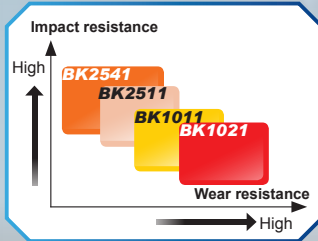
- Machining life increased by 6 times
- Processing efficiency increased by 5 times



Coated PCBN insert

By using a combination of strong PCBN substrate and heat-resistant ceramic coating, developed a new super-hard series product—Coated PCBN inserts, dedicated used for cutting all kinds of hardened steel. The tool life of coated PCBN inserts have been greatly improved, being compared with previous uncoated PCBN inserts.

Cast iron processing category:



Finishing

- ▶ **BK1011** Extremely high wear resistance and edge retention; Suitable for continuous to intermittent high-speed finishing, and capable of achieving consistent surface quality.
- ▶ **BK1021** Excellent wear resistance and good impact resistance; Suitable for continuous to intermittent heavy-duty roughing, good versatility.

Typical applications: brake discs, brake drums, cylinder liners, compressor parts.

Semi-finishing / Roughing

- ▶ **BK2511** Great wear resistance and outstanding chemical stability; Suitable for continuous to interrupted high speed roughing.
- ▶ **BK2541** Very high wear resistance and excellent fracture toughness; Suitable for continuous to interrupted finishing, good versatility.

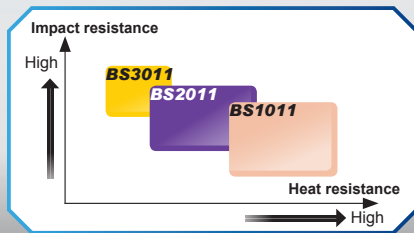
Typical application industries: brake discs, brake drums, cylinder liners, compressor parts, rolls, slurry pumps.

Powder metallurgy and high temperature alloy processing category:

Finishing

- ▶ **BS1011** Excellent wear resistance and chemical stability; Suitable for machining powder metallurgical parts in continuous to lightly interrupted operation; Suitable for machining powder metallurgical parts with more than 10% alloying elements.
- ▶ **BS2011** Excellent heat resistance and chemical stability; Suitable for continuous to lightly interrupted machining of powder metallurgical parts; Suitable for processing powder metallurgical parts with an alloying element content of up to 10%.
- ▶ **BS3011** Very high hardness and wear resistance. Suitable for continuous to interrupted machining of powder metallurgy and high temperature alloy parts.

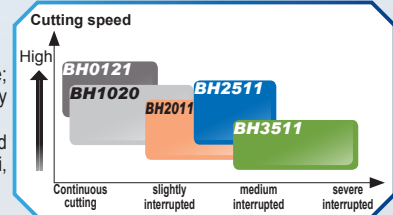
Typical application industries: automotive parts, high temperature resistant parts.



Hardened steel processing:

Finishing

- ▶ **BH0121** Excellent heat and wear resistance; Suitable for continuous to lightly interrupted high-speed finishing; Suitable for machining carburized hardened steel such as 20CrMnTi, 20CrMn, 18Cr2Ni4WA, etc.
- ▶ **BH2511** Excellent heat resistance and impact strength; Suitable for continuous to moderate intermittent finishing; Suitable for machining carburized hardened steels such as 20CrMnTi, 20CrMn, 18Cr2Ni4WA, etc.
- Typical application industries:** Gears, bearings.
- ▶ **BH1020** Effective balance of wear resistance and chemical resistance; Suitable for continuous to lightly intermittent finishing of all types of hardened steels, with good versatility.
- ▶ **BH2011** Excellent wear resistance and impact strength; Suitable for continuous to moderate intermittent finishing; Suitable for machining hardened bearing and die steels such as GCr15, 100Cr6, 18Cr2Ni4WA, etc.
- ▶ **BH3511** Excellent chipping resistance and very high fracture toughness; Suitable for roughing and finishing all types of hardened steels in moderate to heavy interrupted work conditions.
- Typical application industries:** gears, bearings, molds.



Recommended cutting data

| Grade | Workpiece material | Cutting speed(m/min) | Feed amount(mm/r) | Depth of cut(mm) |
|--------|---|----------------------|-------------------|------------------|
| BK1011 | Gray cast iron | 400-1500 | 0.02-0.5 | 0.1-0.3 |
| | Hard cast iron | 80-160 | 0.05-0.5 | 0.05-0.1 |
| BK1021 | Gray cast iron | 400-1500 | 0.02-0.5 | 0.1-0.3 |
| | Hard cast iron | 80-160 | 0.05-0.5 | 0.05-0.1 |
| BK2511 | Gray cast iron | 300-600 | 0.1-0.5 | 1-3 |
| BK2541 | Hard cast iron | 50-150 | 0.1-0.5 | 1-3 |
| BH0121 | Hardened steel | 150-250 | 0.05-0.5 | 0.05-0.1 |
| BH1020 | | 140-220 | 0.05-0.5 | 0.05-0.1 |
| BH2011 | | 100-170 | 0.05-0.5 | 0.05-0.1 |
| BH2511 | | 120-180 | 0.05-0.5 | 0.05-0.1 |
| BH3511 | | 80-150 | 0.05-0.4 | 0.05-0.2 |
| BS1011 | Powder metallurgy and high temperature alloys | 70-180 | 0.05-0.25 | 0.03-0.2 |
| BS2011 | | 100-200 | 0.05-0.25 | 0.03-0.2 |
| BS3011 | | 50-160 | 0.05-0.25 | 0.03-0.25 |

PCD tools

PCD tool material has high hardness, excellent wear resistance, low friction coefficient, Excellent thermal conductivity, suitable for non-ferrous metals and its alloys (e.g. Cu, Al, Mg, etc.) Nonmetallic materials and composite materials (such as: MMC, ceramics, reinforced plastics, etc.) machining

N

▶ DN0121

Super-fine grain particle size
great sharpness and edges durability

Application range: suitable for mirror effect occasion

▶ DN0511

Fine grain particle size
Excellent toughness and relatively good wear-resistance

Application range:
strong universality, particular suitable for low-medium silumin materials in milling.

▶ DN1021

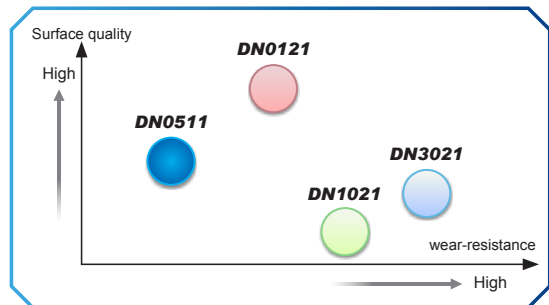
medium grain particle size
Excellent toughness and wear-resistance

Application range:
strong universality, particular suitable for low-medium silumin materials in turning.

▶ DN3021

mixed combined with fine particle and coarse particle
Excellent wear-resistance

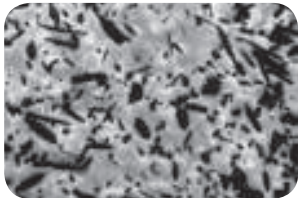
Application range:
suitable for MMC, high silumin, high-strength silumin and bimetallic materials



Recommended cutting data

| Grade | Workpiece materials | Machining method | Cutting speed (m/min) |
|--------|--------------------------------------|------------------|-----------------------|
| DN0121 | Silumin (Si≤12%) | Turning | 500~1000 |
| | Silumin (Si≤12%) | Milling | 300~1500 |
| DN0511 | fibre reinforced composite materials | Turning /Milling | 200~1000 |
| | Silumin (Si≤12%) | Turning | 900~3500 |
| DN1021 | Metal base compound | Milling | 600~2400 |
| | Copper and magnesium alloy silumin | Turning /Milling | 1500~1800 |
| | Cemented carbide | Turning /Milling | 400~1260 |
| | Silumin (Si≤12%) | Turning | 20~40 |
| DN3021 | Silumin (Si≤12%) | Turning | 400~1200 |
| | Copper and magnesium alloy silumin | Milling | 250~1400 |
| | Silumin (Si≤12%) | Turning /Milling | 400~1260 |
| DN3021 | Silumin (Si≤12%) | Turning | 300~700 |
| | Metal base compound | Milling | 500~1000 |
| | Unsintered ceramic materials | Milling | 500~1000 |
| | Sintered Ceramic | Turning | 100~200 |
| | Bimetallic materials | Turning | 20~50 |
| | Bimetallic materials | Milling | 200~300 |

Ceramic Grade



CN3100

A -sialon/β -sialon matrix, the latest developed Siloxane sialon.

Applications: With excellent wear resistance, fracture toughness and thermal shock resistance, for use in general machining to finishing in high temperature alloy parts. It has better resistance of breakage at the depth of cut, compared with SiC/Al₂O₃ whisker ceramic material.

Physical properties

| Grade | Density(g/cm ³) | HardnessHv(GPa) | Flexural strength(MPa) | Fracture toughness (MPa m ^{1/2}) |
|---------------|-----------------------------|-----------------|------------------------|--|
| CN3100 | 3.34 | 1720 | ≥900 | 7.5 |

Recommended cutting data

| Grade | Workpiece material | Operation | Cutting speed (m/min) | Feed rate(mm/r) | Depth of cut (mm) |
|---------------|-------------------------------|--------------|-----------------------|-----------------|-------------------|
| CN3100 | Nickel high temperature alloy | For roughing | 150-260 | 0.1-0.3 | <5 |

Case

Workpiece material: GH4169
 Insert specification: RPGN090700T01020-V
 Cutting data: Vc=200 m/min, ap=1 mm,
 f=0.1 (mm/r)

Workpiece shape and process: Figure 1, four working procedures, two blades and four cutting edges in the figure finish the milling of turbine disk section, and the wear resistance is excellent.

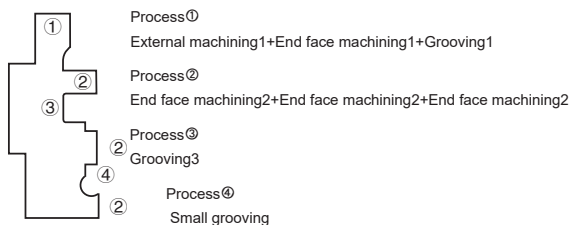


Figure 1



Table of correctional coefficient between material hardness and cutting speed

| Workpiece material | Theoretical Hardness | Correctional coefficient between hardness of materials and cutting speed | | | | | | | | |
|--|----------------------|--|------|------|------|------|------|------|------|---------------------|
| | | Hardness difference (Measured value – Theoretical value) | | | | | | | | |
| | | Hardness decrease ← | | | | | | | | → Hardness increase |
| | | -60 | -40 | -20 | 0 | +20 | +40 | +60 | +80 | +100 |
| P | HB180 | 1.42 | 1.24 | 1.11 | 1.0 | 0.91 | 0.84 | 0.77 | 0.72 | 0.67 |
| M | HB180 | 1.44 | 1.25 | 1.11 | 1.0 | 0.91 | 0.84 | 0.78 | 0.73 | 0.68 |
| K | Grey cast iron | HB220 | 1.21 | 1.13 | 1.06 | 1.0 | 0.95 | 0.90 | 0.86 | 0.82 |
| | Nodular cast iron | HB250 | 1.33 | 1.21 | 1.09 | 1.0 | 0.91 | 0.84 | 0.75 | 0.70 |
| N | HB75 | | | 1.05 | 1.0 | 0.95 | | | | |
| S | HB350 | | | 1.12 | 1.0 | 0.89 | | | | |
| Rockwell hardness HRC | | | -6 | -3 | 0 | +3 | +6 | +9 | | |
| H | HRC60 | | 1.10 | 1.02 | 1.0 | 0.96 | 0.93 | 0.90 | | |
| Actual Cutting Speed = Recommended Cutting Speed × Correctional Coefficient of Cutting Speed | | | | | | | | | | |

● Please find recommended cutting parameters on insert packing box.

Example: If the material you are going to machine is normal alloy steel, whose theoretical hardness is HB180, and the selected insert is CNMG120404-DF/YBC151, then the recommended cutting speed is V=150m/min. If the hardness measured value of the material is HB220, then the hardness difference value is 220-180= +40. Correctional coefficient found in the table is 0.84. Therefore, the actual applicable cutting speed is Vc=250×0.84=210m/min.

Correctional coefficient table between tool life and cutting speed

| Tool life / Insert materials | Correctional coefficient between tool life and cutting speed | | | | | |
|--|--|----------------------------|------------|------------|------------|------------|
| | 10 minutes | 15 minutes (Standard life) | 30 minutes | 45 minutes | 60 minutes | 90 minutes |
| YBC151 | 1.12 | 1.00 | 0.82 | 0.73 | 0.67 | 0.60 |
| YBC251 | 1.11 | 1.00 | 0.84 | 0.76 | 0.71 | 0.64 |
| YBC351 | 1.11 | 1.00 | 0.84 | 0.76 | 0.70 | 0.63 |
| YBC152 | 1.25 | 1.00 | 0.68 | 0.54 | 0.46 | 0.37 |
| YBC252 | 1.55 | 1.00 | 0.47 | 0.30 | 0.22 | 0.14 |
| YBM151 | 1.28 | 1.00 | 0.66 | 0.52 | 0.43 | 0.34 |
| YBM153 | 1.32 | 1.00 | 0.64 | 0.48 | 0.37 | 0.31 |
| YBM215 | 1.22 | 1.00 | 0.85 | 0.77 | 0.72 | 0.67 |
| YBM251 | 1.19 | 1.00 | 0.75 | 0.63 | 0.56 | 0.47 |
| YBM253 | 1.22 | 1.00 | 0.73 | 0.61 | 0.54 | 0.45 |
| YBG202 | 1.10 | 1.00 | 0.85 | 0.77 | 0.72 | 0.66 |
| YBG205 | 1.15 | 1.00 | 0.82 | 0.74 | 0.69 | 0.64 |
| YBD052 | 1.22 | 1.00 | 0.80 | 0.65 | 0.60 | 0.55 |
| YBD102 | 1.20 | 1.00 | 0.75 | 0.62 | 0.58 | 0.50 |
| YBD152 | 1.11 | 1.00 | 0.70 | 0.60 | 0.50 | 0.40 |
| YBG105 | 1.28 | 1.00 | 0.79 | 0.72 | 0.63 | 0.58 |
| YBG212 | 1.25 | 1.00 | 0.75 | 0.70 | 0.60 | 0.50 |
| YBS103 | 1.35 | 1.00 | 0.85 | 0.78 | 0.68 | 0.62 |
| Actual cutting speed = Recommended cutting speed × Correctional coefficient of cutting speed | | | | | | |

Example: If the material you are going to machine is normal alloy steel, and the selected insert is CNMG120404-DF/YBC151, then the recommended cutting speed is V=250m/min (standard life is 15 minutes). If you expect the tool life to reach 60 minutes, the correctional coefficient found in the table is 0.67, then the applicable cutting speed is Vc=250×0.67=167.5m/min.



TURNING / General Turning Inserts

General turning inserts code key

General turning

General turning inserts code key

| Insert shape/Code | | |
|-------------------|---|----------|
| A | B | C |
| D | E | H |
| K | L | M |
| O | P | R |
| S | T | T |
| V | W | Others Z |

Insert shape

| Metric | | | | | | | |
|--------|-------------------|--------------------------|-------------------------|------|-------------------|--------------------------|-------------------------|
| Code | With/Without hole | With/Without chipbreaker | Section plane of insert | Code | With/Without hole | With/Without chipbreaker | Section plane of insert |
| B | With | Without | > 65° | N | Without | Without | |
| H | With | Single-side | > 65° | R | Without | Single-side | |
| C | With | Without | > 65° | F | Without | Double-side | |
| J | With | Double-side | > 65° | A | With | Without | |
| W | With | Without | ≤ 65° | M | With | Single-side | |
| T | With | Single-side | ≤ 65° | G | With | Double-side | |
| Q | With | Without | ≤ 65° | X | --- | --- | Special |
| U | With | Double-side | ≤ 65° | | | | |

Chipbreaker and clamping system

T N M G

| Clearance angle of main cutting edge | | | |
|--------------------------------------|-----------------|------|------------------------|
| Code | Clearance angle | Code | Clearance angle |
| A | 3° | B | 5° |
| C | 7° | D | 15° |
| E | 20° | F | 25° |
| G | 30° | N | 0° |
| P | 11° | O | Other clearance angles |

| Tolerance | | | | | | | | | | |
|-----------|--------------------------------|--|------------------------------|--|------------------|--------|------------------|------------------|------------------|-------|
| Code | Nose height m Tolerance(mm) | Inscribed circle ØI.C Tolerance(mm) | Thickness S Tolerance(mm) | (Reference) Details of M-level tolerance (Identified by shape) | | | | | | |
| | | | | Inscribed circle | Regular triangle | Square | Diamond with 80° | Diamond with 55° | Diamond with 35° | Round |
| A | ±0.005 | ±0.025 | ±0.025 | ● Nose height tolerance(mm) | | | | | | |
| F | ±0.005 | ±0.013 | ±0.025 | 6.35 | ±0.08 | ±0.08 | ±0.08 | ±0.11 | ±0.16 | --- |
| C | ±0.013 | ±0.025 | ±0.025 | 9.525 | ±0.08 | ±0.08 | ±0.08 | ±0.11 | ±0.16 | --- |
| H | ±0.013 | ±0.013 | ±0.025 | 12.7 | ±0.13 | ±0.13 | ±0.13 | ±0.15 | --- | --- |
| E | ±0.025 | ±0.025 | ±0.025 | 15.875 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | --- | --- |
| G | ±0.025 | ±0.025 | ±0.13 | 19.05 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | --- | --- |
| J | ±0.005 | ±0.05-±0.13 | ±0.025 | 25.4 | --- | ±0.18 | --- | --- | --- | --- |
| K | ±0.013 | ±0.05-±0.13 | ±0.025 | ● Tolerance of inscribed circle ØI.C(mm) | | | | | | |
| L | ±0.025 | ±0.05-±0.13 | ±0.025 | Inscribed circle | Regular triangle | Square | Diamond with 80° | Diamond with 55° | Diamond with 35° | Round |
| M | ±0.08-±0.18 | ±0.05-±0.13 | ±0.13 | 6.35 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.05 |
| N | ±0.08-±0.18 | ±0.05-±0.13 | ±0.025 | 9.525 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.05 |
| U | ±0.13-±0.38 | ±0.08-±0.25 | ±0.13 | 12.7 | ±0.08 | ±0.08 | ±0.08 | ±0.08 | --- | ±0.08 |
| | | | | 15.875 | ±0.10 | ±0.10 | ±0.10 | ±0.10 | --- | ±0.10 |
| | | | | 19.05 | ±0.10 | ±0.10 | ±0.10 | ±0.10 | --- | ±0.10 |
| | | | | 25.4 | --- | ±0.13 | --- | --- | --- | ±0.13 |



General turning inserts code key

| Diameter of IC | Insert shape | | | | | | | |
|----------------|--------------|----|----|----|----|----|----|----|
| | C | D | R | S | T | V | W | K |
| 3.97 | | | | | 06 | | | |
| 5.0 | | | 05 | | | | | |
| 5.56 | | | | | 09 | | | |
| 6.0 | | | 06 | | | | | |
| 6.35 | 06 | 07 | | | 11 | 11 | | |
| 8.0 | | | 08 | | | | | |
| 9.525 | 09 | 11 | 09 | 09 | 16 | 16 | 06 | 16 |
| 10.0 | | | 10 | | | | | |
| 12.0 | | | 12 | | | | | |
| 12.7 | 12 | 15 | 12 | 12 | 22 | 22 | 08 | |
| 15.875 | 16 | | 15 | 15 | 27 | | | |
| 16.0 | | 19 | 16 | | | | | |
| 19.05 | 19 | | 19 | 19 | 33 | | | |
| 20.0 | | | 20 | | | | | |
| 25.0 | 25 | 25 | 25 | | | | | |
| 25.4 | | | 25 | 25 | | | | |
| 31.75 | | | 31 | | | | | |
| 32 | | | 32 | | | | | |

Length of cutting edge

Thickness is defined as the height from the bottom of insert to the highest part of cutting edge

| Code | Insert thickness(mm) |
|------|----------------------|
| 00 | 0.79 |
| T0 | 0.99 |
| 01 | 1.59 |
| T1 | 1.98 |
| 02 | 2.38 |
| T2 | 2.58 |
| 03 | 3.18 |
| T3 | 3.97 |
| 04 | 4.76 |
| T4 | 4.96 |
| 05 | 5.96 |
| T5 | 5.95 |
| 06 | 6.35 |
| T6 | 6.75 |
| 07 | 7.94 |
| 09 | 9.52 |
| T9 | 9.72 |
| 11 | 11.11 |
| 12 | 12.70 |

Insert thickness

22 04 08 - DM (ISO)

4 3 2 (inch)

Inscribed circle

| Code | Diameter of IC(mm) |
|------|--------------------|
| 2 | 6.35 |
| 3 | 9.525 |
| 4 | 12.7 |
| 5 | 15.875 |
| 6 | 19.05 |
| 8 | 25.4 |

Thickness

| Code | Thickness (mm) |
|------|----------------|
| 2 | 3.18 |
| 3 | 4.76 |
| 4 | 6.35 |
| 5 | 7.94 |
| 6 | 9.52 |

Nose radius

| Code | Nose radius (mm) |
|------|------------------|
| 0 | 0.2 |
| 1 | 0.4 |
| 2 | 0.8 |
| 3 | 1.2 |
| 4 | 1.6 |
| 5 | 2.0 |
| 6 | 2.4 |

Nose radius code

| Code | Nose radius (mm) |
|------|------------------|
| 00 | No radius |
| 02 | 0.2 |
| 04 | 0.4 |
| 08 | 0.8 |
| 12 | 1.2 |
| 16 | 1.6 |
| 20 | 2.0 |
| 24 | 2.4 |
| 32 | 3.2 |
| X | Others |

Diameter of insert (Metric) Round insert

Chipbreaker code

| DF | DM | DR |
|----|-----|-----|
| | | |
| HF | HM | HR |
| | | |
| EF | EM | ER |
| | | |
| NF | NM | SF |
| | | |
| PM | WGF | SNR |
| | | |

General turning inserts code key



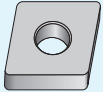
TURNING / General Turning Inserts

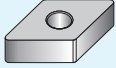
Metric and inch comparison table of general turning inserts

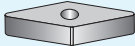
Metric and inch comparison table of negative inserts

General turning


Metric and inch comparison table of general turning inserts


| C-type negative angle | (ISO) | (Inch) | Chipbreaker |
|---|--------|--------|-------------|
| Insert shape  | 090304 | 321 | -DF |
| | 090308 | 322 | -WGF |
| | 120404 | 431 | -SF |
| | 120408 | 432 | -EF |
| | 120412 | 433 | -NF |
| | 120416 | 434 | -WGM |
| | 160608 | 542 | -PM |
| | 160612 | 543 | -DM |
| | 160616 | 544 | -EM |
| | 190608 | 642 | -NM |
| | 190612 | 643 | -DR |
| | 190616 | 644 | -ER |
| | 190624 | 646 | -LR |
| | 250724 | 856 | -HDR |
| | 250732 | 858 | -HPR |
| | 250924 | 866 | -SNR |
| 250932 | 868 | | |


| D-type negative angle | (ISO) | (Inch) | Chipbreaker |
|---|--------|--------|-------------|
| Insert shape  | 110404 | 331 | -EF |
| | 110408 | 332 | -DF |
| | 110412 | 333 | -WGF |
| | 150404 | 431 | -SF |
| | 150408 | 432 | -NF |
| | 150412 | 433 | -WGM |
| | 150604 | 441 | -PM |
| | 150608 | 442 | -DM |
| | 150612 | 443 | -EM |
| | 150616 | 444 | -NM |
| | 190608 | 542 | -DR |
| | 190612 | 543 | -ER |
| | 190616 | 544 | -LR |

| V-type negative angle | (ISO) | (Inch) | Chipbreaker |
|---|--------|--------|-------------|
| Insert shape  | 160404 | 331 | -DF -EF |
| | 160408 | 332 | -SF -NF |
| | 160412 | 333 | -PM -DM |
| | | | -EM -NM |
| | | | -SNR -NGF |

| R-type negative angle | (ISO) | (Inch) | Chipbreaker |
|---|--------|--------|-------------|
| Insert shape  | 120400 | 43 | |
| | | | |
| | | | |
| | | | |


| W-type negative angle | (ISO) | (Inch) | Chipbreaker |
|---|--------|---------|-------------|
| Insert shape  | 06T304 | 3(2.5)1 | -DF |
| | 06T308 | 3(2.5)2 | -WGF |
| | 06T312 | 3(2.5)3 | -SF |
| | 060404 | 331 | -EF |
| | 060408 | 332 | -NF |
| | 060412 | 333 | -WGM |
| | 080404 | 431 | -PM |
| | 080408 | 432 | -DM |
| | 080412 | 433 | -EM |
| | | | |
| | | | -SNR |

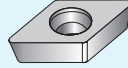
| T-type negative angle | (ISO) | (Inch) | Chipbreaker |
|---|--------|--------|-------------|
| Insert shape  | 110304 | 221 | -DF |
| | 110308 | 222 | -WGF |
| | 160404 | 331 | -SF |
| | 160408 | 332 | -EF |
| | 160412 | 333 | -NF |
| | 220404 | 431 | -WGM |
| | 220408 | 432 | -PM |
| | 220412 | 433 | -DM |
| | 220416 | 434 | -EM |
| | 270608 | 542 | -DR |
| | 270612 | 543 | -ER |
| 270616 | 544 | -LR | |
| | | | -HDR |
| | | | -SNR |

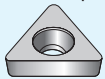
| S-type negative angle | (ISO) | (Inch) | Chipbreaker |
|---|--------|--------|-------------|
| Insert shape  | 090304 | 321 | |
| | 090308 | 322 | |
| | 090312 | 323 | |
| | 120404 | 431 | -DF |
| | 120408 | 432 | -SF |
| | 120412 | 433 | -EF |
| | 120416 | 434 | -PM |
| | 150608 | 542 | -DM |
| | 150612 | 543 | -EM |
| | 150616 | 544 | -NM |
| | 190412 | 633 | -DR |
| | 190424 | 636 | -ER |
| | 190612 | 643 | -LR |
| | 190616 | 644 | -HDR |
| | 250724 | 856 | -HPR |
| | 250732 | 858 | -SNR |
| | 250924 | 866 | |
| | 250932 | 868 | |




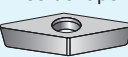
Metric and inch comparison table of positive insert

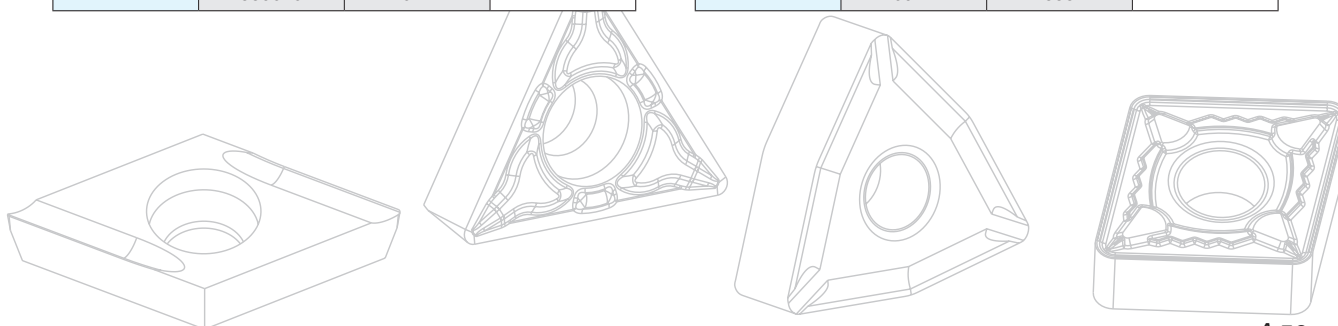
| C-type positive angle | (ISO) | (Inch) | Chipbreaker |
|---|--------|---------|-------------|
| Insert shape  | 060202 | 2(1.5)0 | -USF |
| | 060204 | 2(1.5)1 | -SF |
| | 060208 | 2(1.5)2 | -HF |
| | 09T302 | 3(2.5)0 | -EF |
| | 09T304 | 3(2.5)1 | -HM |
| | 09T308 | 3(2.5)2 | -EM |
| | 120404 | 431 | -HR |
| | 120408 | 432 | -LH |
| | 120412 | 433 | -LC |

| D-type positive angle | (ISO) | (Inch) | Chipbreaker |
|---|--------|---------|-------------|
| Insert shape  | 070202 | 2(1.5)0 | -USF |
| | 070204 | 2(1.5)1 | -SF |
| | 070208 | 2(1.5)2 | -HF |
| | 11T302 | 3(2.5)0 | -EF |
| | 11T304 | 3(2.5)1 | -HM |
| | 11T308 | 3(2.5)2 | -EM |
| | 11T312 | 3(2.5)3 | -HR |
| | | | -LC |

| T-type positive angle | (ISO) | (Inch) | Chipbreaker |
|---|--------|-----------|-------------|
| Insert shape  | 06T102 | 1.2(1.2)0 | |
| | 06T104 | 1.2(1.2)1 | |
| | 06T108 | 1.2(1.2)2 | |
| | 090202 | 1.8(1.5)0 | |
| | 090204 | 1.8(1.5)1 | |
| | 090208 | 1.8(1.5)2 | |
| | 110202 | 2(1.5)0 | |
| | 110204 | 2(1.5)1 | |
| | 110208 | 2(1.5)2 | |
| | 110302 | 220 | |
| | 110304 | 221 | |
| | 110308 | 222 | |
| | 16T302 | 3(2.5)0 | -HM |
| | 16T304 | 3(2.5)1 | -EM |
| | 16T308 | 3(2.5)2 | -HR |
| | 16T312 | 3(2.5)3 | -LH |
| | 160400 | 330 | -LC |
| | 220408 | 432 | |
| | 220412 | 433 | |
| | 220416 | 434 | |
| | 270408 | 532 | |
| | 270412 | 533 | |
| | 330612 | 643 | |
| | 330616 | 644 | |

| S-type positive angle | (ISO) | (Inch) | Chipbreaker |
|---|--------|---------|-------------|
| Insert shape  | 060204 | 2(1.5)1 | |
| | 09T302 | 3(2.5)0 | |
| | 09T304 | 3(2.5)1 | |
| | 09T308 | 3(2.5)2 | |
| | 120404 | 431 | |
| | 120408 | 432 | |
| | 120412 | 433 | |
| | 150404 | 531 | |
| | 150408 | 532 | |
| | 150412 | 533 | |
| | 190408 | 632 | |
| | 190412 | 633 | |
| | 190416 | 634 | |

| V-type positive angle | (ISO) | (Inch) | Chipbreaker | |
|---|--------|---------|-------------|------|
| Insert shape  | 110202 | 2(1.5)0 | | |
| | 110204 | 2(1.5)1 | | |
| | 110208 | 2(1.5)2 | | |
| | 110302 | 220 | | |
| | 110304 | 221 | | |
| | 110308 | 222 | | |
| | 160402 | 330 | | |
| | 160404 | 331 | | |
| | 160408 | 332 | | |
| | 160412 | 333 | | |
| | | | | -USF |
| | | | | -SF |
| | | | | -HF |
| | | -NF | | |
| | | -LH | | |
| | | -LC | | |
| | | -NGF | | |

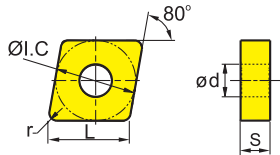




General Turning Inserts

Cemented carbide and cermet inserts

CN (Negative inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YD101 | YD201 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | Cemented cermet | Cemented carbide | | | | | | | | | | | | |
|--|----------------|----------------|-------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|------------------|--------|--------|--------|--------|--------|--------|--------|-------|-------|--|--|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | | | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YD101 | YD201 | | | |
| DF For finishing | CNMG090304-DF | 9.7 | 9.525 | 3.18 | 3.81 | 0.4 | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG090308-DF | 9.7 | 9.525 | 3.18 | 3.81 | 0.8 | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG120404-DF | 12.9 | 12.7 | 4.76 | 5.16 | 0.4 | ★ | ● | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG120408-DF | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | ★ | ● | ★ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG120412-DF | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | ★ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WGF For finishing Wiper | CNMG120404-WGF | 12.9 | 12.7 | 4.76 | 5.16 | 0.4 | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG120408-WGF | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SF For finishing | CNMG090304-SF | 9.7 | 9.525 | 3.18 | 3.81 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG090308-SF | 9.7 | 9.525 | 3.18 | 3.81 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG120404-SF | 12.9 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG120408-SF | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG120412-SF | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EF For finishing | CNMG090304-EF | 9.7 | 9.525 | 3.18 | 3.81 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG090308-EF | 9.7 | 9.525 | 3.18 | 3.81 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG120404-EF | 12.9 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG120408-EF | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG120412-EF | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool



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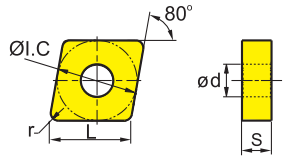
A212

General Turning Inserts **TURNING** A

Cemented carbide and cermet inserts

CN (Negative inserts)

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



| Workpiece material | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | |
| N Non-ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | Cermet YNG151 | Coated cermet YNG151C | Cemented carbide YD101 | Cemented carbide YD201 | | | | | | | | | | |
|--|-----------------------|----------------|--------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------------|--------------------------|---------------------------|---------------------------|--------|--------|--------|--------|--------|--------|--|--|--|--|
| | | L | ØI.C. | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | | | | | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | | | | |
| NF For finishing | CNEG120404-NF | 12.9 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNEG120408-NF | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNEG120412-NF | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WGM For finishing Wiper | CNMG120408-WGM | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG120412-WGM | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PM For semi-finishing | CNMG090304-PM | 9.7 | 9.525 | 3.18 | 3.81 | 0.4 | ★ | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG090308-PM | 9.7 | 9.525 | 3.18 | 3.81 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG120404-PM | 12.9 | 12.7 | 4.76 | 5.16 | 0.4 | ★ | ● | ★ | ○ | | | | | | | | | | | | | | | | | ★ | ★ | | | | | | | | |
| | CNMG120408-PM | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | ● | ★ | ● | ★ | ● | | | | | | | | | | | | | | | | | ★ | ★ | ★ | | | | | | |
| | CNMG120412-PM | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | | | ○ | ● | ★ | ● | | | | | | | | | | | | | | | | ★ | ★ | ★ | | | | | | |
| | CNMG120416-PM | 12.9 | 12.7 | 4.76 | 5.16 | 1.6 | | | ★ | ● | ○ | ● | | | | | | | | | | | | | | | | ★ | ○ | | | | | | | |
| | CNMG160608-PM | 16.1 | 15.875 | 6.35 | 6.35 | 0.8 | ● | ○ | ● | ○ | ○ | | | | | | | | | | | | | | | | | ○ | ○ | | | | | | | |
| | CNMG160612-PM | 16.1 | 15.875 | 6.35 | 6.35 | 1.2 | ● | ○ | ● | ○ | ● | | | | | | | | | | | | | | | | | ★ | ○ | | | | | | | |
| | CNMG160616-PM | 16.1 | 15.875 | 6.35 | 6.35 | 1.6 | | | ● | ○ | | | | | | | | | | | | | | | | | | ○ | ○ | | | | | | | |
| | CNMG190608-PM | 19.3 | 19.05 | 6.35 | 7.94 | 0.8 | | | ★ | ● | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | |
| CNMG190612-PM | 19.3 | 19.05 | 6.35 | 7.94 | 1.2 | | | ★ | ● | ★ | ● | | | | | | | | | | | | | | | | | ○ | ★ | | | | | | | |
| CNMG190616-PM | 19.3 | 19.05 | 6.35 | 7.94 | 1.6 | | | ● | ★ | ● | ○ | ● | | | | | | | | | | | | | | | | ○ | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool



Page A166 A172 A173 A212

Insert code key → A50-A51 Grade selection reference → A19/A36-A48 Chipbreaker selection reference → A22-A35 Recommended cutting parameters → A241-A244

General turning
Cemented carbide and cermet inserts

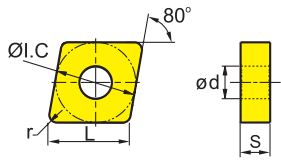
TURNING General Turning Inserts

Cemented carbide and cermet inserts

General turning

Cemented carbide and cermet inserts

CN (Negative inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | | | | | | | | | | | | | | | | | | | | | | | | | | |
| N Non-ferrous metal | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | Cemented cermet | Cemented carbide | | | | | | | | | |
|-------------------------------------|---------------|----------------|--------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|------------------|--------|--------|--------|--------|--------|--------|--------|---------|-------|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | | | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 |
| DM For semi-finishing | CNMG090304-DM | 9.7 | 9.525 | 3.18 | 3.81 | 0.4 | ○ | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG090308-DM | 9.7 | 9.525 | 3.18 | 3.81 | 0.8 | | | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG120404-DM | 12.9 | 12.7 | 4.76 | 5.16 | 0.4 | ★ | ● | ★ | ○ | | | | | ● | | | ○ | | | | | | | | | | | ● | | | | |
| | CNMG120408-DM | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | ● | ★ | ● | ★ | ● | | | | ● | | | | ● | ○ | | | | | | | | | ● | | | | |
| | CNMG120412-DM | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | ★ | ● | ★ | ● | | | | | ○ | | | | | | | | | | | | | | | | | | |
| | CNMG120416-DM | 12.9 | 12.7 | 4.76 | 5.16 | 1.6 | | | ● | ○ | ● | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG160608-DM | 16.1 | 15.875 | 6.35 | 6.35 | 0.8 | ★ | ● | ★ | ○ | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG160612-DM | 16.1 | 15.875 | 6.35 | 6.35 | 1.2 | ○ | ● | ★ | ○ | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG160616-DM | 16.1 | 15.875 | 6.35 | 6.35 | 1.6 | ★ | ● | ○ | ● | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG190608-DM | 19.3 | 19.05 | 6.35 | 7.94 | 0.8 | ○ | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG190612-DM | 19.3 | 19.05 | 6.35 | 7.94 | 1.2 | ★ | ● | ★ | ○ | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG190616-DM | 19.3 | 19.05 | 6.35 | 7.94 | 1.6 | | | ● | ★ | ○ | | | | | | | | | | | | | | | | | | | | | | |
| EM For semi-finishing | CNMG120404-EM | 12.9 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | | ● | ★ | | | | | | | | | | | | | | | | | |
| | CNMG120408-EM | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | ● | ★ | | | | | | | | | | | | | | | | |
| | CNMG120412-EM | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | ● | ★ | | | | | | | | | | | | | | | |
| | CNMG160608-EM | 16.1 | 15.875 | 6.35 | 6.35 | 0.8 | | | | | | | | | | | | ○ | ○ | ★ | | | | | | | | | | | | | |
| | CNMG160612-EM | 16.1 | 15.875 | 6.35 | 6.35 | 1.2 | | | | | | | | | | | | ○ | ○ | ★ | | | | | | | | | | | | | |
| | CNMG160616-EM | 16.1 | 15.875 | 6.35 | 6.35 | 1.6 | | | | | | | | | | | | ○ | ○ | ★ | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool

DCLNR/L
Kr:95°



Page A166

PCBNR/L
Kr:75°



A172

PCLNR/L
Kr:95°



A173

PCLNR/L
Kr:95°



A212

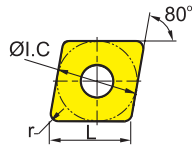
General Turning Inserts

TURNING



Cemented carbide and cermet inserts

CN (Negative inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | Cermet | Coated cermet | Cemented carbide | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------|---------------|----------------|--------|-------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|--|--|--|--|--|--|--|--|---|---|---|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | | | | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | | | | | | | | | | | |
| For semi-finishing | CNMG120404-NM | 12.9 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG120408-NM | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | ○ | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG120412-NM | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | ○ | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Light-load roughing | CNMM120408-LR | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | | |
| | CNMM120412-LR | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | | |
| | CNMM120416-LR | 12.9 | 12.7 | 4.76 | 5.16 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | CNMM160608-LR | 16.1 | 15.875 | 6.35 | 6.35 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | CNMM160612-LR | 16.1 | 15.875 | 6.35 | 6.35 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | CNMM160616-LR | 16.1 | 15.875 | 6.35 | 6.35 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | CNMM160624-LR | 16.1 | 15.875 | 6.35 | 6.35 | 2.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | CNMM190612-LR | 19.3 | 19.05 | 6.35 | 7.94 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | CNMM190616-LR | 19.3 | 19.05 | 6.35 | 7.94 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ |
| | CNMM190624-LR | 19.3 | 19.05 | 6.35 | 7.94 | 2.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ |
| | CNMM250924-LR | 25.79 | 25.4 | 9.525 | 9.12 | 2.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool

DCLNR/L
Kr:95°



Page A166

PCBNR/L
Kr:75°



A172

PCLNR/L
Kr:95°



A173

PCLNR/L
Kr:95°



A212

Insert code key
A50-A51

Grade selection reference
A19/A36-A48

Chipbreaker selection reference
A22-A35

Recommended cutting parameters
A241-A244

General turning

Cemented carbide and cermet inserts

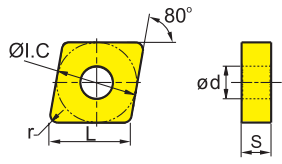
A TURNING

General Turning Inserts

Cemented carbide and cermet inserts

CN (Negative inserts)

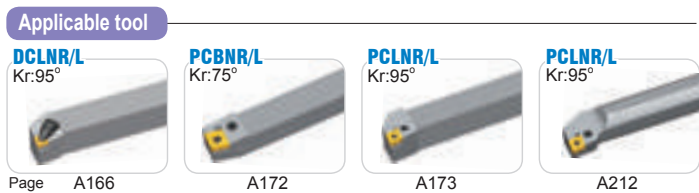
😊 Good working condition 🧐 Normal working condition 😞 Bad working condition



| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|----------------|-------------------|----------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | | | | |
| M Stainless steel | | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | | | |
| K Cast iron | | | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | | |
| N Non-ferrous metal | | | | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | |
| S Heat resistant alloy, Ti alloy | | | | | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |

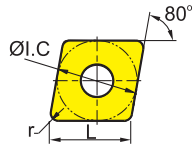
| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | Cermet | Coated cermet | Cemented carbide | | | | | | | | | |
|-------------------------------------|----------------|----------------|--------|-------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|------------------|--------|--------|--------|--------|--------|--------|---------|-------|-------|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | | | | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 |
| DR For light roughing | CNMG120408-DR | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | ★ | ● | ★ | ● | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| | CNMG120412-DR | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | ○ | ● | ★ | ○ | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| | CNMG120416-DR | 12.9 | 12.7 | 4.76 | 5.16 | 1.6 | ○ | | | ○ | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| | CNMG160608-DR | 16.1 | 15.875 | 6.35 | 6.35 | 0.8 | | ○ | ○ | | | | | | | | | | | | | ○ | | | | | | | | | | | | | |
| | CNMG160612-DR | 16.1 | 15.875 | 6.35 | 6.35 | 1.2 | | ● | ★ | ○ | | | | | | | | | | | | ● | | | | ○ | | | | | | | | | |
| | CNMG160616-DR | 16.1 | 15.875 | 6.35 | 6.35 | 1.6 | | ○ | ★ | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMG190608-DR | 19.3 | 15.875 | 6.35 | 7.94 | 0.8 | | ○ | ○ | | | | | | | | | | | | | ● | | | ○ | | | | | | | | | | |
| | CNMG190612-DR | 19.3 | 19.05 | 6.35 | 7.94 | 1.2 | | ○ | ● | ★ | ● | | | | | | | | | | | ○ | | | ○ | | | | | | | | | | |
| | CNMG190616-DR | 19.3 | 19.05 | 6.35 | 7.94 | 1.6 | | ○ | ● | ★ | ● | | | | | | | | | | | ○ | | | ○ | | | | | | | | | | |
| | CNMG190624-DR | 19.3 | 19.05 | 6.35 | 7.94 | 2.4 | | ○ | ● | ○ | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| DR For roughing | CNMM120412-DR | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMM160612-DR | 16.1 | 15.875 | 6.35 | 6.35 | 1.2 | | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMM160616-DR | 16.1 | 15.875 | 6.35 | 6.35 | 1.6 | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMM190612-DR | 19.3 | 19.05 | 6.35 | 7.94 | 1.2 | | ● | ○ | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMM190616-DR | 19.3 | 19.05 | 6.35 | 7.94 | 1.6 | | ● | ★ | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMM190624-DR | 19.3 | 19.05 | 6.35 | 7.94 | 2.4 | | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | |
| ER For roughing | CNMG120408-ER | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | ● | | ★ | | | | | | | | | | | | | | | | |
| | CNMG120412-ER | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | ● | | ★ | | | | | | | | | | | | | | | | |
| | CNMG160612-ER | 16.1 | 15.875 | 6.35 | 6.35 | 1.2 | | | | | | | | | | | ● | | ★ | | | | | | | | | | | | | | | | |
| | CNMG160616-ER | 16.1 | 15.875 | 6.35 | 6.35 | 1.6 | | | | | | | | | | | | | ★ | | | | | | | | | | | | | | | | |
| | CNMG190612-ER | 19.3 | 19.05 | 6.35 | 7.94 | 1.2 | | | | | | | | | | | | | ★ | | | | | | | | | | | | | | | | |
| ER For roughing | CNMG190616-ER | 19.3 | 19.05 | 6.35 | 7.94 | 1.6 | | | | | | | | | | | | ★ | | | | | | | | | | | | | | | | | |
| | CNMM250724-ER | 25.79 | 25.4 | 7.94 | 9.12 | 2.4 | | | | | | | | | | | ★ | | | | | | | | | | | | | | | | | | |
| | CNMM250732-ER | 25.79 | 25.4 | 7.94 | 9.12 | 3.2 | | | | | | | | | | | ★ | | | | | | | | | | | | | | | | | | |
| | CNMM250924-ER | 25.79 | 25.4 | 9.525 | 9.12 | 2.4 | | | | | | | | | | | ★ | | | | | | | | | | | | | | | | | | |
| ER For roughing | CNMM250932-ER | 25.79 | 25.4 | 9.525 | 9.12 | 3.2 | | | | | | | | | | ★ | | | | | | | | | | | | | | | | | | | |
| SNR For roughing | CNMG120408-SNR | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | ○ | ● | | | | | ○ | | | | | | | | | | | | | | | | | | |
| | CNMG120412-SNR | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | ○ | ● | | | | | ○ | | | | | | | | | | | | | | | | | | |
| | CNMG160608-SNR | 16.1 | 15.875 | 6.35 | 6.35 | 0.8 | | | | | ○ | ● | | | | | ○ | | | | | | | | | | | | | | | | | | |
| | CNMG190616-SNR | 19.3 | 19.05 | 6.35 | 7.94 | 1.6 | | | | | ○ | ● | | | | | ○ | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order



Cemented carbide and cermet inserts

CN (Negative inserts)



☺ Good working condition ☹ Normal working condition ☹ Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | ☺☺☺☺☺☺☺ | | | | |
| M Stainless steel | | ☺☺☺☺☺☺ | | | |
| K Cast iron | | | ☺☺☺☺☺☺☺ | | |
| N Non-ferrous metal | | | | ☺☺☺☺☺☺ | |
| S Heat resistant alloy, Ti alloy | | | | | ☺☺☺☺☺☺ |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | Cermet YNG151 | Coated cermet YNG151C | Cemented carbide YD101 YD201 | | | | | | | | | | | | | | | |
|---------------------------------------|----------------|----------------|--------|-------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------------|--------------------------|------------------------------------|--------|--------|--------|--------|--------|--------|--------|--|--|--|--|--|--|--|--|
| | | L | Ø1.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | | | | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | | | | | | | | |
| HDR For heavy machining | CNMM120408-HDR | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | ○ | ● | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMM120412-HDR | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | | | ○ | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMM120416-HDR | 12.9 | 12.7 | 4.76 | 5.16 | 1.6 | | | ○ | | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMM160612-HDR | 16.1 | 15.875 | 6.35 | 6.35 | 1.2 | | | ○ | | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMM160616-HDR | 16.1 | 15.875 | 6.35 | 6.35 | 1.6 | | | | | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMM190616-HDR | 19.3 | 19.05 | 6.35 | 7.94 | 1.6 | | | | ○ | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMM190624-HDR | 19.3 | 19.05 | 6.35 | 7.94 | 2.4 | | | ○ | ○ | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HPR For heavy machining | CNMM190616-HPR | 19.5 | 19.05 | 6.35 | 7.94 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMM250924-HPR | 25.19 | 25.4 | 9.525 | 9.12 | 2.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Without chipbreaker | CNMA120404 | 12.9 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMA120408 | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMA120412 | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMA120416 | 12.9 | 12.7 | 4.76 | 5.16 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMA160608 | 16.1 | 15.875 | 6.35 | 6.35 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMA160612 | 16.1 | 15.875 | 6.35 | 6.35 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMA160616 | 16.1 | 15.875 | 6.35 | 6.35 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMA160620 | 16.1 | 15.875 | 6.35 | 6.35 | 2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMA160630 | 16.1 | 15.875 | 6.35 | 6.35 | 3.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMA190612 | 19.3 | 19.05 | 6.35 | 7.94 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNMA190616 | 19.3 | 19.05 | 6.35 | 7.94 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool

| | | | |
|------------------------------|------------------------------|------------------------------|------------------------------|
| DCLNR/L Kr:95° | PCBNR/L Kr:75° | PCLNR/L Kr:95° | PCLNR/L Kr:95° |
| Page A166 | A172 | A173 | A212 |

| | | | |
|-----------------|---------------------------|---------------------------------|--------------------------------|
| Insert code key | Grade selection reference | Chipbreaker selection reference | Recommended cutting parameters |
| A50-A51 | A19/A36-A48 | A22-A35 | A241-A244 |

General turning
Cemented carbide and cermet inserts

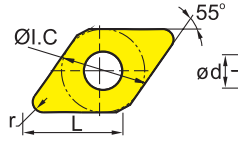
TURNING / General Turning Inserts

Cemented carbide and cermet inserts

General turning

Cemented carbide and cermet inserts

DN (Negative inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Performance | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------|---|---|---|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|---|---|
| | P | M | K | N | S | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | | |
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | |
| K Cast iron | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| N Non-ferrous metal | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | Cermet | Coated cermet | Cemented carbide | | | | | | | | | |
|---------------------------------|-----------------------|----------------|-------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|------------------|--------|--------|--------|--------|--------|--------|---------|-------|-------|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | | | | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 |
| SF For finishing | DNMG110404-SF | 11.6 | 9.525 | 4.76 | 3.81 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150404-SF | 15.5 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150408-SF | 15.5 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150604-SF | 15.5 | 12.7 | 6.35 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150608-SF | 15.5 | 12.7 | 6.35 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EF For finishing | DNMG110404-EF | 11.6 | 9.525 | 4.76 | 3.81 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG110408-EF | 11.6 | 9.525 | 4.76 | 3.81 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG110412-EF | 11.6 | 9.525 | 4.76 | 3.81 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150404-EF | 15.5 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150408-EF | 15.5 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150412-EF | 15.5 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150604-EF | 15.5 | 12.7 | 6.35 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150608-EF | 15.5 | 12.7 | 6.35 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NF For finishing | DNEG150404-NF | 15.5 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNEG150408-NF | 15.5 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNEG150604-NF | 15.5 | 12.7 | 6.35 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNEG150608-NF | 15.5 | 12.7 | 6.35 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NGF For finishing | DNEG150408-NGF | 15.5 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNEG150412-NGF | 15.5 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNEG150608-NGF | 15.5 | 12.7 | 6.35 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNEG150612-NGF | 15.5 | 12.7 | 6.35 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool



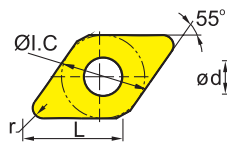
Page A167 A174 A175 A213 A214

General Turning Inserts TURNING

Cemented carbide and cermet inserts

DN □ □ (Negative inserts)

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



Workpiece material

- P** Steel
- M** Stainless steel
- K** Cast iron
- N** Non-ferrous metal
- S** Heat resistant alloy, Ti alloy

| | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| P Steel | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | Cermets | Cemented carbide | | | | | | | | | | | | | |
|--------------------------|----------------|----------------|-------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|------------------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|--|--|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | | | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | | | |
| For semi-finishing Wiper | DNMX150408-WGM | 15.5 | 12.7 | 4.76 | 5.16 | 0.8 | | | | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMX150412-WGM | 15.5 | 12.7 | 4.76 | 5.16 | 1.2 | | | | ★ | | | | | | ★ | | | | | | | | | | | | ★ | | | | | | | | | |
| | DNMX150608-WGM | 15.5 | 12.7 | 6.35 | 5.16 | 0.8 | | | | ★ | | | | | | ★ | | | | | | | | | | | | | ★ | | | | | | | | |
| | DNMX150612-WGM | 15.5 | 12.7 | 6.35 | 5.16 | 1.2 | | | | ★ | | | | | | ★ | | | | | | | | | | | | | ★ | | | | | | | | |
| For semi-finishing | DNMG110404-PM | 11.6 | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● | ○ | | | | | | | | | | | | | | | | | | | ● | | | | | | | | | |
| | DNMG110408-PM | 11.6 | 9.525 | 4.76 | 3.81 | 0.8 | ● | ● | ○ | ○ | | | | | | | | | | | | | | | | | ★ | ○ | ○ | | | | | | | | |
| | DNMG110412-PM | 11.6 | 9.525 | 4.76 | 3.81 | 1.2 | | | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150404-PM | 15.5 | 12.7 | 4.76 | 5.16 | 0.4 | ● | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150408-PM | 15.5 | 12.7 | 4.76 | 5.16 | 0.8 | ● | ● | ○ | ○ | | | | | | | | | | | | | | | | | | ★ | ★ | ○ | | | | | | | |
| | DNMG150412-PM | 15.5 | 12.7 | 4.76 | 5.16 | 1.2 | | | ● | ○ | ○ | | ○ | | | | | | | | | | | | | | | ○ | ★ | ○ | | | | | | | |
| | DNMG150416-PM | 15.5 | 12.7 | 4.76 | 5.16 | 1.6 | | | | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150604-PM | 15.5 | 12.7 | 6.35 | 5.16 | 0.4 | ● | ● | ○ | ○ | | | | | | | | | | | | | | | | | | | ★ | ★ | | | | | | | |
| | DNMG150608-PM | 15.5 | 12.7 | 6.35 | 5.16 | 0.8 | ● | ○ | ● | ★ | ● | | | | | | | | | | | | | | | | | | ★ | ★ | ○ | | | | | | |
| | DNMG150612-PM | 15.5 | 12.7 | 6.35 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | ★ | ○ | | | | | | | |
| DNMG150616-PM | 15.5 | 12.7 | 6.35 | 5.16 | 1.6 | | | | | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

General turning

Cemented carbide and cermet inserts

Applicable tool

DDJNR/L
Kr:93°



Page A167

PDJNR/L
Kr:93°



A174

PDPNN
Kr:62°30'



A175

PDPNR/L
Kr:62°30'



A213

PDUNR/L
Kr:93°



A214

Insert code key **A50-A51**

Grade selection reference **A19/A36-A48**

Chipbreaker selection reference **A22-A35**

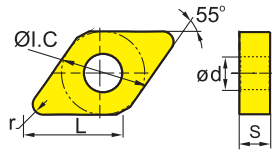
Recommended cutting parameters **A241-A244**



TURNING / General Turning Inserts

Cemented carbide and cermet inserts

DN (Negative inserts)



| Workpiece material | Working condition | | | | | | | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

General turning

Cemented carbide and cermet inserts

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | Cermet YNG151C | Cemented carbide YD101 YD201 | | | | | | | | | | | | | |
|-------------------------------------|---------------|----------------|-------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------|---------------------------------------|--------|--------|--------|--------|--------|--|--|--|--|--|---|---|---|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | | | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | | | | | | | | |
| DM For semi-finishing | DNMG110404-DM | 11.6 | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG110408-DM | 11.6 | 9.525 | 4.76 | 3.81 | 0.8 | ★ | ● | ★ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG110412-DM | 11.6 | 9.525 | 4.76 | 3.81 | 1.2 | ○ | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150404-DM | 15.5 | 12.7 | 4.76 | 5.16 | 0.4 | ○ | ● | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | |
| | DNMG150408-DM | 15.5 | 12.7 | 4.76 | 5.16 | 0.8 | ★ | ● | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● |
| | DNMG150412-DM | 15.5 | 12.7 | 4.76 | 5.16 | 1.2 | ★ | ○ | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150416-DM | 15.5 | 12.7 | 4.76 | 5.16 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | |
| | DNMG150604-DM | 15.5 | 12.7 | 6.35 | 5.16 | 0.4 | ★ | ● | ★ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● |
| | DNMG150608-DM | 15.5 | 12.7 | 6.35 | 5.16 | 0.8 | ★ | ● | ★ | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● |
| | DNMG150612-DM | 15.5 | 12.7 | 6.35 | 5.16 | 1.2 | ● | ● | ★ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DNMG150616-DM | 15.5 | 12.7 | 6.35 | 5.16 | 1.6 | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EM For semi-finishing | DNMG110404-EM | 11.6 | 9.525 | 4.76 | 3.81 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG110408-EM | 11.6 | 9.525 | 4.76 | 3.81 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG110412-EM | 11.6 | 9.525 | 4.76 | 3.81 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150404-EM | 15.5 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150408-EM | 15.5 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150412-EM | 15.5 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150604-EM | 15.5 | 12.7 | 6.35 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150608-EM | 15.5 | 12.7 | 6.35 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DNMG150612-EM | 15.5 | 12.7 | 6.35 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NM For semi-finishing | DNMG150412-NM | 15.5 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | | |
| | DNMG150612-NM | 15.5 | 12.7 | 6.35 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool

DDJNR/L
Kr:93°



Page A167

PDJNR/L
Kr:93°



A174

PDPNN
Kr:62°30'



A175

PDPNR/L
Kr:62°30'



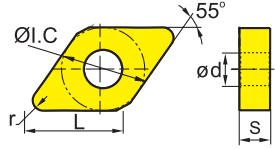
A213

PDUNR/L
Kr:93°



A214

DN (Negative inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | Cermet | Coated cermet | Cemented carbide | | | | | | | | | | | |
|---------------------|-------------------------|----------------|------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|------------------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | | | | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | |
| Light-load roughing | LR DNMM150608-LR | 15.5 | 12.7 | 6.35 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMM150612-LR | 15.5 | 12.7 | 6.35 | 5.16 | 1.2 | | | | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMM150616-LR | 15.5 | 12.7 | 6.35 | 5.16 | 1.6 | | | | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| For light roughing | DNMG150408-DR | 15.5 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150412-DR | 15.5 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150416-DR | 15.5 | 12.7 | 4.76 | 5.16 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150608-DR | 15.5 | 12.7 | 6.35 | 5.16 | 0.8 | | | | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150612-DR | 15.5 | 12.7 | 6.35 | 5.16 | 1.2 | | | | | ○ | ● | ★ | ○ | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150616-DR | 15.5 | 12.7 | 6.35 | 5.16 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| For roughing | DNMM150608-DR | 15.5 | 12.7 | 6.35 | 5.16 | 0.8 | | | | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMM150612-DR | 15.5 | 12.7 | 6.35 | 5.16 | 1.2 | | | | ○ | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMM150616-DR | 15.5 | 12.7 | 6.35 | 5.16 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| For roughing | DNMG150608-ER | 15.5 | 12.7 | 6.35 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150612-ER | 15.5 | 12.7 | 6.35 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| For roughing | DNMM150608-ER | 15.5 | 12.7 | 6.35 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMM150612-ER | 15.5 | 12.7 | 6.35 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| For roughing | DNMG150608-SNR | 15.5 | 12.7 | 6.35 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DNMG150612-SNR | 15.5 | 12.7 | 6.35 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool



Page A167 A174 A175 A213 A214

Insert code key
A50-A51

Grade selection reference
A19/A36-A48

Chipbreaker selection reference
A22-A35

Recommended cutting parameters
A241-A244

General turning

Cemented carbide and cermet inserts

General Turning Inserts

TURNING



Cemented carbide and cermet inserts

SN (Negative inserts)

😊 Good working condition

😐 Normal working condition

😞 Bad working condition

| Workpiece material | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | | |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| P Steel | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | |
| M Stainless steel | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | |
| K Cast iron | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | Cermet YNG151 | Coated cermet YNG151C | Cemented carbide YD101 | Cemented carbide YD201 | | |
|--------------------------------|---------------|----------------|--------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------------|--------------------------|---------------------------|---------------------------|--------|--------|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | | | | | YBM253 | YBS103 |
| DF For finishing | SNMG090304-DF | 9.525 | 9.525 | 3.18 | 3.81 | 0.4 | ○ | | | | | | | | | | | | | | | | | | | | | |
| | SNMG090308-DF | 9.525 | 9.525 | 3.18 | 3.81 | 0.8 | ○ | | | | | | | | | | | | | | | | | | | | | |
| | SNMG120404-DF | 12.7 | 12.7 | 4.76 | 5.16 | 0.4 | ○ | | | | | | | | | | | | | | | | | | | | | |
| | SNMG120408-DF | 12.7 | 12.7 | 4.76 | 5.16 | 0.8 | ○ | ● | ○ | | | | | | | | | | | | | | | ○ | | | | |
| | SNMG120412-DF | 12.7 | 12.7 | 4.76 | 5.16 | 1.2 | ○ | | ○ | | | | | | | | | | | | | | | | | | | |
| EF For finishing | SNMG090304-EF | 9.525 | 9.525 | 3.18 | 3.81 | 0.4 | | | | | | | | ○ | ★ | | | | | ★ | ○ | | | | | | | |
| | SNMG090308-EF | 9.525 | 9.525 | 3.18 | 3.81 | 0.8 | | | | | | | | ○ | ★ | | | | | | ★ | ○ | | | | | | |
| | SNMG090312-EF | 9.525 | 9.525 | 3.18 | 3.81 | 1.2 | | | | | | | | ○ | ★ | | | | | | ★ | ○ | | | | | | |
| | SNMG120404-EF | 12.7 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | ● | ★ | | | | | | | ★ | ★ | | | | | |
| | SNMG120408-EF | 12.7 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | ● | ★ | | | | | | | ★ | ★ | | | | | |
| | SNMG120412-EF | 12.7 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | ○ | ★ | | | | | | | ★ | ★ | | | | | |
| | SNMG150608-EF | 15.875 | 15.875 | 6.35 | 6.35 | 0.8 | | | | | | | | ○ | ★ | | | | | | | ★ | ○ | | | | | |
| | SNMG150612-EF | 15.875 | 15.875 | 6.35 | 6.35 | 1.2 | | | | | | | | ○ | ★ | | | | | | | ★ | ○ | | | | | |
| SF For finishing | SNMG090304-SF | 9.525 | 9.525 | 3.18 | 3.81 | 0.4 | | | | | | | ○ | | | | | | | | | | ○ | ★ | | | | |
| | SNMG090308-SF | 9.525 | 9.525 | 3.18 | 3.81 | 0.8 | | | | | | | ○ | | | | | | | | | | ○ | ★ | | | | |
| | SNMG120404-SF | 12.7 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | ○ | | | | | | | | | | ○ | ★ | | | | |
| | SNMG120408-SF | 12.7 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | ○ | | | | | | | | | | ○ | ★ | | | | |
| | SNMG120412-SF | 12.7 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | ○ | | | | | | | | | | ○ | ★ | | | | |
| | SNMG150608-SF | 15.875 | 15.875 | 6.35 | 6.35 | 0.8 | | | | | | | ○ | | | | | | | | | | ○ | ★ | | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning
Cemented carbide and cermet inserts

Applicable tool



Insert code key
A50–A51

Grade selection reference
A19/A36–A48

Chipbreaker selection reference
A22–A35

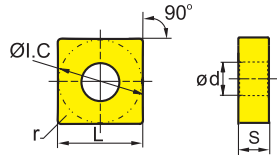
Recommended cutting parameters
A241–A244



General Turning Inserts

Cemented carbide and cermet inserts

SN (Negative inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | Cemented cermet | Cemented carbide | | | | | | | | | | | | |
|------------------------|---------------|----------------|--------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|------------------|--------|--------|--------|--------|--------|--------|---------|-------|-------|--|--|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | | | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | | | |
| For semi-finishing | SNMG090304-PM | 9.525 | 9.525 | 3.18 | 3.81 | 0.4 | ○ | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG090308-PM | 9.525 | 9.525 | 3.18 | 3.81 | 0.8 | ○ | ● | ○ | ○ | | | | | | | | | | | | | | | | ○ | | | | | | | | | | | |
| | SNMG090312-PM | 9.525 | 9.525 | 3.18 | 3.81 | 1.2 | ○ | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG120404-PM | 12.7 | 12.7 | 4.76 | 5.16 | 0.4 | ○ | ● | ○ | ○ | | | | | | | | | | | | | | | | | ○ | | | | | | | | | | |
| | SNMG120408-PM | 12.7 | 12.7 | 4.76 | 5.16 | 0.8 | ● | ● | ○ | ● | | | | | | | | | | | | | | | | | | ★ | ★ | ★ | | | | | | | |
| | SNMG120412-PM | 12.7 | 12.7 | 4.76 | 5.16 | 1.2 | ● | ● | ○ | ○ | | | | | | | | | | | | | | | | | | ★ | ★ | ★ | | | | | | | |
| | SNMG120416-PM | 12.7 | 12.7 | 4.76 | 5.16 | 1.6 | | | ● | ○ | ○ | | | | | | | | | | | | | | | | | | ○ | | | | | | | | |
| | SNMG150608-PM | 15.875 | 15.875 | 6.35 | 6.35 | 0.8 | | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG150612-PM | 15.875 | 15.875 | 6.35 | 6.35 | 1.2 | ● | ● | ○ | | | | | | | | | | | | | | | | | | | ○ | ● | | | | | | | | |
| | SNMG190616-PM | 19.05 | 19.05 | 6.35 | 7.94 | 1.6 | | | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| For semi-finishing | SNMG090304-DM | 9.525 | 9.525 | 3.18 | 3.81 | 0.4 | ○ | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG090308-DM | 9.525 | 9.525 | 3.18 | 3.81 | 0.8 | ○ | ● | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG120404-DM | 12.7 | 12.7 | 4.76 | 5.16 | 0.4 | ★ | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG120408-DM | 12.7 | 12.7 | 4.76 | 5.16 | 0.8 | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG120412-DM | 12.7 | 12.7 | 4.76 | 5.16 | 1.2 | ★ | ● | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG120416-DM | 12.7 | 12.7 | 4.76 | 5.16 | 1.6 | | | ● | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG150608-DM | 15.875 | 15.875 | 6.35 | 6.35 | 0.8 | ○ | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG150612-DM | 15.875 | 15.875 | 6.35 | 6.35 | 1.2 | ● | ● | ★ | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG150616-DM | 15.875 | 15.875 | 6.35 | 6.35 | 1.6 | | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG190612-DM | 19.05 | 19.05 | 6.35 | 7.94 | 1.2 | ○ | ● | ○ | ○ | | | | | | | | | | | | | | | | | | ○ | | | | | | | | | |
| SNMG190616-DM | 19.05 | 19.05 | 6.35 | 7.94 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool

DSBNR/L
Kr:75°



Page A168

PSBNR/L
Kr:75°



A176

PSDNN
Kr:45°



A177

PSKNR/L
Kr:75°



A178

PSSNR/L
Kr:45°



A179

PSKNR/L
Kr:75°



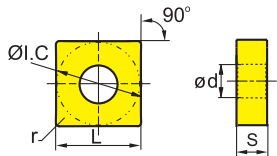
A215

General Turning Inserts

A

Cemented carbide and cermet inserts

SN (Negative inserts)



😊 Good working condition 🟡 Normal working condition 😞 Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|---|
| | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | |
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | | | | Cemented carbide | Coated cermet | Cemented carbide | | | | | |
|--------------------------------------|----------------------|----------------|--------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------------|---------------|------------------|--------|--------|--------|---------|-------|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | | | | YBD152 | YBD252 | YNG151 | YNG151C | YD101 |
| EM For semi-finishing | SNMG120404-EM | 12.7 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG120408-EM | 12.7 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | ●★ | ★ | | | | | | | | ★ | ★ | | | | | | | | | | |
| | SNMG120412-EM | 12.7 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | ●★ | ★ | | | | | | | | ★ | ★ | | | | | | | | | | |
| | SNMG120416-EM | 12.7 | 12.7 | 4.76 | 5.16 | 1.6 | | | | | | | | ○★ | ★ | | | | | | | | ○ | ★ | | | | | | | | | | |
| | SNMG150612-EM | 15.875 | 15.875 | 6.35 | 6.35 | 1.2 | | | | | | | | ●★ | ★ | | | | | | | | ○ | ★ | | | | | | | | | | |
| | SNMG150616-EM | 15.875 | 15.875 | 6.35 | 6.35 | 1.6 | | | | | | | | ○★ | ★ | | | | | | | | ○ | ★ | | | | | | | | | | |
| NM For semi-finishing | SNMG120408-NM | 12.7 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | ●★ | ★ | | | | | | | | | | | | | | | | | | | | |
| | SNMG120412-NM | 12.7 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | ○★ | ★ | | | | | | | | | | | | | | | | | | | | |
| LR Light-load roughing | SNMM120408-LR | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM120412-LR | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM120416-LR | 12.9 | 12.7 | 4.76 | 5.16 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM150612-LR | 15.875 | 15.875 | 6.35 | 6.35 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM150616-LR | 15.875 | 15.875 | 6.35 | 6.35 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM190612-LR | 19.3 | 19.05 | 6.35 | 7.94 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM190616-LR | 19.3 | 19.05 | 6.35 | 7.94 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM190624-LR | 19.3 | 19.05 | 6.35 | 7.94 | 2.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SNMM250924-LR | 25.79 | 25.4 | 9.525 | 9.12 | 2.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool



Page A168 A176 A177 A178 A179 A215



General turning

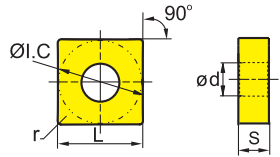
Cemented carbide and cermet inserts

A TURNING / General Turning Inserts

Cemented carbide and cermet inserts

SN (Negative inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition



| Workpiece material | Steel (P) | Stainless steel (M) | Cast iron (K) | Non-ferrous metal (N) | Heat resistant alloy, Ti alloy (S) |
|------------------------------------|------------------|---------------------|------------------|-----------------------|------------------------------------|
| Steel (P) | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |
| Stainless steel (M) | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |
| Cast iron (K) | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |
| Non-ferrous metal (N) | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |
| Heat resistant alloy, Ti alloy (S) | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |

General turning

Cemented carbide and cermet inserts

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | Cemented cermet | Cemented carbide | | | | | | | | | | | | |
|---|---------------|----------------|--------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | | | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151C | YD101 | YD201 | |
|  For light roughing | SNMG120408-DR | 12.7 | 12.7 | 4.76 | 5.16 | 0.8 | ○ | ● | ★ | ○ | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG120412-DR | 12.7 | 12.7 | 4.76 | 5.16 | 1.2 | | ● | ○ | ● | | | | | | | | | | | | | | | | ○ | | | | | | | | |
| | SNMG120416-DR | 12.7 | 12.7 | 4.76 | 5.16 | 1.6 | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG150608-DR | 15.875 | 15.875 | 6.35 | 6.35 | 0.8 | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG150612-DR | 15.875 | 15.875 | 6.35 | 6.35 | 1.2 | | ● | ★ | ● | | | | | | | | | | | | | | | | ○ | | | | | | | | |
| | SNMG150616-DR | 15.875 | 15.875 | 6.35 | 6.35 | 1.6 | | ● | ★ | | | | | | | | | | | | | | | | | ○ | | | | | | | | |
| | SNMG150624-DR | 15.875 | 15.875 | 6.35 | 6.35 | 2.4 | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG190612-DR | 19.05 | 19.05 | 6.35 | 7.94 | 1.2 | | ● | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG190616-DR | 19.05 | 19.05 | 6.35 | 7.94 | 1.6 | | ● | ★ | ● | | | | | | | | | | | | | | | | ○ | | | | | | | | |
| | SNMG190624-DR | 19.05 | 19.05 | 6.35 | 7.94 | 2.4 | | ● | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | |
|  For roughing | SNMM120408-DR | 12.7 | 12.7 | 4.76 | 5.16 | 0.8 | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM120412-DR | 12.7 | 12.7 | 4.76 | 5.16 | 1.2 | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM120416-DR | 12.7 | 12.7 | 4.76 | 5.16 | 1.6 | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM150608-DR | 15.875 | 15.875 | 6.35 | 6.35 | 0.8 | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM150612-DR | 15.875 | 15.875 | 6.35 | 6.35 | 1.2 | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM150616-DR | 15.875 | 15.875 | 6.35 | 6.35 | 1.6 | | ● | | ○ | | | | | | | | | | | | | | | | | | | | | | | | |
| SNMM190608-DR | 19.05 | 19.05 | 6.35 | 7.94 | 0.8 | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | |

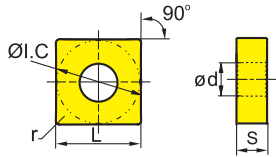
★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool

| | | | | | |
|--|--|--|--|---|--|
|  DSBNR/L Kr:75° |  PSBNR/L Kr:75° |  PSDNN Kr:45° |  PSKNR/L Kr:75° |  PSSNR/L Kr:45° |  PSKNR/L Kr:75° |
| Page A168 | A176 | A177 | A178 | A179 | A215 |



SN (Negative inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | Cemented cermet | Cemented carbide | | | | | | | | | |
|--------------------------------|----------------|----------------|--------|-------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|------------------|--------|--------|--------|--------|--------|---------|-------|-------|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | |
| DR For roughing | SNMM190612-DR | 19.05 | 19.05 | 6.35 | 7.94 | 1.2 | | | ● | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM190616-DR | 19.05 | 19.05 | 6.35 | 7.94 | 1.6 | | ○ | ● | ★ | ● | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM190624-DR | 19.05 | 19.05 | 6.35 | 7.94 | 2.4 | | ★ | ● | ○ | ● | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM250724-DR | 25.4 | 25.4 | 7.94 | 9.12 | 2.4 | | | ● | | ○ | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM250924-DR | 25.4 | 25.4 | 9.525 | 9.12 | 2.4 | | | ● | ★ | ● | | | | | | | | | | | | | | | | | | | | | | | |
| ER For roughing | SNMG120408-ER | 12.7 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG120412-ER | 12.7 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG150608-ER | 15.875 | 15.875 | 6.35 | 6.35 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG150612-ER | 15.875 | 15.875 | 6.35 | 6.35 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMG190612-ER | 19.05 | 19.05 | 6.35 | 7.94 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SNMG190616-ER | 19.05 | 19.05 | 6.35 | 7.94 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ER For roughing | SNMM250724-ER | 25.4 | 25.4 | 7.94 | 9.12 | 2.4 | | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM250732-ER | 25.4 | 25.4 | 7.94 | 9.12 | 3.2 | | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM250924-ER | 25.4 | 25.4 | 9.525 | 9.12 | 2.4 | | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM250932-ER | 25.4 | 25.4 | 9.525 | 9.12 | 3.2 | | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| SNR For roughing | SNMG120408-SNR | 12.7 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | ○ | ● | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool



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A177



A178



A179



A215

Insert code key → A50-A51

Grade selection reference → A19/A36-A48

Chipbreaker selection reference → A22-A35

Recommended cutting parameters → A241-A244



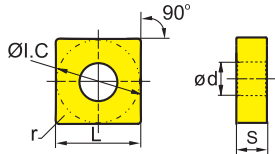
TURNING / General Turning Inserts

Cemented carbide and cermet inserts

General turning



Cemented carbide and cermet inserts

SN (Negative inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | Cemented cermet | Cemented carbide | | | | | | | | | | |
|--|-----------------------|----------------|--------|-------|------|-----|--------|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|------------------|--------|--------|--------|--------|---------|-------|-------|--|--|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | | | |
| HDR  For heavy machining | SNMM120408-HDR | 12.7 | 12.7 | 4.76 | 5.16 | 0.8 | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM120412-HDR | 12.7 | 12.7 | 4.76 | 5.16 | 1.2 | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM120416-HDR | 12.7 | 12.7 | 4.76 | 5.16 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM150608-HDR | 15.875 | 15.875 | 6.35 | 6.35 | 0.8 | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM150612-HDR | 15.875 | 15.875 | 6.35 | 6.35 | 1.2 | | | ● | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM150616-HDR | 15.875 | 15.875 | 6.35 | 6.35 | 1.6 | | | ○ | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM150624-HDR | 15.875 | 15.875 | 6.35 | 6.35 | 2.4 | | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM190608-HDR | 19.05 | 19.05 | 6.35 | 7.94 | 0.8 | | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM190612-HDR | 19.05 | 19.05 | 6.35 | 7.94 | 1.2 | | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM190616-HDR | 19.05 | 19.05 | 6.35 | 7.94 | 1.6 | | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM190624-HDR | 19.05 | 19.05 | 6.35 | 7.94 | 2.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM250724-HDR | 25.4 | 25.4 | 7.94 | 9.12 | 2.4 | | | | ★ | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| SNMM250924-HDR | 25.4 | 25.4 | 9.525 | 9.12 | 2.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HPR  For heavy machining | SNMM190616-HPR | 19.5 | 19.05 | 6.35 | 7.94 | 1.6 | | | | | ★ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SNMM250924-HPR | 25.4 | 25.4 | 9.525 | 9.12 | 2.4 | | | | | ★ | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool

DSBNR/L
Kr:75°



Page A168

PSBNR/L
Kr:75°



A176

PSDNN
Kr:45°



A177

PSKNR/L
Kr:75°



A178

PSSNR/L
Kr:45°



A179

PSKNR/L
Kr:75°



A215

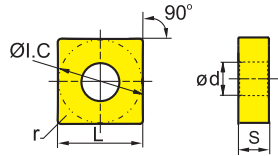


TURNING / General Turning Inserts

Cemented carbide and cermet inserts

SN (Negative inserts)

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



| Workpiece material | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | Coated cermet YD101 | Cemented carbide YD201 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------------|------------------------|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | | | | | | | | | | | | | | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | | | | | | | | | | | | | | | | | | | | | | | | | 😊 |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | | | | | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

General turning

Cemented carbide and cermet inserts

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | Cermet Coated cermet YNG151C | Cemented carbide YD101 | Cemented carbide YD201 | | | |
|-------------------------|------------|----------------|--------|-------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------------------------|------------------------|------------------------|--------|--------|--------|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | | | | YBS103 | YBD052 | YBD102 |
| All round | SNMM190608 | 19.05 | 19.05 | 6.35 | 7.94 | 0.8 | | | ○ | | | | | | | | | | | | | | | | | | | | |
| | SNMM190612 | 19.05 | 19.05 | 6.35 | 7.94 | 1.2 | | | ○ | | | | | | | | | | | | | | | | | | | | |
| | SNMM190616 | 19.05 | 19.05 | 6.35 | 7.94 | 1.6 | | | ○ | | | | | | | | | | | | | | | | | | | | |
| | SNMM250724 | 25.4 | 25.4 | 7.94 | 9.12 | 2.4 | | | ● | | ● | | | | | | | | | | | | | | | | | | |
| | SNMM250924 | 25.4 | 25.4 | 9.525 | 9.12 | 2.4 | | | | | ○ | | | | | | | | | | | | | | | | | | |
| Without chipbreaker | SNMA090304 | 9.525 | 9.525 | 3.18 | 3.81 | 0.4 | | | | | | | | | | | | | | | | | | | | | ○ | | |
| | SNMA090308 | 9.525 | 9.525 | 3.18 | 3.81 | 0.8 | | | | | | | | | | | | | | | | | | | | | ○ | ○ | |
| | SNMA120404 | 12.7 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | ○ | | |
| | SNMA120408 | 12.7 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | ○ | ★ | |
| | SNMA120416 | 12.7 | 12.7 | 4.76 | 5.16 | 1.6 | | | | | | | | | | | | | | | | | | | | | ○ | ○ | |
| | SNMA150608 | 15.875 | 15.875 | 6.35 | 6.35 | 0.8 | | | | | | | | | | | | | | | | | | | | | | ○ | |
| | SNMA150612 | 15.875 | 15.875 | 6.35 | 6.35 | 1.2 | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | SNMA190612 | 19.05 | 19.05 | 6.35 | 7.94 | 1.2 | | | | | | | | | | | | | | | | | | | | | ○ | ○ | |
| | SNMA190616 | 19.05 | 19.05 | 6.35 | 7.94 | 1.6 | | | | | | | | | | | | | | | | | | | | | ★ | ★ | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

DSBNR/L
Kr:75°



Page A168

PSBNR/L
Kr:75°



A176

PSDNN
Kr:45°



A177

PSKNR/L
Kr:75°



A178

PSSNR/L
Kr:45°



A179

PSKNR/L
Kr:75°



A215



TN (Negative inserts)

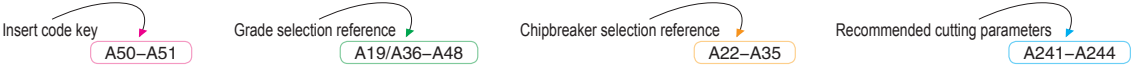
😊 Good working condition
 😐 Normal working condition
 😞 Bad working condition

Workpiece material:
P Steel
M Stainless steel
K Cast iron
N Non-ferrous metal
S Heat resistant alloy, Ti alloy

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | Cemented carbide | Cermet | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------|----------------|----------------|-------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|--|--|--|--|--|--|--|---|---|---|---|---|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | | | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151C | YD101 | YD201 | | | | | | | | | | | | |
| For finishing | TNMG160404-DF | 16.5 | 9.525 | 4.76 | 3.81 | 0.4 | ★ | ● | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG160408-DF | 16.5 | 9.525 | 4.76 | 3.81 | 0.8 | ★ | ○ | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG160412-DF | 16.5 | 9.525 | 4.76 | 3.81 | 1.2 | | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG220408-DF | 22 | 12.7 | 4.76 | 5.16 | 0.8 | ★ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG220412-DF | 22 | 12.7 | 4.76 | 5.16 | 1.2 | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| For finishing Wiper | TNMX160404-WGF | 16.5 | 9.525 | 4.76 | 3.81 | 0.4 | ★ | | | | | | | | | | | | | | | ★ | | | ★ | | | | | | | | | | | | | | | | | | | | |
| | TNMX160408-WGF | 16.5 | 9.525 | 4.76 | 3.81 | 0.8 | ★ | | | | | | | | | | | | | | | ★ | | | ★ | | | | | | | | | | | | | | | | | | | | |
| For finishing | TNMG110304-SF | 11 | 6.35 | 3.18 | 2.26 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | ★ | | | |
| | TNMG160404-SF | 16.5 | 9.525 | 4.76 | 3.81 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | ★ | | |
| | TNMG160408-SF | 16.5 | 9.525 | 4.76 | 3.81 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | ★ | |
| | TNMG220408-SF | 22 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | ★ |
| | TNMG220412-SF | 22 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | ★ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool



General turning

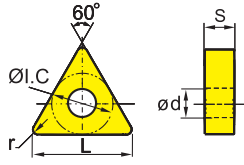
Cemented carbide and cermet inserts

TURNING / General Turning Inserts

Cemented carbide and cermet inserts

TN □ □ (Negative inserts)

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



| Workpiece material | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | | | | | | | | | | | | | | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | Cemented cermet | Cemented carbide | | | | | | | | | | | | | |
|--|----------------|----------------|-------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|------------------|--------|--------|--------|--------|--------|--------|---------|-------|-------|--|--|--|--|
| | | L | Ø1.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | | | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | | | | |
| EF For finishing | TNMG110304-EF | 11 | 6.35 | 3.18 | 2.26 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG110308-EF | 11 | 6.35 | 3.18 | 2.26 | 0.8 | | | | | | | | | ○ | ★ | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG160404-EF | 16.5 | 9.525 | 4.76 | 3.81 | 0.4 | | | | | | | | | ● | ★ | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG160408-EF | 16.5 | 9.525 | 4.76 | 3.81 | 0.8 | | | | | | | | | ● | ★ | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG160412-EF | 16.5 | 9.525 | 4.76 | 3.81 | 1.2 | | | | | | | | | ○ | ★ | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG220404-EF | 22 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | | ○ | ★ | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG220408-EF | 22 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | ○ | ★ | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG220412-EF | 22 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | ○ | ★ | | | | | | | | | | | | | | | | | | | | | | |
| WGM For semi-finishing Wiper | TNMX160408-WGM | 16.5 | 9.525 | 4.76 | 3.81 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMX160412-WGM | 16.5 | 9.525 | 4.76 | 3.81 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PM For semi-finishing | TNMG110304-PM | 11 | 6.35 | 3.18 | 2.26 | 0.4 | | ★ | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG110308-PM | 11 | 6.35 | 3.18 | 2.26 | 0.8 | | ★ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG160404-PM | 16.5 | 9.525 | 4.76 | 3.81 | 0.4 | | ★ | ● | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG160408-PM | 16.5 | 9.525 | 4.76 | 3.81 | 0.8 | | ★ | ● | ★ | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG160412-PM | 16.5 | 9.525 | 4.76 | 3.81 | 1.2 | | ★ | ● | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG220408-PM | 22 | 12.7 | 4.76 | 5.16 | 0.8 | | ★ | ● | ○ | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG220412-PM | 22 | 12.7 | 4.76 | 5.16 | 1.2 | | ● | ★ | ● | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG220416-PM | 22 | 12.7 | 4.76 | 5.16 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool



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A181

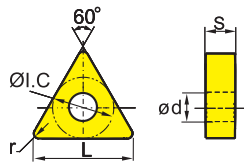


A182





A216

TN (Negative inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|------------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | Cemented cermet | Cemented carbide | | | | | | | | | | | | | | | |
|--|----------------|----------------|--------|-------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|------------------|--------|--------|--------|--------|--------|--------|--------|--|--|--|--|--|--|--|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | | | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | | | | | | | | |
|  For heavy machining | TNMM160408-HDR | 16.5 | 9.525 | 4.76 | 3.81 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMM160412-HDR | 16.5 | 9.525 | 4.76 | 3.81 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMM220408-HDR | 22 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMM220412-HDR | 22 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMM220416-HDR | 22 | 12.7 | 4.76 | 5.16 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMM270612-HDR | 27.5 | 15.875 | 6.35 | 6.35 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMM270616-HDR | 27.5 | 15.875 | 6.35 | 6.35 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMM270624-HDR | 27.5 | 15.875 | 6.35 | 6.35 | 2.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  All round | TNMG110308 | 11 | 6.35 | 3.18 | 2.26 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG160404 | 16.5 | 9.525 | 4.76 | 3.81 | 0.4 | | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG160408 | 16.5 | 9.525 | 4.76 | 3.81 | 0.8 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG160412 | 16.5 | 9.525 | 4.76 | 3.81 | 1.2 | | ● | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG220404 | 22 | 12.7 | 4.76 | 5.16 | 0.4 | | ○ | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG220408 | 22 | 12.7 | 4.76 | 5.16 | 0.8 | | ○ | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG220412 | 22 | 12.7 | 4.76 | 5.16 | 1.2 | | ● | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG220416 | 22 | 12.7 | 4.76 | 5.16 | 1.6 | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG270612 | 27.5 | 15.875 | 6.35 | 6.35 | 1.2 | | | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG270616 | 27.5 | 15.875 | 6.35 | 6.35 | 1.6 | | | | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG330916 | 33 | 19.05 | 9.525 | 7.94 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMG330924 | 33 | 19.05 | 9.525 | 7.94 | 2.4 | | ○ | ○ | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool



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Insert code key
A50-A51

Grade selection reference
A19/A36-A48

Chipbreaker selection reference
A22-A35

Recommended cutting parameters
A241-A244

A TURNING General Turning Inserts

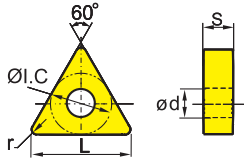
Cemented carbide and cermet inserts

General turning

Cemented carbide and cermet inserts

TN (Negative inserts)

😊 Good working condition 🙄 Normal working condition 😞 Bad working condition



| Workpiece material | Steel (P) | Stainless steel (M) | Cast iron (K) | Non-ferrous metal (N) | Heat resistant alloy, Ti alloy (S) |
|------------------------------------|-----------|---------------------|---------------|-----------------------|------------------------------------|
| Steel (P) | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| Stainless steel (M) | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| Cast iron (K) | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| Non-ferrous metal (N) | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| Heat resistant alloy, Ti alloy (S) | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | Cermet YNG151 | Coated cermet YNG151C | Cemented carbide YD101 | Cemented carbide YD201 | | | | | | | | |
|---------------|------------|----------------|--------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|-----------------------|------------------------|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | | | | | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 |
| | TNMM160404 | 16.5 | 9.525 | 4.76 | 3.81 | 0.4 | | ○ | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMM160408 | 16.5 | 9.525 | 4.76 | 3.81 | 0.8 | | | | | | | ○ | | | | | | | | | | | | | | | | | | | |
| | TNMM160412 | 16.5 | 9.525 | 4.76 | 3.81 | 1.2 | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMM220408 | 22 | 12.7 | 4.76 | 5.16 | 0.8 | | | ○ | | | | | | | | | | | | | | | | | | | | | | | |
| | TNMM220412 | 22 | 12.7 | 4.76 | 5.16 | 1.2 | | | ● | ○ | | | | | | | | | | | | | ○ | | | | | | | | | |
| | TNMM220416 | 22 | 12.7 | 4.76 | 5.16 | 1.6 | | | | | ○ | | | | | | | | | | | | | | | | | | | | | |
| | TNMM270616 | 27.5 | 15.875 | 6.35 | 6.35 | 1.6 | | | ● | ○ | | | | | | | | | | | | | | | | | | | | | | |
| | TNMA160404 | 16.5 | 9.525 | 4.76 | 3.81 | 0.4 | | | | | | | | | | | | | | | | | | | ○ | ★ | ★ | | | | | |
| | TNMA160408 | 16.5 | 9.525 | 4.76 | 3.81 | 0.8 | ○ | | | | | | | | | | | | | | | | | | | ★ | ★ | ★ | | | ○ | |
| | TNMA160412 | 16.5 | 9.525 | 4.76 | 3.81 | 1.2 | | | | | | | | | | | | | | | | | | | | ★ | ○ | ○ | | | | |
| | TNMA160416 | 16.5 | 9.525 | 4.76 | 3.81 | 1.6 | | | | | | | | | | | | | | | | | | | | | ○ | ○ | ○ | | | |
| | TNMA220404 | 22 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | ○ | ○ | ○ | | | |
| | TNMA220408 | 22 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | ○ | ○ | ○ | | | |
| | TNMA270616 | 27.5 | 15.875 | 6.35 | 6.35 | 1.6 | | | | | | | | | | | | | | | | | | | | | | ○ | | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool



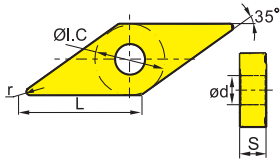
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General Turning Inserts



Cemented carbide and cermet inserts

VN (Negative inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | | | | | | | | | | | | | | | | | | | | | | | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | | Cemented carbide | Cemented carbide | | | | | | | | | | | |
|-------------------|----------------|----------------|-------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------------|------------------|--------|--------|--------|--------|--------|---------|-------|-------|--|---|---|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | | | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | | | |
| For finishing | VNMG160404-DF | 16.6 | 9.525 | 4.76 | 3.81 | 0.4 | ★ | ● | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | VNMG160408-DF | 16.6 | 9.525 | 4.76 | 3.81 | 0.8 | ★ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| For finishing | VNMG160404-EF | 16.6 | 9.525 | 4.76 | 3.81 | 0.4 | | | | | | | | | ○ | ★ | | | | | | | | | | | | | | | | | | | | | |
| | VNMG160408-EF | 16.6 | 9.525 | 4.76 | 3.81 | 0.8 | | | | | | | | | ○ | ★ | | | | | | | | | | | | | | | | | | | | | |
| | VNMG160412-EF | 16.6 | 9.525 | 4.76 | 3.81 | 1.2 | | | | | | | | | ○ | ★ | | | | | | | | | | | | | | | | | | | | | |
| For finishing | VNEG160404-NF | 16.6 | 9.525 | 4.76 | 3.81 | 0.4 | | | | | | | ○ | ★ | | | | | | | | | | | | | | | | | | | | | | ○ | |
| | VNEG160408-NF | 16.6 | 9.525 | 4.76 | 3.81 | 0.8 | | | | | | | ○ | ★ | | | | | | | | | | | | | | | | | | | | | | ○ | |
| For finishing | VNEG160408-NGF | 16.6 | 9.525 | 4.76 | 3.81 | 0.8 | | | | | | | ○ | ● | | | | | | | | | | | | | | | | | | | | | | | |
| | VNEG160412-NGF | 16.6 | 9.525 | 4.76 | 3.81 | 1.2 | | | | | | | ○ | ● | | | | | | | | | | | | | | | | | | | | | | | |
| For finishing | VNMG160404-SF | 16.6 | 9.525 | 4.76 | 3.81 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ |
| | VNMG160408-SF | 16.6 | 9.525 | 4.76 | 3.81 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order



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Insert code key → A50-A51
 Grade selection reference → A19/A36-A48
 Chipbreaker selection reference → A22-A35
 Recommended cutting parameters → A241-A244

General turning

Cemented carbide and cermet inserts

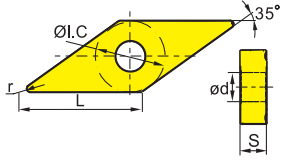


TURNING General Turning Inserts

Cemented carbide and cermet inserts

VN (Negative inserts)

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



| Workpiece material | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|---|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | | | | | | | | | | | | | | | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | | | | | | | | | | | | | | | | | | | | | | | | | |

General turning

Cemented carbide and cermet inserts

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | Cermet YNG151 | Coated cermet YD101 | Cemented carbide YD201 | | | | | | | | | | |
|------------------------|----------------|----------------|-------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------------|---------------------------|------------------------------|--------|--------|--------|--------|--------|--|--|--|--|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | | | | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | | | | | |
| For semi-finishing | VNMG160404-PM | 16.6 | 9.525 | 4.76 | 3.81 | 0.4 | ★ | ● | ○ | ○ | | | | | | | | | | | | | | | | ○ | ○ | | | | | | | | | |
| | VNMG160408-PM | 16.6 | 9.525 | 4.76 | 3.81 | 0.8 | ★ | ● | ○ | | | | | | | | | | | | | | | | | ★ | ★ | ○ | | | | | | | | |
| | VNMG160412-PM | 16.6 | 9.525 | 4.76 | 3.81 | 1.2 | | | ○ | ○ | | | | | | | | | | | | | | | | | ○ | ○ | | | | | | | | |
| For semi-finishing | VNMG160408-DM | 16.6 | 9.525 | 4.76 | 3.81 | 0.8 | ★ | ● | ★ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | VNMG160412-DM | 16.6 | 9.525 | 4.76 | 3.81 | 1.2 | | | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | |
| For semi-finishing | VNMG160404-EM | 16.6 | 9.525 | 4.76 | 3.81 | 0.4 | | | | | | | | | | | | | ● | ★ | | | | | | | | | | | | | | | | |
| | VNMG160408-EM | 16.6 | 9.525 | 4.76 | 3.81 | 0.8 | | | | | | | | | | | | | ● | ★ | | | | | | | | | | | | | | | | |
| For semi-finishing | VNMG160412-NM | 16.6 | 9.525 | 4.76 | 3.81 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| For roughing | VNMG160408-SNR | 16.6 | 9.525 | 4.76 | 3.81 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | VNMG160412-SNR | 16.6 | 9.525 | 4.76 | 3.81 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| All round | VNMG160404 | 16.6 | 9.525 | 4.76 | 3.81 | 0.4 | ○ | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | VNMG160408 | 16.6 | 9.525 | 4.76 | 3.81 | 0.8 | ● | | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool



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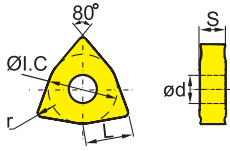
A170

General Turning Inserts



Cemented carbide and cermet inserts

WN (Negative inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|------------------|-------------------|------------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | Cermets | Cemented carbide | | | | | | | | | | | | | |
|--------------------------------|----------------|----------------|-------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|---|---|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | | | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151C | YD101 | YD201 | | |
| DF For finishing | WNMG06T304-DF | 6.5 | 9.525 | 3.97 | 3.81 | 0.4 | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | WNMG06T308-DF | 6.5 | 9.525 | 3.97 | 3.81 | 0.8 | ★ | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | WNMG06T312-DF | 6.5 | 9.525 | 3.97 | 3.81 | 1.2 | ★ | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | WNMG060404-DF | 6.5 | 9.525 | 4.76 | 3.81 | 0.4 | ★ | ● | ★ | | | | | | | | | | | | | | ○ | | | | | | | | | | | | |
| | WNMG060408-DF | 6.5 | 9.525 | 4.76 | 3.81 | 0.8 | ★ | ● | ★ | | | | | | | | | | | | | | ● | | | | | | | | | | | | |
| | WNMG060412-DF | 6.5 | 9.525 | 4.76 | 3.81 | 1.2 | ★ | ● | ○ | | | | | | | | | | | | | | ○ | | | | | | | | | | | | |
| | WNMG080404-DF | 8.7 | 12.7 | 4.76 | 5.16 | 0.4 | ★ | ● | ○ | | | | | | | | | | | | | | ○ | | | | | | | | | | | | |
| | WNMG080408-DF | 8.7 | 12.7 | 4.76 | 5.16 | 0.8 | ★ | ● | ★ | | | | | | | | | | | | | | ● | | | | | | | | | | | | |
| | WNMG080412-DF | 8.7 | 12.7 | 4.76 | 5.16 | 1.2 | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WGF For finishing Wiper | WNMG060404-WGF | 6.5 | 9.525 | 4.76 | 3.81 | 0.4 | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | WNMG060408-WGF | 6.5 | 9.525 | 4.76 | 3.81 | 0.8 | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | WNMG080404-WGF | 8.7 | 12.7 | 4.76 | 5.16 | 0.4 | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | WNMG080408-WGF | 8.7 | 12.7 | 4.76 | 5.16 | 0.8 | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SF For finishing | WNMG06T304-SF | 6.5 | 9.525 | 3.97 | 3.81 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | ★ |
| | WNMG06T308-SF | 6.5 | 9.525 | 3.97 | 3.81 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | |
| | WNMG06T312-SF | 6.5 | 9.525 | 3.97 | 3.81 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | |
| | WNMG060404-SF | 6.5 | 9.525 | 4.76 | 3.81 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | ★ |
| | WNMG060408-SF | 6.5 | 9.525 | 4.76 | 3.81 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | ★ |
| | WNMG080404-SF | 8.7 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | ★ |
| | WNMG080408-SF | 8.7 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | ★ |
| | WNMG080412-SF | 8.7 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool



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Insert code key

A50-A51

Grade selection reference

A19/A36-A48

Chipbreaker selection reference

A22-A35

Recommended cutting parameters

A241-A244



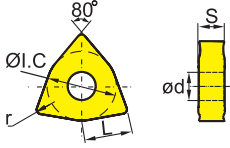
TURNING

General Turning Inserts

Cemented carbide and cermet inserts

WN □ □ (Negative inserts)

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



| Workpiece material | Steel (P) | | | Stainless steel (M) | | | Cast iron (K) | | | Non-ferrous metal (N) | | | Heat resistant alloy, Ti alloy (S) | | |
|------------------------------------|-----------|---|---|---------------------|---|---|---------------|---|---|-----------------------|---|---|------------------------------------|---|---|
| Steel (P) | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| Stainless steel (M) | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| Cast iron (K) | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| Non-ferrous metal (N) | | | | | | | | | | | | | | | |
| Heat resistant alloy, Ti alloy (S) | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | Cermet | Coated cermet | Cemented carbide | | | | | | | | | | | |
|------------------------------|----------------|----------------|-------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | | | | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 |
| For finishing | WNMG06T304-EF | 6.5 | 9.525 | 3.97 | 3.81 | 0.4 | | | | | | | | | ○ | ★ | | | | | | | | | | | | | | | | | | |
| | WNMG06T308-EF | 6.5 | 9.525 | 3.97 | 3.81 | 0.8 | | | | | | | | | ○ | ★ | | | | | | | | | | | | | | | | | | |
| | WNMG06T312-EF | 6.5 | 9.525 | 3.97 | 3.81 | 1.2 | | | | | | | | | ○ | ★ | | | | | | | | | | | | | | | | | | |
| | WNMG060404-EF | 6.5 | 9.525 | 4.76 | 3.81 | 0.4 | | | | | | | | | ● | ★ | | | | | | | | | | | | | | | | | | |
| | WNMG060408-EF | 6.5 | 9.525 | 4.76 | 3.81 | 0.8 | | | | | | | | | ● | ★ | | | | | | | | | | | | | | | | | | |
| | WNMG080404-EF | 8.7 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | ○ | ● | ★ | | | | | | | | | | | | | | | | | | | |
| | WNMG080408-EF | 8.7 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | ○ | ● | ★ | | | | | | | | | | | | | | | | | | | |
| For finishing | WNEG080404-NF | 8.7 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | ○ | ★ | | | | | | | | | | | | | | | | | | | |
| | WNEG080408-NF | 8.7 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | ○ | ★ | | | | | | | | | | | | | | | | | | | |
| For semi-finishing Wiper | WNMG060408-WGM | 6.5 | 9.525 | 4.76 | 3.81 | 0.8 | | | | | | | | | | ★ | | | | | | | | | | | | | | | | | | |
| | WNMG060412-WGM | 6.5 | 9.525 | 4.76 | 3.81 | 1.2 | | | | | | | | | | ★ | | | | | | | | | | | | | | | | | | |
| | WNMG080408-WGM | 8.7 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | ★ | | | | | | | | | | | | | | | | | | |
| | WNMG080412-WGM | 8.7 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | ★ | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool



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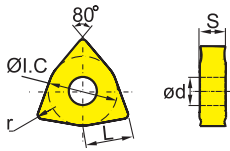
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Cemented carbide and cermet inserts

WN (Negative inserts)

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|------------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | Cemented cermet | Cemented carbide | | | | | | | | | | | | | | | |
|-------------------------------------|----------------|----------------|-------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|--|--|--|--|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | | | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YD101 | YD201 | | | | | |
| PM For semi-finishing | WNUMG060408-PM | 6.5 | 9.525 | 4.76 | 3.81 | 0.8 | ★ | ● | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | WNUMG060412-PM | 6.5 | 9.525 | 4.76 | 3.81 | 1.2 | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | WNUMG080404-PM | 8.7 | 12.7 | 4.76 | 5.16 | 0.4 | ○ | ● | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | WNUMG080408-PM | 8.7 | 12.7 | 4.76 | 5.16 | 0.8 | ★ | ● | ★ | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | WNUMG080412-PM | 8.7 | 12.7 | 4.76 | 5.16 | 1.2 | ★ | ● | ★ | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | WNUMG080416-PM | 8.7 | 12.7 | 4.76 | 5.16 | 1.6 | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | WNUMG080608-PM | 8.7 | 12.7 | 6.35 | 5.16 | 0.8 | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DM For semi-finishing | WNUMG06T304-DM | 6.5 | 9.525 | 3.97 | 3.81 | 0.4 | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | WNUMG06T308-DM | 6.5 | 9.525 | 3.97 | 3.81 | 0.8 | | | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | WNUMG06T312-DM | 6.5 | 9.525 | 3.97 | 3.81 | 1.2 | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | WNUMG060408-DM | 6.5 | 9.525 | 4.76 | 3.81 | 0.8 | ★ | ● | ★ | ● | | | | | | | | | | | | ● | | | | | | | | | | | | | | | | |
| | WNUMG060412-DM | 6.5 | 9.525 | 4.76 | 3.81 | 1.2 | | | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | WNUMG080404-DM | 8.7 | 12.7 | 4.76 | 5.16 | 0.4 | ★ | ● | ★ | ○ | | | | | | ○ | | | | | | | ○ | | | | | | | | | | | | | | | |
| | WNUMG080408-DM | 8.7 | 12.7 | 4.76 | 5.16 | 0.8 | ★ | ● | ★ | ● | | | | | | | | | | | | | ○ | | | | | | | | | | | | | | | |
| | WNUMG080412-DM | 8.7 | 12.7 | 4.76 | 5.16 | 1.2 | ★ | ● | ★ | | | | | | | | | | | | | | ○ | | | | | | | | | | | | | | | |
| WNUMG080416-DM | 8.7 | 12.7 | 4.76 | 5.16 | 1.6 | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EM For semi-finishing | WNUMG06T304-EM | 6.5 | 9.525 | 3.97 | 3.81 | 0.4 | | | | | | | | | | ○ | ★ | | | | ○ | ★ | | | | | | | | | | | | | | | | |
| | WNUMG06T308-EM | 6.5 | 9.525 | 3.97 | 3.81 | 0.8 | | | | | | | | | | | ○ | ★ | | | | ○ | ★ | | | | | | | | | | | | | | | |
| | WNUMG06T312-EM | 6.5 | 9.525 | 3.97 | 3.81 | 1.2 | | | | | | | | | | | | ○ | ★ | | | | ○ | ★ | | | | | | | | | | | | | | |
| | WNUMG060404-EM | 6.5 | 9.525 | 4.76 | 3.81 | 0.4 | | | | | | | | | | | | ○ | ★ | | | | ○ | ★ | | | | | | | | | | | | | | |
| | WNUMG060408-EM | 6.5 | 9.525 | 4.76 | 3.81 | 0.8 | | | | | | | | | | | | ● | ★ | | | | ○ | ★ | | | | | | | | | | | | | | |
| | WNUMG080404-EM | 8.7 | 12.7 | 4.76 | 5.16 | 0.4 | | | | | | | | | | | | | ● | ★ | | | | ★ | ★ | | | | | | | | | | | | | |
| | WNUMG080408-EM | 8.7 | 12.7 | 4.76 | 5.16 | 0.8 | | | | | | | | | | | | | ● | ★ | | | | ★ | ★ | | | | | | | | | | | | | |
| | WNUMG080412-EM | 8.7 | 12.7 | 4.76 | 5.16 | 1.2 | | | | | | | | | | | | | | ● | ★ | | | ★ | ★ | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool



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Insert code key

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Grade selection reference

A19/A36-A48

Chipbreaker selection reference

A22-A35

Recommended cutting parameters

A241-A244

General turning

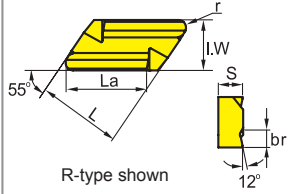
Cemented carbide and cermet inserts



Cemented carbide and cermet inserts

KN (Negative inserts)

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



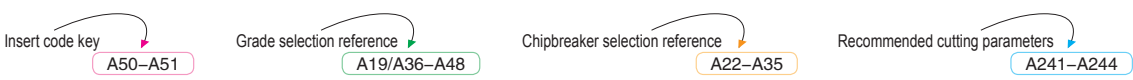
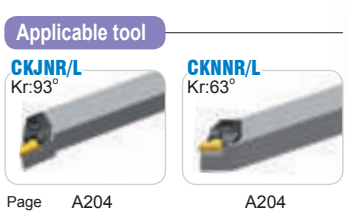
| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|--------------------|----------|-----------------|-----------|-------------------|--------------------------------|
| P | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| M | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| K | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| N | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| S | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | | Coated cemented carbide | | | | | | | | | | | | | | Cermet | Coated cermet | Cemented carbide | | | | | | | | | | | | | |
|-----------------|---------------|----------------|-------|-------|------|-----|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|--------|---------------|------------------|--------|--------|--------|--------|--------|--------|---------|-------|-------|--|--|--|--|
| | | La | L | I.W | S | brn | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBBI151 | YBBI153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | | | | |
| Profile turning | KNUX160405L11 | 16 | 16.15 | 9.525 | 4.76 | 2.2 | 0.5 | ○ | ● | ★ | ○ | | | | | | | | | | | | ● | | | | | | | | | | | | | | |
| | KNUX160410L11 | 16 | 16.15 | 9.525 | 4.76 | 2.2 | 1.0 | | ● | | | | | | | | | | | | | | ○ | | | | | | | | | | | | | | |
| | KNUX160405L12 | 16 | 16.15 | 9.525 | 4.76 | 2.2 | 0.5 | ○ | ● | | | | | | | | | | | | | | ○ | | | | | | | | | | | | | | |
| | KNUX160410L12 | 16 | 16.15 | 9.525 | 4.76 | 2.2 | 1.0 | ○ | ○ | ● | | | | | | | | | | | | | ○ | | | | | | | | | | | | | | |
| | KNUX160415L12 | 16 | 16.15 | 9.525 | 4.76 | 2.2 | 1.5 | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | KNUX160405R11 | 16 | 16.15 | 9.525 | 4.76 | 2.2 | 0.5 | ● | ● | ○ | ● | | | | | | | | | | | | ● | | | | | | | | | | | | | | |
| | KNUX160410R11 | 16 | 16.15 | 9.525 | 4.76 | 2.2 | 1.0 | ○ | ● | | | | | | | | | | | | | | ○ | | | | | | | | | | | | | | |
| | KNUX160405R12 | 16 | 16.15 | 9.525 | 4.76 | 2.2 | 0.5 | ● | ● | | | | | | | | | | | | | | | ○ | | | | | | | | | | | | | |
| | KNUX160410R12 | 16 | 16.15 | 9.525 | 4.76 | 2.2 | 1.0 | ○ | ○ | ● | ○ | | | | | | | | | | | | | ○ | | | | | | | | | | | | | |
| | KNUX160415R12 | 16 | 16.15 | 9.525 | 4.76 | 2.2 | 1.5 | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Note: KNUX160405L11 ★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Chipbreaker code: 11→Declining chipbreaker 12→Straight chipbreaker

General turning
Cemented carbide and cermet inserts

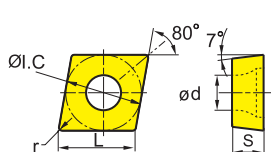


General Turning Inserts

TURNING

Cemented carbide and cermet inserts

CC (Positive inserts)



😊 Good working condition 🙄 Normal working condition 😞 Bad working condition

| Workpiece material | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 |
|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | | | | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | | | | | | | | | | | | | | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S Heat resistant alloy, Ti alloy | | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | Cemented cermet | Cemented carbide | | | | | | | | | |
|--------------------------------|-----------------|----------------|-------|------|------|-----|--------|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|------------------|--------|--------|--------|--------|---------|-------|-------|---|---|
| | | L | Ø1.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | | |
| USF For extra finishing | CCGT09T301R-USF | 9.7 | 9.525 | 3.97 | 4.4 | 0.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CCGT09T302R-USF | 9.7 | 9.525 | 3.97 | 4.4 | 0.2 | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | | | | |
| | CCGT09T304R-USF | 9.7 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | | | | | |
| USF For extra finishing | CCGT09T301L-USF | 9.7 | 9.525 | 3.97 | 4.4 | 0.1 | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | | | | |
| | CCGT09T302L-USF | 9.7 | 9.525 | 3.97 | 4.4 | 0.2 | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | | | |
| | CCGT09T304L-USF | 9.7 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | | | | |
| SF For extra finishing | CCGT060202-SF | 6.4 | 6.35 | 2.38 | 2.8 | 0.2 | | | | | | ○ | | | | | | | | | | | | ○ | ○ | | | | | | | | | | |
| | CCGT060204-SF | 6.4 | 6.35 | 2.38 | 2.8 | 0.4 | | | | | | ○ | | | | | | | | | | | | ○ | ○ | | | | | | | | | | |
| | CCGT09T304-SF | 9.7 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | ○ | | | | | | | | | | | | ○ | ★ | | | | | | | | | | |
| HF For finishing | CCMT060202-HF | 6.4 | 6.35 | 2.38 | 2.8 | 0.2 | ★ | ● | ★ | | | | ● | | | | | | | | | | ○ | ○ | | | | | | | | | | ○ | |
| | CCMT060204-HF | 6.4 | 6.35 | 2.38 | 2.8 | 0.4 | ★ | ● | ○ | ○ | | | | | ● | | | | | | | | ● | ● | | | | | | | | | | ● | |
| | CCMT060208-HF | 6.4 | 6.35 | 2.38 | 2.8 | 0.8 | ★ | ● | ○ | | | | | | ● | | | | | | | | ○ | ○ | | | | | | | | | | | |
| | CCMT09T302-HF | 9.7 | 9.525 | 3.97 | 4.4 | 0.2 | | | | ● | ○ | | | | ● | | | | | | | | | ● | ○ | | | | | | | | | | ○ |
| | CCMT09T304-HF | 9.7 | 9.525 | 3.97 | 4.4 | 0.4 | ★ | ● | ★ | ○ | | | | | ● | | | | | | | | | ○ | ○ | | | ● | ● | | ○ | | ○ | | ○ |
| | CCMT09T308-HF | 9.7 | 9.525 | 3.97 | 4.4 | 0.8 | ★ | ● | ○ | ○ | | | | | ● | | | | | | | | ○ | ○ | ○ | ○ | ○ | | ○ | | ○ | ○ | | ○ | ○ |
| | CCMT120404-HF | 12.9 | 12.7 | 4.76 | 5.56 | 0.4 | ● | ○ | ● | ○ | | | | | | | | | | | | | | | | ○ | | | | | | | | | |
| | CCMT120408-HF | 12.9 | 12.7 | 4.76 | 5.56 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool

SCACR/L
Kr:90°



Page A184

SCLCR/L
Kr:95°



A185

SCLCR/L
Kr:95°



A218

SCFCR/L
Kr:90°



A232

SCLCR/L
Kr:95°



A233

Insert code key

A50-A51

Grade selection reference

A19/A36-A48

Chipbreaker selection reference

A22-A35

Recommended cutting parameters

A241-A244

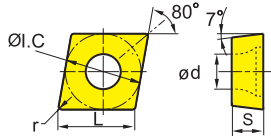


General Turning Inserts

Cemented carbide and cermet inserts

CC (Positive inserts)

☺ Good working condition ☹ Normal working condition ☹ Bad working condition



| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|--------------------|------------|-----------------|------------|-------------------|--------------------------------|
| P | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ |
| M | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ |
| K | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ |
| N | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ |
| S | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ | ☺☺☺☺☺☺☺☺☺☺ |

General turning

Cemented carbide and cermet inserts

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | Cermet | Coated cermet | Cemented carbide | | | | | | | |
|-------------------------------------|---------------|----------------|-------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|------------------|--------|--------|--------|--------|--------|--------|--------|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | | | | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 |
| EF For finishing | CCMT060202-EF | 6.4 | 6.35 | 2.38 | 2.8 | 0.2 | | | | | | | | ○ | ● | ★ | | | | | | ★ | ○ | | | | | | | | |
| | CCMT060204-EF | 6.4 | 6.35 | 2.38 | 2.8 | 0.4 | | | | | | | ○ | ● | ★ | | | | | | | ★ | ○ | | | | | | | | |
| | CCMT09T302-EF | 9.7 | 9.525 | 3.97 | 4.4 | 0.2 | | | | | | | ○ | ● | ★ | | | | | | | ★ | ○ | | | | | | | | |
| | CCMT09T304-EF | 9.7 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | ○ | ● | ★ | | | | | | | ★ | ★ | | | | | | | | |
| | CCMT09T308-EF | 9.7 | 9.525 | 3.97 | 4.4 | 0.8 | | | | | | | ○ | ● | ★ | | | | | | | ○ | ★ | | | | | | | | |
| | CCMT120404-EF | 12.9 | 12.7 | 4.76 | 5.56 | 0.4 | | | | | | | ○ | ● | ★ | | | | | | | ★ | ○ | | | | | | | | |
| | CCMT120408-EF | 12.9 | 12.7 | 4.76 | 5.56 | 0.8 | | | | | | | ○ | ● | ★ | | | | | | | ○ | ○ | | | | | | | | |
| HM For semi-finishing | CCMT060204-HM | 6.4 | 6.35 | 2.38 | 2.8 | 0.4 | ★ | ● | ★ | ○ | | | | ● | | | | | | | | ● | | | | | ● | ● | | | |
| | CCMT060208-HM | 6.4 | 6.35 | 2.38 | 2.8 | 0.8 | ★ | ● | ○ | ○ | | | | ● | | | | | | | | ○ | | | | | ○ | ● | | | |
| | CCMT09T304-HM | 9.7 | 9.525 | 3.97 | 4.4 | 0.4 | ● | ★ | ● | ★ | ● | | | | ● | | | | | | | | ● | | | | | ● | ● | | |
| | CCMT09T308-HM | 9.7 | 9.525 | 3.97 | 4.4 | 0.8 | ★ | ● | ★ | ● | | | | ● | | | | | | | | | ● | | | | | ● | ● | | |
| | CCMT120404-HM | 12.9 | 12.7 | 4.76 | 5.56 | 0.4 | ★ | ● | ○ | ○ | | | | ○ | | | | | | | | ○ | | | | | ○ | ○ | | | |
| | CCMT120408-HM | 12.9 | 12.7 | 4.76 | 5.56 | 0.8 | ★ | ● | ★ | ● | | | | ○ | | | | | | | | | ● | | | | | ● | ● | | |
| | CCMT120412-HM | 12.9 | 12.7 | 4.76 | 5.56 | 1.2 | ○ | ○ | | | | | | | | | | | | | | | | | | | | ○ | | | |
| EM For semi-finishing | CCMT060204-EM | 6.4 | 6.35 | 2.38 | 2.8 | 0.4 | | | | | | | | | ● | ★ | | | | | | ○ | ★ | | | | | | | | |
| | CCMT060208-EM | 6.4 | 6.35 | 2.38 | 2.8 | 0.8 | | | | | | | | | ● | ★ | | | | | | ○ | ★ | | | | | | | | |
| | CCMT09T304-EM | 9.7 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | | ● | ★ | | | | | | ★ | ★ | | | | | | | | |
| | CCMT09T308-EM | 9.7 | 9.525 | 3.97 | 4.4 | 0.8 | | | | | | | | | ● | ★ | | | | | | ★ | ★ | | | | | | | | |
| | CCMT120404-EM | 12.9 | 12.7 | 4.76 | 5.56 | 0.4 | | | | | | | | | ● | ★ | | | | | | ○ | ★ | | | | | | | | |
| | CCMT120408-EM | 12.9 | 12.7 | 4.76 | 5.56 | 0.8 | | | | | | | | | ● | ★ | | | | | | ○ | ★ | | | | | | | | |
| | CCMT120412-EM | 12.9 | 12.7 | 4.76 | 5.56 | 1.2 | | | | | | | | | ● | ★ | | | | | | ○ | ★ | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool

SCACR/L
Kr:90°



Page A184

SCLCR/L
Kr:95°



A185

SCLCR/L
Kr:95°



A218

SCFCR/L
Kr:90°



A232

SCLCR/L
Kr:95°



A233



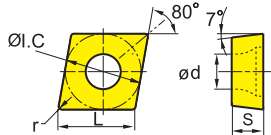
General Turning Inserts

Cemented carbide and cermet inserts

General turning

Cemented carbide and cermet inserts

CC (Positive inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|--------------------|------------|-----------------|------------|-------------------|--------------------------------|
| P | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| M | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| K | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| N | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| S | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | Cermet | Coated cermet | Cemented carbide | | | | | | | | | | | |
|-----------------------------------|---------------|----------------|-------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|------------------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|---|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | | | | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | |
| LH For Al machining | CCGX09T304-LH | 9.7 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | ● | |
| | CCGX09T308-LH | 9.7 | 9.525 | 3.97 | 4.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | | |
| | CCGX120402-LH | 12.9 | 12.7 | 4.76 | 5.56 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | |
| | CCGX120404-LH | 12.9 | 12.7 | 4.76 | 5.56 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | CCGX120408-LH | 12.9 | 12.7 | 4.76 | 5.56 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | CCGX120412-LH | 12.9 | 12.7 | 4.76 | 5.56 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | |
| Without chipbreaker | CCMW060204 | 6.4 | 6.35 | 2.38 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | | |
| | CCMW09T304 | 9.7 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | ● | |
| | CCMW09T308 | 9.7 | 9.525 | 3.97 | 4.4 | 0.8 | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | | |
| | CCMW120404 | 12.9 | 12.7 | 4.76 | 5.56 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | |
| | CCMW120408 | 12.9 | 12.7 | 4.76 | 5.56 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

SCACR/L
Kr:90°



Page A184

SCLCR/L
Kr:95°



A185

SCLCR/L
Kr:95°



A218

SCFCR/L
Kr:90°



A232

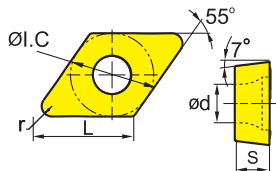
SCLCR/L
Kr:95°



A233



DC (Positive inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|--------------------|------------|-----------------|------------|-------------------|--------------------------------|
| P | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| M | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| K | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| N | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| S | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | | Cermet | Cemented carbide | | | | | | | | | | |
|---------------------------------------|------------------|----------------|-------|------|-----|------|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|-------|-------|---|---|--|
| | | L | Øl.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | | | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YD101 | YD201 | | | |
| USF For extra finishing | DCGT0702005R-USF | 7.8 | 6.35 | 2.38 | 2.8 | 0.05 | | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | | | |
| | DCGT070201R-USF | 7.8 | 6.35 | 2.38 | 2.8 | 0.1 | | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | | | |
| | DCGT070202R-USF | 7.8 | 6.35 | 2.38 | 2.8 | 0.2 | | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | | | |
| | DCGT11T301R-USF | 11.6 | 9.525 | 3.97 | 4.4 | 0.1 | | | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | | | |
| | DCGT11T302R-USF | 11.6 | 9.525 | 3.97 | 4.4 | 0.2 | | | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | | |
| USF For extra finishing | DCGT0702005L-USF | 7.8 | 6.35 | 2.38 | 2.8 | 0.05 | | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | | | | |
| | DCGT070201L-USF | 7.8 | 6.35 | 2.38 | 2.8 | 0.1 | | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | | | | |
| | DCGT070202L-USF | 7.8 | 6.35 | 2.38 | 2.8 | 0.2 | | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | | | |
| | DCGT11T301L-USF | 11.6 | 9.525 | 3.97 | 4.4 | 0.1 | | | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | | | |
| | DCGT11T302L-USF | 11.6 | 9.525 | 3.97 | 4.4 | 0.2 | | | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | | |
| SF For extra finishing | DCGT070202-SF | 7.8 | 6.35 | 2.38 | 2.8 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | ○ | | | | | | | |
| | DCGT070204-SF | 7.8 | 6.35 | 2.38 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | ○ | | | | | | |
| | DCGT070208-SF | 7.8 | 6.35 | 2.38 | 2.8 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DCGT11T302-SF | 11.6 | 9.525 | 3.97 | 4.4 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | ○ | | | |
| | DCGT11T304-SF | 11.6 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | | | |
| | DCGT11T308-SF | 11.6 | 9.525 | 3.97 | 4.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | ○ | ○ | | | | |
| HF For finishing | DCMT070202-HF | 7.8 | 6.35 | 2.38 | 2.8 | 0.2 | ★ | ● | ○ | | | | | | | | ○ | | | | | | | | | | | | | ○ | | | | | | |
| | DCMT070204-HF | 7.8 | 6.35 | 2.38 | 2.8 | 0.4 | ★ | ● | ★ | ○ | | | | | | ● | | | | | | | | | | | | ○ | | | | | ● | | | |
| | DCMT070208-HF | 7.8 | 6.35 | 2.38 | 2.8 | 0.8 | | | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DCMT11T302-HF | 11.6 | 9.525 | 3.97 | 4.4 | 0.2 | ★ | ● | ○ | | | | | | | | ● | | | | | | | | | | | | | | ○ | | | ○ | | |
| | DCMT11T304-HF | 11.6 | 9.525 | 3.97 | 4.4 | 0.4 | ★ | ● | ★ | ○ | | | | | | ● | | | | | | | | | | | | | ○ | ○ | | | ● | | ○ | |
| | DCMT11T308-HF | 11.6 | 9.525 | 3.97 | 4.4 | 0.8 | ★ | ● | ○ | | | | | | | | ○ | | | | | | | | | | | | | | | ○ | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool



Page A186 A187 A188 A219 A220 A221

Insert code key A50-A51 Grade selection reference A19/A36-A48 Chipbreaker selection reference A22-A35 Recommended cutting parameters A241-A244

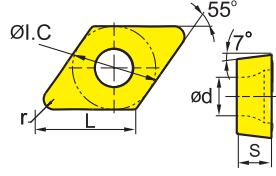
General turning

Cemented carbide and cermet inserts



DC (Positive inserts)

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|--------------------|------------------|------------------|------------------|-------------------|--------------------------------|
| P | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |
| M | | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |
| K | | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |
| N | | | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |
| S | | | | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | Cemented cermet | Cemented carbide | | | | | | | | | | |
|-----------------------------------|---------------|----------------|-------|------|-----|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | | | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YD101 |
| HR For roughing | DCMT11T304-HR | 11.6 | 9.525 | 3.97 | 4.4 | 0.4 | ○ | ● | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | |
| | DCMT11T308-HR | 11.6 | 9.525 | 3.97 | 4.4 | 0.8 | ● | ● | ★ | ○ | | | | | | | | | | | | | | | | | | | | | | |
| | DCMT11T312-HR | 11.6 | 9.525 | 3.97 | 4.4 | 1.2 | ○ | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| LC For Al machining | DCGX070201-LC | 7.8 | 6.35 | 2.38 | 2.8 | 0.1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DCGX070202-LC | 7.8 | 6.35 | 2.38 | 2.8 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DCGX070204-LC | 7.8 | 6.35 | 2.38 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DCGX11T304-LC | 11.6 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DCGX11T308-LC | 11.6 | 9.525 | 3.97 | 4.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LH For Al machining | DCGX070202-LH | 7.8 | 6.35 | 2.38 | 2.8 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DCGX070204-LH | 7.8 | 6.35 | 2.38 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DCGX11T302-LH | 11.6 | 9.525 | 3.97 | 4.4 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DCGX11T304-LH | 11.6 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DCGX11T308-LH | 11.6 | 9.525 | 3.97 | 4.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Without chipbreaker | DCMW070204 | 7.8 | 6.35 | 2.38 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DCMW11T304 | 11.6 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DCMW11T308 | 11.6 | 9.525 | 3.97 | 4.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool



Page A186 A187 A188 A219 A220 A221

Insert code key → A50-A51 Grade selection reference → A19/A36-A48 Chipbreaker selection reference → A22-A35 Recommended cutting parameters → A241-A244

General turning

Cemented carbide and cermet inserts

General Turning Inserts

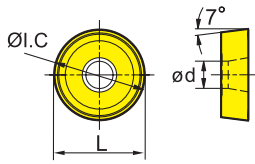
TURNING



Cemented carbide and cermet inserts

RC (Positive inserts)

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



| Workpiece material | Steel (P) | Stainless steel (M) | Cast iron (K) | Non-ferrous metal (N) | Heat resistant alloy, Ti alloy (S) |
|------------------------------------|-----------|---------------------|---------------|-----------------------|------------------------------------|
| Steel (P) | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| Stainless steel (M) | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| Cast iron (K) | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| Non-ferrous metal (N) | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| Heat resistant alloy, Ti alloy (S) | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |

| Inserts shape | Type | Dimensions(mm) | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | Coated cermet | Cemented carbide | | | | | | | | |
|---------------|------------|----------------|------|------|------|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|------------------|--------|--------|--------|---------|-------|-------|---|---|
| | | L | ØI.C | S | Ød | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151C | YD101 | YD201 | | |
| | RCMX0803MO | 8.0 | 8.0 | 3.18 | 3.36 | | ● | ○ | | | | | | | | | | | | | | | | ○ | | | | | | | | |
| | RCMX1003MO | 10 | 10 | 3.18 | 3.6 | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | ○ | |
| | RCMX1204MO | 12 | 12 | 4.76 | 4.4 | ○ | ● | | | | | | | | | | | | | | | | | | | | | | | | ○ | ● |
| | RCMX1606MO | 16 | 16 | 6.35 | 5.5 | ● | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | ○ | ● |
| | RCMX2006MO | 20 | 20 | 6.35 | 6.5 | ○ | ★ | ● | ○ | ○ | | | | | | | | | | | | | | | | | ★ | | | | ○ | ● |
| | RCMX2507MO | 25 | 25 | 7.94 | 7.2 | ★ | ● | ○ | ○ | | | | | | | | | | | | | | | | | | ○ | | | | | |
| | RCMX3209MO | 32 | 32 | 9.52 | 9.5 | ○ | ○ | ● | ○ | ○ | | | | | | | | | | | | | | | | | ● | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

General turning

Cemented carbide and cermet inserts

Insert code key → A50–A51

Grade selection reference → A19/A36–A48

Chipbreaker selection reference → A22–A35

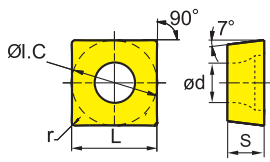
Recommended cutting parameters → A241–A244

General Turning Inserts



Cemented carbide and cermet inserts

SC (Positive inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|----------------------------------|------------|-----------------|------------|-------------------|--------------------------------|
| P Steel | 😊😊😊😊😊😊😊😊😊😊 | | | | |
| M Stainless steel | | 😊😊😊😊😊😊😊😊😊😊 | | | |
| K Cast iron | | | 😊😊😊😊😊😊😊😊😊😊 | | |
| N Non-ferrous metal | | | | 😊😊😊😊😊😊😊😊😊😊 | |
| S Heat resistant alloy, Ti alloy | | | | | 😊😊😊😊😊😊😊😊😊😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | Cermet Coated cermet | Cemented carbide | | | | | | | | |
|----------------------|---------------|----------------|-------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------------|------------------|--------|--------|--------|--------|--------|--------|---------|-------|
| | | L | Ø.I.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | | | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151C | YD101 |
| For Al machining | SCGX09T304-LC | 9.525 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | ★ |
| | SCGX09T308-LC | 9.525 | 9.525 | 3.97 | 4.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | ★ |
| | SCGX120408-LC | 12.7 | 12.7 | 4.76 | 5.5 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | ★ |
| For Al machining | SCGX09T302-LH | 9.525 | 9.525 | 3.97 | 4.4 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | ○ | | |
| | SCGX09T304-LH | 9.525 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | ○ | | |
| | SCGX09T308-LH | 9.525 | 9.525 | 3.97 | 4.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | ★ | | |
| | SCGX120404-LH | 12.7 | 12.7 | 4.76 | 5.56 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | ○ | | |
| | SCGX120408-LH | 12.7 | 12.7 | 4.76 | 5.56 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | ★ | | |
| For roughing | SCMT09T304-HR | 9.525 | 9.525 | 3.97 | 4.4 | 0.4 | ★ | ● | | ● | | | | ● | | | | | | | | | | | | | ○ | | | | | |
| | SCMT09T308-HR | 9.525 | 9.525 | 3.97 | 4.4 | 0.8 | ★ | ○ | | ● | | | | | | | | | | | | | | | | ● | ● | | | | | |
| | SCMT09T312-HR | 9.525 | 9.525 | 3.97 | 4.4 | 1.2 | ★ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SCMT120404-HR | 12.7 | 12.7 | 4.76 | 5.56 | 0.4 | | ○ | ● | | ○ | | | | | | | | | | | | | | | | | | | | | |
| | SCMT120408-HR | 12.7 | 12.7 | 4.76 | 5.56 | 0.8 | | ★ | ● | ○ | ● | | | | | ○ | | | | | | | | | | ○ | ● | ● | | | | |
| | SCMT120412-HR | 12.7 | 12.7 | 4.76 | 5.56 | 1.2 | | ○ | ○ | | ● | | | | | | | | | | | | | | | ○ | ○ | | | | | |
| All round | SCMT09T304 | 9.525 | 9.525 | 3.97 | 4.4 | 0.4 | ○ | | ● | | | | | | | | | | | | | | | | | | | | | | | |
| | SCMT120404 | 12.7 | 12.7 | 4.76 | 5.56 | 0.4 | | | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | |
| | SCMT120408 | 12.7 | 12.7 | 4.76 | 5.56 | 0.8 | | ○ | | ● | | | | | | | | | | | | | | | | ○ | | | | | | |
| Without chipbreaker | SCMW060204 | 6.35 | 6.35 | 2.38 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | | ○ | | | | |
| | SCMW09T304 | 9.525 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | | | | | | | | | | | | | | | ○ | | | | |
| | SCMW09T308 | 9.525 | 9.525 | 3.97 | 4.4 | 0.8 | | ○ | | | | | | | | | | | | | | | | | | | | | | | | |
| | SCMW120408 | 12.7 | 12.7 | 4.76 | 5.56 | 0.8 | | ● | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool



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Insert code key A50-A51 Grade selection reference A19/A36-A48 Chipbreaker selection reference A22-A35 Recommended cutting parameters A241-A244

General turning

Cemented carbide and cermet inserts



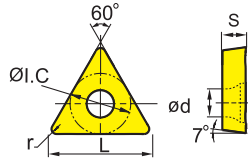
TURNING

General Turning Inserts

Cemented carbide and cermet inserts

TC □ □ (Positive inserts)

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|--------------|-------------------|--------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | Cemented cermet | Cemented carbide | | | | | | | | | | | | |
|---------------------------------------|-----------------|----------------|------|------|-----|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | | | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | |
| USF For extra finishing | TCGT110301R-USF | 11 | 6.35 | 3.18 | 2.8 | 0.1 | | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | | |
| | TCGT110302R-USF | 11 | 6.35 | 3.18 | 2.8 | 0.2 | | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | | |
| USF For extra finishing | TCGT110301L-USF | 11 | 6.35 | 3.18 | 2.8 | 0.1 | | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | | |
| | TCGT110302L-USF | 11 | 6.35 | 3.18 | 2.8 | 0.2 | | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | | |
| SF For extra finishing | TCGT090202-SF | 9.6 | 5.56 | 2.38 | 2.5 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCGT090204-SF | 9.6 | 5.56 | 2.38 | 2.5 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCGT090208-SF | 9.6 | 5.56 | 2.38 | 2.5 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCGT110302-SF | 11 | 6.35 | 3.18 | 2.8 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | ○ | | | | | |
| | TCGT110304-SF | 11 | 6.35 | 3.18 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | ○ | ○ | | | | |
| | TCGT110308-SF | 11 | 6.35 | 3.18 | 2.8 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool



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A199



A200



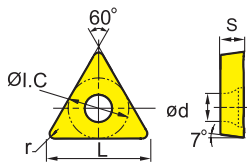
A223



General Turning Inserts **TURNING**

Cemented carbide and cermet inserts

TC (Positive inserts)



☺ Good working condition ☹ Normal working condition ☹ Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|------------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | ☺☺☺☺☺☺☺☺☺☺ | | | | |
| M Stainless steel | | ☺☺☺☺☺☺☺☺☺☺ | | | |
| K Cast iron | | | ☹☹☹☹☹☹☹☹☹☹ | | |
| N Non-ferrous metal | | | | ☺☺☺☺☺☺☺☺☺☺ | |
| S Heat resistant alloy, Ti alloy | | | | | ☺☺☺☺☺☺☺☺☺☺ |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | Cemented cermet | Cemented carbide | | | | | | | | | | | | | | | | |
|-------------------------|---------------|----------------|-------|------|-----|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|------------------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|--|--|--|--|--|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151C | YD101 | YD201 | | | | | | |
| HF For finishing | TCMT090202-HF | 9.6 | 5.56 | 2.38 | 2.5 | 0.2 | ★ | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT090204-HF | 9.6 | 5.56 | 2.38 | 2.5 | 0.4 | ★ | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT090208-HF | 9.6 | 5.56 | 2.38 | 2.5 | 0.8 | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT110202-HF | 11 | 6.35 | 2.38 | 2.8 | 0.2 | | | | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT110204-HF | 11 | 6.35 | 2.38 | 2.8 | 0.4 | ● | ★ | ● | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT110208-HF | 11 | 6.35 | 2.38 | 2.8 | 0.8 | | ○ | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT16T302-HF | 16.5 | 9.525 | 3.97 | 4.4 | 0.2 | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT16T304-HF | 16.5 | 9.525 | 3.97 | 4.4 | 0.4 | | ● | ● | | | | | | | ○ | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT16T308-HF | 16.5 | 9.525 | 3.97 | 4.4 | 0.8 | | ○ | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

General turning

Cemented carbide and cermet inserts

Applicable tool

STACR/L
Kr:90°



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STFCR/L
Kr:90°



A198

STGCR/L
Kr:91°



A199

STECR/L
Kr:60°



A200

STFCR/L
Kr:90°



A223

Insert code key

A50-A51

Grade selection reference

A19/A36-A48

Chipbreaker selection reference

A22-A35

Recommended cutting parameters

A241-A244

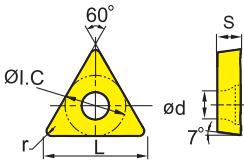
A TURNING General Turning Inserts

Cemented carbide and cermet inserts

General turning

Cemented carbide and cermet inserts

TC (Positive inserts)



😊 Good working condition 🟡 Normal working condition 🟠 Bad working condition

| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|---|----------|-----------------|-----------|-------------------|--------------------------------|
| P Steel | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | Cermet YNG151C | Coated cermet YD101 | Cemented carbide YD201 | | | | | | | | | | | |
|-------------------------------------|---------------|----------------|-------|------|-----|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------------------|---------------------------|------------------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBIM151 | | | | YBIM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | | |
| EF For finishing | TCMT090202-EF | 9.6 | 5.56 | 2.38 | 2.5 | 0.2 | | | | | | | | | | | | ○ | ● | ★ | | | | | | | | | | | | | |
| | TCMT090204-EF | 9.6 | 5.56 | 2.38 | 2.5 | 0.4 | | | | | | | | | | | | ○ | ● | ★ | | | | | | | | | | | | | |
| | TCMT110202-EF | 11 | 6.35 | 2.38 | 2.8 | 0.2 | | | | | | | | | | | | | ○ | ● | ★ | | | | | | | | | | | | |
| | TCMT110204-EF | 11 | 6.35 | 2.38 | 2.8 | 0.4 | | | | | | | | | | | | | ○ | ● | ★ | | | | | | | | | | | | |
| | TCMT110208-EF | 11 | 6.35 | 2.38 | 2.8 | 0.8 | | | | | | | | | | | | | ○ | ● | ★ | | | | | | | | | | | | |
| | TCMT16T304-EF | 16.5 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | | | | | | ○ | ● | ★ | | | | | | | | | | | | |
| | TCMT16T308-EF | 16.5 | 9.525 | 3.97 | 4.4 | 0.8 | | | | | | | | | | | | | ○ | ● | ★ | | | | | | | | | | | | |
| EM For semi-finishing | TCMT090204-EM | 9.6 | 5.56 | 2.38 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT090208-EM | 9.6 | 5.56 | 2.38 | 2.8 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT110204-EM | 11 | 6.35 | 2.38 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT110208-EM | 11 | 6.35 | 2.38 | 2.8 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT110212-EM | 11 | 6.35 | 2.38 | 2.8 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT16T304-EM | 16.5 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT16T308-EM | 16.5 | 9.525 | 3.97 | 4.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT16T312-EM | 16.5 | 9.525 | 3.97 | 4.4 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool

STACR/L
Kr:90°



Page A198

STFCR/L
Kr:90°



A198

STGCR/L
Kr:91°



A199

STECR/L
Kr:60°



A200

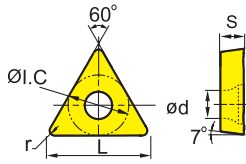
STFCR/L
Kr:90°



A223

TC (Positive inserts)

☺ Good working condition ☹ Normal working condition ☹ Bad working condition



| Workpiece material |
|----------------------------------|
| P Steel |
| M Stainless steel |
| K Cast iron |
| N Non-ferrous metal |
| S Heat resistant alloy, Ti alloy |

| Workpiece material | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 |
|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|
| P Steel | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| M Stainless steel | | | | | | | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| K Cast iron | | | | | | | | | | | | | | | | | | | | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| N Non-ferrous metal | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S Heat resistant alloy, Ti alloy | ☺ | ☺ | | | | | ☺ | | | | | | ☺ | | | | | | ☺ | | | | ☺ | | | |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | | | | Cermet | Cemented carbide | | | | | | | | | |
|------------------------|---------------|----------------|-------|------|-----|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|---------|-------|-------|--|---|---|
| | | L | Ø1.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | | | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | | | |
| For semi-finishing | TCMT090204-HM | 9.6 | 5.56 | 2.38 | 2.5 | 0.4 | | ★ | ● | ○ | | | | | | | | | | | | ○ | | | | | | | | | | | | | | | |
| | TCMT090208-HM | 9.6 | 5.56 | 2.38 | 2.5 | 0.8 | | ○ | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT110204-HM | 11 | 6.35 | 2.38 | 2.8 | 0.4 | | ★ | ● | ○ | ○ | | | ● | | | | | | | | | ● | | ○ | | | | | | | | | | | | |
| | TCMT110208-HM | 11 | 6.35 | 2.38 | 2.8 | 0.8 | | ★ | ● | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT16T304-HM | 16.5 | 9.525 | 3.97 | 4.4 | 0.4 | | ★ | ● | ★ | ● | | | | | | | | | | | ● | | | ○ | | | | | | | | | | | | |
| | TCMT16T308-HM | 16.5 | 9.525 | 3.97 | 4.4 | 0.8 | | ★ | ● | ★ | ● | | | | | | | | | | | ● | | | | ○ | | | | | | | | | | | |
| | TCMT16T312-HM | 16.5 | 9.525 | 3.97 | 4.4 | 1.2 | | | | | | ● | | | | | | | | | | | | ○ | | | | | | | | | | | | | |
| For roughing | TCMT090204-HR | 9.6 | 5.56 | 2.38 | 2.5 | 0.4 | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT090208-HR | 9.6 | 5.56 | 2.38 | 2.5 | 0.8 | | | | | | | | | | | | | | | | | | | | | ○ | | | | | | | | | ● | |
| | TCMT110204-HR | 11 | 6.35 | 2.38 | 2.8 | 0.4 | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT110208-HR | 11 | 6.35 | 2.38 | 2.8 | 0.8 | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT16T304-HR | 16.5 | 9.525 | 3.97 | 4.4 | 0.4 | | ○ | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TCMT16T308-HR | 16.5 | 9.525 | 3.97 | 4.4 | 0.8 | | ● | ● | | ● | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | |
| | TCMT16T312-HR | 16.5 | 9.525 | 3.97 | 4.4 | 1.2 | | ○ | ● | | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | ○ |
| | TCMT220408-HR | 22 | 12.7 | 4.76 | 5.5 | 0.8 | | ○ | ● | | ○ | | | | | | | | | | | ● | | | | | | | | | | | | | | | |
| For Al machining | TCGX090202-LC | 9.6 | 5.56 | 2.38 | 2.5 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | TCGX090204-LC | 9.6 | 5.56 | 2.38 | 2.5 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | TCGX110202-LC | 11 | 6.35 | 2.38 | 2.8 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | TCGX110204-LC | 11 | 6.35 | 2.38 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | TCGX110208-LC | 11 | 6.35 | 2.38 | 2.8 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | TCGX16T304-LC | 16.5 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | TCGX16T308-LC | 16.5 | 9.525 | 3.97 | 4.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool



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A198



A199



A200



A223

Insert code key **A50-A51**

Grade selection reference **A19/A36-A48**

Chipbreaker selection reference **A22-A35**

Recommended cutting parameters **A241-A244**



TURNING

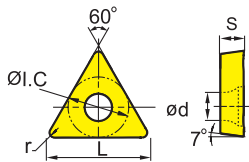
General Turning Inserts

Cemented carbide and cermet inserts

General turning

Cemented carbide and cermet inserts

TC (Positive inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working conditions (emojis) | | | | | | | | | | | | | | | | | | | |
|---|-----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | | | | | | | | | | | | | | | | | | | | |
| N Non-ferrous metal | | | | | | | | | | | | | | | | | | | | |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | | | | | | | | | | | |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | Cermet | Coated cermet | Cemented carbide | | | | | | | | | | |
|----------------------|---------------|----------------|-------|------|-----|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | | | | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C |
| For Al machining | TCGX090202-LH | 9.6 | 5.56 | 2.38 | 2.5 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ |
| | TCGX090204-LH | 9.6 | 5.56 | 2.38 | 2.5 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ |
| | TCGX110202-LH | 11 | 6.35 | 2.38 | 2.8 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ |
| | TCGX110204-LH | 11 | 6.35 | 2.38 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ |
| | TCGX110208-LH | 11 | 6.35 | 2.38 | 2.8 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ |
| | TCGX16T302-LH | 16.5 | 9.525 | 3.97 | 4.4 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ |
| | TCGX16T304-LH | 16.5 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ |
| | TCGX16T308-LH | 16.5 | 9.525 | 3.97 | 4.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ |
| All round | TCMT220408 | 22 | 12.7 | 4.76 | 5.5 | 0.8 | ○ | ● | | | | | | | | | | | | | | | | | ○ | | | | | | | ○ | |
| Without chipbreaker | TCMW110204 | 11 | 6.35 | 2.38 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | ● | ○ | |
| | TCMW16T304 | 16.5 | 9.525 | 3.97 | 4.4 | 0.4 | ○ | | | | | | | | | | | | | | | | | | | | | | | | | ○ | |
| | TCMW16T308 | 16.5 | 9.525 | 3.97 | 4.4 | 0.8 | | | | | | | | | ○ | | | | | | | | | | | ○ | ○ | | | | | | |
| | TCMW16T312 | 16.5 | 9.525 | 3.97 | 4.4 | 1.2 | ○ | | | | | | | | ○ | | | | | | | | | | | | | | | | | | |
| | TCMW220408 | 22 | 12.7 | 4.76 | 5.5 | 0.8 | ○ | | | | | | | | | | | | | | | | | | | | ○ | | | | | | |

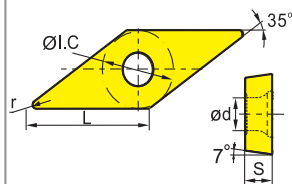
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

| | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| STACR/L Kr:90° | STFCR/L Kr:90° | STGCR/L Kr:91° | STECR/L Kr:60° | STFCR/L Kr:90° |
| Page A198 | A198 | A199 | A200 | A223 |



VC □ □ (Positive inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Steel | | Stainless steel | | Cast iron | | Non-ferrous metal | | Heat resistant alloy, Ti alloy | |
|----------------------------------|----------|----------|-----------------|----------|-----------|----------|-------------------|----------|--------------------------------|--|
| | P | M | K | N | S | | | | | |
| P Steel | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | |
| M Stainless steel | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | |
| K Cast iron | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | |
| N Non-ferrous metal | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | Cemented cermet | Cemented carbide | | | | | | | | | | | | | |
|-------------------------|-----------------|----------------|-------|------|-----|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|--|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | | | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | | |
| For extra finishing | VCGT080201R-USF | 8 | 4.76 | 2.38 | 2.3 | 0.1 | | | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | | | |
| | VCGT080202R-USF | 8 | 4.76 | 2.38 | 2.3 | 0.2 | | | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | | |
| | VCGT110301R-USF | 11 | 6.35 | 3.18 | 2.8 | 0.1 | | | | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | |
| | VCGT110302R-USF | 11 | 6.35 | 3.18 | 2.8 | 0.2 | | | | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | |
| For extra finishing | VCGT080201L-USF | 8 | 4.76 | 2.38 | 2.3 | 0.1 | | | | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | | |
| | VCGT080202L-USF | 8 | 4.76 | 2.38 | 2.3 | 0.2 | | | | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | | |
| | VCGT110301L-USF | 11 | 6.35 | 3.18 | 2.8 | 0.1 | | | | | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | |
| | VCGT110302L-USF | 11 | 6.35 | 3.18 | 2.8 | 0.2 | | | | | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | |
| For extra finishing | VCGT110302-SF | 11 | 6.35 | 3.18 | 2.8 | 0.2 | | | | | | | | | | | ○ | | | | | | | | | | | | | | ○ | ★ | | | | |
| | VCGT110304-SF | 11 | 6.35 | 3.18 | 2.8 | 0.4 | | | | | | | | | | | ○ | | | | | | | | | | | | | | ○ | ★ | | | | |
| For finishing | VCGT110304-HF | 11 | 6.35 | 3.18 | 2.8 | 0.4 | | | | | | | | | | | ● | | | | | | | | | | | | | | | | | | | |
| For finishing | VCGT160408-NF | 16.5 | 9.525 | 4.76 | 4.4 | 0.8 | | | | | | | | | | | | | ● | ★ | | | | | | | | | | | | | | | | |
| For finishing | VCGT160408-NGF | 16.5 | 9.525 | 4.76 | 4.4 | 0.8 | | | | | | | | | | | | | | ○ | ● | | | | | | | | | | | | | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool



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Insert code key

A50-A51

Grade selection reference

A19/A36-A48

Chipbreaker selection reference

A22-A35

Recommended cutting parameters

A241-A244

General turning

Cemented carbide and cermet inserts

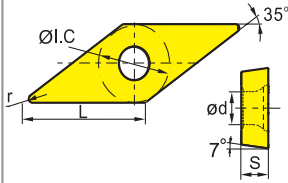


TURNING / General Turning Inserts

Cemented carbide and cermet inserts

VC (Positive inserts)

😊 Good working condition 🟡 Normal working condition 🟠 Bad working condition



| Workpiece material | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

General turning

Cemented carbide and cermet inserts

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | | Cemented cermet | Cemented carbide | | | | | | | | |
|-----------------------------------|---------------|----------------|-------|------|-----|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|------------------|--------|--------|--------|--------|-------|-------|---|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YD101 | YD201 | | |
| LC For Al machining | VCGX110301-LC | 11 | 6.35 | 3.18 | 2.8 | 0.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | VCGX110302-LC | 11 | 6.35 | 3.18 | 2.8 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | VCGX110304-LC | 11 | 6.35 | 3.18 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | VCGX110308-LC | 11 | 6.35 | 3.18 | 2.8 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | VCGX160404-LC | 16.6 | 9.525 | 4.76 | 4.4 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | VCGX160408-LC | 16.6 | 9.525 | 4.76 | 4.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | VCGX160412-LC | 16.6 | 9.525 | 4.76 | 4.4 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| | VCGX220530-LC | 22 | 12.7 | 5.56 | 5.5 | 3.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | |
| LH For Al machining | VCGX110202-LH | 11 | 6.35 | 2.38 | 2.8 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | ○ | | | |
| | VCGX110204-LH | 11 | 6.35 | 2.38 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | | |
| | VCGX110301-LH | 11 | 6.35 | 3.18 | 2.8 | 0.1 | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | ● | |
| | VCGX110302-LH | 11 | 6.35 | 3.18 | 2.8 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | ● | |
| | VCGX110304-LH | 11 | 6.35 | 3.18 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | ● | |
| | VCGX110308-LH | 11 | 6.35 | 3.18 | 2.8 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | ○ | | | |
| | VCGX160402-LH | 16.6 | 9.525 | 4.76 | 4.4 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | | |
| | VCGX160404-LH | 16.6 | 9.525 | 4.76 | 4.4 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | ○ | |
| | VCGX160408-LH | 16.6 | 9.525 | 4.76 | 4.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | ○ | |
| | VCGX160412-LH | 16.6 | 9.525 | 4.76 | 4.4 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | ● | |
| | VCGX220530-LH | 22 | 12.7 | 5.56 | 5.5 | 3.0 | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | ● | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order



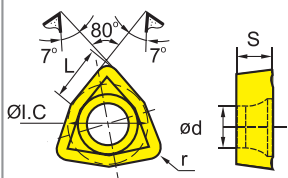
Page A224 A225 A192 A193

General Turning Inserts **TURNING A**

Cemented carbide and cermet inserts

WC (Positive inserts)

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|--------------------|------------------|------------------|------------------|-------------------|--------------------------------|
| P | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |
| M | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |
| K | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |
| N | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |
| S | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | Cermet | Coated cermet | Cemented carbide | | | | | | | | | | | | | |
|---------------|-----------------------|----------------|-------|------|-----|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|---|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | | | | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | |
| | WCMX040208R-53 | 4.3 | 6.35 | 2.38 | 3.1 | 0.8 | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ |
| | WCMX06T308R-53 | 6.5 | 9.525 | 3.97 | 3.7 | 0.8 | ● | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ |
| | WCMX080412R-53 | 8.7 | 12.7 | 4.76 | 4.3 | 1.2 | | | | | | | | | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



Applicable tool
SWACR/L
 Kr:90°

Page A201

Insert code key → A50–A51 Grade selection reference → A19/A36–A48 Chipbreaker selection reference → A22–A35 Recommended cutting parameters → A241–A244

General turning

Cemented carbide and cermet inserts



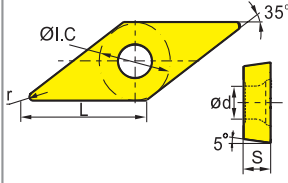
General Turning Inserts

Cemented carbide and cermet inserts

General turning

Cemented carbide and cermet inserts

VB (Positive inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 |
|--------------------|---------|-------------------|-------------|---------------------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|
| | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | Cermet | Coated cermet | Cemented carbide | | | | | | | | | | | | |
|---------------------|----------------|----------------|-------|------|-----|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|------------------|--------|--------|--------|--------|--------|--------|---------|-------|-------|--|--|--|
| | | L | Ø1.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | | | | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | | | |
| | SF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | VBGT110302-SF | 11 | 6.35 | 3.18 | 2.8 | 0.2 | | | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | VBGT110304-SF | 11 | 6.35 | 3.18 | 2.8 | 0.4 | | | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| For extra finishing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | EF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | VBMT110302-EF | 11 | 6.35 | 3.18 | 2.8 | 0.2 | | | | | | ○ | ● | ★ | | | | | ★ | ○ | | | | | | | | | | | | | | | | | | |
| | VBMT110304-EF | 11 | 6.35 | 3.18 | 2.8 | 0.4 | | | | | | ○ | ● | ★ | | | | | ★ | ○ | | | | | | | | | | | | | | | | | | |
| | VBMT110308-EF | 11 | 6.35 | 3.18 | 2.8 | 0.8 | | | | | | ○ | ● | ★ | | | | | | ○ | ○ | | | | | | | | | | | | | | | | | |
| | VBMT160404-EF | 16.5 | 9.525 | 4.76 | 4.4 | 0.4 | | | | | | ○ | ● | ★ | | | | | ★ | ● | | | | | | | | | | | | | | | | | | |
| VBMT160408-EF | 16.5 | 9.525 | 4.76 | 4.4 | 0.8 | | | | | | ○ | ● | ★ | | | | | | ○ | ● | | | | | | | | | | | | | | | | | | |
| | HF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | VBMT110202-HF | 11 | 6.35 | 2.38 | 2.8 | 0.2 | | ● | ○ | | | | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| | VBMT110204-HF | 11 | 6.35 | 2.38 | 2.8 | 0.4 | | ● | | | | | ○ | | | | | | | | | | | | ○ | | | | | | | | | | | | | |
| VBMT110208-HF | 11 | 6.35 | 2.38 | 2.8 | 0.8 | | ● | | | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | |
| For finishing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | NF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | VBET160404-NF | 16.5 | 9.525 | 4.76 | 4.4 | 0.4 | | | | | | | ● | ★ | | | | | | | | | | | | | | | | | | | | | | | | |
| VBET160408-NF | 16.5 | 9.525 | 4.76 | 4.4 | 0.8 | | | | | | | ● | ★ | | | | | | | | | | | | | | | | | | | | | | | | | |
| For finishing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | NGF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | VBET160404-NGF | 16.5 | 9.525 | 4.76 | 4.4 | 0.4 | | | | | | ○ | ● | | | ○ | | | | | | | | | | | | | | | | | | | | | | |
| | VBET160408-NGF | 16.5 | 9.525 | 4.76 | 4.4 | 0.8 | | | | | | ○ | ● | | | ○ | | | | | | | | | | | | | | | | | | | | | | |
| VBET160412-NGF | 16.5 | 9.525 | 4.76 | 4.4 | 1.2 | | | | | | ○ | ● | | | ○ | | | | | | | | | | | | | | | | | | | | | | | |
| For finishing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool

SVJBR/L
Kr:93°



Page A189

SVABR/L
Kr:90°



A190

SVVBN
Kr:72°30'



A191

SVQBR/L
Kr:107°30'



A226

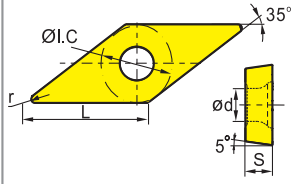
SVUBR/L
Kr:93°



A227



VB (Positive inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | Cemented carbide | Cemented carbide | | | | | | | | | | |
|--------------------|----------------|----------------|-------|------|-----|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------------|------------------|--------|--------|--------|--------|--------|--------|---------|-------|-------|---|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | | | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | |
| EM | VBMT110304-EM | 11 | 6.35 | 3.18 | 2.8 | 0.4 | | | | | | | | | ● | ★ | | | | | | | | | | | | | | | | | | | |
| | VBMT110308-EM | 11 | 6.35 | 3.18 | 2.8 | 0.8 | | | | | | | | | ● | ★ | | | | | | | | | | | | | | | | | | | |
| For semi-finishing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HM | VBMT160404-HM | 16.5 | 9.525 | 4.76 | 4.4 | 0.4 | ★ | ● | ★ | ● | | | | | ● | | | | | ● | | | | | | | | | | | | | | ○ | |
| | VBMT160408-HM | 16.5 | 9.525 | 4.76 | 4.4 | 0.8 | ★ | ● | ★ | ● | | | | | ● | | | | | ● | | | | | | | | | | | | | | ○ | |
| | VBMT160412-HM | 16.5 | 9.525 | 4.76 | 4.4 | 1.2 | | | | | ● | | | | | ○ | | | | | | | | | | | | | | | | | | | ○ |
| For semi-finishing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HR | VBMT160404-HR | 16.5 | 9.525 | 4.76 | 4.4 | 0.4 | ★ | ● | ○ | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| | VBMT160408-HR | 16.5 | 9.525 | 4.76 | 4.4 | 0.8 | ○ | ● | ○ | ● | | | | | | | | | | | | | | | | | | | | | | | | ○ | |
| | VBMT160412-HR | 16.5 | 9.525 | 4.76 | 4.4 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | VBGT160408-HR | 16.5 | 9.525 | 4.76 | 4.4 | 0.8 | | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | |
| For roughing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SNR | VBMT160408-SNR | 16.5 | 9.525 | 4.76 | 4.4 | 0.8 | | | | | | ○ | ● | | ○ | | | | | ● | | | | | | | | | | | | | | | |
| | VBMT160412-SNR | 16.5 | 9.525 | 4.76 | 4.4 | 1.2 | | | | | | ○ | ● | | ○ | | | | | | ○ | | | | | | | | | | | | | | |
| For roughing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool

SVJBR/L
Kr:93°



Page A189

SVABR/L
Kr:90°



A190

SVVBN
Kr:72°30'



A191

SVQBR/L
Kr:107°30'



A226

SVUBR/L
Kr:93°



A227

Insert code key

A50-A51

Grade selection reference

A19/A36-A48

Chipbreaker selection reference

A22-A35

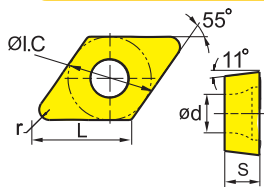
Recommended cutting parameters

A241-A244



Cemented carbide and cermet inserts

DP (Positive inserts)



😊 Good working condition 😊 Normal working condition 😞 Bad working condition

| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|----------------------------------|------------|-----------------|------------|-------------------|--------------------------------|
| P Steel | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊😊😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | | | Cemented cermet | Cemented carbide | | | | | | | |
|---------------------------------------|------------------|----------------|-------|------|-----|------|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|------------------|--------|--------|--------|--------|---------|-------|-------|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | YBS103 | | | YBD052 | YBD102 | YBD152 | YBD252 | YNG151C | YD101 | YD201 |
| USF For extra finishing | DPGT0702005R-USF | 7.8 | 6.35 | 2.38 | 2.8 | 0.05 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DPGT070201R-USF | 7.8 | 6.35 | 2.38 | 2.8 | 0.1 | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | | |
| | DPGT11T301R-USF | 11.6 | 9.525 | 3.97 | 4.4 | 0.1 | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | |
| USF For extra finishing | DPGT0702005L-USF | 7.8 | 6.35 | 2.38 | 2.8 | 0.05 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DPGT070201L-USF | 7.8 | 6.35 | 2.38 | 2.8 | 0.1 | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | | |
| | DPGT11T301L-USF | 11.6 | 9.525 | 3.97 | 4.4 | 0.1 | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | | |
| SF For extra finishing | DPGT070202-SF | 7.8 | 6.35 | 2.38 | 2.8 | 0.2 | | | | | | | | ○ | | | | | | | | | | | | | | | | | ○ | ○ | |
| | DPGT070204-SF | 7.8 | 6.35 | 2.38 | 2.8 | 0.4 | | | | | | | | ○ | | | | | | | | | | | | | | | | | ○ | ○ | |
| | DPGT070208-SF | 7.8 | 6.35 | 2.38 | 2.8 | 0.8 | | | | | | | | ○ | | | | | | | | | | | | | | | | | ○ | ○ | |
| | DPGT11T304-SF | 11.6 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | ○ | | | | | | | | | | | | | | | | | ○ | ○ | |
| | DPGT11T308-SF | 11.6 | 9.525 | 3.97 | 4.4 | 0.8 | | | | | | | | ○ | | | | | | | | | | | | | | | | | ○ | ○ | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

General turning

Cemented carbide and cermet inserts

Applicable tool



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Insert code key

A50-A51

Grade selection reference

A19/A36-A48

Chipbreaker selection reference

A22-A35

Recommended cutting parameters

A241-A244

TURNING General Turning Inserts

Cemented carbide and cermet inserts

General turning

Cemented carbide and cermet inserts

SP (Positive inserts)

😊 Good working condition
 😐 Normal working condition
 😞 Bad working condition

| Inserts shape | Type | Dimensions(mm) | | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | Cermet Coated cermet | Cemented carbide | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------|-------------------|--------------------|-------|------|------|-----|--------|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------------------------|---------------------|--------|--------|--------|--------|--------|--------|---------|-------|-------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | L | ∅I.C | S | ∅d | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | | | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | | | | | | | | | | | | | | | | |
| | | Workpiece material | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Without chipbreaker | SPMW09T304 | 9.525 | 9.525 | 3.97 | 4.4 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SPMW09T308 | 9.525 | 9.525 | 3.97 | 4.4 | 0.8 | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SPMW120408 | 12.7 | 12.7 | 4.76 | 5.56 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

TB (Positive inserts)

😊 Good working condition
 😐 Normal working condition
 😞 Bad working condition

| Inserts shape | Type | Dimensions(mm) | | | | | | Coated cemented carbide | | | | | | | | | | | | | | | | Cermet Coated cermet | Cemented carbide | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------|--------------------|------|------|-----|-----|--------|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------------------------|---------------------|--------|--------|--------|--------|--------|--------|---------|-------|-------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | L | ∅I.C | S | ∅d | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | YBM251 | YBM253 | | | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | | | | | | | | | | | | | | | |
| | | Workpiece material | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| For extra finishing | TBGH060102L | 6.4 | 3.97 | 1.59 | 2.2 | 0.2 | | | | | | | | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TBGH060104L | 6.4 | 3.97 | 1.59 | 2.2 | 0.4 | | | | | | | | ★ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order



TP (Positive inserts)

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | Cermet | Coated cermet | Cemented carbide | | | | | | | | |
|----------------------------|-------------|----------------|------|------|------|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|------------------|--------|--------|--------|--------|--------|--------|--------|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | | | | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | |
| | | | | | | | YNG151 | YD101 | YD201 | | | | | | | | | | | | | | | | | | | | | | | |
| <p>For extra finishing</p> | TPGH090202L | 9.6 | 5.56 | 2.38 | 2.8 | 0.2 | | | | | | | ● | | | | | | | | | | | | | | | | ○ | | | |
| | TPGH090204L | 9.6 | 5.56 | 2.38 | 2.8 | 0.4 | | | | | | | ● | | | | | | | | | | | | | | | | ● | | | |
| | TPGH110302L | 11 | 6.35 | 3.18 | 3.18 | 0.2 | | | | | | | ○ | | | | | | | | | | | | | | | | ● | | | |
| | TPGH110304L | 11 | 6.35 | 3.18 | 3.18 | 0.4 | | | | | | | ● | | | | | | | | | | | | | | | | ● | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

TP (Positive inserts)

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | | Cermet | Coated cermet | Cemented carbide | | | | | | | | | |
|----------------------------|---------------|----------------|------|------|-----|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|------------------|--------|--------|--------|--------|--------|--------|--------|--|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | YBM215 | | | | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | | |
| | | | | | | | YNG151 | YD101 | YD201 | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>For extra finishing</p> | TPGT090202-SF | 9.6 | 5.56 | 2.38 | 2.5 | 0.2 | | | | | | | ○ | | | | | | | | | | | | | | | | ○ | | | | |
| | TPGT090204-SF | 9.6 | 5.56 | 2.38 | 2.5 | 0.4 | | | | | | | ○ | | | | | | | | | | | | | | | | ○ | ★ | | | |
| | TPGT090208-SF | 9.6 | 5.56 | 2.38 | 2.5 | 0.8 | | | | | | | ○ | | | | | | | | | | | | | | | | ○ | | | | |
| | TPGT110302-SF | 11 | 6.35 | 3.18 | 2.8 | 0.2 | | | | | | | ○ | | | | | | | | | | | | | | | | ○ | | | | |
| | TPGT110304-SF | 11 | 6.35 | 3.18 | 2.8 | 0.4 | | | | | | | ○ | | | | | | | | | | | | | | | | ○ | | | | |
| | TPGT110308-SF | 11 | 6.35 | 3.18 | 2.8 | 0.8 | | | | | | | ○ | | | | | | | | | | | | | | | | ○ | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Applicable tool



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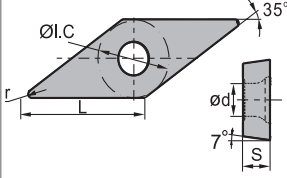
A TURNING / General Turning Inserts

Cemented carbide and cermet inserts

General turning

Cemented carbide and cermet inserts

VP □ □ (Positive inserts)

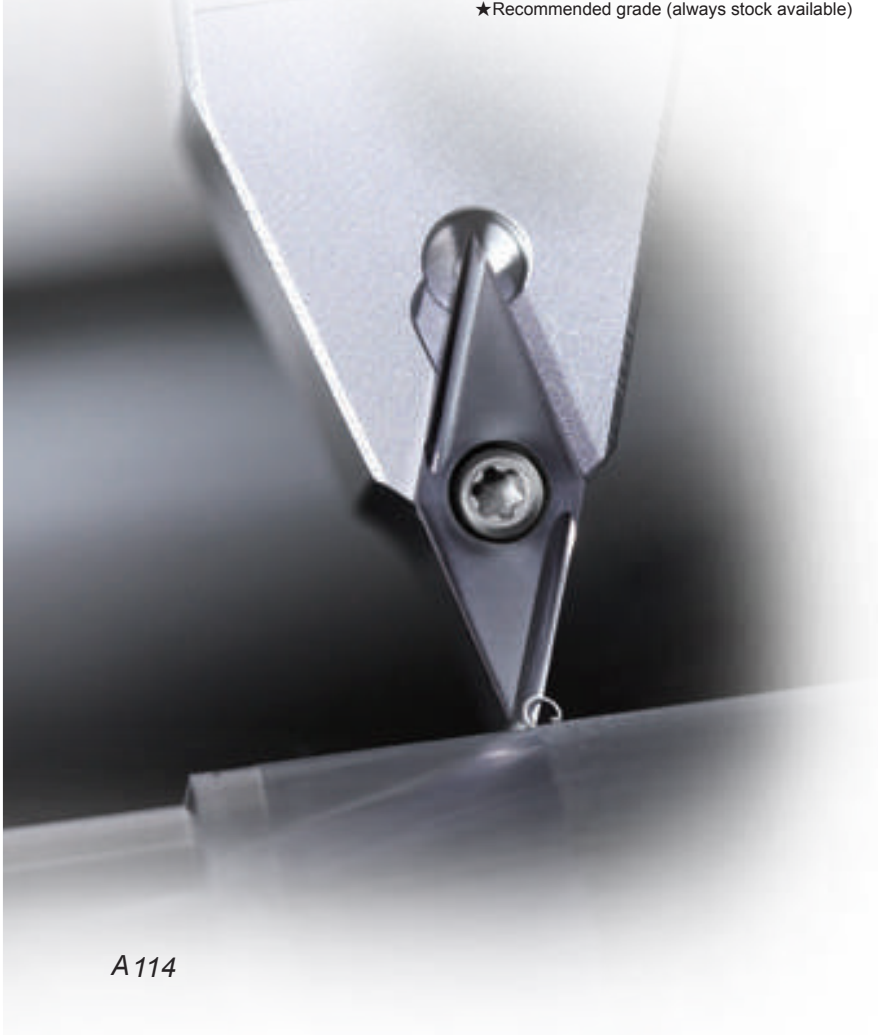


😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|--------------------|----------|-----------------|-----------|-------------------|--------------------------------|
| P | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| M | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| K | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| N | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |
| S | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 | 😊😊😊😊😊😊😊😊 |

| Inserts shape | Type | Dimensions(mm) | | | | | Coated cemented carbide | | | | | | | | | | | | | | Cemented cermet | Cemented carbide | | | | | | | | | | | | | |
|-------------------------|-----------------|----------------|------|------|-----|-----|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|--|
| | | L | ØI.C | S | ød | r | YBC151 | YBC152 | YBC251 | YBC252 | YBC351 | YBC352 | YBG102 | YBG105 | YBG202 | YBG205 | YBG212 | YBG302 | YBM151 | YBM153 | | | YBM215 | YBM251 | YBM253 | YBS103 | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | YD101 | YD201 | |
| For extra finishing | VPGT080201R-USF | 8 | 4.76 | 2.38 | 2.3 | 0.1 | | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | | | |
| | VPGT080202R-USF | 8 | 4.76 | 2.38 | 2.3 | 0.2 | | | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | | |
| | VPGT110301R-USF | 11 | 6.35 | 3.18 | 2.8 | 0.1 | | | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | |
| For extra finishing | VPGT080201L-USF | 8 | 4.76 | 2.43 | 2.3 | 0.1 | | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | | |
| | VPGT080202L-USF | 8 | 4.76 | 2.43 | 2.3 | 0.2 | | | | | | | | | | | ● | ○ | | | | | | | | | | | | | | | | | |
| | VPGT110301L-USF | 11 | 6.35 | 3.18 | 2.8 | 0.1 | | | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order





PCBN & PCD Insert



TURNING / General Turning Inserts

PCBN&PCD inserts code key

General turning

PCBN&PCD inserts code key

| Insert shape | | |
|--------------|---|----------|
| A | B | C |
| D | E | H |
| K | L | M |
| P | S | T |
| V | W | Others Z |

| Tolerance class | | | | | | | |
|-----------------|-----------------------------|--------------------------------|---------------------------|------|-----------------------------|--------------------------------|---------------------------|
| | | | | | | | |
| Code | Nose height M Tolerance(mm) | Inscribed circle Tolerance(mm) | Thickness S Tolerance(mm) | Code | Nose height M Tolerance(mm) | Inscribed circle Tolerance(mm) | Thickness S Tolerance(mm) |
| A | ±0.005 | ±0.025 | ±0.025 | J | ±0.005 | ±0.05-±0.13 | ±0.025 |
| F | ±0.005 | ±0.013 | ±0.025 | K | ±0.013 | ±0.05-±0.13 | ±0.025 |
| C | ±0.013 | ±0.025 | ±0.025 | L | ±0.025 | ±0.05-±0.13 | ±0.025 |
| H | ±0.013 | ±0.013 | ±0.025 | M | ±0.08-±0.18 | ±0.05-±0.13 | ±0.13 |
| E | ±0.025 | ±0.025 | ±0.025 | N | ±0.08-±0.18 | ±0.05-±0.13 | ±0.025 |
| G | ±0.025 | ±0.025 | ±0.13 | U | ±0.13-±0.38 | ±0.08-±0.25 | ±0.13 |

C N G A 12

| Clearance angle of main cutting edge | | | |
|--------------------------------------|-----------------|------|-----------------------|
| Code | Clearance angle | Code | Clearance angle |
| A | 3° | B | 5° |
| C | 7° | D | 15° |
| E | 20° | F | 25° |
| G | 30° | N | 0° |
| P | 11° | O | Other clearance angle |

| Chipbreaker and clamping system | | |
|---------------------------------|-------------------|-------------------------|
| Code | With/Without hole | Section plane of insert |
| N | Without | |
| B | With | |
| C | With | |
| A | With | |
| W | With | |
| Q | With | |
| X | --- | Special |

| Diameter of IC (mm) | Insert shape | | | | | | |
|---------------------|--------------|----|----|----|----|----|----|
| | C | D | R | S | T | V | W |
| 3.97 | | | | | 06 | | |
| 5.0 | | | 05 | | 09 | | |
| 5.56 | | | | | | | |
| 6.0 | | | 06 | | 11 | 11 | |
| 6.35 | 06 | 07 | | | | | |
| 8.0 | | | 08 | | | | |
| 9.525 | 09 | 11 | 09 | 09 | 16 | 16 | 06 |
| 10.0 | | | 10 | | | | |
| 12.0 | | | 12 | | | | |
| 12.7 | 12 | 15 | 12 | 12 | 22 | 22 | 08 |
| 15.875 | 16 | | 15 | 15 | 27 | | |
| 16.0 | | 19 | 16 | | | | |
| 19.05 | 19 | | 19 | 19 | 33 | | |
| 20.0 | | | 20 | | | | |
| 25.0 | 25 | 25 | 25 | 25 | | | |
| 25.4 | | | 25 | 25 | | | |
| 31.75 | | | 31 | | | | |
| 32 | | | 32 | | | | |



| Insert thickness | | | |
|--|----------------------|------|----------------------|
| <p>Thickness is defined as height from bottom of insert to the highest part of cutting edge.</p> | | | |
| Code | Insert thickness(mm) | Code | Insert thickness(mm) |
| 02 | 2.38 | 06 | 6.35 |
| T2 | 2.58 | T6 | 6.75 |
| 03 | 3.18 | 07 | 7.94 |
| T3 | 3.97 | 09 | 9.52 |
| 04 | 4.76 | T9 | 9.72 |
| T4 | 4.96 | 11 | 11.11 |
| 05 | 5.56 | 12 | 12.70 |
| T5 | 5.95 | | |

| Nose radius code | |
|-----------------------------|-----------------|
| Code | Nose radius(mm) |
| 00 | No radius |
| 02 | 0.2 |
| 04 | 0.4 |
| 08 | 0.8 |
| 12 | 1.2 |
| 16 | 1.6 |
| 20 | 2.0 |
| 24 | 2.4 |
| 32 | 3.2 |
| X | Others |
| Diameter of insert (Metric) | |
| Round insert | |

| Type of cutting edge | | |
|----------------------|----------------------|---------|
| Code | Type of cutting edge | Picture |
| E | Honing | |
| T | Chamfering | |
| S | Chamfering + honing | |
| F | Sharp edges | |

04 04 A T 010 20 - 2 S

| Insert Structure | | |
|------------------|----------------------|---------|
| Code | Type of cutting edge | Diagram |
| A | Single-sided insert | |
| B | Intact insert | |
| C | penetration insert | |
| D | Double-sided insert | |

| Chamfer width | |
|---------------|-----------------|
| | |
| Code | Dimensions (mm) |
| 000 | -- |
| 008 | 0.08 |
| 012 | 0.12 |
| 017 | 0.17 |
| 022 | 0.22 |

| Chamfer angle | |
|---------------|-----------|
| | |
| Code | Angle (°) |
| 00 | -- |
| 10 | 10 |
| 15 | 15 |
| 20 | 20 |
| 25 | 25 |

| Cutting edge number | |
|---------------------|---------|
| Code | number |
| / | number1 |
| 2 | number2 |
| 3 | number3 |
| 4 | number4 |
| 6 | number6 |

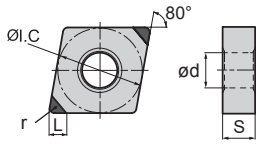
| The length of cutting edge | | | |
|----------------------------|----------|----------|------------|
| | Standard | Elongate | Overlength |
| Code | Omission | S | SS |
| Length | Standard | +1mm | +2mm |



General Turning Inserts

PCBN&PCD inserts

CN (Negative angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|---|---|---|
| | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | 😊 | 😊 | 😊 |
| H Super hard material | | | | | | | | | 😊 | 😊 | 😊 | 😊 |
| N Non ferrous metal | | | | | | | | | | | | |

General turning

PCBN&PCD inserts

| Type | Shape of insert | Model | Specifi- cation | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | | |
|---------------------|-----------------|----------------------|--------------------|-------------------|-------|-----------------|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|---|
| | | | | $\varnothing L.C$ | S | $\varnothing d$ | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 | |
| Single-sided insert | | CNGA120404AE-2 | AE | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | | | | | ○ | ○ | ○ | | |
| | | CNGA120408AE-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.4 | ○ | ○ | | | | | | | | ○ | ○ | ○ | |
| | | CNGA120412AE-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.3 | ○ | ○ | | | | | | | | | ○ | ○ | ○ |
| | | CNGA120404AS01225-2 | | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | CNGA120408AS01225-2 | 12.7 | 4.76 | 5.156 | 0.8 | 2.4 | ○ | ○ | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | CNGA120412AS01225-2 | 12.7 | 4.76 | 5.156 | 1.2 | 2.3 | ○ | ○ | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | CNGA120404AS00815-2 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | | | ○ | ○ | ○ | | | | | | | |
| | | CNGA120408AS00815-2 | 12.7 | 4.76 | 5.156 | 0.8 | 2.4 | | | | | ○ | ○ | ○ | | | | | | | |
| | | CNGA120412AS00815-2 | 12.7 | 4.76 | 5.156 | 1.2 | 2.3 | | | | | ○ | ○ | ○ | | | | | | | |
| | | CNGA 120404AS01735-2 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | | | | | ○ | ○ | ○ | | | | | |
| | | CNGA120408AS01735-2 | 12.7 | 4.76 | 5.156 | 0.8 | 2.4 | | | | | | | ○ | ○ | ○ | | | | | |
| | | CNGA120412AS01735-2 | 12.7 | 4.76 | 5.156 | 1.2 | 2.3 | | | | | | | ○ | ○ | ○ | | | | | |
| | | CNGA120404AT01215-2 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | | | | | | | | ○ | ○ | ○ |
| | | CNGA120408AT01215-2 | 12.7 | 4.76 | 5.156 | 0.8 | 2.4 | ○ | ○ | | | | | | | | | | ○ | ○ | ○ |
| CNGA120412AT01215-2 | 12.7 | 4.76 | 5.156 | 1.2 | 2.3 | ○ | ○ | | | | | | | | | | ○ | ○ | ○ | | |
| Double-sided insert | | CNGA120404DE-4 | DE | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | | | | | ○ | ○ | ○ | | |
| | | CNGA120408DE-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.4 | ○ | ○ | | | | | | | | ○ | ○ | ○ | |
| | | CNGA120412DE-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.3 | ○ | ○ | | | | | | | | ○ | ○ | ○ | |
| | | CNGA120404DT01215-4 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ★ | ★ | | | | | | | | | ★ | ★ | ★ | |
| | | CNGA120408DT01215-4 | 12.7 | 4.76 | 5.156 | 0.8 | 2.4 | ★ | ★ | | | | | | | | | | ★ | ★ | ★ |
| | | CNGA120412DT01215-4 | 12.7 | 4.76 | 5.156 | 1.2 | 2.3 | ★ | ★ | | | | | | | | | | ★ | ★ | ★ |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

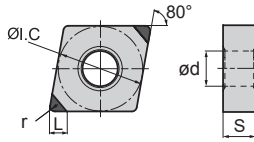
Applicable tool



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CN (Negative angle)



☺ Good working condition ☹ Normal working condition ☹ Bad working condition

| Workpiece material | Cast iron | Heat resistant alloy, Ti alloy | Super hard material | Non ferrous metal |
|--------------------|-----------|--------------------------------|---------------------|-------------------|
| K | ☺☺☺☺ | ☺☺☺☺ | ☺☺☺☺ | ☺☺☺☺ |
| S | ☺☺☺☺ | ☺☺☺☺ | ☺☺☺☺ | ☺☺☺☺ |
| H | ☺☺☺☺ | ☺☺☺☺ | ☺☺☺☺ | ☺☺☺☺ |
| N | ☺☺☺☺ | ☺☺☺☺ | ☺☺☺☺ | ☺☺☺☺ |

| Type | Shape of insert | Model | Specifi- cation | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | | |
|---------------------|-----------------|---------------------|--------------------|---------------|-------|-------|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|--|
| | | | | ∅l.C | S | ∅d | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 | |
| Double-sided insert | | CNGA120404DS01225-4 | S01225 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | | | | | | | | | |
| | | CNGA120408DS01225-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.4 | ○ | ○ | | | | | | | | | | | |
| | | CNGA120412DS01225-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.3 | ○ | ○ | | | | | | | | | | | |
| | | CNGA120404DS00815-4 | | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | | | ★ | ★ | ○ | | | | | | |
| | | CNGA120408DS00815-4 | 12.7 | 4.76 | 5.156 | 0.8 | 2.4 | | | | | ★ | ★ | ○ | | | | | | | |
| | | CNGA120412DS00815-4 | 12.7 | 4.76 | 5.156 | 1.2 | 2.3 | | | | | ★ | ★ | ○ | | | | | | | |
| | | CNGA120404DS01225-4 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | | | ★ | ★ | ★ | ★ | ★ | ○ | ○ | ○ | | |
| | | CNGA120408DS01225-4 | 12.7 | 4.76 | 5.156 | 0.8 | 2.4 | | | | | ★ | ★ | ★ | ★ | ★ | ○ | ○ | ○ | | |
| | | CNGA120412DS01225-4 | 12.7 | 4.76 | 5.156 | 1.2 | 2.3 | | | | | ★ | ★ | ★ | ★ | ★ | ○ | ○ | ○ | | |
| | | CNGA120404DS01735-4 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | | | | | ○ | ★ | ○ | | | | | |
| | | CNGA120408DS01735-4 | 12.7 | 4.76 | 5.156 | 0.8 | 2.4 | | | | | | | ○ | ★ | ○ | | | | | |
| | | CNGA120412DS01735-4 | 12.7 | 4.76 | 5.156 | 1.2 | 2.3 | | | | | | | ○ | ★ | ○ | | | | | |
| Penetration insert | | CNGA120404CE-2 | CE | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | ○ | | | | | | | | | | | |
| | | CNGA120408CE-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.4 | | ○ | | | | | | | | | | | |
| | | CNGA120412CE-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.3 | | ○ | | | | | | | | | | | |
| | | CNGA120404CT01215-2 | T01215 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | ★ | | | | | | | | | | | |
| | | CNGA120408CT01215-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.4 | | ★ | | | | | | | | | | | |
| | | CNGA120412CT01215-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.3 | | ★ | | | | | | | | | | | |
| | | CNGA120404CS01225-2 | S01225 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | ○ | | | | | | | | | | |
| | | CNGA120408CS01225-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.4 | | | ○ | | | | | | | | | | |
| | | CNGA120412CS01225-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.3 | | | ○ | | | | | | | | | | |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool



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General turning

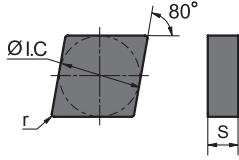
PCBN&PCD inserts



TURNING / General Turning Inserts

PCBN&PCD inserts

CN (Negative angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | 😊 | 😊 | 😊 |
| H Super hard material | | | | | | | | | 😊 | 😊 | 😊 | 😊 |
| N Non ferrous metal | | | | | | | | | | | | |

General turning

PCBN&PCD inserts

| Type | Shape of insert | Model | Specifi-cation | Dimension(mm) | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | |
|---------------|-----------------|-------------------|----------------|---------------|------|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|
| | | | | ØI.C | S | r | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
| Intact insert | | CNGN120404BE | BE | 12.7 | 4.76 | 0.4 | | | ○ | | | | | | | | | |
| | | CNGN120408BE | | 12.7 | 4.76 | 0.8 | | | ○ | | | | | | | | | |
| | | CNGN120412BE | | 12.7 | 4.76 | 1.2 | | | ○ | | | | | | | | | |
| | | CNGN120404BT01215 | T01215 | 12.7 | 4.76 | 0.4 | | | ★ | | | | | | | | | |
| | | CNGN120408BT01215 | | 12.7 | 4.76 | 0.8 | | | ★ | | | | | | | | | |
| | | CNGN120412BT01215 | | 12.7 | 4.76 | 1.2 | | | ★ | | | | | | | | | |
| | | CNGN120404BS01225 | S01225 | 12.7 | 4.76 | 0.4 | | | ○ | | | | | | | | | |
| | | CNGN120408BS01225 | | 12.7 | 4.76 | 0.8 | | | ○ | | | | | | | | | |
| | | CNGN120412BS01225 | | 12.7 | 4.76 | 1.2 | | | ○ | | | | | | | | | |

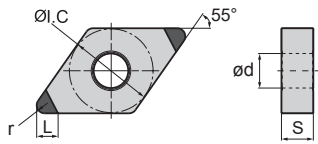
According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order



DN (Negative angle)



☺ Good working condition 😐 Normal working condition ☹ Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|---|---|---|
| | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| K Cast iron | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| S Heat resistant alloy, Ti alloy | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| H Super hard material | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| N Non ferrous metal | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |

| Type | Shape of insert | Model | Specifi- cation | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | | | |
|---------------------|-----------------|---------------------|--------------------|---------------|------|-------|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|---|---|
| | | | | Ø1.C | S | ød | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 | | |
| Single-sided insert | | DNGA150404AE-2 | AE | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | | | | | ○ | ○ | ○ | | | |
| | | DNGA150408AE-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.1 | ○ | ○ | | | | | | | | ○ | ○ | ○ | | |
| | | DNGA150412AE-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | ○ | ○ | | | | | | | | | ○ | ○ | ○ | |
| | | DNGA150604AE-2 | | 12.7 | 6.35 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | | | | | | | ○ | ○ | ○ | |
| | | DNGA150608AE-2 | | 12.7 | 6.35 | 5.156 | 0.8 | 2.1 | ○ | ○ | | | | | | | | | | ○ | ○ | ○ |
| | | DNGA150612AE-2 | | 12.7 | 6.35 | 5.156 | 1.2 | 2.0 | ○ | ○ | | | | | | | | | | ○ | ○ | ○ |
| | | DNGA150404AT01215-2 | T01215 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | | | | | | | ○ | ○ | ○ | |
| | | DNGA150408AT01215-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.1 | ○ | ○ | | | | | | | | | ○ | ○ | ○ | |
| | | DNGA150412AT01215-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | ○ | ○ | | | | | | | | | | ○ | ○ | ○ |
| | | DNGA150604AT01215-2 | | 12.7 | 6.35 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | | | | | | | | ○ | ○ | ○ |
| | | DNGA150608AT01215-2 | | 12.7 | 6.35 | 5.156 | 0.8 | 2.1 | ○ | ○ | | | | | | | | | | ○ | ○ | ○ |
| | | DNGA150612AT01215-2 | | 12.7 | 6.35 | 5.156 | 1.2 | 2.0 | ○ | ○ | | | | | | | | | | ○ | ○ | ○ |
| | | DNGA150404AS01225-2 | S01225 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | | | | | | | ○ | ○ | ○ | |
| | | DNGA150408AS01225-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.1 | ○ | ○ | | | | | | | | | ○ | ○ | ○ | |
| | | DNGA150412AS01225-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | ○ | ○ | | | | | | | | | | ○ | ○ | ○ |
| | | DNGA150604AS01225-2 | | 12.7 | 6.35 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | | | | | | | | ○ | ○ | ○ |
| | | DNGA150608AS01225-2 | | 12.7 | 6.35 | 5.156 | 0.8 | 2.1 | ○ | ○ | | | | | | | | | | ○ | ○ | ○ |
| | | DNGA150612AS01225-2 | | 12.7 | 6.35 | 5.156 | 1.2 | 2.0 | ○ | ○ | | | | | | | | | | ○ | ○ | ○ |
| | | DNGA150404AS00815-2 | S00815 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | | | | | | | | | ○ | ○ | ○ | |
| | | DNGA150408AS00815-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.1 | | | | | | | | | | | ○ | ○ | ○ | |
| | | DNGA150412AS00815-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | | | | | | | | | ○ | ○ | ○ | |
| | | DNGA150604AS00815-2 | | 12.7 | 6.35 | 5.156 | 0.4 | 2.5 | | | | | | | | | | | ○ | ○ | ○ | |
| | | DNGA150608AS00815-2 | | 12.7 | 6.35 | 5.156 | 0.8 | 2.1 | | | | | | | | | | | ○ | ○ | ○ | |
| | | DNGA150612AS00815-2 | | 12.7 | 6.35 | 5.156 | 1.2 | 2.0 | | | | | | | | | | | ○ | ○ | ○ | |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

DDJNR/L
Kr:93°



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PDJNR/L
Kr:93°



A174

PDPNN
Kr:62°30'



A175

PDPNR/L
Kr:62°30'



A213

PDUNR/L
Kr:93°



A214

General turning

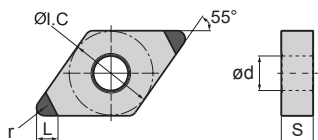
PCBN&PCD inserts



General Turning Inserts

PCBN&PCD inserts

DN (Negative angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|---|---|---|
| | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | 😊 | 😊 | 😊 |
| H Super hard material | | | | | | | | | | 😊 | 😊 | 😊 |
| N Non ferrous metal | | | | | | | | | | | | |

General turning

PCBN&PCD inserts

| Type | Shape of insert | Model | Specifi-cation | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | | | | | |
|---------------------|-----------------|---------------------|----------------|---------------|------|-------|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|---|---|---|---|
| | | | | Øl.C | S | ød | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 | | | | |
| Single-sided insert | | DNGA150404AS01735-2 | S01735 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | | | | | | | | | | | | | | |
| | | DNGA150408AS01735-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.1 | | | | | | | | | | | | | | | | |
| | | DNGA150412AS01735-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | | | | | | | | | | | | | | |
| | | DNGA150604AS01735-2 | | 12.7 | 6.35 | 5.156 | 0.4 | 2.5 | | | | | | | | | | | | | | | | |
| | | DNGA150608AS01735-2 | | 12.7 | 6.35 | 5.156 | 0.8 | 2.1 | | | | | | | | | | | | | | | | |
| | | DNGA150612AS01735-2 | | 12.7 | 6.35 | 5.156 | 1.2 | 2.0 | | | | | | | | | | | | | | | | |
| Double-sided insert | | DNGA150404DE-4 | DE | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ | | | | |
| | | DNGA150408DE-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.1 | ○ | ○ | | | | | | | | | ○ | ○ | ○ | | | |
| | | DNGA150412DE-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | ○ | ○ | | | | | | | | | | ○ | ○ | ○ | | |
| | | DNGA150604DE-4 | | 12.7 | 6.35 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | | | | | | | | ○ | ○ | ○ | | |
| | | DNGA150608DE-4 | | 12.7 | 6.35 | 5.156 | 0.8 | 2.1 | ○ | ○ | | | | | | | | | | | ○ | ○ | ○ | |
| | | DNGA150612DE-4 | | 12.7 | 6.35 | 5.156 | 1.2 | 2.0 | ○ | ○ | | | | | | | | | | | ○ | ○ | ○ | |
| | | DNGA150404DT01215-4 | T01215 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ★ | ★ | | | | | | | | | | ★ | ★ | ★ | | |
| | | DNGA150408DT01215-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.1 | ★ | ★ | | | | | | | | | | | ★ | ★ | ★ | |
| | | DNGA150412DT01215-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | ★ | ★ | | | | | | | | | | | ★ | ★ | ★ | |
| | | DNGA150604DT01215-4 | | 12.7 | 6.35 | 5.156 | 0.4 | 2.5 | ★ | ★ | | | | | | | | | | | | ★ | ★ | ★ |
| | | DNGA150608DT01215-4 | | 12.7 | 6.35 | 5.156 | 0.8 | 2.1 | ★ | ★ | | | | | | | | | | | | ★ | ★ | ★ |
| | | DNGA150612DT01215-4 | | 12.7 | 6.35 | 5.156 | 1.2 | 2.0 | ★ | ★ | | | | | | | | | | | | ★ | ★ | ★ |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

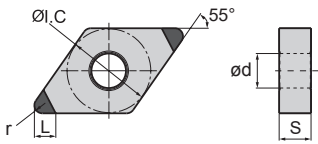
Applicable tool



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DN (Negative angle)



☺ Good working condition 😐 Normal working condition ☹ Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|---|---|---|
| | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| K Cast iron | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | | ☺ | ☺ |
| H Super hard material | | | | | | | | | | ☺ | ☺ | ☺ |
| N Non ferrous metal | | | | | | | | | | | | |

| Type | Shape of insert | Model | Specifi- cation | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | |
|---------------------|-----------------|---------------------|--------------------|---------------|------|-------|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|
| | | | | Ø1.C | S | ød | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
| Double-sided insert | | DNGA150404DS01225-4 | S01225 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | ★ | ★ | ★ | ★ | ★ | ○ | ○ | ○ |
| | | DNGA150408DS01225-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.1 | ○ | ○ | | | ★ | ★ | ★ | ★ | ★ | ○ | ○ | ○ |
| | | DNGA150412DS01225-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | ○ | ○ | | | ★ | ★ | ★ | ★ | ★ | ○ | ○ | ○ |
| | | DNGA150602DS01225-4 | | 12.7 | 6.35 | 5.156 | 0.2 | 2.7 | | | | | ★ | ★ | ★ | ★ | ★ | | | |
| | | DNGA150604DS01225-4 | | 12.7 | 6.35 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | ★ | ★ | ★ | ★ | ★ | ○ | ○ | ○ |
| | | DNGA150608DS01225-4 | | 12.7 | 6.35 | 5.156 | 0.8 | 2.1 | ○ | ○ | | | ★ | ★ | ★ | ★ | ★ | ○ | ○ | ○ |
| | | DNGA150612DS01225-4 | | 12.7 | 6.35 | 5.156 | 1.2 | 2.0 | ○ | ○ | | | ★ | ★ | ★ | ★ | ★ | ○ | ○ | ○ |
| | | DNGA150404DS00815-4 | S00815 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | | | ★ | ★ | ○ | | | | | |
| | | DNGA150408DS00815-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.1 | | | | | ★ | ★ | ○ | | | | | |
| | | DNGA150412DS00815-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | | | ★ | ★ | ○ | | | | | |
| | | DNGA150602DS00815-4 | | 12.7 | 6.35 | 5.156 | 0.2 | 2.7 | | | | | ★ | ★ | ○ | | | | | |
| | | DNGA150604DS00815-4 | | 12.7 | 6.35 | 5.156 | 0.4 | 2.5 | | | | | ★ | ★ | ○ | | | | | |
| | | DNGA150608DS00815-4 | | 12.7 | 6.35 | 5.156 | 0.8 | 2.1 | | | | | ★ | ★ | ○ | | | | | |
| | | DNGA150612DS00815-4 | | 12.7 | 6.35 | 5.156 | 1.2 | 2.0 | | | | | ★ | ★ | ○ | | | | | |
| | | DNGA150404DS01735-4 | S01735 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | | | | | | | ○ | ★ | ○ | |
| | | DNGA150408DS01735-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.1 | | | | | | | | | ○ | ★ | ○ | |
| | | DNGA150412DS01735-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | | | | | | | ○ | ★ | ○ | |
| | | DNGA150602DS01735-4 | | 12.7 | 6.35 | 5.156 | 0.2 | 2.7 | | | | | | | | | ○ | ★ | ○ | |
| | | DNGA150604DS01735-4 | | 12.7 | 6.35 | 5.156 | 0.4 | 2.5 | | | | | | | | | ○ | ★ | ○ | |
| | | DNGA150608DS01735-4 | | 12.7 | 6.35 | 5.156 | 0.8 | 2.1 | | | | | | | | | ○ | ★ | ○ | |
| DNGA150612DS01735-4 | 12.7 | 6.35 | | 5.156 | 1.2 | 2.0 | | | | | | | | | ○ | ★ | ○ | | | |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool



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General turning

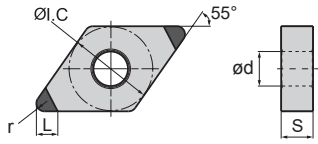
PCBN&PCD inserts



General Turning Inserts

PCBN&PCD inserts

DN (Negative angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working condition | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|---|
| | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| H Super hard material | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Type | Shape of insert | Model | Specifi- cation | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | |
|--------------------|-----------------|---------------------|--------------------|--------------------|------|-----------------|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|
| | | | | $\varnothing L, C$ | S | $\varnothing d$ | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
| Penetration insert | | DNGA150404CE-2 | CE | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | ○ | | | | | | | | | |
| | | DNGA150408CE-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.1 | | | ○ | | | | | | | | | |
| | | DNGA150412CE-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | ○ | | | | | | | | | |
| | | DNGA150604CE-2 | | 12.7 | 6.35 | 5.156 | 0.4 | 2.5 | | | ○ | | | | | | | | | |
| | | DNGA150608CE-2 | | 12.7 | 6.35 | 5.156 | 0.8 | 2.1 | | | ○ | | | | | | | | | |
| | | DNGA150612CE-2 | | 12.7 | 6.35 | 5.156 | 1.2 | 2.0 | | | ○ | | | | | | | | | |
| | | DNGA150404CT01215-2 | T01215 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | ★ | | | | | | | | | |
| | | DNGA150408CT01215-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.1 | | | ★ | | | | | | | | | |
| | | DNGA150412CT01215-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | ★ | | | | | | | | | |
| | | DNGA150604CT01215-2 | | 12.7 | 6.35 | 5.156 | 0.4 | 2.5 | | | ★ | | | | | | | | | |
| | | DNGA150608CT01215-2 | | 12.7 | 6.35 | 5.156 | 0.8 | 2.1 | | | ★ | | | | | | | | | |
| | | DNGA150612CT01215-2 | | 12.7 | 6.35 | 5.156 | 1.2 | 2.0 | | | ★ | | | | | | | | | |
| | | DNGA150404CS01225-2 | S01225 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | ○ | | | | | | | | | |
| | | DNGA150408CS01225-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.1 | | | ○ | | | | | | | | | |
| | | DNGA150412CS01225-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | ○ | | | | | | | | | |
| | | DNGA150604CS01225-2 | | 12.7 | 6.35 | 5.156 | 0.4 | 2.5 | | | ○ | | | | | | | | | |
| | | DNGA150608CS01225-2 | | 12.7 | 6.35 | 5.156 | 0.8 | 2.1 | | | ○ | | | | | | | | | |
| | | DNGA150612CS01225-2 | | 12.7 | 6.35 | 5.156 | 1.2 | 2.0 | | | ○ | | | | | | | | | |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

DDJNR/L
Kr:93°



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PDJNR/L
Kr:93°



A174

PDPNN
Kr:62°30'



A175

PDPNR/L
Kr:62°30'



A213

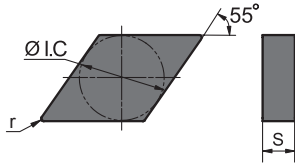
PDUNR/L
Kr:93°



A214



DN (Negative angle)



😊 Good working condition 🙄 Normal working condition 😞 Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|---|---|---|
| | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | 😊 | 😊 | 😊 |
| H Super hard material | | | | | | | | | | 😊 | 😊 | 😊 |
| N Non ferrous metal | | | | | | | | | | | | |

| Type | Shape of insert | Model | Specifi- cation | Dimension(mm) | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | | |
|---------------|-----------------|-------------------|--------------------|---------------|------|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|--|
| | | | | Ø I.C | S | r | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 | |
| Intact insert | | DNGN150404BE | BE | 12.7 | 4.76 | 0.4 | | | ○ | | | | | | | | | | |
| | | DNGN150408BE | | 12.7 | 4.76 | 0.8 | | | ○ | | | | | | | | | | |
| | | DNGN150412BE | | 12.7 | 4.76 | 1.2 | | | ○ | | | | | | | | | | |
| | | DNGN150604BE | | 12.7 | 6.35 | 0.4 | | | ○ | | | | | | | | | | |
| | | DNGN150608BE | | 12.7 | 6.35 | 0.8 | | | ○ | | | | | | | | | | |
| | | DNGN150612BE | | 12.7 | 6.35 | 1.2 | | | ○ | | | | | | | | | | |
| | | DNGN150404BT01215 | T01215 | 12.7 | 4.76 | 0.4 | | | ★ | | | | | | | | | | |
| | | DNGN150408BT01215 | | 12.7 | 4.76 | 0.8 | | | ★ | | | | | | | | | | |
| | | DNGN150412BT01215 | | 12.7 | 4.76 | 1.2 | | | ★ | | | | | | | | | | |
| | | DNGN150604BT01215 | | 12.7 | 6.35 | 0.4 | | | ★ | | | | | | | | | | |
| | | DNGN150608BT01215 | | 12.7 | 6.35 | 0.8 | | | ★ | | | | | | | | | | |
| | | DNGN150612BT01215 | | 12.7 | 6.35 | 1.2 | | | ★ | | | | | | | | | | |
| | | DNGN150404BS01225 | S01225 | 12.7 | 4.76 | 0.4 | | | ○ | | | | | | | | | | |
| | | DNGN150408BS01225 | | 12.7 | 4.76 | 0.8 | | | ○ | | | | | | | | | | |
| | | DNGN150412BS01225 | | 12.7 | 4.76 | 1.2 | | | ○ | | | | | | | | | | |
| | | DNGN150604BS01225 | | 12.7 | 6.35 | 0.4 | | | ○ | | | | | | | | | | |
| | | DNGN150608BS01225 | | 12.7 | 6.35 | 0.8 | | | ○ | | | | | | | | | | |
| | | DNGN150612BS01225 | | 12.7 | 6.35 | 1.2 | | | ○ | | | | | | | | | | |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

General turning

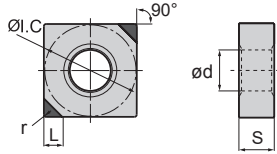
PCBN&PCD inserts



General Turning Inserts

PCBN&PCD inserts

SN (Negative angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Cast iron | Heat resistant alloy, Ti alloy | Super hard material | Non ferrous metal |
|--------------------|-----------|--------------------------------|---------------------|-------------------|
| K | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |
| S | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |
| H | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |
| N | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |

General turning

PCBN&PCD inserts

| Type | Shape of insert | Model | Specifi- cation | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | | |
|---------------------|-----------------|---------------------|--------------------|---------------|------|-------|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|---|
| | | | | Ø1.C | S | ød | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 | |
| Single-sided insert | | SNGA120404AE-2 | AE | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | | | | | ○ | ○ | ○ | | |
| | | SNGA120408AE-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | ○ | ○ | | | | | | | | ○ | ○ | ○ | |
| | | SNGA120412AE-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | ○ | ○ | | | | | | | | | ○ | ○ | ○ |
| | | SNGA120404AE-4 | | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | | | | | | | | | ○ | ○ | ○ |
| | | SNGA120408AE-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | | | | | | | | | | | ○ | ○ | ○ |
| | | SNGA120412AE-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | | | | | | | | | ○ | ○ | ○ |
| | | SNGA120404AT01215-2 | T01215 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | | | | | | | ○ | ○ | ○ |
| | | SNGA120408AT01215-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | ○ | ○ | | | | | | | | | ○ | ○ | ○ |
| | | SNGA120412AT01215-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | ○ | ○ | | | | | | | | | ○ | ○ | ○ |
| | | SNGA120404AT01215-4 | | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | | | | | | | | | ○ | ○ | ○ |
| | | SNGA120408AT01215-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | | | | | | | | | | | ○ | ○ | ○ |
| | | SNGA120412AT01215-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | | | | | | | | | ○ | ○ | ○ |
| | | SNGA120404AS01225-2 | S01225 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | | | | | | | ○ | ○ | ○ |
| | | SNGA120408AS01225-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | ○ | ○ | | | | | | | | | ○ | ○ | ○ |
| | | SNGA120412AS01225-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | ○ | ○ | | | | | | | | | ○ | ○ | ○ |
| | | SNGA120404AS01225-4 | | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | SNGA120408AS01225-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | SNGA120412AS01225-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | SNGA120404AS00815-4 | S00815 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | | | | | | | ○ | ○ | ○ | ○ | |
| | | SNGA120408AS00815-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | | | | | | | | | ○ | ○ | ○ | ○ | |
| | | SNGA120412AS00815-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | | | | | | | ○ | ○ | ○ | ○ | |
| | | SNGA120404AS01735-4 | S01735 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | | | | | | | | ○ | ○ | ○ | |
| | | SNGA120408AS01735-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | | | | | | | | | | ○ | ○ | ○ | |
| | | SNGA120412AS01735-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | | | | | | | | ○ | ○ | ○ | |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

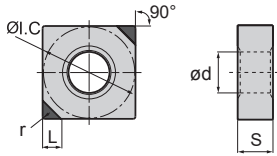
Applicable tool



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SN (Negative angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working condition | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|---|
| | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| H Super hard material | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Type | Shape of insert | Model | Specifi- cation | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy& Superalloy | | | |
|---------------------|-----------------|---------------------|--------------------|---------------|------|-------|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|--------------------------|--------|--------|--------|
| | | | | Øl.C | S | ød | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
| Double-sided insert | | SNGA120404DE-4 | DE | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | | | | | | | | |
| | | SNGA120408DE-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | ○ | ○ | | | | | | | | | | |
| | | SNGA120412DE-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | ○ | ○ | | | | | | | | | | |
| | | SNGA120404DT01215-4 | T01215 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ★ | ★ | | | | | | | | | | |
| | | SNGA120408DT01215-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | ★ | ★ | | | | | | | | | | |
| | | SNGA120412DT01215-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | ★ | ★ | | | | | | | | | | |
| | | SNGA120404DS01225-4 | S01225 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | ○ | ○ | | | | | | | | | | |
| | | SNGA120408DS01225-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | ○ | ○ | | | | | | | | | | |
| | | SNGA120412DS01225-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | ○ | ○ | | | | | | | | | | |
| | | SNGA120404DS01225-8 | S01225 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | | | ○ | ○ | ○ | ○ | ○ | | | |
| | | SNGA120408DS01225-8 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | | | | | ○ | ○ | ○ | ○ | ○ | | | |
| | | SNGA120412DS01225-8 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | | | ○ | ○ | ○ | ○ | ○ | | | |
| | | SNGA120404DS00815-8 | S00815 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | | | ○ | ○ | ○ | | | | | |
| | | SNGA120408DS00815-8 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | | | | | ○ | ○ | ○ | | | | | |
| | | SNGA120412DS00815-8 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | | | ○ | ○ | ○ | | | | | |
| | | SNGA120404DS01735-8 | S01735 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | | | | | | ○ | ○ | ○ | | |
| | | SNGA120408DS01735-8 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | | | | | | | | ○ | ○ | ○ | | |
| | | SNGA120412DS01735-8 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | | | | | | ○ | ○ | ○ | | |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool



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General turning

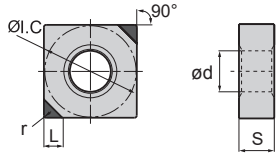
PCBN&PCD inserts



General Turning Inserts

PCBN&PCD inserts

SN (Negative angle)



😊 Good working condition 🙄 Normal working condition 😞 Bad working condition

| Workpiece material | Cast iron | Heat resistant alloy, Ti alloy | Super hard material | Non ferrous metal |
|--------------------|-----------|--------------------------------|---------------------|-------------------|
| K | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |
| S | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |
| H | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |
| N | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |

General turning

PCBN&PCD inserts

| Type | Shape of insert | Model | Specifi- cation | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | |
|--------------------|-----------------|---------------------|--------------------|---------------|------|-------|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|
| | | | | Øl.C | S | ød | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
| Penetration insert | | SNGA120404CE-2 | CE | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | ○ | | | | | | | | | |
| | | SNGA120408CE-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | | | ○ | | | | | | | | | |
| | | SNGA120412CE-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | ○ | | | | | | | | | |
| | | SNGA120404CE-4 | | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | ○ | | | | | | | | | |
| | | SNGA120408CE-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | | | ○ | | | | | | | | | |
| | | SNGA120412CE-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | ○ | | | | | | | | | |
| | | SNGA120404CT01215-4 | T01215 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | ★ | | | | | | | | | |
| | | SNGA120408CT01215-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | | | ★ | | | | | | | | | |
| | | SNGA120412CT01215-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | ★ | | | | | | | | | |
| | | SNGA120404CT01215-2 | | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | ★ | | | | | | | | | |
| | | SNGA120408CT01215-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | | | ★ | | | | | | | | | |
| | | SNGA120412CT01215-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | ★ | | | | | | | | | |
| | | SNGA120404CS01225-4 | S01225 | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | ○ | | | | | | | | | |
| | | SNGA120408CS01225-4 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | | | ○ | | | | | | | | | |
| | | SNGA120412CS01225-4 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | ○ | | | | | | | | | |
| | | SNGA120404CS01225-2 | | 12.7 | 4.76 | 5.156 | 0.4 | 2.5 | | | ○ | | | | | | | | | |
| | | SNGA120408CS01225-2 | | 12.7 | 4.76 | 5.156 | 0.8 | 2.2 | | | ○ | | | | | | | | | |
| | | SNGA120412CS01225-2 | | 12.7 | 4.76 | 5.156 | 1.2 | 2.0 | | | ○ | | | | | | | | | |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

DSBNR/L
Kr:75°



Page A168

PSBNR/L
Kr:75°



A176

PSDNN
Kr:45°



A177

PSKNR/L
Kr:75°



A178

PSSNR/L
Kr:45°



A179

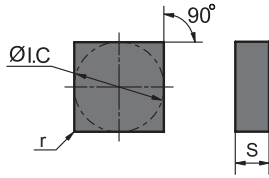
PSKNR/L
Kr:75°



A215



SN □ □ (Negative angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | K | S | H | N | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
|---|---|---|---|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| K Cast iron | 😊 | 😊 | 😊 | 😊 | | | | | | | | | | | | |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | | | | | 😊 | 😊 | 😊 |
| H Super hard material | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | | | |
| N Non ferrous metal | | | | | | | | | | | | | | | | |

| Type | Shape of insert | Model | Specifi-cation | Dimension(mm) | | | Cast iron | | | | Hardened steel | | | | Powder alloy& Superalloy | | | |
|---------------|-----------------|-------------------|----------------|---------------|------|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|--------------------------|--------|--------|--------|
| | | | | ØI.C | S | r | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
| Intact insert | | SNGN120404BE | BE | 12.7 | 4.76 | 0.4 | | | ○ | | | | | | | | | |
| | | SNGN120408BE | | 12.7 | 4.76 | 0.8 | | | ○ | | | | | | | | | |
| | | SNGN120412BE | | 12.7 | 4.76 | 1.2 | | | ○ | | | | | | | | | |
| | | SNGN120404BT01215 | T01215 | 12.7 | 4.76 | 0.4 | | | ★ | | | | | | | | | |
| | | SNGN120408BT01215 | | 12.7 | 4.76 | 0.8 | | | ★ | | | | | | | | | |
| | | SNGN120412BT01215 | | 12.7 | 4.76 | 1.2 | | | ★ | | | | | | | | | |
| | | SNGN120404BS01225 | S01225 | 12.7 | 4.76 | 0.4 | | | ○ | | | | | | | | | |
| | | SNGN120408BS01225 | | 12.7 | 4.76 | 0.8 | | | ○ | | | | | | | | | |
| | | SNGN120412BS01225 | | 12.7 | 4.76 | 1.2 | | | ○ | | | | | | | | | |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

General turning

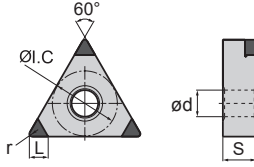
PCBN&PCD inserts



General Turning Inserts

PCBN&PCD inserts

TN (Negative angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | | 😊 | 😊 |
| H Super hard material | | | | | | | | | | 😊 | 😊 | 😊 |
| N Non ferrous metal | | | | | | | | | | | | |

| Type | Shape of insert | Model | Specifi- cation | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | |
|---------------------|-----------------|---------------------|--------------------|---------------|-------|------|------|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|
| | | | | ØL.C | S | ød | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
| Single-sided insert | | TNGA160404AE-3 | AE | 9.525 | 4.76 | 3.81 | 0.4 | 2.5 | ○ | ○ | | | | | | | ○ | ○ | ○ | |
| | | TNGA160408AE-3 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.2 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | | TNGA160412AE-3 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | | TNGA160404AT01215-3 | | T01215 | 9.525 | 4.76 | 3.81 | 0.4 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ |
| | | TNGA160408AT01215-3 | 9.525 | | 4.76 | 3.81 | 0.8 | 2.2 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | | TNGA160412AT01215-3 | 9.525 | | 4.76 | 3.81 | 1.2 | 2.0 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | | TNGA160404AS01225-3 | S01225 | 9.525 | 4.76 | 3.81 | 0.4 | 2.5 | ○ | ○ | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | TNGA160408AS01225-3 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.2 | ○ | ○ | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | TNGA160412AS01225-3 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | ○ | ○ | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | TNGA160404AS00815-3 | S00815 | 9.525 | 4.76 | 3.81 | 0.4 | 2.5 | | | | | | ○ | ○ | ○ | | | | |
| | | TNGA160408AS00815-3 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.2 | | | | | | ○ | ○ | ○ | | | | |
| | | TNGA160412AS00815-3 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | | | | ○ | ○ | ○ | | | | |
| | | TNGA160404AS01735-3 | S01735 | 9.525 | 4.76 | 3.81 | 0.4 | 2.5 | | | | | | | | | ○ | ○ | ○ | |
| | | TNGA160408AS01735-3 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.2 | | | | | | | | | ○ | ○ | ○ | |
| TNGA160412AS01735-3 | 9.525 | 4.76 | | 3.81 | 1.2 | 2.0 | | | | | | | | | ○ | ○ | ○ | | | |
| Double-sided insert | | TNGA160404DE-6 | DE | 9.525 | 4.76 | 3.81 | 0.4 | 2.5 | ○ | ○ | | | | | | | ○ | ○ | ○ | |
| | | TNGA160408DE-6 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.2 | ○ | ○ | | | | | | | ○ | ○ | ○ | |
| | | TNGA160412DE-6 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | ○ | ○ | | | | | | | ○ | ○ | ○ | |
| | | TNGA160404DT01215-6 | T01215 | 9.525 | 4.76 | 3.81 | 0.4 | 2.5 | ★ | ★ | | | | | | | | ★ | ★ | ★ |
| | | TNGA160408DT01215-6 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.2 | ★ | ★ | | | | | | | | ★ | ★ | ★ |
| | | TNGA160412DT01215-6 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | ★ | ★ | | | | | | | | ★ | ★ | ★ |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

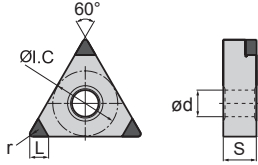
★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

| | | | | |
|-----------|------|------|------|------|
| | | | | |
| Page A169 | A180 | A181 | A182 | A216 |



TN (Negative angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Cast iron | | | | | Heat resistant alloy, Ti alloy | | | | | Super hard material | | | | | Non ferrous metal | | | | |
|--------------------|-----------|---|---|---|---|--------------------------------|---|---|---|---|---------------------|---|---|---|---|-------------------|---|---|---|---|
| | K | S | H | N | | K | S | H | N | | K | S | H | N | | K | S | H | N | |
| | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Type | Shape of insert | Model | Specifi- cation | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | | Powder alloy & Superalloy | | |
|---------------------|-----------------|---------------------|--------------------|---------------|------|------|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|--------|---------------------------|--------|--------|
| | | | | ØI.C | S | ød | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
| Double-sided insert | | TNGA160404DS01225-6 | S01225 | 9.525 | 4.76 | 3.81 | 0.4 | 2.5 | ○ | ○ | | | ★ | ★ | ★ | ★ | ★ | ○ | ○ | ○ |
| | | TNGA160408DS01225-6 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.2 | ○ | ○ | | | ★ | ★ | ★ | ★ | ★ | ○ | ○ | ○ |
| | | TNGA160412DS01225-6 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | ○ | ○ | | | ★ | ★ | ★ | ★ | ★ | ○ | ○ | ○ |
| | | TNGA160404DS00815-6 | S00815 | 9.525 | 4.76 | 3.81 | 0.4 | 2.5 | | | | | ★ | ★ | ○ | | | | | |
| | | TNGA160408DS00815-6 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.2 | | | | | ★ | ★ | ○ | | | | | |
| | | TNGA160412DS00815-6 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | | | ★ | ★ | ○ | | | | | |
| | | TNGA160404DS01735-6 | S01735 | 9.525 | 4.76 | 3.81 | 0.4 | 2.5 | | | | | | | ○ | ★ | ○ | | | |
| | | TNGA160408DS01735-6 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.2 | | | | | | | ○ | ★ | ○ | | | |
| | | TNGA160412DS01735-6 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | | | | | ○ | ★ | ○ | | | |
| Penetration insert | | TNGA160404CE-3 | CE | 9.525 | 4.76 | 3.81 | 0.4 | 2.5 | | | ○ | | | | | | | | | |
| | | TNGA160408CE-3 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.2 | | | ○ | | | | | | | | | |
| | | TNGA160412CE-3 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | ○ | | | | | | | | | |
| | | TNGA160404CT01215-3 | T01215 | 9.525 | 4.76 | 3.81 | 0.4 | 2.5 | | | | ★ | | | | | | | | |
| | | TNGA160408CT01215-3 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.2 | | | | ★ | | | | | | | | |
| | | TNGA160412CT01215-3 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | | ★ | | | | | | | | |
| | | TNGA160404CS01225-3 | S01225 | 9.525 | 4.76 | 3.81 | 0.4 | 2.5 | | | | ○ | | | | | | | | |
| | | TNGA160408CS01225-3 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.2 | | | | ○ | | | | | | | | |
| | | TNGA160412CS01225-3 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | | ○ | | | | | | | | |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

DTGNR/L
Kr:90°



Page A169

PTFNR/L
Kr:90°



A180

PTTNR/L
Kr:60°



A181

PTGNR/L
Kr:90°



A182

PTFNR/L
Kr:90°



A216

General turning

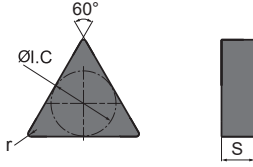
PCBN&PCD inserts



General Turning Inserts

PCBN&PCD inserts

TN (Negative angle)



😊 Good working condition 🙄 Normal working condition 😞 Bad working condition

| Workpiece material | Working Condition | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|---|---|---|
| | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | 😊 | 😊 | 😊 |
| H Super hard material | | | | | | | | | 😊 | 😊 | 😊 | 😊 |
| N Non ferrous metal | | | | | | | | | | | | |

General turning

PCBN&PCD inserts

| Type | Shape of insert | Model | Specifi-cation | Dimension(mm) | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | |
|---------------|-----------------|-------------------|----------------|---------------|------|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|
| | | | | Ø1.C | S | r | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
| Intact insert | | TNGN160404BE | BE | 9.525 | 4.76 | 0.4 | | | ○ | | | | | | | | | |
| | | TNGN160408BE | | 9.525 | 4.76 | 0.8 | | | ○ | | | | | | | | | |
| | | TNGN160412BE | | 9.525 | 4.76 | 1.2 | | | ○ | | | | | | | | | |
| | | TNGN160404BT01215 | T01215 | 9.525 | 4.76 | 0.4 | | | ★ | | | | | | | | | |
| | | TNGN160408BT01215 | | 9.525 | 4.76 | 0.8 | | | ★ | | | | | | | | | |
| | | TNGN160412BT01215 | | 9.525 | 4.76 | 1.2 | | | ★ | | | | | | | | | |
| | | TNGN160404BS01225 | S01225 | 9.525 | 4.76 | 0.4 | | | ○ | | | | | | | | | |
| | | TNGN160408BS01225 | | 9.525 | 4.76 | 0.8 | | | ○ | | | | | | | | | |
| | | TNGN160412BS01225 | | 9.525 | 4.76 | 1.2 | | | ○ | | | | | | | | | |

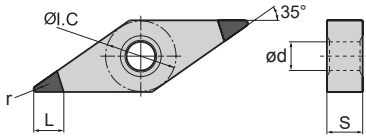
According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order



VN (Negative angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|---|---|---|
| | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| H Super hard material | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Type | Shape of insert | Model | Specifi- cation | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy& Superalloy | | | |
|---------------------|-----------------|---------------------|--------------------|-------------------|------|-----------------|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|--------------------------|--------|--------|--------|
| | | | | $\varnothing L.C$ | S | $\varnothing d$ | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
| Single-sided insert | | VNGA160404AE-2 | AE | 9.525 | 4.76 | 3.81 | 0.4 | 2.8 | | | | | | | | | ○ | ○ | ○ | |
| | | VNGA160408AE-2 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.5 | | | | | | | | | ○ | ○ | ○ | |
| | | VNGA160412AE-2 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | | | | | | | ○ | ○ | ○ | |
| | | VNGA160404AT01215-2 | T01215 | 9.525 | 4.76 | 3.81 | 0.4 | 2.8 | | | | | | | | | ○ | ○ | ○ | |
| | | VNGA160408AT01215-2 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.5 | | | | | | | | | ○ | ○ | ○ | |
| | | VNGA160412AT01215-2 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | | | | | | | ○ | ○ | ○ | |
| | | VNGA160404AS01225-2 | S01225 | 9.525 | 4.76 | 3.81 | 0.4 | 2.8 | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | VNGA160408AS01225-2 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.5 | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | VNGA160412AS01225-2 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | VNGA160404AS00815-2 | S00815 | 9.525 | 4.76 | 3.81 | 0.4 | 2.8 | | | | | ○ | ○ | ○ | | | | | |
| | | VNGA160408AS00815-2 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.5 | | | | | ○ | ○ | ○ | | | | | |
| | | VNGA160412AS00815-2 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | | | ○ | ○ | ○ | | | | | |
| | | VNGA160404AS01735-2 | S01735 | 9.525 | 4.76 | 3.81 | 0.4 | 2.8 | | | | | | | | | ○ | ○ | ○ | |
| | | VNGA160408AS01735-2 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.5 | | | | | | | | | ○ | ○ | ○ | |
| VNGA160412AS01735-2 | 9.525 | 4.76 | | 3.81 | 1.2 | 2.0 | | | | | | | | | ○ | ○ | ○ | | | |
| Double-sided insert | | VNGA160404DE-4 | DE | 9.525 | 4.76 | 3.81 | 0.4 | 2.8 | | | | | | | | | ○ | ○ | ○ | |
| | | VNGA160408DE-4 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.5 | | | | | | | | | ○ | ○ | ○ | |
| | | VNGA160412DE-4 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | | | | | | | ○ | ○ | ○ | |
| | | VNGA160404DT01215-4 | T01215 | 9.525 | 4.76 | 3.81 | 0.4 | 2.8 | | | | | | | | | ★ | ★ | ★ | |
| | | VNGA160408DT01215-4 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.5 | | | | | | | | | ★ | ★ | ★ | |
| | | VNGA160412DT01215-4 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | | | | | | | ★ | ★ | ★ | |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

DVNN
Kr:72°30'



Page A170

DVJNR/L
Kr:93°



A170

General turning

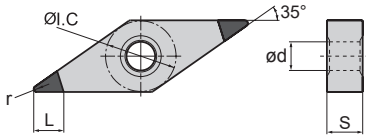
PCBN&PCD inserts



General Turning Inserts

PCBN&PCD inserts

VN (Negative angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | 😊 | 😊 | 😊 |
| H Super hard material | | | | | | | | | | 😊 | 😊 | 😊 |
| N Non ferrous metal | | | | | | | | | | | | |

| Type | Shape of insert | Model | Specifi- cation | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | | | |
|---------------------|-----------------|---------------------|--------------------|--------------------|------|-----------------|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|--|--|
| | | | | $\varnothing L, C$ | S | $\varnothing d$ | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 | | |
| Double-sided insert | | VNGA160404DS01225-4 | S01225 | 9.525 | 4.76 | 3.81 | 0.4 | 2.8 | | | | | ★ | ★ | ★ | ★ | ★ | ○ | ○ | ○ | | |
| | | VNGA160408DS01225-4 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.5 | | | | | ★ | ★ | ★ | ★ | ★ | ○ | ○ | ○ | | |
| | | VNGA160412DS01225-4 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | | | ★ | ★ | ★ | ★ | ★ | ○ | ○ | ○ | | |
| | | VNGA160404DS00815-4 | S00815 | 9.525 | 4.76 | 3.81 | 0.4 | 2.8 | | | | | ★ | ★ | ○ | | | | | | | |
| | | VNGA160408DS00815-4 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.5 | | | | | ★ | ★ | ○ | | | | | | | |
| | | VNGA160412DS00815-4 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | | | ★ | ★ | ○ | | | | | | | |
| | | VNGA160404DS01735-4 | S01735 | 9.525 | 4.76 | 3.81 | 0.4 | 2.8 | | | | | | | | | ○ | ★ | ○ | | | |
| | | VNGA160408DS01735-4 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.5 | | | | | | | | | ○ | ★ | ○ | | | |
| | | VNGA160412DS01735-4 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | | | | | | | ○ | ★ | ○ | | | |
| Penetration insert | | VNGA160402CE-2 | CE | 9.525 | 4.76 | 3.81 | 0.2 | 3.3 | | | | ○ | | | | | | | | | | |
| | | VNGN160404CE-2 | | 9.525 | 4.76 | 3.81 | 0.4 | 2.8 | | | | ○ | | | | | | | | | | |
| | | VNGN160408CE-2 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.5 | | | | | | | | | | | | | | |
| | | VNGN160412CE-2 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | | ○ | | | | | | | | | | |
| | | VNGA160402CT01215-2 | T01215 | 9.525 | 4.76 | 3.81 | 0.2 | 3.3 | | | | ★ | | | | | | | | | | |
| | | VNGN160404CT01215-2 | | 9.525 | 4.76 | 3.81 | 0.4 | 2.8 | | | | ★ | | | | | | | | | | |
| | | VNGN160408CT01215-2 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.5 | | | | ★ | | | | | | | | | | |
| | | VNGN160412CT01215-2 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | | ★ | | | | | | | | | | |
| | | VNGA160402CS01225-2 | S01225 | 9.525 | 4.76 | 3.81 | 0.2 | 3.3 | | | | ○ | | | | | | | | | | |
| | | VNGN160404CS01225-2 | | 9.525 | 4.76 | 3.81 | 0.4 | 2.8 | | | | ○ | | | | | | | | | | |
| | | VNGN160408CS01225-2 | | 9.525 | 4.76 | 3.81 | 0.8 | 2.5 | | | | | | | | | | | | | | |
| | | VNGN160412CS01225-2 | | 9.525 | 4.76 | 3.81 | 1.2 | 2.0 | | | | ○ | | | | | | | | | | |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

DVVNN
Kr:72°30'



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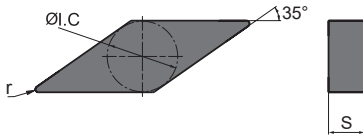
DVJNR/L
Kr:93°



A170



VN (Negative angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|---|---|---|
| | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | 😊 | 😊 | 😊 |
| H Super hard material | | | | | | | | | 😊 | 😊 | 😊 | 😊 |
| N Non ferrous metal | | | | | | | | | | | | |

| Type | Shape of insert | Model | Specifi-cation | Dimension(mm) | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | | |
|---------------|-----------------|-------------------|----------------|---------------|------|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|--|
| | | | | Øl.C | S | r | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 | |
| Intact insert | | VNGN160402BE | BE | 9.525 | 4.76 | 0.4 | | | ○ | | | | | | | | | | |
| | | VNGN160404BE | | 9.525 | 4.76 | 0.4 | | | ○ | | | | | | | | | | |
| | | VNGN160408BE | | 9.525 | 4.76 | 0.8 | | | | | | | | | | | | | |
| | | VNGN160412BE | | 9.525 | 4.76 | 1.2 | | | ○ | | | | | | | | | | |
| | | VNGN160402BT01215 | T01215 | 9.525 | 4.76 | 0.4 | | | ★ | | | | | | | | | | |
| | | VNGN160404BT01215 | | 9.525 | 4.76 | 0.4 | | | ★ | | | | | | | | | | |
| | | VNGN160408BT01215 | | 9.525 | 4.76 | 0.8 | | | ★ | | | | | | | | | | |
| | | VNGN160412BT01215 | | 9.525 | 4.76 | 1.2 | | | ★ | | | | | | | | | | |
| | | VNGN160402BS01225 | S01225 | 9.525 | 4.76 | 0.4 | | | ○ | | | | | | | | | | |
| | | VNGN160404BS01225 | | 9.525 | 4.76 | 0.4 | | | ○ | | | | | | | | | | |
| | | VNGN160408BS01225 | | 9.525 | 4.76 | 0.8 | | | | | | | | | | | | | |
| | | VNGN160412BS01225 | | 9.525 | 4.76 | 1.2 | | | ○ | | | | | | | | | | |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

General turning

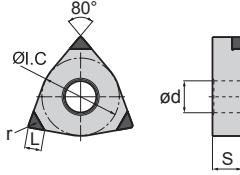
PCBN&PCD inserts



General Turning Inserts

PCBN&PCD inserts

WN (Negative angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | | 😊 | 😊 |
| H Super hard material | | | | | | | | | | 😊 | 😊 | 😊 |
| N Non ferrous metal | | | | | | | | | | | | |

General turning

PCBN&PCD inserts

| Type | Shape of insert | Model | Specifi- cation | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | |
|---------------------|-----------------|---------------------|--------------------|---------------|------|------|------|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|
| | | | | Øl.C | S | ød | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 |
| Single-sided insert | | WNGA080404AE-3 | AE | 12.7 | 4.76 | 5.16 | 0.4 | 2.5 | | | | | | | | | ○ | ○ | ○ |
| | | WNGA080408AE-3 | | 12.7 | 4.76 | 5.16 | 0.8 | 2.4 | | | | | | | | | ○ | ○ | ○ |
| | | WNGA080412AE-3 | | 12.7 | 4.76 | 5.16 | 1.2 | 2.3 | | | | | | | | | ○ | ○ | ○ |
| | | WNGA080404AT01215-3 | | 12.7 | 4.76 | 5.16 | 0.4 | 2.5 | | | | | | | | | ○ | ○ | ○ |
| | | WNGA080408AT01215-3 | T01215 | 12.7 | 4.76 | 5.16 | 0.8 | 2.4 | | | | | | | | | ○ | ○ | ○ |
| | | WNGA080412AT01215-3 | | 12.7 | 4.76 | 5.16 | 1.2 | 2.3 | | | | | | | | | ○ | ○ | ○ |
| | | WNGA080404AS01225-3 | | S01225 | 12.7 | 4.76 | 5.16 | 0.4 | 2.5 | | | | | ○ | ○ | ○ | ○ | ○ | ○ |
| | | WNGA080408AS01225-3 | 12.7 | | 4.76 | 5.16 | 0.8 | 2.4 | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | WNGA080412AS01225-3 | S00815 | 12.7 | 4.76 | 5.16 | 1.2 | 2.3 | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | WNGA080404AS00815-3 | | 12.7 | 4.76 | 5.16 | 0.4 | 2.5 | | | | | ○ | ○ | ○ | | | | |
| | | WNGA080408AS00815-3 | | 12.7 | 4.76 | 5.16 | 0.8 | 2.4 | | | | | ○ | ○ | ○ | | | | |
| | | WNGA080412AS00815-3 | S01735 | 12.7 | 4.76 | 5.16 | 1.2 | 2.3 | | | | | | | | | | | |
| | | WNGA080404AS01735-3 | | 12.7 | 4.76 | 5.16 | 0.4 | 2.5 | | | | | | | | | ○ | ○ | ○ |
| | | WNGA080408AS01735-3 | S01735 | 12.7 | 4.76 | 5.16 | 0.8 | 2.4 | | | | | | | | | ○ | ○ | ○ |
| WNGA080412AS01735-3 | 12.7 | 4.76 | | 5.16 | 1.2 | 2.3 | | | | | | | | | ○ | ○ | ○ | | |
| Double-sided insert | | WNGA080404DE-6 | DE | 12.7 | 4.76 | 5.16 | 0.4 | 2.5 | ○ | ○ | | | | | | | | | |
| | | WNGA080408DE-6 | | 12.7 | 4.76 | 5.16 | 0.8 | 2.4 | ○ | ○ | | | | | | | | | |
| | | WNGA080412DE-6 | | 12.7 | 4.76 | 5.16 | 1.2 | 2.3 | ○ | ○ | | | | | | | | | |
| | | WNGA080404DT01215-6 | T01215 | 12.7 | 4.76 | 5.16 | 0.4 | 2.5 | ★ | ★ | | | | | | | | | |
| | | WNGA080408DT01215-6 | | 12.7 | 4.76 | 5.16 | 0.8 | 2.4 | ★ | ★ | | | | | | | | | |
| | | WNGA080412DT01215-6 | | 12.7 | 4.76 | 5.16 | 1.2 | 2.3 | ★ | ★ | | | | | | | | | |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

DWLNRL
Kr:95°



Page A171

PWLNRL
Kr:95°



A183

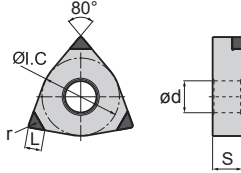
PWLNRL
Kr:95°



A217



WN (Negative angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|---|---|---|
| | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| H Super hard material | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Type | Shape of insert | Model | Specifi- cation | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | |
|---------------------|-----------------|---------------------|--------------------|---------------|------|------|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|
| | | | | ØL.C | S | ød | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
| Double-sided insert | | WNGA080404DS01225-6 | S01225 | 12.7 | 4.76 | 5.16 | 0.4 | 2.5 | ○ | ○ | | | | | | | | | | |
| | | WNGA080408DS01225-6 | | 12.7 | 4.76 | 5.16 | 0.8 | 2.4 | ○ | ○ | | | | | | | | | | |
| | | WNGA080412DS01225-6 | | 12.7 | 4.76 | 5.16 | 1.2 | 2.3 | ○ | ○ | | | | | | | | | | |
| | | WNGA080404DS00815-6 | S00815 | 12.7 | 4.76 | 3.81 | 0.4 | 2.5 | | | | | ★ | ★ | ○ | | | | | |
| | | WNGA080408DS00815-6 | | 12.7 | 4.76 | 3.81 | 0.8 | 2.2 | | | | | ★ | ★ | ○ | | | | | |
| | | WNGA080412DS00815-6 | | 12.7 | 4.76 | 3.81 | 1.2 | 2.0 | | | | | ★ | ★ | ○ | | | | | |
| | | WNGA080404DS01225-6 | S01225 | 12.7 | 4.76 | 3.81 | 0.4 | 2.5 | | | | | ★ | ★ | ★ | ★ | ★ | | | |
| | | WNGA080408DS01225-6 | | 12.7 | 4.76 | 3.81 | 0.8 | 2.2 | | | | | ★ | ★ | ★ | ★ | ★ | | | |
| | | WNGA080412DS01225-6 | | 12.7 | 4.76 | 3.81 | 1.2 | 2.0 | | | | | ★ | ★ | ★ | ★ | ★ | | | |
| | | WNGA080404DS01735-6 | S01735 | 12.7 | 4.76 | 3.81 | 0.4 | 2.5 | | | | | | | ○ | ★ | ○ | | | |
| | | WNGA080408DS01735-6 | | 12.7 | 4.76 | 3.81 | 0.8 | 2.2 | | | | | | | ○ | ★ | ○ | | | |
| | | WNGA080412DS01735-6 | | 12.7 | 4.76 | 3.81 | 1.2 | 2.0 | | | | | | | ○ | ★ | ○ | | | |
| Penetration insert | | WNGA080404CE-3 | CE | 12.7 | 4.76 | 5.16 | 0.4 | 2.5 | | ○ | | | | | | | | | | |
| | | WNGN080408CE-3 | | 12.7 | 4.76 | 5.16 | 0.8 | 2.4 | | ○ | | | | | | | | | | |
| | | WNGN080412CE-3 | | 12.7 | 4.76 | 5.16 | 1.2 | 2.3 | | ○ | | | | | | | | | | |
| | | WNGA080404CT01215-3 | T01215 | 12.7 | 4.76 | 5.16 | 0.4 | 2.5 | | | | | ★ | | | | | | | |
| | | WNGN080408CT01215-3 | | 12.7 | 4.76 | 5.16 | 0.8 | 2.4 | | | | | ★ | | | | | | | |
| | | WNGN080412CT01215-3 | | 12.7 | 4.76 | 5.16 | 1.2 | 2.3 | | | | | ★ | | | | | | | |
| | | WNGA080404CS01225-3 | S01225 | 12.7 | 4.76 | 5.16 | 0.4 | 2.5 | | | | | ○ | | | | | | | |
| | | WNGN080408CS01225-3 | | 12.7 | 4.76 | 5.16 | 0.8 | 2.4 | | | | | ○ | | | | | | | |
| | | WNGN080412CS01225-3 | | 12.7 | 4.76 | 5.16 | 1.2 | 2.3 | | | | | ○ | | | | | | | |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

DWLN/L
Kr:95°



Page A171

PWLN/L
Kr:95°



A183

PWLN/L
Kr:95°



A217

General turning

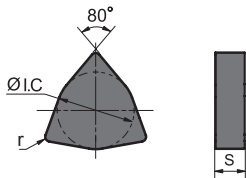
PCBN&PCD inserts



TURNING / General Turning Inserts

PCBN&PCD inserts

WN (Negative angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working Condition | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | 😊 | 😊 | 😊 |
| H Super hard material | | | | | | | | | 😊 | 😊 | 😊 | 😊 |
| N Non ferrous metal | | | | | | | | | | | | |

General turning

PCBN&PCD inserts

| Type | Shape of insert | Model | Specifi-cation | Dimension(mm) | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | |
|---------------|-----------------|-------------------|----------------|---------------|------|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|
| | | | | ØI.C | S | r | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
| Intact insert | | WNGN080404BE | BE | 12.7 | 4.76 | 0.4 | | | ○ | | | | | | | | | |
| | | WNGN080408BE | | 12.7 | 4.76 | 0.8 | | | ○ | | | | | | | | | |
| | | WNGN080412BE | | 12.7 | 4.76 | 1.2 | | | ○ | | | | | | | | | |
| | | WNGN080404BT01215 | T01215 | 12.7 | 4.76 | 0.4 | | | ★ | | | | | | | | | |
| | | WNGN080408BT01215 | | 12.7 | 4.76 | 0.8 | | | ★ | | | | | | | | | |
| | | WNGN080412BT01215 | | 12.7 | 4.76 | 1.2 | | | ★ | | | | | | | | | |
| | | WNGN080404BS01225 | S01225 | 12.7 | 4.76 | 0.4 | | | ○ | | | | | | | | | |
| | | WNGN080408BS01225 | | 12.7 | 4.76 | 0.8 | | | ○ | | | | | | | | | |
| | | WNGN080412BS01225 | | 12.7 | 4.76 | 1.2 | | | ○ | | | | | | | | | |

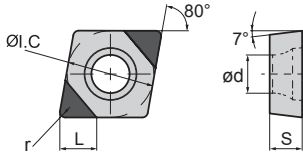
According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order



CC (Positive angle)



☺ Good working condition 😐 Normal working condition ☹ Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| K Cast iron | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | | | ☺ | ☺ |
| H Super hard material | | | | | | | | | | | | ☺ | ☺ |
| N Non ferrous metal | | | | | | | | | | | | | |

| Insert shape | Specification | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | |
|--------------|---------------------|---------------|------|-----|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|
| | | øI.C | S | ød | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
| | CCGW060202AE-2 | 6.35 | 2.38 | 2.8 | 0.2 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | CCGW060204AE-2 | 6.35 | 2.38 | 2.8 | 0.4 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | CCGW060208AE-2 | 6.35 | 2.38 | 2.8 | 0.8 | 2.4 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | CCGW060202AS01225-2 | 6.35 | 2.38 | 2.8 | 0.2 | 2.5 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | CCGW060204AS01225-2 | 6.35 | 2.38 | 2.8 | 0.4 | 2.5 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | CCGW060208AS01225-2 | 6.35 | 2.38 | 2.8 | 0.8 | 2.4 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | CCGW060202AT01225-2 | 6.35 | 2.38 | 2.8 | 0.2 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | CCGW060204AT01225-2 | 6.35 | 2.38 | 2.8 | 0.4 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | CCGW060208AT01225-2 | 6.35 | 2.38 | 2.8 | 0.8 | 2.4 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | CCGW09T302AE-2 | 9.525 | 3.97 | 4.4 | 0.2 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | CCGW09T304AE-2 | 9.525 | 3.97 | 4.4 | 0.4 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | CCGW09T308AE-2 | 9.525 | 3.97 | 4.4 | 0.8 | 2.4 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | CCGW09T302AS01225-2 | 9.525 | 3.97 | 4.4 | 0.2 | 2.5 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | CCGW09T304AS01225-2 | 9.525 | 3.97 | 4.4 | 0.4 | 2.5 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | CCGW09T308AS01225-2 | 9.525 | 3.97 | 4.4 | 0.8 | 2.4 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | CCGW09T302AT01225-2 | 9.525 | 3.97 | 4.4 | 0.2 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | CCGW09T304AT01225-2 | 9.525 | 3.97 | 4.4 | 0.4 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | CCGW09T308AT01225-2 | 9.525 | 3.97 | 4.4 | 0.8 | 2.4 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | CCGW120402AE-2 | 12.7 | 4.76 | 5.5 | 0.2 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | CCGW120404AE-2 | 12.7 | 4.76 | 5.5 | 0.4 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | CCGW120408AE-2 | 12.7 | 4.76 | 5.5 | 0.8 | 2.4 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | CCGW120402AS01225-2 | 12.7 | 4.76 | 5.5 | 0.2 | 2.5 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | CCGW120404AS01225-2 | 12.7 | 4.76 | 5.5 | 0.4 | 2.5 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | CCGW120408AS01225-2 | 12.7 | 4.76 | 5.5 | 0.8 | 2.4 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | CCGW120402AT01225-2 | 12.7 | 4.76 | 5.5 | 0.2 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | CCGW120404AT01225-2 | 12.7 | 4.76 | 5.5 | 0.4 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | CCGW120408AT01225-2 | 12.7 | 4.76 | 5.5 | 0.8 | 2.4 | ○ | ○ | | | | | | | | ○ | ○ | ○ |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

SCACR/L
Kr:90°



Page A184

SCLCR/L
Kr:95°



A185

SCLCR/L
Kr:95°



A218

SCFCR/L
Kr:90°



A232

SCLCR/L
Kr:95°



A233

General turning

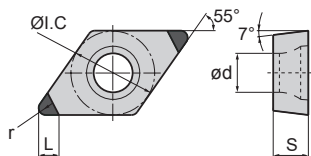
PCBN&PCD inserts



General Turning Inserts

PCBN&PCD inserts

DC (Positive angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | 😊 | 😊 | 😊 |
| H Super hard material | | | | | | | | | | 😊 | 😊 | 😊 |
| N Non ferrous metal | | | | | | | | | | 😊 | 😊 | 😊 |

| Insert shape | Specification | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | |
|--------------|---------------------|---------------|------|-----|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|
| | | Øl.C | S | ød | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
| | DCGW070202AE-2 | 6.35 | 2.38 | 2.8 | 0.2 | 2.7 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | DCGW070204AE-2 | 6.35 | 2.38 | 2.8 | 0.4 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | DCGW070208AE-2 | 6.35 | 2.38 | 2.8 | 0.8 | 2.1 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | DCGW070202AS01225-2 | 6.35 | 2.38 | 2.8 | 0.2 | 2.7 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | DCGW070204AS01225-2 | 6.35 | 2.38 | 2.8 | 0.4 | 2.5 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | DCGW070208AS01225-2 | 6.35 | 2.38 | 2.8 | 0.8 | 2.1 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | DCGW070202AT01225-2 | 6.35 | 2.38 | 2.8 | 0.2 | 2.7 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | DCGW070204AT01225-2 | 6.35 | 2.38 | 2.8 | 0.4 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | DCGW070208AT01225-2 | 6.35 | 2.38 | 2.8 | 0.8 | 2.1 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | DCGW11T302AE-2 | 9.525 | 3.97 | 4.4 | 0.2 | 2.7 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | DCGW11T304AE-2 | 9.525 | 3.97 | 4.4 | 0.4 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | DCGW11T308AE-2 | 9.525 | 3.97 | 4.4 | 0.8 | 2.1 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | DCGW11T302AS01225-2 | 9.525 | 3.97 | 4.4 | 0.2 | 2.7 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | DCGW11T304AS01225-2 | 9.525 | 3.97 | 4.4 | 0.4 | 2.5 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | DCGW11T308AS01225-2 | 9.525 | 3.97 | 4.4 | 0.8 | 2.1 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | DCGW11T302AT01225-2 | 9.525 | 3.97 | 4.4 | 0.2 | 2.7 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | DCGW11T304AT01225-2 | 9.525 | 3.97 | 4.4 | 0.4 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | DCGW11T308AT01225-2 | 9.525 | 3.97 | 4.4 | 0.8 | 2.1 | ○ | ○ | | | | | | | | ○ | ○ | ○ |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

SDACR/L
Kr:90°



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SDJCR/L
Kr:93°



A187

SDNCN
Kr:62°30'



A188

SDQCR/L
Kr:107°30'



A219

SDUCR/L
Kr:93°



A220

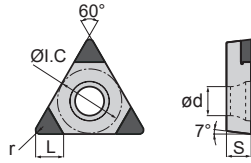
SDZCR/L
Kr:95°



A221



TC (Positive angle)



☺ Good working condition 😐 Normal working condition ☹ Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|---|---|---|
| | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| K Cast iron | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | ☺ | ☺ | ☺ |
| H Super hard material | | | | | | | | | | ☺ | ☺ | ☺ |
| N Non ferrous metal | | | | | | | | | | | | |

| Insert shape | Sepcification | Dimnsion(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy& Superalloy | | | |
|--------------|---------------------|--------------|------|-----|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|--------------------------|--------|--------|--------|
| | | ØI.C | S | ød | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
| | TCGW090202AE-3 | 5.56 | 2.38 | 2.5 | 0.2 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | TCGW090204AE-3 | 5.56 | 2.38 | 2.5 | 0.4 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | TCGW090208AE-3 | 5.56 | 2.38 | 2.5 | 0.8 | 2.2 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | TCGW090202AS01225-3 | 5.56 | 2.38 | 2.5 | 0.2 | 2.5 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | TCGW090204AS01225-3 | 5.56 | 2.38 | 2.5 | 0.4 | 2.5 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | TCGW090208AS01225-3 | 5.56 | 2.38 | 2.5 | 0.8 | 2.2 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | TCGW090202AT01225-3 | 5.56 | 2.38 | 2.5 | 0.2 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | TCGW090204AT01225-3 | 5.56 | 2.38 | 2.5 | 0.4 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | TCGW090208AT01225-3 | 5.56 | 2.38 | 2.5 | 0.8 | 2.2 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | TCGW110202AE-3 | 6.35 | 2.38 | 2.8 | 0.2 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | TCGW110204AE-3 | 6.35 | 2.38 | 2.8 | 0.4 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | TCGW110208AE-3 | 6.35 | 2.38 | 2.8 | 0.8 | 2.2 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | TCGW110202AS01225-3 | 6.35 | 2.38 | 2.8 | 0.2 | 2.5 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | TCGW110204AS01225-3 | 6.35 | 2.38 | 2.8 | 0.4 | 2.5 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | TCGW110208AS01225-3 | 6.35 | 2.38 | 2.8 | 0.8 | 2.2 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | TCGW110202AT01225-3 | 6.35 | 2.38 | 2.8 | 0.2 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | TCGW110204AT01225-3 | 6.35 | 2.38 | 2.8 | 0.4 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | TCGW110208AT01225-3 | 6.35 | 2.38 | 2.8 | 0.8 | 2.2 | ○ | ○ | | | | | | | | ○ | ○ | ○ |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

| | | | | |
|-----------|------|------|------|------|
| | | | | |
| Page A198 | A198 | A199 | A200 | A223 |

General turning

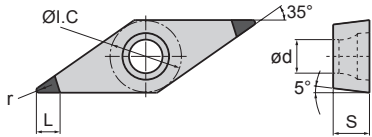
PCBN&PCD inserts



General Turning Inserts

PCBN&PCD inserts

VB (Positive angle)



😊 Good working condition 🙄 Normal working condition 😞 Bad working condition

| Workpiece material | K Cast iron | S Heat resistant alloy, Ti alloy | H Super hard material | N Non ferrous metal |
|--------------------|-------------|----------------------------------|-----------------------|---------------------|
| | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |
| | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |
| | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |
| | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |
| | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |
| | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |
| | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |
| | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |
| | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |
| | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 | 😊😊😊😊 |

| Insert shape | Specification | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | | |
|--------------|----------------------------|---------------|------|-----|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|--------|
| | | ØI.C | S | ød | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
| | VBGW160402AE-2 | 9.525 | 4.76 | 4.4 | 0.2 | 3.3 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | VBGW160404AE-2 | 9.525 | 4.76 | 4.4 | 0.4 | 2.8 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | VBGW160408AE-2 | 9.525 | 4.76 | 4.4 | 0.8 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | VBGW160402AS01225-2 | 9.525 | 4.76 | 4.4 | 0.2 | 3.3 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | VBGW160404AS01225-2 | 9.525 | 4.76 | 4.4 | 0.4 | 2.8 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | VBGW160408AS01225-2 | 9.525 | 4.76 | 4.4 | 0.8 | 2.5 | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| | VBGW160402AT01225-2 | 9.525 | 4.76 | 4.4 | 0.2 | 3.3 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | VBGW160404AT01225-2 | 9.525 | 4.76 | 4.4 | 0.4 | 2.8 | ○ | ○ | | | | | | | | ○ | ○ | ○ |
| | VBGW160408AT01225-2 | 9.525 | 4.76 | 4.4 | 0.8 | 2.5 | ○ | ○ | | | | | | | | ○ | ○ | ○ |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

SVJBR/L
Kr:93°



Page A189

SVABR/L
Kr:90°



A190

SVVBN
Kr:72°30'



A191

SVQBR/L
Kr:107°30'



A226

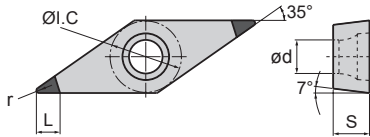
SVUBR/L
Kr:93°



A227



VC (Positive angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | 😊 | 😊 | 😊 |
| H Super hard material | | | | | | | | | 😊 | 😊 | 😊 | 😊 |
| N Non ferrous metal | | | | | | | | | | | | |

| Insert shape | Sepsification | Dimension(mm) | | | | | Cast iron | | | | Hardened steel | | | | Powder alloy & Superalloy | | |
|--------------|---------------------|---------------|------|-----|-----|-----|-----------|--------|--------|--------|----------------|--------|--------|--------|---------------------------|--------|--------|
| | | ØI.C | S | ød | r | L | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 |
| | VCGW160402AE-2 | 9.525 | 4.76 | 4.4 | 0.2 | 3.3 | ○ | ○ | | | | | | | ○ | ○ | ○ |
| | VCGW160404AE-2 | 9.525 | 4.76 | 4.4 | 0.4 | 2.8 | ○ | ○ | | | | | | | ○ | ○ | ○ |
| | VCGW160408AE-2 | 9.525 | 4.76 | 4.4 | 0.8 | 2.5 | ○ | ○ | | | | | | | ○ | ○ | ○ |
| | VCGW160402AS01225-2 | 9.525 | 4.76 | 4.4 | 0.2 | 3.3 | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | VCGW160404AS01225-2 | 9.525 | 4.76 | 4.4 | 0.4 | 2.8 | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | VCGW160408AS01225-2 | 9.525 | 4.76 | 4.4 | 0.8 | 2.5 | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | VCGW160402AT01225-2 | 9.525 | 4.76 | 4.4 | 0.2 | 3.3 | ○ | ○ | | | | | | | ○ | ○ | ○ |
| | VCGW160404AT01225-2 | 9.525 | 4.76 | 4.4 | 0.4 | 2.8 | ○ | ○ | | | | | | | ○ | ○ | ○ |
| | VCGW160408AT01225-2 | 9.525 | 4.76 | 4.4 | 0.8 | 2.5 | ○ | ○ | | | | | | | ○ | ○ | ○ |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

General turning

PCBN&PCD inserts

Applicable tool



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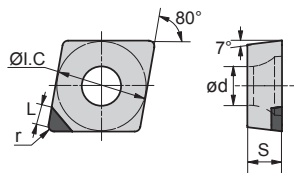
A225



General Turning Inserts

PCBN&PCD inserts

CC (Positive angle)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Cast iron | Heat resistant alloy, Ti alloy | Super hard material | Non ferrous metal |
|--------------------|-----------|--------------------------------|---------------------|-------------------|
| K | | | | |
| S | | | | |
| H | | | | |
| N | 😊 | 😊 | 😊 | 😊 |

| Type | Shape | Specification | Dimension(mm) | | | | | Grade | | | |
|---------------|-------|---------------|---------------|------|-----|-----|-----|--------|--------|--------|--------|
| | | | ØI.C | S | ød | r | L | DN0121 | DN0511 | DN1021 | DN3021 |
| 0° rake angle | | CCGW060202AF | 6.35 | 2.38 | 2.8 | 0.2 | 2.6 | ○ | ○ | ○ | ○ |
| | | CCGW060204AF | 6.35 | 2.38 | 2.8 | 0.4 | 2.5 | ★ | ★ | ★ | ★ |
| | | CCGW060208AF | 6.35 | 2.38 | 2.8 | 0.8 | 2.4 | ○ | ○ | ○ | ○ |
| | | CCGW09T302AF | 9.525 | 3.97 | 4.4 | 0.2 | 2.6 | ○ | ○ | ○ | ○ |
| | | CCGW09T304AF | 9.525 | 3.97 | 4.4 | 0.4 | 2.5 | ○ | ○ | ○ | ○ |
| | | CCGW09T308AF | 9.525 | 3.97 | 4.4 | 0.8 | 2.4 | ★ | ★ | ★ | ★ |
| | | CCGW120402AF | 12.7 | 4.76 | 5.5 | 0.2 | 2.6 | ○ | ○ | ○ | ○ |
| | | CCGW120404AF | 12.7 | 4.76 | 5.5 | 0.4 | 2.5 | ○ | ○ | ○ | ○ |
| | | CCGW120408AF | 12.7 | 4.76 | 5.5 | 0.8 | 2.4 | ★ | ★ | ★ | ★ |
| 7° rake angle | | CCMX060202AF | 6.35 | 2.38 | 2.8 | 0.2 | 2.6 | ○ | ○ | ○ | ○ |
| | | CCMX060204AF | 6.35 | 2.38 | 2.8 | 0.4 | 2.5 | ○ | ○ | ○ | ○ |
| | | CCMX060208AF | 6.35 | 2.38 | 2.8 | 0.8 | 2.4 | ○ | ○ | ○ | ○ |
| | | CCMX09T302AF | 9.525 | 3.97 | 4.4 | 0.2 | 2.6 | ○ | ○ | ○ | ○ |
| | | CCMX09T304AF | 9.525 | 3.97 | 4.4 | 0.4 | 2.5 | ○ | ○ | ○ | ○ |
| | | CCMX09T308AF | 9.525 | 3.97 | 4.4 | 0.8 | 2.4 | ○ | ○ | ○ | ○ |
| | | CCMX120402AF | 12.7 | 4.76 | 5.5 | 0.2 | 2.6 | ○ | ○ | ○ | ○ |
| | | CCMX120404AF | 12.7 | 4.76 | 5.5 | 0.4 | 2.5 | ○ | ○ | ○ | ○ |
| | | CCMX120408AF | 12.7 | 4.76 | 5.5 | 0.8 | 2.4 | ○ | ○ | ○ | ○ |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

SCACR/L
Kr:90°



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SCLCR/L
Kr:95°



A185

SCLCR/L
Kr:95°



A218

SCFCR/L
Kr:90°



A232

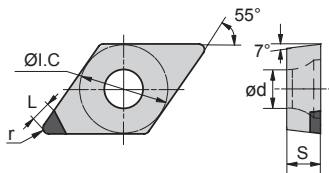
SCLCR/L
Kr:95°



A233



DC (Positive angle)



😊 Good working condition 🙄 Normal working condition 😞 Bad working condition

| | | | | | |
|--------------------|---|---|---|---|---|
| Workpiece material | K Cast iron | | | | |
| | S Heat resistant alloy, Ti alloy | | | | |
| | H Super hard material | | | | |
| | N Non ferrous metal | 😊 | 😊 | 😞 | 😞 |

| Type | Shape | Specification | Dimension(mm) | | | | | Grade | | | |
|---------------|-------|---------------|---------------|------|-----|-----|-----|--------|--------|--------|--------|
| | | | Øl.C | S | ød | r | L | DN0121 | DN0511 | DN1021 | DN3021 |
| 0° rake angle | | DCGW070202AF | 6.35 | 2.38 | 2.8 | 0.2 | 2.7 | ○ | ○ | ○ | ○ |
| | | DCGW070204AF | 6.35 | 2.38 | 2.8 | 0.4 | 2.5 | ○ | ○ | ○ | ○ |
| | | DCGW070208AF | 6.35 | 2.38 | 2.8 | 0.8 | 2.1 | ★ | ★ | ★ | ★ |
| | | DCGW11T302AF | 9.525 | 3.97 | 4.4 | 0.2 | 2.7 | ○ | ○ | ○ | ○ |
| | | DCGW11T304AF | 9.525 | 3.97 | 4.4 | 0.4 | 2.5 | ○ | ○ | ○ | ○ |
| | | DCGW11T308AF | 9.525 | 3.97 | 4.4 | 0.8 | 2.1 | ★ | ★ | ★ | ★ |
| 7° rake angle | | DCMX070202AF | 6.35 | 2.38 | 2.8 | 0.2 | 2.7 | ○ | ○ | ○ | ○ |
| | | DCMX070204AF | 6.35 | 2.38 | 2.8 | 0.4 | 2.5 | ○ | ○ | ○ | ○ |
| | | DCMX070208AF | 6.35 | 2.38 | 2.8 | 0.8 | 2.1 | ○ | ○ | ○ | ○ |
| | | DCMX11T302AF | 9.525 | 3.97 | 4.4 | 0.2 | 2.7 | ○ | ○ | ○ | ○ |
| | | DCMX11T304AF | 9.525 | 3.97 | 4.4 | 0.4 | 2.5 | ○ | ○ | ○ | ○ |
| | | DCMX11T308AF | 9.525 | 3.97 | 4.4 | 0.8 | 2.1 | ○ | ○ | ○ | ○ |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

★ Recommended grade (always stock available) ○ Make-to-order

General turning

PCBN&PCD inserts

Applicable tool

SDACR/L
Kr:90°



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SDJCR/L
Kr:93°



A187

SDNCN
Kr:62°30'



A188

SDQCR/L
Kr:107°30'



A219

SDUCR/L
Kr:93°



A220

SDZCR/L
Kr:95°



A221



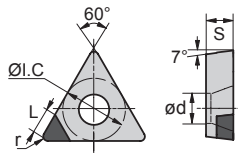
General Turning Inserts

PCBN&PCD inserts

General turning

PCBN&PCD inserts

TC (Positive inserts)



😊 Good working condition 🙄 Normal working condition 😞 Bad working condition

| Workpiece material | K | Cast iron | | | | |
|--------------------|---|--------------------------------|---|---|---|---|
| | S | Heat resistant alloy, Ti alloy | | | | |
| | H | Super hard material | | | | |
| | N | Non ferrous metal | 😊 | 😊 | 😞 | 😞 |

| Type | Shape | Specification | Dimension(mm) | | | | | Grade | | | |
|---------------|-------|---------------|---------------|------|-----|-----|-----|--------|--------|--------|--------|
| | | | ØI.C | S | ød | r | L | DN0121 | DN0511 | DN1021 | DN3021 |
| 0° rake angle | | TCGW090202AF | 5.56 | 2.38 | 2.5 | 0.2 | 2.5 | ○ | ○ | ○ | ○ |
| | | TCGW090204AF | 5.56 | 2.38 | 2.5 | 0.4 | 2.5 | ○ | ○ | ○ | ○ |
| | | TCGW090208AF | 5.56 | 2.38 | 2.5 | 0.8 | 2.2 | ★ | ★ | ★ | ★ |
| | | TCGW110202AF | 6.35 | 2.38 | 2.8 | 0.2 | 2.5 | ○ | ○ | ○ | ○ |
| | | TCGW110204AF | 6.35 | 2.38 | 2.8 | 0.4 | 2.5 | ○ | ○ | ○ | ○ |
| | | TCGW110208AF | 6.35 | 2.38 | 2.8 | 0.8 | 2.2 | ★ | ★ | ★ | ★ |
| 7° rake angle | | TCMX090202AF | 5.56 | 2.38 | 2.5 | 0.2 | 2.5 | ○ | ○ | ○ | ○ |
| | | TCMX090204AF | 5.56 | 2.38 | 2.5 | 0.4 | 2.5 | ○ | ○ | ○ | ○ |
| | | TCMX090208AF | 5.56 | 2.38 | 2.5 | 0.8 | 2.2 | ○ | ○ | ○ | ○ |
| | | TCMX110202AF | 6.35 | 2.38 | 2.8 | 0.2 | 2.5 | ○ | ○ | ○ | ○ |
| | | TCMX110204AF | 6.35 | 2.38 | 2.8 | 0.4 | 2.5 | ○ | ○ | ○ | ○ |
| | | TCMX110208AF | 6.35 | 2.38 | 2.8 | 0.8 | 2.2 | ○ | ○ | ○ | ○ |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

STACR/L
Kr:90°



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STFCR/L
Kr:90°



A198

STGCR/L
Kr:91°



A199

STECR/L
Kr:60°



A200

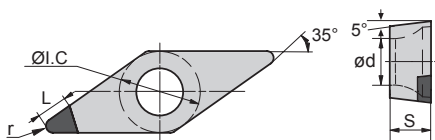
STFCR/L
Kr:90°



A223



VB (Positive inserts)



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| | | | | | |
|--------------------|---|---|---|---|---|
| Workpiece material | K Cast iron | | | | |
| | S Heat resistant alloy, Ti alloy | | | | |
| | H Super hard material | | | | |
| | N Non ferrous metal | 😊 | 😊 | 😐 | 😞 |

| Type | Shape | Specification | Dimension(mm) | | | | | Grade | | | |
|---------------|-------|---------------------|---------------|------|-----|-----|-----|--------|--------|--------|--------|
| | | | ØI.C | S | ød | r | L | DN0121 | DN0511 | DN1021 | DN3021 |
| 0° rake angle | | VBGW160402AF | 9.525 | 4.76 | 4.4 | 0.2 | 3.3 | ○ | ○ | ○ | ○ |
| | | VBGW160404AF | 9.525 | 4.76 | 4.4 | 0.4 | 2.8 | ○ | ○ | ○ | ○ |
| | | VBGW160408AF | 9.525 | 4.76 | 4.4 | 0.8 | 2.5 | ★ | ★ | ★ | ★ |
| 5° rake angle | | VBMX160402AF | 9.525 | 4.76 | 4.4 | 0.2 | 3.3 | ○ | ○ | ○ | ○ |
| | | VBMX160404AF | 9.525 | 4.76 | 4.4 | 0.4 | 2.8 | ○ | ○ | ○ | ○ |
| | | VBMX160408AF | 9.525 | 4.76 | 4.4 | 0.8 | 2.5 | ○ | ○ | ○ | ○ |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

★ Recommended grade (always stock available) ○ Make-to-order

General turning

PCBN&PCD inserts

Applicable tool

SVJBR/L
Kr:93°



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SVABR/L
Kr:90°



A190

SVVBN
Kr:72°30'



A191

SVQBR/L
Kr:107°30'



A226

SVUBR/L
Kr:93°



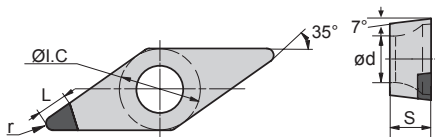
A227



TURNING / General Turning Inserts

PCBN&PCD inserts

VC□□ (Positive inserts)



😊 Good working condition 🙄 Normal working condition 😞 Bad working condition

| Workpiece material | Cast iron | Heat resistant alloy, Ti alloy | Super hard material | Non ferrous metal |
|--------------------|-----------|--------------------------------|---------------------|-------------------|
| K | | | | |
| S | | | | |
| H | | | | |
| N | | 😊 | 😊 | 😊 |

| Type | Shape | Specification | Dimension(mm) | | | | | Grade | | | |
|---------------|-------|---------------|---------------|------|-----|-----|-----|--------|--------|--------|--------|
| | | | ØI.C | S | ød | r | L | DN0121 | DN0511 | DN1021 | DN3021 |
| 0° rake angle | | VCGW160402AF | 9.525 | 4.76 | 4.4 | 0.2 | 3.3 | ○ | ○ | ○ | ○ |
| | | VCGW160404AF | 9.525 | 4.76 | 4.4 | 0.4 | 2.8 | ○ | ○ | ○ | ○ |
| | | VCGW160408AF | 9.525 | 4.76 | 4.4 | 0.8 | 2.5 | ○ | ○ | ○ | ○ |
| 7° rake angle | | VCMX160402AF | 9.525 | 4.76 | 4.4 | 0.2 | 3.3 | ○ | ○ | ○ | ○ |
| | | VCMX160404AF | 9.525 | 4.76 | 4.4 | 0.4 | 2.8 | ○ | ○ | ○ | ○ |
| | | VCMX160408AF | 9.525 | 4.76 | 4.4 | 0.8 | 2.5 | ○ | ○ | ○ | ○ |

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

SVVCN
Kr:72°30'



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SVJCR/L
Kr:93°



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SVQCR/L
Kr:107°30'



A224

SVUCR/L
Kr:93°



A225



Abnormal failure and solutions for cast iron machining

| | Abnormal failure | Solution |
|------------------------|---|--|
| Breakage | Breakage occurs on chamfer of rake face | Enlarge chamfered negative rake angle |
| | Edge crashing appears when finishing grey cast iron | |
| Abrasion | Abrasion occurs when machining nodular cast iron | Change to dry cutting |
| | Abrasion under dry cutting conditions | Reduce cutting speed |
| | Abrasion occurs when machining grey cast iron | Change to dry cutting, increase cutting speed |
| Surface quality | Bad surface finish | Increase cutting speed, increase nose radius, reduce feed rate |
| | Bad cylindricity and coaxiality | Reduce nose radius, improve stability, change to positive insert |
| | Burrs | Change to positive insert, reduce chamfer width |

Abnormal failure and solutions for hardened steel

| | Abnormal failure | Solution | |
|------------------------|--|--|---|
| Breakage | Cutting edge breakage | Enlarge chamfered negative rake angle; raise cutting speed and reduce feed | |
| | Flaking and crater wear on rake face | Reduce cutting speed | |
| | Thermal cracks | Change to dry cutting; reduce cutting speed | |
| Abrasion | Wear occurs on chamfer of rake face | Reduce cutting speed | |
| | Rapid wear when finishing grey cast iron | | |
| Surface quality | Bad surface finish | Vibration | Reduce chamfered negative rake angle; reduce nose radius; reduce feed rate; improve stability |
| | | Tool mark | Increase nose radius; reduce feed rate; change to dry cutting; increase cutting speed |
| | Bad cylindricity and coaxiality | | Reduce nose radius; improve stability; change to positive insert |



TURNING / General Turning Inserts

Ceramic inserts

Ceramic inserts code key

General turning

Ceramic inserts code key

| Insert shape | | |
|--------------|---|---|
| A | B | C |
| D | E | H |
| K | L | M |
| P | R | S |
| T | V | W |

| Tolerance class | | | | | | | |
|-----------------|-----------------------------|--------------------------------|---------------------------|------|-----------------------------|--------------------------------|---------------------------|
| | | | | | | | |
| Code | Nose height M Tolerance(mm) | Inscribed circle Tolerance(mm) | Thickness S Tolerance(mm) | Code | Nose height M Tolerance(mm) | Inscribed circle Tolerance(mm) | Thickness S Tolerance(mm) |
| A | ±0.005 | ±0.025 | ±0.025 | J | ±0.005 | ±0.05±0.13 | ±0.025 |
| F | ±0.005 | ±0.013 | ±0.025 | K | ±0.013 | ±0.05±0.13 | ±0.025 |
| C | ±0.013 | ±0.025 | ±0.025 | L | ±0.025 | ±0.05±0.13 | ±0.025 |
| H | ±0.013 | ±0.013 | ±0.025 | M | ±0.08±0.18 | ±0.05±0.13 | ±0.13 |
| E | ±0.025 | ±0.025 | ±0.025 | N | ±0.08±0.18 | ±0.05±0.13 | ±0.025 |
| G | ±0.025 | ±0.025 | ±0.13 | U | ±0.13±0.38 | ±0.08±0.25 | ±0.13 |

R P G N

| Clearance angle of main cutting edge | | | |
|--------------------------------------|-----------------|------|-----------------------|
| Code | Clearance angle | Code | Clearance angle |
| A | 3° | B | 5° |
| C | 7° | D | 15° |
| E | 20° | F | 25° |
| G | 30° | N | 0° |
| P | 11° | O | Other clearance angle |

| Chipbreaker and clamping system | | |
|---------------------------------|-------------------|-------------------------|
| Code | With/Without hole | Section plane of insert |
| N | Without | |
| B | With | |
| C | With | |
| A | With | |
| W | With | |
| Q | With | |
| X | --- | Special |



| Length of cutting edge | | | | | | |
|------------------------|--------------|----|----|----|----|----|
| Diameter of IC (mm) | Insert shape | | | | | |
| | C | D | S | T | V | W |
| 3.97 | | | | 06 | | |
| 5.0 | | | | | | |
| 5.56 | | | | 09 | | |
| 6.0 | | | | | | |
| 6.35 | 06 | 07 | | 11 | 11 | |
| 8.0 | | | | | | |
| 9.525 | 09 | 11 | 09 | 16 | 16 | 06 |
| 10.0 | | | | | | |
| 12.0 | | | | | | |
| 12.7 | 12 | 15 | 12 | 22 | 22 | 08 |
| 15.875 | 16 | | 15 | 27 | | |
| 16.0 | | 19 | | | | |
| 19.05 | 19 | | 19 | 33 | | |
| 20.0 | | | | | | |
| 25.0 | 25 | 25 | | | | |
| 25.4 | | | 25 | | | |
| 31.75 | | | | | | |
| 32 | | | | | | |

| Insert thickness | | | |
|--|----------------------|------|----------------------|
| <p>Thickness is defined as height from bottom of insert to the highest part of cutting edge.</p> | | | |
| Code | Insert thickness(mm) | Code | Insert thickness(mm) |
| 02 | 2.38 | 06 | 6.35 |
| T2 | 2.58 | T6 | 6.75 |
| 03 | 3.18 | 07 | 7.94 |
| T3 | 3.97 | 09 | 9.52 |
| 04 | 4.76 | T9 | 9.72 |
| T4 | 4.96 | 11 | 11.11 |
| 05 | 5.56 | 12 | 12.70 |
| T5 | 5.95 | | |

| Nose radius code | |
|-----------------------------|-----------------|
| Code | Nose radius(mm) |
| 00 | No radius |
| 02 | 0.2 |
| 04 | 0.4 |
| 08 | 0.8 |
| 12 | 1.2 |
| 16 | 1.6 |
| 20 | 2.0 |
| 24 | 2.4 |
| 32 | 3.2 |
| X | Others |
| Diameter of insert (Metric) | Round insert |

General turning

Ceramic inserts code key

09 07 00 T 010 20 - V

| Type of cutting edge | | |
|----------------------|----------------------|---------|
| Code | Type of cutting edge | Picture |
| E | Honing | |
| T | Chamfering | |
| S | Chamfering + honing | |
| F | Sharp edges | |

| Chamfer width (mm) | | | |
|--------------------|------|-----|------|
| 010 | 0.10 | 040 | 0.40 |
| 015 | 0.15 | 045 | 0.45 |
| 020 | 0.20 | 050 | 0.50 |
| 025 | 0.25 | 100 | 1.00 |
| 030 | 0.30 | 200 | 2.00 |
| 035 | 0.35 | | |

| Chamfer angle | |
|---------------|-----|
| 05 | 5° |
| 10 | 10° |
| 15 | 15° |
| 20 | 20° |
| 25 | 25° |
| 30 | 30° |

V-type positioning surface



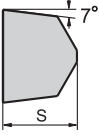
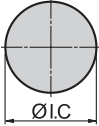
TURNING / General Turning Inserts

Ceramic inserts


General turning

Ceramic inserts

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| | | |
|--------------------|-------------------------------|---|
| Workpiece material | K Cast iron | 😞 |
| | S Heat resistant alloy | 😐 |
| | H Super hard material | 😊 |

| Inserts shape | Type | Dimensions(mm) | | Grade |
|---|---------------------------|----------------|------|--------|
| | | ØI.C | S | CN3100 |
|  | RCGN090700T01015-V | 9.525 | 7.94 | ○ |
| | RCGN090700T01520-V | 9.525 | 7.94 | ○ |
| | RCGN090700T01020-V | 9.525 | 7.94 | ● |
| | RCGN120700T01015-V | 12.7 | 7.94 | ○ |
| | RCGN120700T01020-V | 12.7 | 7.94 | ○ |
| | RCGN120700T01520-V | 12.7 | 7.94 | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

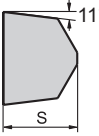
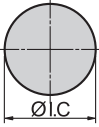
Applicable tool




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2.Tailor-made nonstandard CRXCR

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| | | |
|--------------------|-------------------------------|---|
| Workpiece material | K Cast iron | 😞 |
| | S Heat resistant alloy | 😐 |
| | H Super hard material | 😊 |

| Inserts shape | Type | Dimensions(mm) | | Grade |
|---|---------------------------|----------------|------|--------|
| | | ØI.C | S | CN3100 |
|  | RPGN090700T01015-V | 9.525 | 7.94 | ○ |
| | RPGN090700T01520-V | 9.525 | 7.94 | ○ |
| | RPGN090700T01020-V | 9.525 | 7.94 | ● |
| | RPGN120700T01015-V | 12.7 | 7.94 | ○ |
| | RPGN120700T01020-V | 12.7 | 7.94 | ○ |
| | RPGN120700T01520-V | 12.7 | 7.94 | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool



Page A205

2.Tailor-made nonstandard CRXCR

D-type
double-clamping tool holder





TURNING / General Turning Tools

Applications sketch map of turning tools

External and internal turning

General turning

Applications sketch map of turning tools

| External turning | | Tool holder type | | | | | |
|------------------|-----------|------------------|-----------|-----------|-----------|-----------|-----------|
| | DTGNR/L□□ | DSBNR/L□□ | PCBNR/L□□ | PSBNR/L□□ | PSSNR/L□□ | PTGNR/L□□ | PTTNR/L□□ |
| | SCACR/L□□ | SSBCR/L□□ | SSSCR/L□□ | STACR/L□□ | STGCR/L□□ | STECR/L□□ | SWACR/L□□ |

| External and end surface turning | | Tool holder type | |
|----------------------------------|-----------|------------------|--|
| | DCLNR/L□□ | DWLNRL/L□□ | |
| | PCLNR/L□□ | PWLNRL/L□□ | |
| | SCLCR/L□□ | | |

| Profile turning | | Tool holder type | | | |
|-----------------|-----------|------------------|---------|---------|--|
| | DVVNN□□ | PDPNN□□ | PSDNN□□ | SDNCN□□ | |
| | SVVBN□□ | SVVCN□□ | SSDCN□□ | SRDCN□□ | |
| | CKNNR/L□□ | | | | |

| Profile turning | | Tool holder type | | | |
|-----------------|-----------|------------------|-----------|--|--|
| | DDJNR/L□□ | DVJNR/L□□ | PDJNR/L□□ | | |
| | SDACR/L□□ | SDJCR/L□□ | SVABR/L□□ | | |
| | SVJBR/L□□ | SVJCR/L□□ | CKJNR/L□□ | | |
| | | | | | |

| Profile turning | | Tool holder type |
|-----------------|--|------------------|
| | | SRGCR/L□□ |

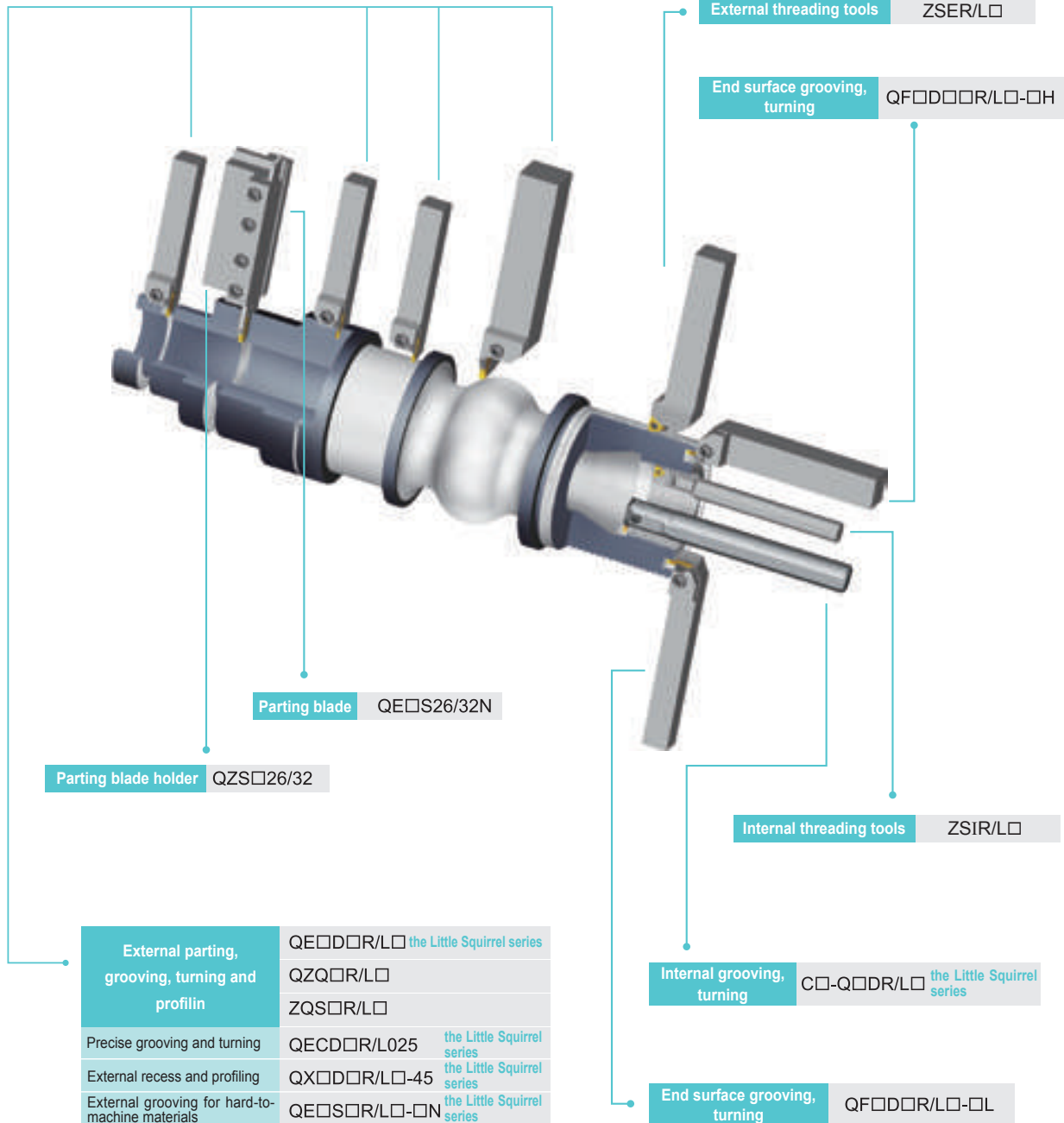
| End surface turning | | Tool holder type | |
|---------------------|-----------|------------------|--|
| | PSKNR/L□□ | PTFNR/L□□ | |
| | SSKCR/L□□ | STFCR/L□□ | |

| Tool holders for internal turning (Steel tool shank) | | | | | | |
|--|-------------|--------------|-------------|-------------|-------------|-------------|
| | S□-PSKNR/L□ | S□-PCLNR/L□ | S□-PDPNR/L□ | S□-PDUNR/L□ | S□-SDQCR/L□ | S□-SDZCR/L□ |
| | S□-PTFNR/L□ | S□-PWLNRL/L□ | | S□-SDUCR/L□ | S□-SDQPR/L□ | |
| | S□-SCFCR/L□ | S□-SCLCR/L□ | | S□-SDUPR/L□ | S□-SVQBR/L□ | |
| | S□-SSKCR/L□ | S□-SCLPR/L□ | | S□-SVUBR/L□ | S□-SVQCR/L□ | |
| | S□-STFCR/L□ | | | S□-SVUCR/L□ | | |
| | S□-STUPR/L□ | | | | | |

| Tool holders for internal turning (Cemented carbide tool shank) | | | | |
|---|-------------|-------------|-------------|-------------|
| | C□-STUPR/L□ | C□-SCLPR/L□ | C□-SDUPR/L□ | C□-SDQPR/L□ |
| | | | C□-SVUCR/L□ | C□-SVQCR/L□ |
| | | | | |



● Parting, grooving and threading tools



General turning

Applications sketch map of turning tools



How to select external turning tools

How to select external turning tools

Explanation of external turning tools detailed table

- Listed according to clamping types.

Approach angle of tools

Tools type

The first 4 letters in the type description stands for tool shape and application

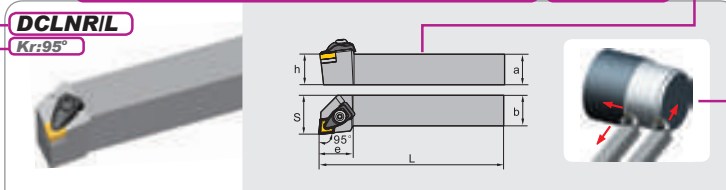
Inserts type

Specification chart

Application chart

The arrow shows suitable applications such as external turning, profiling and end turning, etc.

Corresponding tool holders of insert **CN** **D-type clamping**



| Type | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Wrench | Clamp | Shim screw | Spring |
|----------------|-------|---|----------------------|----|-----|----|----|----|---------|-------|--------|-------|-------------|--------|
| | R | L | a | b | L | h | s | e | | | | | | |
| DCLNR/L | ▲ | △ | 16 | 16 | 100 | 16 | 20 | 24 | CM5×22C | C09BM | WH30L | C1RA | SM5×8.65XA1 | SPR6 |
| | ▲ | △ | 20 | 20 | 125 | 20 | 25 | 24 | | | | | | |
| | ▲ | △ | 25 | 25 | 150 | 25 | 32 | 24 | | | | | | |
| | ▲ | △ | 20 | 20 | 125 | 20 | 25 | 28 | CM6×25C | C12BM | WH40L | C2RA | SM6×10XA1 | SPR4 |
| | ▲ | △ | 25 | 25 | 150 | 25 | 32 | 28 | | | | | | |
| | ▲ | △ | 32 | 25 | 170 | 32 | 32 | 28 | | | | | | |

▲ Stock available △ Make-to-order

| Applicable inserts | | | | | | |
|--------------------|----------------------------|----------------------------|----------------------------------|---------------------|--|-------------------------------------|
| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining Without chipbreaker | PCBN&PCD inserts |
| Inserts shape | DF Wiper A54 | WGM Wiper A55 | DR Double side A58 | HDR A59 | Without chipbreaker A59 | PCBN&PCD inserts A118 |
| | WGF Wiper A54 | PM A55 | DR Single side A58 | HPR A59 | | A118 -A119 |
| | SF A54 | DM A56 | ER Double side A58 | | | A119 |
| | EF A54 | EM A56 | ER Single side A58 | | | |
| | NF A55 | NM A57 | SNR Double side A58 | | | |
| | | | LR Single side A57 | | | |
| Tool holder type | DCLNR/L □□□□/K/M09 | CN□□0903□□ | CN□□0903□□ | | | |
| | DCLNR/L □□□□/M/P12 | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ |

Products specification

Including product description, stock (left and right hand), basic dimensions and applicable spare parts.

Applicable inserts

Including applications of inserts, reference page, insert shape and corresponding tool holders.



TURNING



External Turning Tools

External turning tools overview ● A158-A161

External turning tools code key ● A162-A163

Detailed table of external turning tools ● A166-A204

External turning tool holders by D type clamping ● A166-A171

External turning tool holders by P type clamping ● A172-A183

External turning tool holders by S type clamping ● A184-A203

External turning tool holders by C type clamping ● A204

**Detailed table of external turning tools
(ceramic)** ● A205





TURNING / General Turning Tools

External turning tools overview




















General turning

External turning tools overview

| Clamping system | Tool type | Approach angle(Kr°) | Turning type | | | | | | Applicable workpiece shape | | Page |
|-----------------|-----------|---------------------|------------------|---------------------|----------------------------------|-----------------|-----------------|-----------------|----------------------------|------------|------|
| | | | External turning | End surface turning | External and end surface turning | Profile turning | Profile turning | Profile turning | Short, Thick | Thin, Long | |
| | | | | | | | | | | | |
| D | DCLNR/L | 95 | | | ☺ | | | | ☺ | | A166 |
| | DDJNR/L | 93 | | | | | ☺ | | ☺ | ☺ | A167 |
| | DSBNR/L | 75 | ☺ | | | | | | ☺ | | A168 |
| | DTGNR/L | 91 | ☺ | | | | | | ☺ | ☺ | A169 |
| | DVVNN | 72.5 | | | | | | ☺ | ☺ | | A170 |
| | DVJNR/L | 93 | | | | | ☺ | | ☺ | ☺ | A170 |
| | DWLNR/L | 95 | | | ☺ | | | | ☺ | | A171 |
| P | PCBNR/L | 75 | ☺ | | | | | | ☺ | | A172 |
| | PCLNR/L | 95 | | | ☺ | | | | ☺ | | A173 |
| | PDJNR/L | 93 | | | | | ☺ | | ☺ | ☺ | A174 |
| | PDPNN | 62.5 | | | | | | ☺ | ☺ | | A175 |

☺ Recommended ☺ Available



| Clamping system | Tool type | Approach angle(Kr°) | Turning type | | | | | | Applicable workpiece shape | | Page |
|-----------------|---|---------------------|---|---|---|---|---|--|---|---|------|
| | | | External turning | End surface turning | External and end surface turning | Profile turning | Profile turning | Profile turning | Short, Thick | Thin, Long | |
| | | |  |  |  |  |  |  |  |  | |
| P |  PSBNR/L 75 | ☺ | | | | | | ☺ | | A176 | |
| |  PSDNN 45 | | | | | | ☺ | ☺ | | A177 | |
| |  PSKNR/L 75 | | ☺ | | | | | ☺ | | A178 | |
| |  PSSNR/L 45 | ☺ | | | | | | ☺ | | A179 | |
| |  PTFNR/L 90 | | ☺ | | | | | ☺ | ☺ | A180 | |
| |  PTTNR/L 60 | ☺ | | | | | | ☺ | | A181 | |
| |  PTGNR/L 90 | ☺ | | | | | | ☺ | ☺ | A182 | |
| |  PWLNR/L 95 | | | ☺ | | | | ☺ | | A183 | |
| S |  SCACR/L 90 | ☺ | | | | | | ☺ | ☺ | A184 | |
| |  SCLCR/L 95 | | | ☺ | | | | ☺ | ☺ | A185 | |
| |  SDACR/L 90 | | | | | ☺ | | ☺ | ☺ | A186 | |

☺ Recommended ☺ Available

General turning

External turning tools overview







TURNING / General Turning Tools

External turning tools overview

General turning

External turning tools overview

| Clamping system | Tool type | Approach angle (K°) | Turning type | | | | | | Applicable workpiece shape | | Page | |
|-----------------|---|---------------------|---|---|---|---|---|--|---|---|------|------|
| | | | External turning | End surface turning | External and end surface turning | Profile turning | Profile turning | Profile turning | Short, Thick | Thin, Long | | |
| | | |  |  |  |  |  |  |  |  | | |
| S |  SDJCR/L | 93 | | | | | | ☺ | | ☺ | ☺ | A187 |
| |  SDNCN | 62.5 | | | | | | | ☺ | ☺ | ☺ | A188 |
| |  SVJBR/L | 93 | | | | | | ☺ | | ☺ | ☺ | A189 |
| |  SVABR/L | 90 | | | | | | ☺ | | ☺ | ☺ | A190 |
| |  SVVBN | 72.5 | | | | | | | ☺ | ☺ | ☺ | A191 |
| |  SVVCN | 72.5 | | | | | | | ☺ | ☺ | ☺ | A192 |
| |  SVJCR/L | 93 | | | | | | ☺ | | ☺ | ☺ | A193 |
| |  SSBCR/L | 75 | ☺ | | | | | | ☺ | | | A194 |
| |  SSDCN | 45 | | | | | | | ☺ | ☺ | | A195 |
| |  SSKCR/L | 75 | | ☺ | | | | | ☺ | | | A196 |
| |  SSSCR/L | 45 | ☺ | | | | | | ☺ | | | A197 |

☺ Recommended ☹ Available



External turning tools overview

| Clamping system | Tool type | Approach angle (K°) | Turning type | | | | | | Applicable workpiece shape | | Page |
|-----------------|------------------------|---------------------|------------------|---------------------|----------------------------------|-----------------|-----------------|-----------------|----------------------------|------------|------|
| | | | External turning | End surface turning | External and end surface turning | Profile turning | Profile turning | Profile turning | Short, Thick | Thin, Long | |
| | | | | | | | | | | | |
| S | STACR/L | 90 | ☺ | | | | | | ☺ | ☺ | A198 |
| | STFCR/L | 90 | | ☺ | | | | | ☺ | | A198 |
| | STGCR/L | 91 | ☺ | | | | | | ☺ | ☺ | A199 |
| | STECR/L | 60 | ☺ | | | | | | ☺ | | A200 |
| | SWACR/L | 90 | ☺ | | | | | | ☺ | ☺ | A201 |
| | SRDCN | -- | | | | | | ☺ | ☺ | | A202 |
| | SRGCR/L | -- | | | | ☺ | | | ☺ | | A203 |
| C | CKJNR/L | 93 | | | | | ☺ | | ☺ | | A204 |
| | CKNNR/L | 63 | | | | | | ☺ | ☺ | | A204 |
| | CRDCR/L CRDPR/L | -- | | | | | ☺ | | ☺ | | A205 |

☺ Recommended ☹ Available

General turning

External turning tools overview



TURNING / General Turning Tools

External turning tools code key

General turning

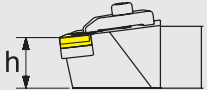
External turning tools code key

| Clamping system | Insert shape | | Clearance angle of insert | Cutting direction |
|-------------------------|--------------|-------|---------------------------|-----------------------------|
| D – double clamping | C | D | B | L - Left-hand |
| P – Hole clamping | R | S | C | R - Right-hand |
| S – Screw on | T | V | D | |
| C – Top clamping | W | | E | N - Right and left hand |
| | | | N | |
| | | | P | |

P C L N L


| Tool holder style and approach angle | | | | | | | |
|--------------------------------------|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H |
| | | | | | | | |
| J | K | L | M | N | O | P | Q |
| | | | | | | | |
| R | S | T | U | V | W | X | |
| | | | | | | | |

Nose height (mm)



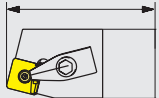
| Code | Height |
|-----------|--------|
| 12 | 12 |
| 16 | 16 |
| 20 | 20 |
| 25 | 25 |
| 32 | 32 |
| 40 | 40 |
| 50 | 50 |

Width of tool holder (mm)



| Code | Width |
|-----------|-------|
| 12 | 12 |
| 16 | 16 |
| 20 | 20 |
| 25 | 25 |
| 32 | 32 |
| 40 | 40 |
| 50 | 50 |

Length of tool holder (mm)










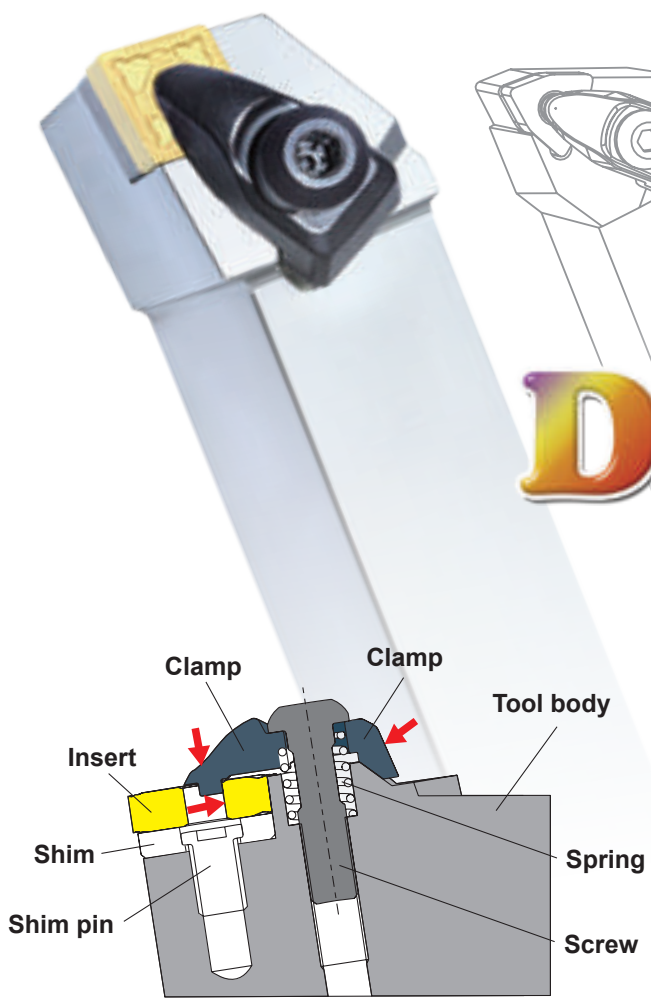
| Code | Length |
|----------|--------|
| E | 70 |
| F | 80 |
| H | 100 |
| K | 125 |
| M | 150 |
| P | 170 |
| Q | 180 |
| R | 200 |
| S | 250 |
| T | 300 |

General turning

External turning tools code key

25 25 M 12

| Length of cutting edge | | | | | | | |
|------------------------|---|---|---|---|---|---|---|
| Inserts shape | C | D | R | S | T | V | W |
| |  |  |  |  |  |  |  |
| Inscribed circle (mm) | Length of cutting edge(mm) | | | | | | |
| 5.556 | --- | --- | --- | --- | 09 | --- | --- |
| 6.350 | 06 | 07 | --- | --- | 11 | --- | --- |
| 9.525 | 09 | 11 | 09 | 09 | 16 | 16 | 06 |
| 12.700 | 12 | 15 | 12 | 12 | 22 | 22 | 08 |
| 15.875 | 16 | 19 | 15 | 15 | 27 | --- | --- |
| 19.050 | 19 | --- | 19 | 19 | 33 | --- | --- |
| 25.400 | 25 | --- | 25 | 25 | 44 | --- | --- |
| 32.000 | --- | --- | 32 | --- | --- | --- | --- |



D-type double-clamping tool holder

With newly developed double-clamping structure, D-type turning tools have high clamping rigidity and high positioning accuracy, achieving easy and secure clamping of inserts. It is the best choice for the clamping of straight hole negative inserts.

Convenient secure clamping device

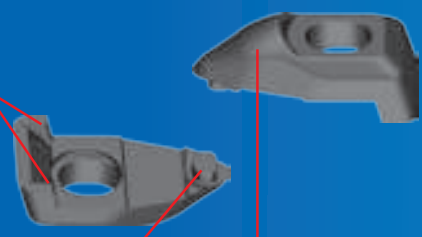


Slots in the tool body match perfectly with the clamp, realizing simple and easy clamping.

Uniquely clamp

The clamp and the inner wall of insert hole make an arc contact. The stable and evenly distributed clamping force ensures more secure clamping.

lug boss on both ends and double-locating make more insert clamp secure .

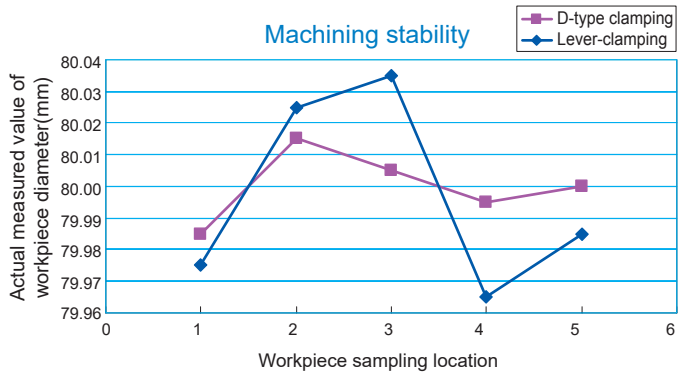


Arc locating surface makes large contact area and the force is evenly distributed.

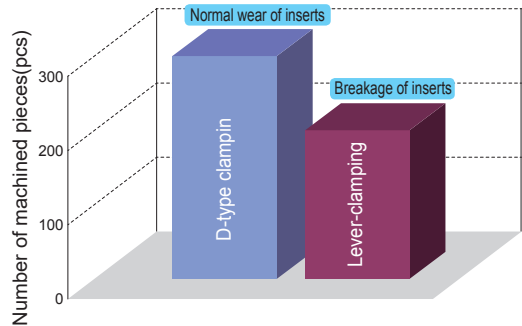
Simple and compact structure effectively prevents chip blocking while ensuring high clamping rigidity.

Compared with lever-clamping:

① Accurate locating ensures more stable machining accuracy.



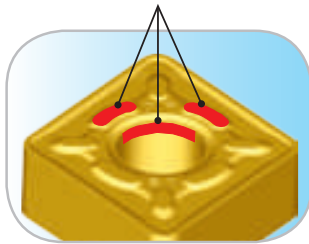
② High clamping rigidity effectively improves resistance to breakage of insert.



Compared with similar products of company A:

① Locating surface contact: (checking the contact location of clamp by dyeing)

Force evenly distributed, firm clamping, high locating accuracy.



ZCC-CT



Similar product of company A

② Effect on tool life:

Tool holder: DCLNL3225P12
 Insert: YBC252/CNMG120408-DR
 Cutting material: 45# steel
 Cutting parameters: $V_c=250\text{m/min}$
 $a_p=2\text{mm}$
 $f=0.6\text{mm/r}$

After 60 minutes of cutting



ZCC-CT



Similar product of company A

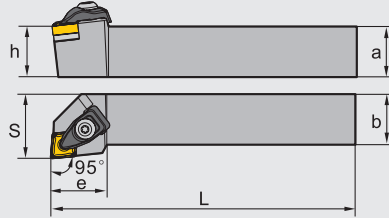


TURNING / General Turning Tools

External turning tools

Corresponding tool holders of insert **CN** D-type clamping

DCLNRIL Kr:95°



| Type | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Wrench | Clamp | Shim screw | Spring | |
|----------------|----------------|---|----------------------|----|----|-----|----|----|-------|---------|--------|-------|------------|-------------|------|
| | R | L | a | b | L | h | s | e | | | | | | | |
| DCLNR/L | 1616H09 | ▲ | △ | 16 | 16 | 100 | 16 | 20 | 24 | | | | | | |
| | 2020K09 | ▲ | △ | 20 | 20 | 125 | 20 | 25 | 24 | CM5×22C | C09BM | WH30L | C1RA | SM5×8.65XA1 | SPR6 |
| | 2525M09 | ▲ | △ | 25 | 25 | 150 | 25 | 32 | 24 | | | | | | |
| | 2020K12 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 28 | | | | | | |
| | 2525M12 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 28 | CM6×25C | C12BM | WH40L | C2RA | SM6×10XA1 | SPR4 |
| | 3225P12 | ▲ | ▲ | 32 | 25 | 170 | 32 | 32 | 28 | | | | | | |

▲Stock available △Make-to-order

Applicable inserts

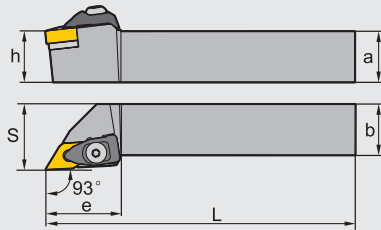
| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining | PCBN&PCD inserts |
|---------------|----------------------------|----------------------------|----------------------------------|---------------------|----------------------------|------------------|
| Inserts shape | DF Wiper A54 | WGM Wiper A55 | DR Double-side A58 | HDR A59 | Without chipbreaker A59 | A118 |
| | WGF Wiper A54 | PM A55 | DR Single-side A58 | HPR A59 | | A118 -A119 |
| | SF A54 | DM A56 | ER Double-side A58 | | | A119 |
| | EF A54 | EM A56 | ER Single-side A58 | | | |
| | NF A55 | NM A57 | SNR Double-side A58 | | | |
| | | | LR Single-side A57 | | | |

| | | | | | | | |
|------------------|-------------------------|------------|------------|------------|------------|------------|------------|
| Tool holder type | DCLNR/L□□H/K/M09 | CN□□0903□□ | CN□□0903□□ | | | | |
| | DCLNR/L□□K/M/P12 | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ |



Corresponding tool holders of insert **DN** D-type clamping

DDJNRIL
Kr:93°



| Type | | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Wrench | Clamp | Shim screw | Spring | |
|----------------|----------------|----------------|---|----------------------|----|-----|-----|----|----|---------|---------|--------|-------|-------------|-----------|------|
| | | R | L | a | b | L | h | s | e | | | | | | | |
| DDJNR/L | 1616H11 | △ | △ | 16 | 16 | 100 | 16 | 20 | 30 | CM5×22C | D11BM | WH30L | C1RA | SM5×8.65XA1 | SPR6 | |
| | 2020K11 | ▲ | △ | 20 | 20 | 125 | 20 | 25 | 30 | | | | | | | |
| | 2525M11 | ▲ | △ | 25 | 25 | 150 | 25 | 32 | 30 | | | | | | | |
| | | 3225P11 | △ | △ | 32 | 25 | 170 | 32 | 32 | 30 | CM6×25C | D15BM | WH40L | C2RA | SM6×10XA1 | SPR4 |
| | | 2020K15 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 35 | | | | | | |
| | | 2525M15 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 35 | | | | | | |
| | | 3232P15 | ▲ | ▲ | 32 | 32 | 170 | 32 | 40 | 35 | | | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining | PCBN&PCD inserts |
|------------------|--------------------------------|--------------------------------|--------------------------------------|-----------------------|--------------------------------|-------------------|
| Inserts shape | DF A61 | WGM Wiper A63 | DR Double-side A65 | HDR A66 | Without chipbreaker A66 | A121 -A122 |
| | WGF Wiper A61 | PM A63 | DR Single-side A65 | | | A122 -A123 |
| | SF A62 | DM A64 | ER Double-side A65 | | | A124 |
| | EF A62 | EM A64 | ER Single-side A65 | | | |
| | NF A62 | NM A64 | SNR Double-side A65 | | | |
| | NGF A62 | | LR Single-side A65 | | | |
| Tool holder type | DDJNR/L□□H/K/M/P11 | DN□□1104□□ | DN□□1104□□ | | DN□□1104□□ | |
| | DDJNR/L□□K/M/P15 | DN□□1506□□ | DN□□1506□□ | DN□□1506□□ | DN□□1506□□ | DN□□1506□□ |

General turning
External turning tools

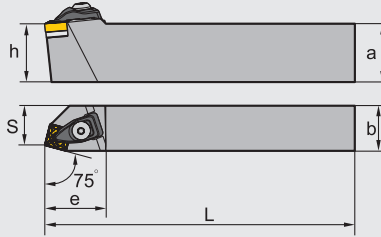


TURNING / General Turning Tools

External turning tools

Corresponding tool holders of insert **SN** D-type clamping

DSBNRIL
Kr:75°



| Type | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Wrench | Clamp | Shim screw | Spring |
|----------------|----------------|-----|----------------------|----|-----|----|----|----|---------|-------|--------|-------|-------------|--------|
| | R | L | a | b | L | h | s | e | | | | | | |
| DSBNR/L | 1616H09 | ▲ △ | 16 | 16 | 100 | 16 | 13 | 26 | CM5×22C | S09BM | WH30L | C1RA | SM5×8.65XA1 | SPR6 |
| | 2020K12 | ▲ ▲ | 20 | 20 | 125 | 20 | 17 | 34 | | | | | | |
| | 2525M12 | ▲ ▲ | 25 | 25 | 150 | 25 | 22 | 34 | CM6×25C | S12BM | WH40L | C2RA | SM6×10XA1 | SPR4 |
| | 3225P12 | ▲ ▲ | 32 | 25 | 170 | 32 | 22 | 34 | | | | | | |
| | 3232P15 | ▲ ▲ | 32 | 32 | 170 | 32 | 27 | 41 | CM6×25C | S15BM | WH40L | C3RA | SM6×10XA2 | SPR4 |

▲ Stock available △ Make-to-order

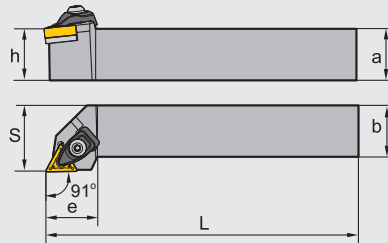
Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining | PCBN&PCD inserts |
|-------------------------|-------------------------|--------------------|-------------------------------|---------------------|--------------------------|------------------|
| Inserts shape | DF A67 | PM A68 | DR Double-side A70 | HDR A72 | Without chipbreaker A74 | A126 |
| | EF A67 | DM A68 | DR Single-side A70-71 | HPR A72 | | A127 |
| | SF A67 | EM A69 | ER Double-side A71 | | | A128 |
| | | NM A69 | ER Single-side A71 | | | |
| | | | SNR Double-side A71 | | | |
| | | | LR Single-side A69 | | | |
| Tool holder type | DSBNR/L□□H09 | SN□□0903□□ | SN□□0903□□ | | SN□□0903□□ | |
| | DSBNR/L□□K/M/P12 | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ |
| | DSBNR/L□□P15 | SN□□1506□□ | SN□□1506□□ | SN□□1506□□ | SN□□1506□□ | |



Corresponding tool holders of insert **TN** D-type clamping

DTGNRIL
Kr:91°



| Type | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Wrench | Clamp | Shim screw | Spring | |
|----------------|----------------|---|----------------------|----|----|-----|----|----|-------|---------|--------|-------|------------|-------------|------|
| | R | L | a | b | L | h | s | e | | | | | | | |
| DTGNR/L | 1616H16 | △ | △ | 16 | 16 | 100 | 16 | 20 | 25 | CM5×22C | T16BM | WH30L | C1RA | SM5×8.65XA1 | SPR6 |
| | 2020K16 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 25 | | | | | | |
| | 2525M16 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 25 | | | | | | |

▲Stock available △Make-to-order

General turning

External turning tools

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining | PCBN&PCD inserts |
|------------------|--------------------------------|--------------------------------|--------------------------------------|-----------------------|--------------------------------|-------------------|
| Inserts shape | DF A75 | WGM Wiper A76 | DR Double-side A78 | HDR A79 | Without chipbreaker A80 | A130 |
| | WGF Wiper A75 | PM A76 | DR Single-side A78 | | | A130 -A131 |
| | SF A75 | DM A77 | ER Double-side A78 | | | A131 |
| | EF A76 | EM A77 | SNR Double-side A78 | | | |
| | | | LR Single-side A77 | | | |
| Tool holder type | DTGNR/L□□H/K/M16 | TN□□1604□□ | TN□□1604□□ | TN□□1604□□ | TN□□1604□□ | TN□□1604□□ |



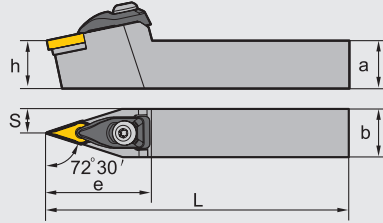
TURNING / General Turning Tools

External turning tools

Corresponding tool holders of insert **VN** D-type clamping

General turning
External turning tools

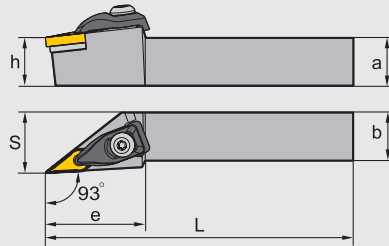
DVVNN
Kr:72°30'



| Type | | Stock | Basic dimensions(mm) | | | | | Screw | Shim | Wrench | Clamp | Shim screw | Spring | |
|--------------|----------------|-------|----------------------|----|-----|----|------|-------|------|--------|-------|------------|--------|---|
| | | | a | b | L | h | s | | | | | | | e |
| DVVNN | 2020K16 | △ | 20 | 20 | 125 | 20 | 10 | 44 | | | | | | |
| | 2525M16 | ▲ | 25 | 25 | 150 | 25 | 12.5 | 44 | | | | | | |

▲Stock available △Make-to-order

DVJNR/L
Kr:93°



| Type | | Stock | | Basic dimensions(mm) | | | | | Screw | Shim | Wrench | Clamp | Shim screw | Spring | |
|----------------|----------------|-------|---|----------------------|----|-----|----|----|-------|------|--------|-------|------------|--------|---|
| | | R | L | a | b | L | h | s | | | | | | | e |
| DVJNR/L | 2020K16 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 41 | | | | | | |
| | 2525M16 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 41 | | | | | | |

▲Stock available △Make-to-order

Applicable inserts

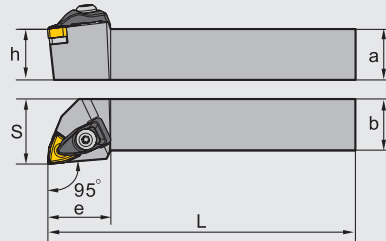
| Application | For finishing | For semi-finishing | For roughing | PCBN&PCD inserts |
|---------------|-----------------------|----------------------|-----------------------|-------------------|
| Inserts shape | DF A81 | PM A82 | SNR A82 | A133 |
| | EF A81 | DM A82 | | A133 -A134 |
| | SF A81 | EM A82 | | A134 |
| | NF A81 | NM A82 | | |
| | NGF A81 | | | |

| Tool holder type | DVVNN□□K/M16 | DVJNR/L□□K/M16 |
|--------------------|--------------|----------------|
| For finishing | VN□□1604□□ | VN□□1604□□ |
| For semi-finishing | VN□□1604□□ | VN□□1604□□ |
| For roughing | VN□□1604□□ | VN□□1604□□ |
| PCBN&PCD inserts | VN□□1604□□ | VN□□1604□□ |



Corresponding tool holders of insert **WN** D-type clamping

DWLNRL
Kr:95°



| Type | | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Wrench | Clamp | Shim screw | Spring |
|-----------------|----------------|-------|---|----------------------|----|-----|----|----|----|---------|-------|--------|-------|-------------|--------|
| | | R | L | a | b | L | h | s | e | | | | | | |
| DWLNRL/L | 1616H06 | ▲ | △ | 16 | 16 | 100 | 16 | 25 | 25 | CM5×22C | W06BM | WH30L | C1RA | SM5×8.65XA1 | SPR6 |
| | 2020K06 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 24 | | | | | | |
| | 2525M06 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 24 | | | | | | |
| | 2020K08 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 31 | CM6×25C | W08BM | WH40L | C2RA | SM6×10XA1 | SPR4 |
| | 2525M08 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 31 | | | | | | |
| | 3225P08 | △ | △ | 32 | 25 | 170 | 32 | 32 | 31 | | | | | | |

▲Stock available △Make-to-order

General turning

External turning tools

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For cast iron machining | PCBN&PCD inserts | |
|------------------|----------------------------|----------------------------|----------------------------------|----------------------------|------------------|------------|
| Inserts shape | DF A83 | WGM Wiper A84 | DR Double-side A86 | Without chipbreaker A86 | A136 | |
| | WGF Wiper A83 | PM A85 | SNR Double-side A86 | | A136 -A137 | |
| | SF A83 | DM A85 | | | A137 | |
| | EF A84 | EM A85 | | | | |
| | NF A84 | NM A86 | | | | |
| Tool holder type | DWLNRL/□□H/K/M06 | WN□□0604□□ | WN□□0604□□ | WN□□0604□□ | WN□□0604□□ | |
| | DWLNRL/□□K/M/P08 | WN□□0804□□ | WN□□0804□□ | WN□□0804□□ | WN□□0804□□ | WN□□0804□□ |

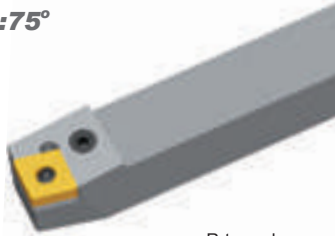


TURNING / General Turning Tools

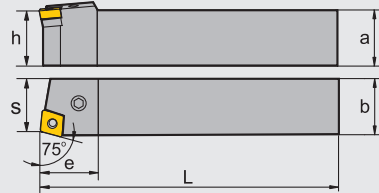
External turning tools

Corresponding tool holders of insert **CN** P-type clamping

PCBNR/L Kr:75°



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Wrench | Lever | Shim pin | |
|----------------|-----------|---|----------------------|----|----|-----|----|----|-------|-----------|----------|-------|----------|-----|
| | R | L | a | b | L | h | s | e | | | | | | |
| PCBNR/L | 2020K12 | ▲ | ▲ | 20 | 20 | 125 | 20 | 17 | 27 | LEM8×21 | C12AP | WH30L | L4 | SP4 |
| | 2525M12 | ▲ | ▲ | 25 | 25 | 150 | 25 | 22 | 27 | | | | | |
| | 3232P12 | ▲ | ▲ | 32 | 32 | 170 | 32 | 27 | 33 | | | | | |
| | 2525M16 | ▲ | ▲ | 25 | 25 | 150 | 25 | 22 | 33 | LEM8×25 | C16AP | WH30L | L5 | SP5 |
| | 3232P16 | ▲ | ▲ | 32 | 32 | 170 | 32 | 27 | 33 | | | | | |
| | 4040R16 | ▲ | ▲ | 40 | 40 | 200 | 40 | 35 | 38 | LEM10×27 | C19AP | WH40L | L6 | SP6 |
| | 3232P19 | ▲ | ▲ | 32 | 32 | 170 | 32 | 27 | 38 | | | | | |
| | 4040R19 | ▲ | ▲ | 40 | 40 | 200 | 40 | 35 | 40 | LEM12×36A | C25AP-07 | WH50L | L8 | SP8 |
| | 4040S2507 | ▲ | ▲ | 40 | 40 | 250 | 40 | 35 | 50 | | C25AP | | | |
| | 4040S2509 | ▲ | ▲ | 40 | 40 | 250 | 40 | 35 | 50 | | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining | |
|------------------|-------------------------|-----------------------|-----------------------------|---------------------|--------------------------|------------|
| Inserts shape | DF A54 | WGM Wiper A55 | DR Double-side A58 | HDR A59 | Without chipbreaker A59 | |
| | WGF Wiper A54 | PM A55 | DR Single-side A58 | HPR A59 | | |
| | SF A54 | DM A55 | ER Double-side A58 | | | |
| | EF A54 | EM A56 | ER Single-side A58 | | | |
| | NF A55 | NM A57 | SNR Double-side A58 | | | |
| | | | LR Single-side A57 | | | |
| Tool holder type | PCBNR/L□□K/M/P12 | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ |
| | PCBNR/L□□M/P/R16 | CN□□1606□□ | CN□□1606□□ | CN□□1606□□ | CN□□1606□□ | CN□□1606□□ |
| | PCBNR/L□□P/R19 | | CN□□1906□□ | CN□□1906□□ | CN□□1906□□ | CN□□1906□□ |
| | PCBNR/L□□S2507 | | | CN□□2507□□ | | |
| | PCBNR/L□□S2509 | | | CN□□2509□□ | | |

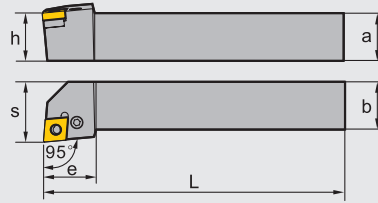


Corresponding tool holders of insert **CN** P-type clamping

PCLNRIL
Kr:95°



R-type shown



| Type | Stock | Basic dimensions(mm) | | | | | | | Screw | Shim | Wrench | Lever | Shim pin | |
|------------------|------------------|----------------------|----|----|-----|-----|----|----|-------|-----------|----------|-------|----------|-----|
| | | R | L | a | b | L | h | s | | | | | | e |
| PCLNR/L | 2020K12 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 28 | LEM8×21 | C12AP | WH30L | L4 | SP4 |
| | 2525M12 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 28 | | | | | |
| | 3225P12 | △ | △ | 32 | 25 | 170 | 32 | 32 | 33 | | | | | |
| | 3232P12 | ▲ | ▲ | 32 | 32 | 170 | 32 | 40 | 28 | | | | | |
| | 2525M16 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 33 | LEM8×25 | C16AP | WH30L | L5 | SP5 |
| | 3225P16 | △ | △ | 32 | 25 | 170 | 32 | 32 | 33 | | | | | |
| | 3232P16 | ▲ | ▲ | 32 | 32 | 170 | 32 | 40 | 33 | | | | | |
| | 4040R16 | △ | △ | 40 | 40 | 200 | 40 | 50 | 42 | | | | | |
| | 3232P19 | ▲ | ▲ | 32 | 32 | 170 | 32 | 40 | 38 | LEM10×27 | C19AP | WH40L | L6 | SP6 |
| | 4040R19 | ▲ | ▲ | 40 | 40 | 200 | 40 | 50 | 40 | | | | | |
| | 4040S2507 | ▲ | ▲ | 40 | 40 | 250 | 40 | 50 | 49 | LEM12×36A | C25AP-07 | WH50L | L8 | SP8 |
| 4040S2509 | ▲ | ▲ | 40 | 40 | 250 | 40 | 50 | 49 | | | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining | PCBN&PCD inserts |
|---------------|----------------------------|----------------------------|----------------------------------|---------------------|----------------------------|------------------|
| Inserts shape | DF Wiper A54 | WGM Wiper A55 | DR Double-side A58 | HDR A59 | Without chipbreaker A59 | A118 |
| | WGF Wiper A54 | PM A55 | DR Single-side A58 | HPR A59 | | A118 -A119 |
| | SF A54 | DM A56 | ER Double-side A58 | | | A119 |
| | EF A54 | EM A56 | ER Single-side A58 | | | |
| | NF A55 | NM A57 | SNR Double-side A58 | | | |
| | | | LR Single-side A57 | | | |

| | | | | | | | |
|------------------|-------------------------|------------|------------|------------|------------|------------|------------|
| Tool holder type | PCLNR/L□□K/M/P12 | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ |
| | PCLNR/L□□M/P/R16 | CN□□1606□□ | CN□□1606□□ | CN□□1606□□ | CN□□1606□□ | CN□□1606□□ | |
| | PCLNR/L□□P/R19 | | CN□□1906□□ | CN□□1906□□ | CN□□1906□□ | CN□□1906□□ | |
| | PCLNR/L□□S2507 | | | CN□□2507□□ | | | |
| | PCLNR/L□□S2509 | | | CN□□2509□□ | | | |

General turning

External turning tools



TURNING / General Turning Tools

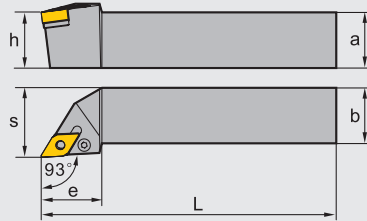
External turning tools

Corresponding tool holders of insert **DN** P-type clamping

PDJNR/L
Kr:93°



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Wrench | Lever | Shim pin | |
|----------------|-----------|---|----------------------|----|-----|-----|----|----|-------|---------|--------|-------|----------|-----|
| | R | L | a | b | L | h | s | e | | | | | | |
| PDJNR/L | 1616H11 | ▲ | ▲ | 16 | 16 | 100 | 16 | 20 | 25 | LEM6×17 | D11AP | WH25L | L3 | SP3 |
| | 2020K11 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 25 | | | | | |
| | 2525M11 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 30 | | | | | |
| | 2020K15 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 35 | LEM8×21 | D15AP | WH30L | L4B | SP4 |
| | 2525M15 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 35 | | | | | |
| | 3232P15 | ▲ | ▲ | 32 | 32 | 170 | 32 | 40 | 35 | LEM8×21 | D15AP | WH30L | L4 | SP4 |
| | 2020K15-3 | ▲ | △ | 20 | 20 | 125 | 20 | 25 | 35 | | | | | |
| | 2525M15-3 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 35 | | | | | |
| 3232P15-3 | ▲ | △ | 32 | 32 | 170 | 32 | 40 | 35 | | | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining | PCBN&PCD inserts |
|---------------|--------------------------------|--------------------------------|--------------------------------------|-----------------------|--------------------------------|-------------------|
| Inserts shape | DF A61 | WGM Wiper A63 | DR Double-side A65 | HDR A66 | Without chipbreaker A66 | A121 -A122 |
| | WGF Wiper A61 | PM A63 | DR Single-side A65 | | | A122 -A123 |
| | SF A62 | DM A64 | ER Double-side A65 | | | A124 |
| | EF A62 | EM A64 | ER Single-side A65 | | | |
| | NF A62 | NM A64 | SNR Double-side A65 | | | |
| | NGF A62 | | LR Single-side A65 | | | |

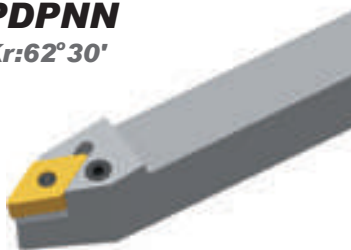
| Tool holder type | PDJNR/L□□H/K/M11 | DN□□1104□□ | DN□□1104□□ | | DN□□1104□□ | |
|------------------|--------------------|------------|------------|------------|------------|------------|
| | PDJNR/L□□K/M/P15 | DN□□1506□□ | DN□□1506□□ | DN□□1506□□ | DN□□1506□□ | DN□□1506□□ |
| | PDJNR/L□□K/M/P15-3 | DN□□1504□□ | DN□□1504□□ | | DN□□1504□□ | DN□□1504□□ |



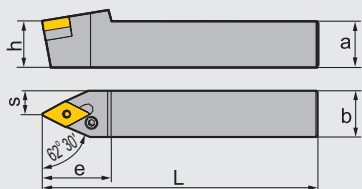
Corresponding tool holders of insert **DN** P-type clamping

PDPNN

Kr:62°30'



R-type shown



General turning

External turning tools

| Type | Stock | Basic dimensions(mm) | | | | | | Screw | Shim | Wrench | Lever | Shim pin | |
|--------------|------------------|----------------------|----|----|-----|----|------|-------|---------|--------|-------|----------|-----|
| | | a | b | L | h | s | e | | | | | | |
| PDPNN | 2020K15 | ▲ | 20 | 20 | 125 | 20 | 8 | 38 | LEM8×21 | D15AP | WH30L | L4B | SP4 |
| | 2525M15 | ▲ | 25 | 25 | 150 | 25 | 12.5 | 38 | | | | | |
| | 3232P15 | ▲ | 32 | 32 | 170 | 32 | 16 | 38 | | | | | |
| | 2020K15-3 | ▲ | 20 | 20 | 125 | 20 | 8 | 38 | LEM8×21 | D15AP | WH30L | L4 | SP4 |
| | 2525M15-3 | ▲ | 25 | 25 | 150 | 25 | 12.5 | 38 | | | | | |
| | 3232P15-3 | ▲ | 32 | 32 | 170 | 32 | 16 | 38 | | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining | PCBN&PCD inserts |
|------------------|----------------------------|----------------------------|----------------------------------|---------------------|----------------------------|------------------|
| Inserts shape | DF A61 | WGM Wiper A63 | DR Double-side A65 | HDR A66 | Without chipbreaker A66 | A121 -A122 |
| | WGF Wiper A61 | PM A63 | DR Single-side A65 | | | A122 -A123 |
| | SF A62 | DM A64 | ER Double-side A65 | | | A124 |
| | EF A62 | EM A64 | ER Single-side A65 | | | |
| | NF A62 | NM A64 | SNR Double-side A65 | | | |
| | NGF A62 | | LR Single-side A65 | | | |
| Tool holder type | PDPNN□□K/M/P15 | DN□□1506□□ | DN□□1506□□ | DN□□1506□□ | DN□□1506□□ | DN□□1506□□ |
| | PDPNN□□K/M/P15-3 | DN□□1504□□ | DN□□1504□□ | | DN□□1504□□ | DN□□1504□□ |



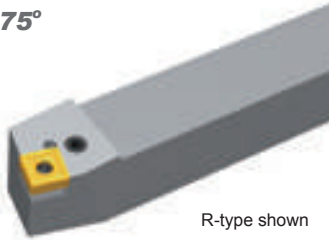
TURNING / General Turning Tools

External turning tools

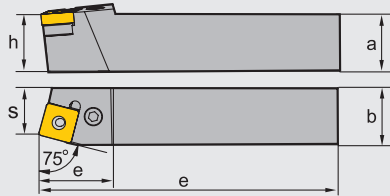
Corresponding tool holders of insert **SN** P-type clamping

PSBNRIL

Kr:75°



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Wrench | Lever | Shim pin | |
|----------------|------------------|---|----------------------|----|----|-----|----|----|-------|------------|--------|-------|----------|-----|
| | R | L | a | b | L | h | s | e | | | | | | |
| PSBNR/L | 1616H09 | ▲ | ▲ | 16 | 16 | 100 | 16 | 13 | 21 | LEM6×13.4A | S09AP | WH25L | L3 | SP3 |
| | 2020K09 | ▲ | ▲ | 20 | 20 | 125 | 20 | 17 | 23 | LEM8×21 | S12AP | WH30L | L4 | SP4 |
| | 2020K12 | ▲ | ▲ | 20 | 20 | 125 | 20 | 17 | 28 | | | | | |
| | 2525M12 | ▲ | ▲ | 25 | 25 | 150 | 25 | 22 | 28 | | | | | |
| | 3225P12 | ▲ | △ | 32 | 25 | 170 | 32 | 22 | 28 | LEM8×25 | S15AP | WH30L | L5 | SP5 |
| | 3232P12 | ▲ | ▲ | 32 | 32 | 170 | 32 | 27 | 28 | | | | | |
| | 2525M15 | ▲ | ▲ | 25 | 25 | 150 | 25 | 22 | 35 | LEM10×27 | S19AP | WH40L | L6 | SP6 |
| | 3232P15 | ▲ | ▲ | 32 | 32 | 170 | 32 | 27 | 35 | | | | | |
| | 3232P19 | ▲ | ▲ | 32 | 32 | 170 | 32 | 27 | 40 | LEM12×36A | S25AP | WH50L | L8 | SP8 |
| | 4040R19 | ▲ | ▲ | 40 | 40 | 200 | 40 | 35 | 40 | | | | | |
| | 4040S2507 | ▲ | ▲ | 40 | 40 | 250 | 40 | 35 | 48 | | | | | |
| | 4040S2509 | ▲ | ▲ | 40 | 40 | 250 | 40 | 35 | 48 | S25AP-09 | | | | |

▲Stock available △Make-to-order

Applicable inserts

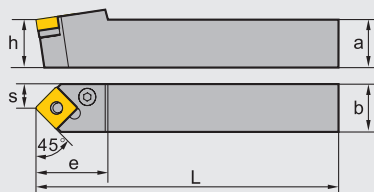
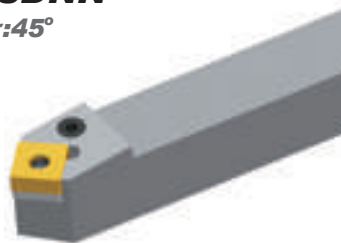
| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining <small>Without chipbreaker</small> | PCBN&PCD inserts |
|---------------|---------------|--------------------|-------------------------------|---------------------|---|------------------|
| Inserts shape | DF A67 | PM A68 | DR Double-side A70 | HDR A72 | A74 | A126 |
| | EF A67 | DM A68 | DR Single-side A70-71 | HPR A72 | | A127 |
| | SF A67 | EM A69 | ER Double-side A71 | | | A128 |
| | | NM A69 | ER Single-side A71 | | | |
| | | | SNR Double-side A71 | | | |
| | | | LR Single-side A69 | | | |

| Tool holder type | PSBNR/L□□H/K09 | SN□□0903□□ | SN□□0903□□ | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ |
|------------------|------------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | PSBNR/L□□K/M/P12 | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ |
| | PSBNR/L□□M/P15 | SN□□1506□□ | SN□□1506□□ | SN□□1506□□ | SN□□1506□□ | SN□□1506□□ | SN□□1506□□ | SN□□1506□□ | SN□□1506□□ |
| | PSBNR/L□□P/R19 | | SN□□1906□□ | SN□□1906□□ | SN□□1906□□ | SN□□1906□□ | SN□□1906□□ | SN□□1906□□ | SN□□1906□□ |
| | PSBNR/L□□S2507 | | | SN□□2507□□ | SN□□2507□□ | SN□□2507□□ | SN□□2507□□ | SN□□2507□□ | SN□□2507□□ |
| | PSBNR/L□□S2509 | | | SN□□2509□□ | SN□□2509□□ | SN□□2509□□ | SN□□2509□□ | SN□□2509□□ | SN□□2509□□ |



Corresponding tool holders of insert **SN** P-type clamping

PSDNN
Kr:45°






















General turning

External turning tools

| Type | Stock | Basic dimensions(mm) | | | | | | | Screw | Shim | Wrench | Lever | Shim pin |
|--------------|----------------|----------------------|----|----|-----|----|------|----|----------|-------|--------|-------|----------|
| | | a | b | L | h | s | e | | | | | | |
| PSDNN | 2020K12 | ▲ | 20 | 20 | 125 | 20 | 10 | 30 | LEM8×21 | S12AP | WH30L | L4 | SP4 |
| | 2525M12 | ▲ | 25 | 25 | 150 | 25 | 12.5 | 30 | | | | | |
| | 3232P12 | ▲ | 32 | 32 | 170 | 32 | 16 | 40 | | | | | |
| | 2525M15 | ▲ | 25 | 25 | 150 | 25 | 12.5 | 40 | LEM8×25 | S15AP | WH30L | L5 | SP5 |
| | 3232P15 | ▲ | 32 | 32 | 170 | 32 | 16 | 40 | | | | | |
| | 3232P19 | ▲ | 32 | 32 | 170 | 32 | 16 | 40 | LEM10×27 | S19AP | WH40L | L6 | SP6 |
| | 4040R19 | ▲ | 40 | 40 | 200 | 40 | 20 | 40 | | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining | PCBN&PCD inserts |
|------------------|---|---|--|---|---|--|
| Inserts shape | DF  A67 | PM  A68 | DR Double-side  A70 | HDR  A72 | Without chipbreaker  A74 |  A126 |
| | EF  A67 | DM  A68 | DR Single-side  A70-71 | HPR  A72 | |  A127 |
| | SF  A67 | EM  A69 | ER Double-side  A71 | | |  A128 |
| | | NM  A69 | ER Single-side  A71 | | | |
| | | | SNR Double-side  A71 | | | |
| | | | LR Single-side  A69 | | | |
| Tool holder type | PSDNN□□K/M/P12 | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ |
| | PSDNN□□M/P15 | SN□□1506□□ | SN□□1506□□ | SN□□1506□□ | SN□□1506□□ | SN□□1506□□ |
| | PSDNN□□P/R19 | | SN□□1906□□ | SN□□1906□□ | SN□□1906□□ | SN□□1906□□ |



TURNING / General Turning Tools

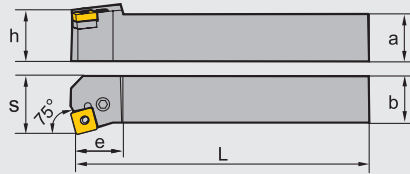
External turning tools

Corresponding tool holders of insert **SN** P-type clamping

PSKNRIL
Kr:75°



R-type shown



| Type | | Stock | | Basic dimensions(mm) | | | | | Screw | Shim | Wrench | Lever | Shim pin | |
|----------------|----------------|-------|---|----------------------|----|-----|----|----|-------|------------|--------|-------|----------|-----|
| | | R | L | a | b | L | h | s | e | | | | | |
| PSKNR/L | 1616H09 | ▲ | ▲ | 16 | 16 | 100 | 16 | 20 | 17 | LEM6×13.4A | S09AP | WH25L | L3 | SP3 |
| | 2020K09 | ▲ | △ | 20 | 20 | 125 | 20 | 25 | 20 | | | | | |
| | 2020K12 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 26 | LEM8×21 | S12AP | WH30L | L4 | SP4 |
| | 2525M12 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 26 | | | | | |
| | 3232P12 | ▲ | ▲ | 32 | 32 | 170 | 32 | 40 | 26 | | | | | |
| | 2525M15 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 32 | LEM8×25 | S15AP | WH30L | L5 | SP5 |
| | 3232P15 | ▲ | ▲ | 32 | 32 | 170 | 32 | 40 | 32 | | | | | |
| | 3232P19 | ▲ | ▲ | 32 | 32 | 170 | 32 | 40 | 36 | LEM10×27 | S19AP | WH40L | L6 | SP6 |
| | 4040R19 | ▲ | ▲ | 40 | 40 | 200 | 40 | 50 | 40 | | | | | |

▲Stock available △Make-to-order

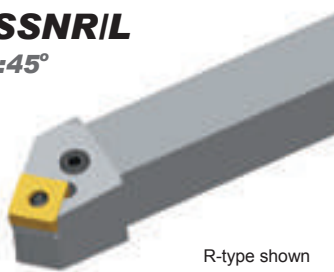
Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining Without chipbreaker | PCBN&PCD inserts |
|-------------------------|-------------------------|--------------------|------------------------------|---------------------|--|------------------|
| Inserts shape | DF A67 | PM A68 | DR Double-side A70 | HDR A72 | A74 | A126 |
| | EF A67 | DM A68 | DR Single-side A70-71 | HPR A72 | | A127 |
| | SF A67 | EM A69 | ER Double-side A71 | | | A128 |
| | | NM A69 | ER Single-side A71 | | | |
| | | | SNR Double-side A71 | | | |
| | | | LR Single-side A69 | | | |
| Tool holder type | PSKNR/L□□H/K09 | SN□□0903□□ | SN□□0903□□ | | SN□□0903□□ | |
| | PSKNR/L□□K/M/P12 | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ |
| | PSKNR/L□□M/P15 | SN□□1506□□ | SN□□1506□□ | SN□□1506□□ | SN□□1506□□ | |
| | PSKNR/L□□P/R19 | | SN□□1906□□ | SN□□1906□□ | SN□□1906□□ | |

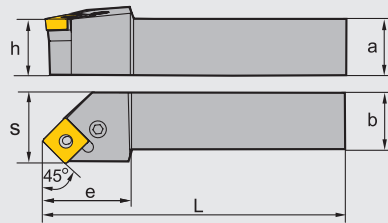


Corresponding tool holders of insert **SN** P-type clamping

PSSNRIL
Kr:45°



R-type shown



General turning

External turning tools

| Type | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Wrench | Lever | Shim pin | |
|----------------|------------------|---|----------------------|----|----|-----|----|----|-------|------------|-------------------|-------|----------|-----|
| | R | L | a | b | L | h | s | e | | | | | | |
| PSSNR/L | 1616H09 | ▲ | ▲ | 16 | 16 | 100 | 16 | 20 | 25 | LEM6×13.4A | S09AP | WH25L | L3 | SP3 |
| | 2020K09 | △ | △ | 20 | 20 | 125 | 20 | 25 | 25 | | | | | |
| | 2020K12 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 30 | | | | | |
| | 2525M12 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 30 | LEM8×21 | S12AP | WH30L | L4 | SP4 |
| | 3232P12 | ▲ | ▲ | 32 | 32 | 170 | 32 | 40 | 40 | | | | | |
| | 2525M15 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 30 | LEM8×25 | S15AP | WH30L | L5 | SP5 |
| | 3232P15 | ▲ | ▲ | 32 | 32 | 170 | 32 | 40 | 40 | | | | | |
| | 3232P19 | ▲ | ▲ | 32 | 32 | 170 | 32 | 40 | 40 | LEM10×27 | S19AP | WH40L | L6 | SP6 |
| | 4040R19 | ▲ | ▲ | 40 | 40 | 200 | 40 | 50 | 40 | | | | | |
| | 4040S2507 | ▲ | ▲ | 40 | 40 | 250 | 40 | 50 | 50 | LEM12×36A | S25AP S25AP-09 | WH50L | L8 | SP8 |
| | 4040S2509 | ▲ | ▲ | 40 | 40 | 250 | 40 | 50 | 50 | | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining Without chipbreaker | PCBN&PCD inserts |
|-------------------------|-------------------------|--------------------|-------------------------------|---------------------|--|------------------|
| Inserts shape | DF A67 | PM A68 | DR Double-side A70 | HDR A72 | A74 | A126 |
| | EF A67 | DM A68 | DR Single-side A70-71 | HPR A72 | | A127 |
| | SF A67 | EM A69 | ER Double-side A71 | | | A128 |
| | | NM A69 | ER Single-side A71 | | | |
| | | | SNR Double-side A71 | | | |
| | | | LR Single-side A69 | | | |
| Tool holder type | PSSNR/L□□H/K09 | SN□□0903□□ | SN□□0903□□ | SN□□0903□□ | SN□□0903□□ | |
| | PSSNR/L□□K/M/P12 | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ | SN□□1204□□ |
| | PSSNR/L□□M/P15 | SN□□1506□□ | SN□□1506□□ | SN□□1506□□ | SN□□1506□□ | |
| | PSSNR/L□□P/R19 | | SN□□1906□□ | SN□□1906□□ | SN□□1906□□ | |
| | PSSNR/L□□S2507 | | SN□□2507□□ | SN□□2507□□ | | |
| | PSSNR/L□□S2509 | | SN□□2509□□ | SN□□2509□□ | | |



TURNING / General Turning Tools

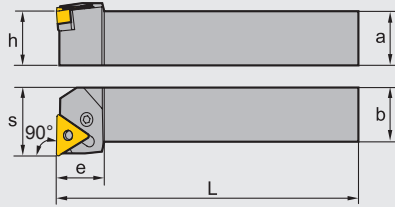
External turning tools

Corresponding tool holders of insert **TN** P-type clamping

PTFNR/L
Kr:90°



R-type shown



| Type | | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Wrench | Lever | Shim pin |
|----------------|----------------|-------|---|----------------------|----|-----|----|----|----|------------|-------|--------|-------|----------|
| | | R | L | a | b | L | h | s | e | | | | | |
| PTFNR/L | 1616H16 | △ | ▲ | 16 | 16 | 100 | 16 | 20 | 20 | LEM6×13.4A | T16AP | WH25L | L3 | SP3 |
| | 2020K16 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 20 | | | | | |
| | 2525M16 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 20 | | | | | |
| | 2525M22 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 25 | LEM8×21 | T22AP | WH30L | L4 | SP4 |
| | 3232P22 | ▲ | ▲ | 32 | 32 | 170 | 32 | 40 | 25 | | | | | |
| | 3232P27 | ▲ | ▲ | 32 | 32 | 170 | 32 | 40 | 34 | LEM8×25 | T27AP | WH30L | L5 | SP5 |
| | 4040S27 | ▲ | ▲ | 40 | 40 | 250 | 40 | 50 | 34 | | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining | PCBN&PCD inserts |
|-------------------------|--------------------------------|--------------------------------|-------------------------------------|-----------------------|--------------------------------|-------------------|
| Inserts shape | DF A75 | WGM Wiper A76 | DR Double-side A78 | HDR A79 | Without chipbreaker A80 | A130 |
| | WGF Wiper A75 | PM A76 | DR Single-side A78 | | | A130 -A131 |
| | SF A75 | DM A77 | ER Double-side A78 | | | A131 |
| | EF A76 | EM A77 | SNR A78 | | | |
| | | | LR Single-side A77 | | | |
| Tool holder type | PTFNR/L□□H/K/M16 | TN□□1604□□ | TN□□1604□□ | TN□□1604□□ | TN□□1604□□ | TN□□1604□□ |
| | PTFNR/L□□M/P22 | TN□□2204□□ | TN□□2204□□ | TN□□2204□□ | TN□□2204□□ | TN□□2204□□ |
| | PTFNR/L□□P/S27 | | | TN□□2706□□ | TN□□2706□□ | TN□□2706□□ |

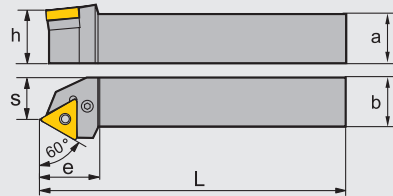


Corresponding tool holders of insert **TN** P-type clamping

PTTNRIL
Kr:60°



R-type shown





















| Type | | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Wrench | Lever | Shim pin |
|----------------|----------------|-------|---|----------------------|----|-----|----|----|----|------------|-------|--------|-------|----------|
| | | R | L | a | b | L | h | s | e | | | | | |
| PTTNR/L | 1616H16 | ▲ | ▲ | 16 | 16 | 100 | 16 | 13 | 25 | LEM6×13.4A | T16AP | WH25L | L3 | SP3 |
| | 2020K16 | ▲ | ▲ | 20 | 20 | 125 | 20 | 17 | 25 | | | | | |
| | 2525M16 | △ | △ | 25 | 25 | 150 | 25 | 22 | 25 | | | | | |
| | 2525M22 | ▲ | ▲ | 25 | 25 | 150 | 20 | 22 | 32 | LEM8×21 | T22AP | WH30L | L4 | SP4 |

▲Stock available △Make-to-order

General turning

External turning tools

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining | PCBN&PCD inserts | |
|------------------|--|--|---|--|---|---|------------|
| Inserts shape | DF  A75 | WGM Wiper  A76 | DR Double-side  A78 | HDR  A79 |  A80 |  A130 | |
| | WGF Wiper  A75 | PM  A76 | DR Single-side  A78 | | |  A130 -A131 | |
| | SF  A75 | DM  A77 | ER Double-side  A78 | | |  A131 | |
| | EF  A76 | EM  A77 | SNR  A78 | | | | |
| | | | LR Single-side  A77 | | | | |
| Tool holder type | PTTNR/L□□H/K/M16 | TN□□1604□□ | TN□□1604□□ | TN□□1604□□ | TN□□1604□□ | TN□□1604□□ | TN□□1604□□ |
| | PTTNR/L□□M22 | TN□□2204□□ | TN□□2204□□ | TN□□2204□□ | TN□□2204□□ | | |

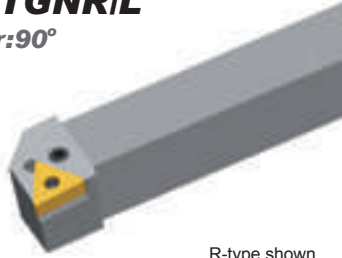


TURNING / General Turning Tools

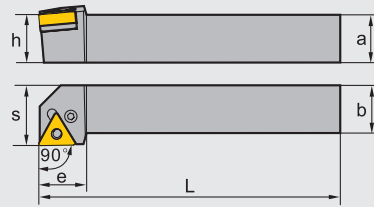
External turning tools

Corresponding tool holders of insert **TN** P-type clamping

PTGNR/L Kr:90°



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Wrench | Lever | Shim pin | |
|----------------|----------------|---|----------------------|----|----|-----|----|----|-------|------------|--------|-------|----------|-----|
| | R | L | a | b | L | h | s | e | | | | | | |
| PTGNR/L | 1616H16 | ▲ | ▲ | 16 | 16 | 100 | 16 | 20 | 20 | LEM6×13.4A | T16AP | WH25L | L3 | SP3 |
| | 2020K16 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 20 | | | | | |
| | 2525M16 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 20 | | | | | |
| | 3232P16 | ▲ | ▲ | 32 | 32 | 170 | 32 | 40 | 20 | | | | | |
| | 2525M22 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 28 | LEM8×21 | T22AP | WH30L | L4 | SP4 |
| | 3232P22 | ▲ | ▲ | 32 | 32 | 170 | 32 | 40 | 28 | | | | | |
| | 3232P27 | ▲ | ▲ | 32 | 32 | 170 | 32 | 40 | 33 | | | | | |
| | 4040S27 | ▲ | ▲ | 40 | 40 | 250 | 40 | 50 | 33 | | | | | |

▲Stock available △Make-to-order

Applicable inserts

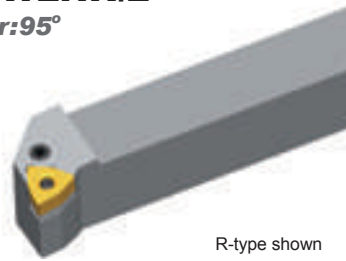
| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining | PCBN&PCD inserts |
|-------------------------|--------------------------------|--------------------------------|-------------------------------------|-----------------------|--------------------------------|-------------------|
| Inserts shape | DF A75 | WGM Wiper A76 | DR Double-side A78 | HDR A79 | Without chipbreaker A80 | A130 |
| | WGF Wiper A75 | PM A76 | DR Single-side A78 | | | A130 -A131 |
| | SF A75 | DM A77 | ER Double-side A78 | | | A131 |
| | EF A76 | EM A77 | SNR A78 | | | |
| | | | LR Single-side A77 | | | |
| Tool holder type | PTGNR/L□□H/K/M/P16 | TN□□1604□□ | TN□□1604□□ | TN□□1604□□ | TN□□1604□□ | TN□□1604□□ |
| | PTGNR/L□□M/P22 | TN□□2204□□ | TN□□2204□□ | TN□□2204□□ | TN□□2204□□ | |
| | PTGNR/L□□P/S27 | | | TN□□2706□□ | TN□□2706□□ | |



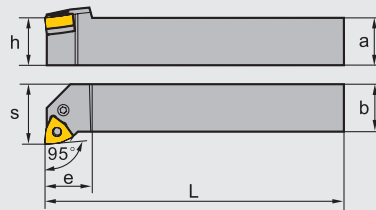
Corresponding tool holders of insert **WN** P-type clamping

PWLNRL

Kr:95°



R-type shown



| Type | | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Wrench | Lever | Shim pin |
|-----------------|----------------|-------|---|----------------------|----|-----|----|----|----|------------|-------|--------|-------|----------|
| | | R | L | a | b | L | h | s | e | | | | | |
| PWLNRL/L | 1616H06 | ▲ | ▲ | 16 | 16 | 100 | 16 | 20 | 20 | LEM6×13.4A | W06AP | WH25L | L3 | SP3 |
| | 2020K06 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 20 | | | | | |
| | 2525M06 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 20 | | | | | |
| | 2020K08 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 26 | LEM8×21 | W08AP | WH30L | L4 | SP4 |
| | 2525M08 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 26 | | | | | |
| | 3232P08 | △ | △ | 32 | 32 | 170 | 32 | 40 | 28 | | | | | |

▲Stock available △Make-to-order

General turning

External turning tools

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For cast iron machining | PCBN&PCD inserts |
|------------------|--------------------------------|--------------------------------|--------------------------------------|--------------------------------|-------------------|
| Inserts shape | DF A83 | WGM Wiper A84 | DR Double-side A86 | Without chipbreaker A86 | A136 |
| | WGF Wiper A83 | PM A85 | SNR Double-side A86 | | A136 -A137 |
| | SF A83 | DM A85 | | | A137 |
| | EF A84 | EM A85 | | | |
| | NF A84 | NM A86 | | | |
| Tool holder type | PWLNRL/□□H/K/M06 | WN□□0604□□ | WN□□0604□□ | WN□□0604□□ | WN□□0604□□ |
| | PWLNRL/□□K/M/P08 | WN□□0804□□ | WN□□0804□□ | WN□□0804□□ | WN□□0804□□ |



TURNING / General Turning Tools

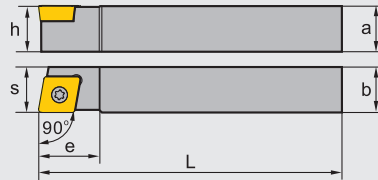
External turning tools

Corresponding tool holders of insert **CC** S-type clamping

SCACRIL
Kr:90°





R-type shown















General turning

External turning tools

| Type | Stock | | Basic dimensions(mm) | | | | | | | Screw | Wrench |
|----------------|----------------|---|----------------------|----|----|-----|----|----|---|---|--------|
| | R | L | a | b | L | h | s | e |  |  | |
| SCACR/L | 0808F06 | △ | △ | 8 | 8 | 80 | 8 | 8 | 16 | I60M2.5×6.5 | WT07IP |
| | 1010H06 | ▲ | △ | 10 | 10 | 100 | 10 | 10 | 16 | | |
| | 1212H06 | △ | △ | 12 | 12 | 100 | 12 | 12 | 16 | | |
| | 1212H09 | ▲ | ▲ | 12 | 12 | 100 | 12 | 12 | 20 | I60M3.5×8 | WT15IP |
| | 1616H09 | △ | △ | 16 | 16 | 100 | 16 | 16 | 20 | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For extra finishing | For finishing | For semi-finishing | For roughing | For Al machining | For cast iron machining | PCBN&PCD inserts |
|------------------|--|---|---|---|--|---|---|
| Inserts shape | USF  A89 | HF  A89 | HM  A90 | HR  A91 | LH  A91-92 |  Without chipbreaker A92 |  A139 |
| | SF  A89 | EF  A90 | EM  A90 | | LC  A91 | |  A144 |
| Tool holder type | SCACR/L□□H/F06 | CC□□0602□□ | CC□□0602□□ | CC□□0602□□ | CC□□0602□□ | CCGX 0602□□ | CC□□ 0602□□ |
| | SCACR/L□□H09 | CC□□09T3□□ | CC□□09T3□□ | CC□□09T3□□ | CC□□09T3□□ | CCGX 09T3□□ | CC□□ 09T3□□ |

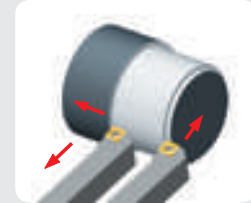
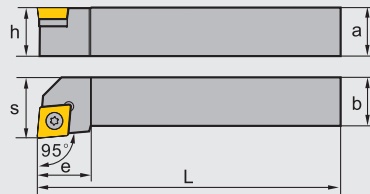


Corresponding tool holders of insert **CC** S-type clamping

SCLCR/L
Kr:95°



R-type shown



| Type | | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Shim screw | Wrench |
|----------------|----------------|-------|---|----------------------|----|-----|----|----|----|-------------|-------|------------|-----------------|
| | | R | L | a | b | L | h | s | e | | | | |
| SCLCR/L | 0808F06 | ▲ | △ | 08 | 08 | 80 | 08 | 10 | 12 | I60M2.5×6.5 | --- | --- | WT07IP |
| | 1010F06 | ▲ | ▲ | 10 | 10 | 80 | 10 | 12 | 12 | | | | |
| | 1212H06 | △ | △ | 12 | 12 | 100 | 12 | 16 | 12 | | | | |
| | 1616H06 | △ | △ | 16 | 16 | 100 | 16 | 20 | 16 | | | | |
| | 1212H09 | ▲ | ▲ | 12 | 12 | 100 | 12 | 16 | 16 | I60M3.5×8 | --- | --- | WT15IP |
| | 1616H09 | ▲ | ▲ | 16 | 16 | 100 | 16 | 20 | 16 | | | | |
| | 2020K09 | △ | △ | 20 | 20 | 125 | 20 | 25 | 16 | | | | |
| | 2525M09 | △ | △ | 25 | 25 | 150 | 25 | 32 | 16 | I60M4×11X | C12BS | SM6×10XA | WT15IP WH40L |
| | 2020K12 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 20 | | | | |
| | 2525M12 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 20 | | | | |
| | 3225M12 | ▲ | ▲ | 32 | 25 | 150 | 32 | 32 | 20 | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For extra finishing | For finishing | For semi-finishing | For roughing | For Al machining | For cast iron machining | PCBN&PCD inserts |
|------------------|-------------------------|----------------------|----------------------|----------------------|-------------------------|--------------------------------|------------------|
| Inserts shape | USF A89 | HF A89 | HM A90 | HR A91 | LH A91-92 | Without chipbreaker A92 | A139 |
| | SF A89 | EF A90 | EM A90 | | LC A91 | | A144 |
| Tool holder type | SCLCR/L□□H/F06 | CC□□ 0602□□ | CC□□ 0602□□ | CC□□ 0602□□ | CC□□ 0602□□ | CCGX 0602□□ | CC□□ 0602□□ |
| | SCLCR/L□□H/K/M09 | CC□□ 09T3□□ | CC□□ 09T3□□ | CC□□ 09T3□□ | CC□□ 09T3□□ | CCGX 09T3□□ | CC□□ 09T3□□ |
| | SCLCR/L□□K/M12 | | CC□□ 1204□□ | CC□□ 1204□□ | CC□□ 1204□□ | CCGX 1204□□ | CC□□ 1204□□ |

General turning

External turning tools



TURNING / General Turning Tools

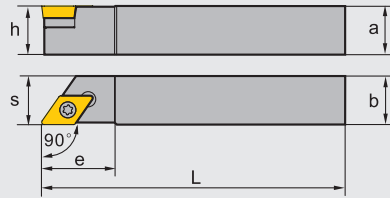
External turning tools

Corresponding tool holders of insert **DC** S-type clamping

SDACR/L
Kr:90°








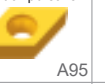






R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | | | Screw | Shim | Shim screw | Wrench |
|----------------|----------------|---|----------------------|----|----|-----|----|----|----|-------------|-------|------------|-----------------|
| | R | L | a | b | L | h | s | e | | | | | |
| SDACR/L | 0808K07 | △ | △ | 8 | 8 | 125 | 8 | 8 | 15 | I60M2.5×6.5 | --- | --- | WT07IP |
| | 1010K07 | △ | △ | 10 | 10 | 125 | 10 | 10 | 15 | | | | |
| | 1212K07 | △ | △ | 12 | 12 | 125 | 10 | 10 | 15 | | | | |
| | 1212K11 | △ | △ | 12 | 12 | 125 | 12 | 12 | 22 | I60M3.5×8 | --- | --- | WT15IP |
| | 1616K11 | △ | △ | 16 | 16 | 125 | 16 | 16 | 22 | I60M3.5×12 | D11BS | SM5×8.65XA | WT15IP WH35L |
| | 2020K11 | △ | △ | 20 | 20 | 125 | 20 | 20 | 22 | | | | |
| | 2525M11 | △ | △ | 25 | 25 | 150 | 25 | 25 | 22 | | | | |

▲Stock available △Make-to-order

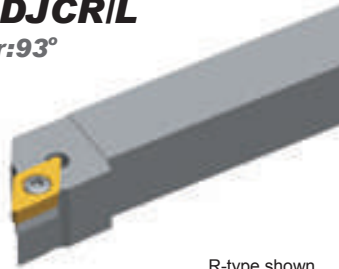
Applicable inserts

| Application | For extra finishing | For finishing | For semi-finishing | For roughing | For Al machining | For cast iron machining | PCBN&PCD inserts | |
|------------------|--|---|---|---|---|---|---|-------------|
| Inserts shape | USF  A93 | HF  A93 | HM  A94 | HR  A95 | LH  A95 |  Without chipbreaker A95 |  A140 | |
| | SF  A93 | EF  A94 | EM  A94 | | LC  A95 | |  A145 | |
| Tool holder type | SDACR/L□□K07 | DC□□ 0702□□ | DC□□ 0702□□ | DC□□ 0702□□ | | DCGX 0702□□ | DC□□ 0702□□ | DC□□ 0702□□ |
| | SDACR/L□□K/M11 | DC□□ 11T3□□ | DC□□ 11T3□□ | DC□□ 11T3□□ | DC□□ 11T3□□ | DCGX 11T3□□ | DC□□ 11T3□□ | DC□□ 11T3□□ |

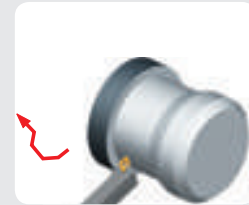


Corresponding tool holders of insert **DC** S-type clamping

SDJCRIL
Kr:93°



R-type shown



General turning

External turning tools

| Type | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Shim screw | Wrench | |
|----------------|----------------|---|----------------------|----|-----|-----|----|----|------------|-------------|------------|-----------------|--------|
| | R | L | a | b | L | h | s | e | | | | | |
| SDJCR/L | 0808F07 | △ | △ | 8 | 8 | 80 | 8 | 10 | 15 | I60M2.5×6.5 | --- | --- | WT07IP |
| | 1010F07 | ▲ | △ | 10 | 10 | 80 | 10 | 12 | 15 | | | | |
| | 1212H07 | ▲ | ▲ | 12 | 12 | 100 | 12 | 16 | 15 | | | | |
| | 1414H07 | △ | △ | 14 | 14 | 100 | 14 | 18 | 15 | | | | |
| | 1616H07 | ▲ | ▲ | 16 | 16 | 100 | 16 | 20 | 15 | | | | |
| | 2020K07 | △ | △ | 20 | 20 | 125 | 20 | 25 | 28 | | | | |
| | 2525M07 | △ | △ | 25 | 25 | 150 | 25 | 32 | 28 | | | | |
| 1212K11 | △ | △ | 12 | 12 | 125 | 12 | 16 | 22 | I60M3.5×12 | D11BS | SM5×8.65XA | WT15IP WH35L | |
| 1616K11 | ▲ | ▲ | 16 | 16 | 125 | 16 | 20 | 22 | | | | | |
| 2020K11 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 22 | | | | | |
| 2525M11 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 22 | | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For extra finishing | For finishing | For semi-finishing | For roughing | For Al machining | For cast iron machining | PCBN&PCD inserts | |
|------------------|---------------------------|----------------------|----------------------|----------------------|----------------------|---------------------------------------|------------------|-------------|
| Inserts shape | USF A93 | HF A93 | HM A94 | HR A95 | LH A95 | Without chipbreaker A95 | A140 | |
| | SF A93 | EF A94 | EM A94 | | LC A95 | | A145 | |
| Tool holder type | SDJCR/L□□F/H/K/M07 | DC□□ 0702□□ | DC□□ 0702□□ | DC□□ 0702□□ | | DCGX 0702□□ | DC□□ 0702□□ | DC□□ 0702□□ |
| | SDJCR/L□□K/M11 | DC□□ 11T3□□ | DC□□ 11T3□□ | DC□□ 11T3□□ | DC□□ 11T3□□ | DCGX 11T3□□ | DC□□ 11T3□□ | DC□□ 11T3□□ |

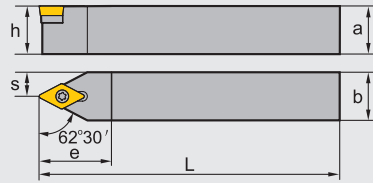
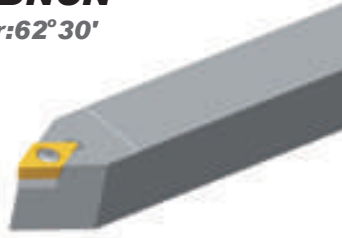


TURNING / General Turning Tools

External turning tools

Corresponding tool holders of insert **DC** S-type clamping

SDNCN
Kr:62°30'



General turning

External turning tools

| Type | Stock | Basic dimensions(mm) | | | | | | Screw | Shim | Shim screw | Wrench | |
|--------------|---------|----------------------|----|----|-----|----|------|-------|-------------|------------|------------|-----------------|
| | | a | b | L | h | s | e | | | | | |
| SDNCN | 0808F07 | △ | 8 | 8 | 80 | 8 | 4 | 15 | I60M2.5×6.5 | --- | --- | WT07IP |
| | 1010F07 | ▲ | 10 | 10 | 80 | 10 | 5 | 15 | | | | |
| | 1212H07 | ▲ | 12 | 12 | 100 | 12 | 6 | 15 | | | | |
| | 1616H07 | △ | 16 | 16 | 100 | 16 | 8 | 15 | | | | |
| | 2020K07 | △ | 20 | 20 | 125 | 20 | 10 | 20 | | | | |
| | 2525M07 | △ | 25 | 25 | 150 | 25 | 12.5 | 20 | | | | |
| | 1616K11 | ▲ | 16 | 16 | 125 | 16 | 8 | 22 | I60M3.5×12 | D11BS | SM5×8.65XA | WT15IP WH35L |
| | 2020K11 | ▲ | 20 | 20 | 125 | 20 | 10 | 22 | | | | |
| | 2525M11 | ▲ | 25 | 25 | 150 | 25 | 12.5 | 22 | | | | |
| | 3225M11 | △ | 32 | 25 | 150 | 32 | 12.5 | 22 | | | | |
| | 3232P11 | △ | 32 | 32 | 170 | 32 | 16 | 22 | | | | |

▲Stock available △Make-to-order

Applicable inserts

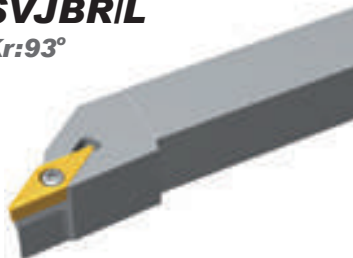
| Application | For extra finishing | For finishing | For semi-finishing | For roughing | For Al machining | For cast iron machining | PCBN&PCD inserts |
|------------------|-------------------------|----------------------|----------------------|----------------------|----------------------|--------------------------------|------------------|
| Inserts shape | USF A93 | HF A93 | HM A94 | HR A95 | LH A95 | Without chipbreaker A95 | A140 |
| | SF A93 | EF A94 | EM A94 | | LC A95 | | A145 |
| Tool holder type | SDNCN□□F/H/K/M07 | DC□□0702□□ | DC□□0702□□ | DC□□0702□□ | | DCGX 0702□□ | DC□□0702□□ |
| | SDNCN□□K/M/P11 | DC□□11T3□□ | DC□□11T3□□ | DC□□11T3□□ | DC□□11T3□□ | DCGX 11T3□□ | DC□□11T3□□ |



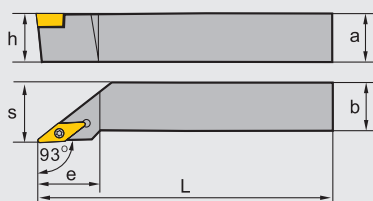
Corresponding tool holders of insert **VB** S-type clamping

SVJBR/L

Kr:93°



R-type shown



General turning

External turning tools

| Type | | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Shim screw | Wrench |
|----------------|---------|-------|---|----------------------|----|-----|----|----|----|-------------|-------|------------|-----------------|
| | | R | L | a | b | L | h | s | e | | | | |
| SVJBR/L | 1212H11 | ▲ | ▲ | 12 | 12 | 100 | 12 | 16 | 25 | I60M2.5×6.5 | --- | --- | WT071P |
| | 1616H11 | ▲ | ▲ | 16 | 16 | 100 | 16 | 20 | 25 | | | | |
| | 2020K11 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 25 | | | | |
| | 2525M11 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 25 | | | | |
| | 1616H16 | ▲ | ▲ | 16 | 16 | 100 | 16 | 20 | 35 | I60M3.5×12 | V16BS | SM5×8.65XA | WT151P WH35L |
| | 2020K16 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 35 | | | | |
| | 2525M16 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 35 | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For extra finishing | For finishing | For semi-finishing | For roughing | PCBN&PCD inserts |
|------------------|-------------------------|------------------------|-----------------------|------------------------|------------------|
| Inserts shape | SF A108 | HF A108 | HM A109 | HR A109 | A142 |
| | | NF A108 | EM A109 | SNR A109 | A147 |
| | | EF A108 | | | |
| | | NGF A108 | | | |
| Tool holder type | SVJBR/L□□H/K/M11 | VB□□1103□□ | VB□□1103□□ | VB□□1103□□ | |
| | SVJBR/L□□H/K/M16 | | VB□□1604□□ | VB□□1604□□ | VB□□1604□□ |

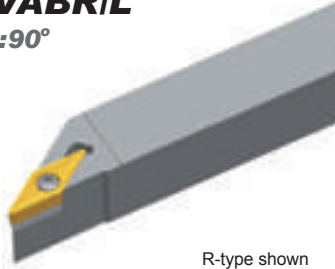


TURNING / General Turning Tools

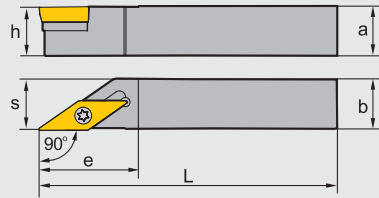
External turning tools

Corresponding tool holders of insert **VB** S-type clamping

SVABRIL
Kr:90°



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | | | Screw | Shim | Shim screw | Wrench |
|----------------|----------------|---|----------------------|----|----|-----|----|----|----|-------------|-------|------------|-----------------|
| | R | L | a | b | L | h | s | e | | | | | |
| SVABR/L | 1010F11 | △ | △ | 10 | 10 | 80 | 10 | 10 | 25 | I60M2.5×6.5 | --- | --- | WT07IP |
| | 1616H16 | △ | △ | 16 | 16 | 100 | 16 | 16 | 28 | I60M3.5×12 | V16BS | SM5×8.65XA | WT15IP WH35L |
| | 2020K16 | △ | △ | 20 | 20 | 125 | 20 | 20 | 28 | | | | |
| | 2525M16 | △ | △ | 25 | 25 | 150 | 25 | 25 | 28 | | | | |

▲Stock available △Make-to-order

Applicable inserts

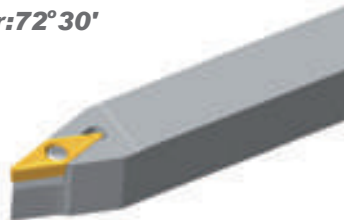
| Application | For extra finishing | For finishing | For semi-finishing | For roughing | PCBN&PCD inserts |
|------------------|-------------------------|------------------------|-----------------------|------------------------|------------------|
| Inserts shape | SF A108 | HF A108 | HM A109 | HR A109 | A142 |
| | | NF A108 | EM A109 | SNR A109 | A147 |
| | | EF A108 | | | |
| | | NGF A108 | | | |
| Tool holder type | SVABR/L□□F11 | VB□□1103□□ | VB□□1103□□ | VB□□1103□□ | |
| | SVABR/L□□H/K/M16 | | VB□□1604□□ | VB□□1604□□ | VB□□1604□□ |



Corresponding tool holders of insert **VB** S-type clamping

SVVBN

Kr:72°30'














| Type | Stock | Basic dimensions(mm) | | | | | | Screw | Shim | Shim screw | Wrench | |
|--------------|----------------|----------------------|----|----|-----|----|------|-------|-------------|------------|------------|-----------------|
| | | a | b | L | h | s | e | | | | | |
| SVVBN | 1212H11 | ▲ | 12 | 12 | 100 | 12 | 6 | 25 | I60M2.5×6.5 | --- | --- | WT071P |
| | 1616H11 | ▲ | 16 | 16 | 100 | 16 | 8 | 25 | | | | |
| | 2020K11 | ▲ | 20 | 20 | 125 | 20 | 10 | 25 | | | | |
| | 2525M11 | △ | 25 | 25 | 150 | 25 | 12.5 | 35 | | | | |
| | 1616H16 | ▲ | 16 | 16 | 100 | 16 | 8 | 35 | I60M3.5×12 | V16BS | SM5×8.65XA | WT151P WH35L |
| | 2020K16 | ▲ | 20 | 20 | 125 | 20 | 10 | 35 | | | | |
| | 2525M16 | ▲ | 25 | 25 | 150 | 25 | 12.5 | 35 | | | | |

▲Stock available △Make-to-order

General turning

External turning tools

Applicable inserts

| Application | For extra finishing | For finishing | For semi-finishing | For roughing | PCBN&PCD inserts |
|------------------|--|---|--|--|---|
| Inserts shape | SF  A108 | HF  A108 | HM  A109 | HR  A109 |  A142 |
| | | NF  A108 | EM  A109 | SNR  A109 |  A147 |
| | | EF  A108 | | | |
| | | NGF  A108 | | | |
| Tool holder type | SVVBN□□H/K/M11 | VB□□1103□□ | VB□□1103□□ | VB□□1103□□ | |
| | SVVBN□□H/K/M16 | | VB□□1604□□ | VB□□1604□□ | VB□□1604□□ |



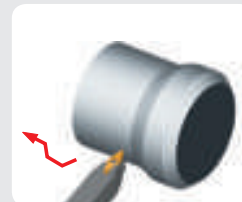
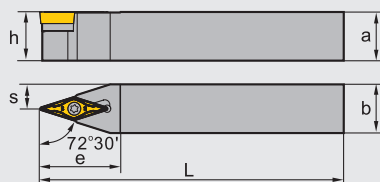
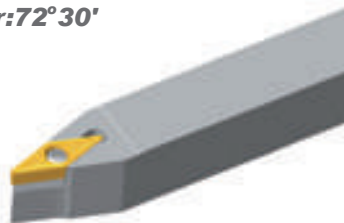
TURNING / General Turning Tools

External turning tools

Corresponding tool holders of insert VC□□ S-type clamping

SVVCN










Kr:72°30'



| Type | Stock | Basic dimensions(mm) | | | | | | Screw | Shim | Shim screw | Wrench | |
|--------------|----------------|----------------------|----|----|-----|----|------|-------|-------------|------------|------------|-----------------|
| | | a | b | L | h | s | e | | | | | |
| SVVCN | 1212H11 | ▲ | 12 | 12 | 100 | 12 | 6 | 25 | I60M2.5×6.5 | --- | --- | WT071P |
| | 1616H11 | ▲ | 16 | 16 | 100 | 16 | 8 | 27 | | | | |
| | 2020K11 | ▲ | 20 | 20 | 125 | 20 | 10 | 30 | | | | |
| | 2525M11 | △ | 25 | 25 | 150 | 25 | 12.5 | 38 | I60M3.5×12 | V16BSC | SM5×8.65XA | WT151P WH35L |
| | 1616H16 | ▲ | 16 | 16 | 100 | 16 | 8 | 33 | | | | |
| | 2020K16 | ▲ | 20 | 20 | 125 | 20 | 10 | 33 | | | | |
| | 2525M16 | ▲ | 25 | 25 | 150 | 25 | 12.5 | 38 | | | | |

▲Stock available △Make-to-order

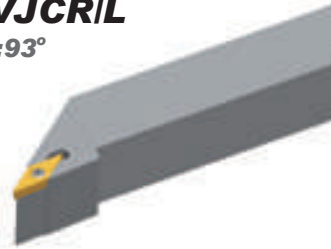
Applicable inserts

| Application | For extra finishing | For finishing | For Al machining | PCBN&PCD inserts |
|------------------|---|---|---|---|
| Inserts shape | USF  A105 | HF  A105 | LH  A106 |  A143 |
| | SF  A105 | NF  A105 | LC  A106 |  A148 |
| | | NGF  A105 | | |
| Tool holder type | SVVCN□□H/K/M11 | VC□□1103□□ | VC□□1103□□ | VCGX1103□□ |
| | SVVCN□□H/K/M16 | | VC□□1604□□ | VCGX1604□□ VC□□1604□□ |

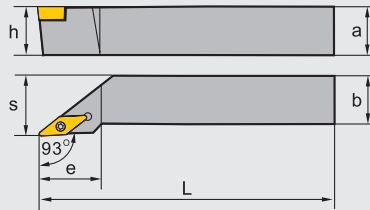


Corresponding tool holders of insert **VC** S-type clamping

SVJCR/L
Kr:93°



R-type shown












| Type | | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Shim screw | Wrench |
|----------------|----------------|-------|---|----------------------|----|-----|----|----|----|-------------|--------|------------|-----------------|
| | | R | L | a | b | L | h | s | e | | | | |
| SVJCR/L | 1212H11 | △ | △ | 12 | 12 | 100 | 12 | 16 | 25 | I60M2.5×6.5 | --- | --- | WT07IP |
| | 1616H11 | ▲ | ▲ | 16 | 16 | 100 | 16 | 20 | 25 | | | | |
| | 2020K11 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 25 | | | | |
| | 2525M11 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 35 | | | | |
| | 1616H16 | ▲ | ▲ | 16 | 16 | 100 | 16 | 20 | 35 | I60M3.5×12 | V16BSC | SM5×8.65XA | WT15IP WH35L |
| | 2020K16 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 35 | | | | |
| | 2525M16 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 35 | | | | |

▲Stock available △Make-to-order

General turning

External turning tools

Applicable inserts

| Application | For extra finishing | For finishing | For Al machining | PCBN&PCD inserts | | |
|------------------|---|---|---|---|------------|------------|
| Inserts shape | USF  A105 | HF  A105 | LH  A106 |  A143 | | |
| | SF  A105 | NF  A105 | LC  A106 |  A148 | | |
| | | NGF  A105 | | | | |
| Tool holder type | SVJCR/L□□H/K/M11 | | VC□□1103□□ | VC□□1103□□ | VCGX1103□□ | |
| | SVJCR/L□□H/K/M16 | | VC□□1604□□ | VC□□1604□□ | VCGX1604□□ | VC□□1604□□ |

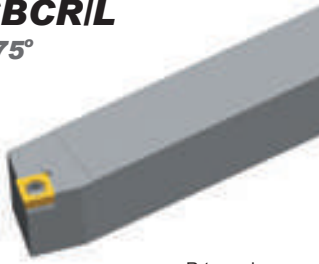


TURNING / General Turning Tools

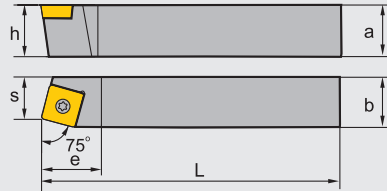
External turning tools

Corresponding tool holders of insert **SC** S-type clamping

SSBCRIL
Kr:75°



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Shim screw | Wrench | |
|----------------|----------------|---|----------------------|----|----|-----|----|----|-------|------------|------------|------------|-----------------|
| | R | L | a | b | L | h | s | e | | | | | |
| SSBCR/L | 1212H09 | ▲ | ▲ | 12 | 12 | 100 | 12 | 9 | 16 | I60M3.5×8 | --- | --- | WT15IP |
| | 1616H09 | ▲ | ▲ | 16 | 16 | 100 | 16 | 13 | 16 | I60M3.5×12 | S09BS | SM5×8.65XA | WT15IP WH35L |
| | 2020K09 | △ | △ | 20 | 20 | 125 | 20 | 17 | 20 | | | | |
| | 2525M09 | △ | △ | 25 | 25 | 150 | 25 | 22 | 20 | | | | |
| | 2020K12 | ▲ | ▲ | 20 | 20 | 125 | 20 | 17 | 25 | I60M4×11X | S12BS | SM6×10XA | WT15IP WH40L |
| | 2525M12 | △ | △ | 25 | 25 | 150 | 25 | 22 | 25 | | | | |

▲Stock available △Make-to-order

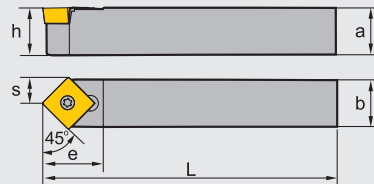
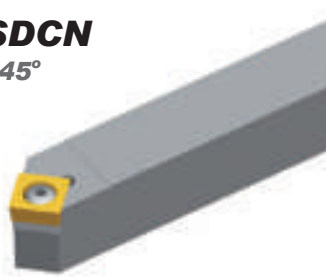
Applicable inserts

| Application | For finishing | | For semi-finishing | | For roughing | For Al machining | For cast iron machining |
|------------------|-------------------------|----------------------|----------------------|----------------------|--------------|----------------------|--------------------------------|
| Inserts shape | HF A98 | HM A98 | HR A99 | LH A99 | | LC A99 | Without chipbreaker A99 |
| | EF A98 | EM A98 | | | | | |
| Tool holder type | SSBCR/L□□H/K/M09 | | SC□□09T3□□ | SC□□09T3□□ | SC□□09T3□□ | SCGX09T3□□ | SC□□09T3□□ |
| | SSBCR/L□□K/M12 | | | SC□□1204□□ | SC□□1204□□ | SCGX1204□□ | SC□□1204□□ |



Corresponding tool holders of insert **SC** S-type clamping

SSDCN
Kr:45°



| Type | Stock | Basic dimensions(mm) | | | | | | Screw | Shim | Shim screw | Wrench | |
|--------------|----------------|----------------------|----|----|-----|----|------|-------|------------|------------|------------|-----------------|
| | | a | b | L | h | s | e | | | | | |
| SSDCN | 1212H09 | ▲ | 12 | 12 | 100 | 12 | 6 | 16 | I60M3.5×8 | --- | --- | WT15IP |
| | 1616H09 | ▲ | 16 | 16 | 100 | 16 | 8 | 16 | I60M3.5×12 | S09BS | SM5×8.65XA | WT15IP WH35L |
| | 2020K09 | △ | 20 | 20 | 125 | 20 | 10 | 20 | | | | |
| | 2525M09 | △ | 25 | 25 | 150 | 25 | 12.5 | 20 | I60M4×11 | S12BS | SM6×10XA | WT15IP WH40L |
| | 2525M12 | ▲ | 25 | 25 | 150 | 25 | 12.5 | 22 | | | | |

▲Stock available △Make-to-order

General turning

External turning tools

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For Al machining | For cast iron machining | |
|------------------|-----------------------|----------------------|----------------------|----------------------|--------------------------------|------------|
| Inserts shape | HF A98 | HM A98 | HR A99 | LH A99 | Without chipbreaker A99 | |
| | EF A98 | EM A98 | | LC A99 | | |
| Tool holder type | SSDCN□□H/K/M09 | SC□□09T3□□ | SC□□09T3□□ | SC□□09T3□□ | SCG□09T3□□ | SC□□09T3□□ |
| | SSDCN□□M12 | | SC□□1204□□ | SC□□1204□□ | SCG□1204□□ | SC□□1204□□ |

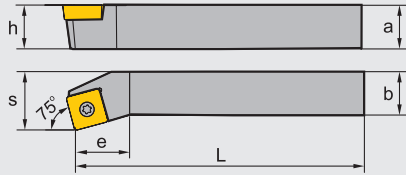
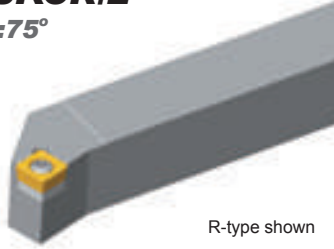


TURNING / General Turning Tools

External turning tools

Corresponding tool holders of insert **SC** S-type clamping

SSKCRIL
Kr:75°



| Type | | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Shim screw | Wrench |
|----------------|----------------|-------|---|----------------------|----|-----|----|----|----|------------|-------|------------|-----------------|
| | | R | L | a | b | L | h | s | e | | | | |
| SSKCR/L | 1212H09 | △ | △ | 12 | 12 | 100 | 12 | 16 | 16 | I60M3.5×8 | --- | --- | WT15IP |
| | 1616H09 | ▲ | △ | 16 | 16 | 100 | 16 | 20 | 16 | I60M3.5×12 | S09BS | SM5×8.65XA | WT15IP WH35L |
| | 2020K09 | △ | △ | 20 | 20 | 125 | 20 | 25 | 20 | | | | |
| | 2525M09 | △ | △ | 25 | 25 | 150 | 25 | 32 | 20 | | | | |
| | 2020K12 | △ | △ | 20 | 20 | 125 | 20 | 25 | 22 | I60M4×11X | S12BS | SM6×10XA | WT15IP WH40L |
| | 2525M12 | △ | △ | 25 | 25 | 150 | 25 | 32 | 22 | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For Al machining | For cast iron machining | |
|------------------|-------------------------|----------------------|----------------------|----------------------|--------------------------------|------------|
| Inserts shape | HF A98 | HM A98 | HR A99 | LH A99 | Without chipbreaker A99 | |
| | EF A98 | EM A98 | | LC A99 | | |
| Tool holder type | SSKCR/L□□H/K/M09 | SC□□09T3□□ | SC□□09T3□□ | SC□□09T3□□ | SCGX09T3□□ | SC□□09T3□□ |
| | SSKCR/L□□K/M12 | | SC□□1204□□ | SC□□1204□□ | SCGX1204□□ | SC□□1204□□ |



Corresponding tool holders of insert **SC** □ □

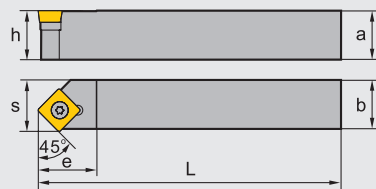
S-type clamping

SSSCR/L

Kr:45°



R-type shown



| Type | | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Shim screw | Wrench |
|----------------|----------------|-------|---|----------------------|----|-----|----|----|----|------------|-------|------------|-----------------|
| | | R | L | a | b | L | h | s | e | | | | |
| SSSCR/L | 1212H09 | △ | △ | 12 | 12 | 100 | 12 | 16 | 16 | I60M3.5×8 | --- | --- | WT15IP |
| | 1616H09 | ▲ | ▲ | 16 | 16 | 100 | 16 | 17 | 16 | I60M3.5×12 | S09BS | SM5×8.65XA | WT15IP WH35L |
| | 2020K09 | △ | △ | 20 | 20 | 125 | 20 | 21 | 20 | | | | |
| | 2525M09 | △ | △ | 25 | 25 | 150 | 25 | 32 | 20 | | | | |
| | 2020K12 | ▲ | ▲ | 20 | 20 | 125 | 20 | 21 | 24 | I60M4×11X | S12BS | SM6×10XA | WT15IP WH40L |
| | 2525M12 | △ | △ | 25 | 25 | 150 | 25 | 32 | 22 | | | | |

▲ Stock available △ Make-to-order

General turning

External turning tools

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For AI machining | For cast iron machining |
|------------------|-------------------------|----------------------|----------------------|----------------------|--------------------------------|
| Inserts shape | HF A98 | HM A98 | HR A99 | LH A99 | Without chipbreaker A99 |
| | EF A98 | EM A98 | | LC A99 | |
| Tool holder type | SSSCR/L□□H/K/M09 | SC□□09T3□□ | SC□□09T3□□ | SC□□09T3□□ | SCGX09T3□□ |
| | SSSCR/L□□K/M12 | | SC□□1204□□ | SC□□1204□□ | SCGX1204□□ |



TURNING / General Turning Tools

External turning tools

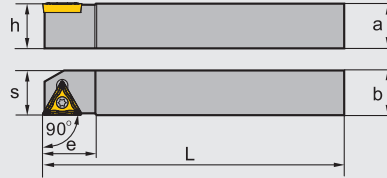
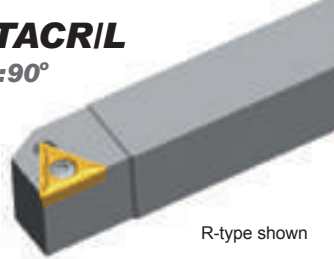
Corresponding tool holders of insert **TC** S-type clamping

General turning

External turning tools

STACR/L

Kr:90°

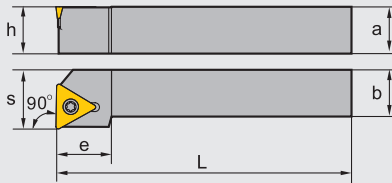
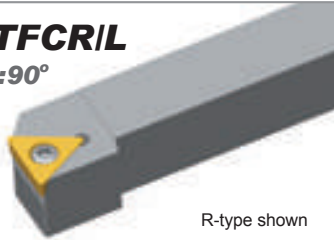


| Type | | Stock | | Basic dimensions(mm) | | | | | | Screw | Wrench | --- | --- |
|----------------|----------------|-------|---|----------------------|----|-----|----|----|----|-------------|--------|-----|-----|
| | | R | L | a | b | L | h | s | e | | | --- | --- |
| STACR/L | 1010K11 | △ | △ | 10 | 10 | 100 | 10 | 10 | 12 | I60M2.5×6.5 | | --- | --- |
| | 1212F11 | △ | △ | 12 | 12 | 100 | 12 | 12 | 14 | | | --- | --- |
| | 1616K11 | △ | △ | 16 | 16 | 100 | 16 | 16 | 16 | | | --- | --- |

▲Stock available △Make-to-order

STFCR/L

Kr:90°



| Type | | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Shim screw | Wrench |
|----------------|----------------|-------|----|----------------------|-----|-----|----|----|-----|-------------|-------|------------|-----------------|
| | | R | L | a | b | L | h | s | e | | | | |
| STFCR/L | 1212H11 | ▲ | ▲ | 12 | 12 | 100 | 12 | 16 | 14 | I60M2.5×6.5 | --- | --- | WT07IP |
| | 1616H11 | ▲ | ▲ | 16 | 16 | 100 | 16 | 20 | 14 | | | | |
| | 2020K11 | △ | △ | 20 | 20 | 125 | 20 | 25 | 20 | | | | |
| | 2525M11 | △ | △ | 25 | 25 | 150 | 25 | 32 | 20 | I60M3.5×12 | T16BS | SM5×8.65XA | WT15IP WH35L |
| | 1616K16 | ▲ | ▲ | 16 | 16 | 125 | 16 | 20 | 20 | | | | |
| | 2020K16 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 20 | | | | |
| 2525M16 | △ | △ | 25 | 25 | 150 | 25 | 32 | 25 | --- | --- | --- | --- | |

▲Stock available △Make-to-order

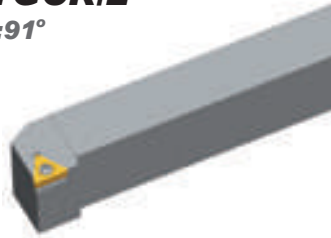
Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For Al machining | For cast iron machining | PCBN&PCD inserts |
|------------------|-------------------------|-----------------------|-----------------------|-----------------------|--|------------------|
| Inserts shape | HF A101 | HM A103 | HR A103 | LH A104 | Without chipbreaker A104 | A141 |
| | EF A102 | EM A102 | | LC A103 | | |
| Tool holder type | STACR/L□□K/F11 | TC□□1102□□ | TC□□1102□□ | TC□□1102□□ | TCGX1102□□ | TC□□1102□□ |
| | STFCR/L□□H/K/M11 | TC□□1102□□ | TC□□1102□□ | TC□□1102□□ | TCGX1102□□ | TC□□1102□□ |
| | STFCR/L□□K/M16 | TC□□16T3□□ | TC□□16T3□□ | TC□□16T3□□ | TCGX16T3□□ | TC□□16T3□□ |

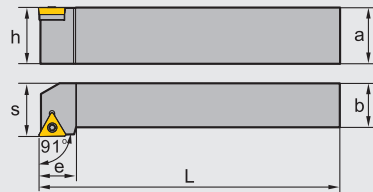


Corresponding tool holders of insert **TC** S-type clamping

STGCRIL
Kr:91°



R-type shown














General turning

External turning tools

| Type | | Stock | | Basic dimensions(mm) | | | | | | Screw | Shim | Shim screw | Wrench |
|----------------|----------------|-------|---|----------------------|----|-----|----|----|----|-------------|-------|------------|-----------------|
| | | R | L | a | b | L | h | s | e | | | | |
| STGCR/L | 0808F09 | ▲ | △ | 08 | 08 | 80 | 8 | 10 | 12 | I60M2.2×5.5 | --- | --- | WT06IP |
| | 1010F09 | ▲ | ▲ | 10 | 10 | 80 | 10 | 12 | 12 | | | | |
| | 1212H09 | △ | △ | 12 | 12 | 100 | 12 | 16 | 12 | | | | |
| | 1212H11 | ▲ | ▲ | 12 | 12 | 100 | 12 | 16 | 16 | I60M2.5×6.5 | --- | --- | WT07IP |
| | 1616H11 | ▲ | ▲ | 16 | 16 | 100 | 16 | 20 | 16 | | | | |
| | 2020K11 | △ | △ | 20 | 20 | 125 | 20 | 25 | 20 | | | | |
| | 2525M11 | △ | △ | 25 | 25 | 150 | 25 | 32 | 20 | | | | |
| | 1616K16 | △ | △ | 16 | 16 | 125 | 16 | 20 | 20 | I60M3.5×12 | T16BS | SM5×8.65XA | WT15IP WH35L |
| | 2020K16 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | 21 | | | | |
| | 2525M16 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | 21 | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For extra finishing | For finishing | For semi-finishing | For roughing | For Al machining | For cast iron machining Without chipbreaker | PCBN&PCD inserts |
|------------------|---|--|--|--|--|--|--|
| Inserts shape | USF  A100 | HF  A101 | HM  A103 | HR  A103 | LH  A104 | A104  A104 | A141  A141 |
| | SF  A100 | EF  A102 | EM  A102 | | LC  A103 | | |
| Tool holder type | STGCR/L□□F/H09 | TC□□0902□□ | TC□□0902□□ | TC□□0902□□ | TC□□0902□□ | TCGX0902□□ | TC□□0902□□ |
| | STGCR/L□□H/K/M11 | | TC□□1102□□ | TC□□1102□□ | TC□□1102□□ | TCGX1102□□ | TC□□1102□□ |
| | STGCR/L□□K/M16 | | TC□□16T3□□ | TC□□16T3□□ | TC□□16T3□□ | TCGX16T3□□ | TC□□16T3□□ |

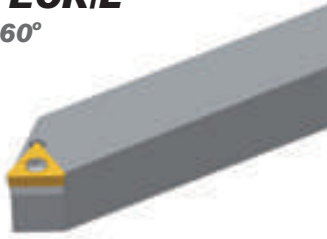


TURNING / General Turning Tools

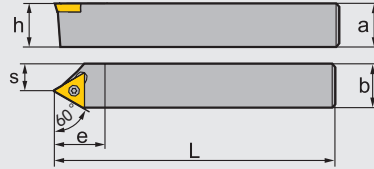
External turning tools

Corresponding tool holders of insert **TC** S-type clamping

STECRIL
Kr:60°



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | | | Screw | Shim | Shim screw | Wrench |
|----------------|----------------|---|----------------------|----|----|-----|----|------|----|-------------|-------|------------|--------|
| | R | L | a | b | L | h | s | e | | | | | |
| STECR/L | 1616H11 | △ | △ | 16 | 16 | 100 | 16 | 10.5 | 16 | I60M2.5×6.5 | --- | --- | WT07IP |
| | 2020K11 | △ | △ | 20 | 20 | 125 | 20 | 14.5 | 20 | | --- | --- | WT15IP |
| | 2020K16 | △ | △ | 20 | 20 | 125 | 20 | 12.5 | 20 | I60M3.5×12 | T16BS | SM5×8.65XA | WT15IP |
| | 2525M16 | △ | △ | 25 | 25 | 150 | 25 | 17.0 | 25 | | --- | --- | WT35IP |

▲Stock available △Make-to-order

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For AI machining | For cast iron machining Without chipbreaker | PCBN&PCD inserts | |
|------------------|-----------------------|-----------------------|-----------------------|-----------------------|--|------------------|------------|
| Inserts shape | HF A101 | HM A103 | HR A103 | LH A104 | A104 | A141 | |
| | EF A102 | EM A102 | | LC A103 | | | |
| Tool holder type | STECR/L□□H/K11 | TC□□1102□□ | TC□□1102□□ | TC□□1102□□ | TCGX1102□□ | TC□□1102□□ | TC□□1102□□ |
| | STECR/L□□K/M16 | TC□□16T3□□ | TC□□16T3□□ | TC□□16T3□□ | TCGX16T3□□ | TC□□16T3□□ | TC□□16T3□□ |

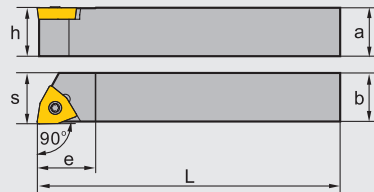


Corresponding tool holders of insert WC S-type clamping

SWACRIL
Kr:90°



R-type shown




| Type | | Stock | | Basic dimensions(mm) | | | | | | Screw | Wrench | — | — |
|----------------|----------------|-------|---|----------------------|----|-----|----|----|----|-------------|--------|-----|-----|
| | | R | L | a | b | L | h | s | e | | | | |
| SWACR/L | 1010E04 | △ | △ | 10 | 10 | 70 | 10 | 10 | 10 | I60M2.5×6.5 | WT07IP | --- | --- |
| | 1212F04 | ▲ | △ | 12 | 12 | 80 | 12 | 12 | 14 | | | | |
| | 1616H06 | ▲ | △ | 16 | 16 | 100 | 16 | 16 | 20 | I60M3×7 | WT10IP | --- | --- |
| | 2020K08 | ▲ | ▲ | 20 | 20 | 125 | 20 | 20 | 24 | I60M3.5×12 | WT15IP | --- | --- |

▲Stock available △Make-to-order

General turning

External turning tools

Applicable inserts

| Application | For finishing |
|------------------|--|
| Inserts shape | 53  |
| Tool holder type | SWACR/L□□E/F04 WC□X0402□□ |
| | SWACR/L□□H06 WC□X06T3□□ |
| | SWACR/L□□K08 WC□X0804□□ |

A107



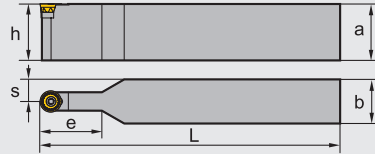


TURNING / General Turning Tools

External turning tools

Corresponding tool holders of insert **RC** S-type clamping

SRDCN



| Type | Stock | Basic dimensions(mm) | | | | | | Screw | Shim | Shim screw | Wrench | |
|--------------|----------------|----------------------|----|----|-----|----|------|-------|------------|------------|------------|-----------------|
| | | a | b | L | h | s | e | | | | | |
| SRDCN | 1616H08 | △ | 16 | 16 | 100 | 16 | 8 | 16 | I60M3×7 | --- | --- | WT10IP |
| | 2020K08 | △ | 20 | 20 | 125 | 20 | 10 | 16 | | | | |
| | 2525M08 | △ | 25 | 25 | 150 | 25 | 12.5 | 16 | | | | |
| | 2020K10 | △ | 20 | 20 | 125 | 20 | 10 | 20 | I60M3.5×10 | --- | --- | WT15IP |
| | 2525M10 | ▲ | 25 | 25 | 150 | 25 | 12.5 | 20 | | | | |
| | 2525M12 | ▲ | 25 | 25 | 150 | 25 | 12.5 | 35 | I60M3.5×12 | R12BS | SM5×8.65XA | WT15IP WH35L |
| | 3232P12 | △ | 32 | 32 | 170 | 32 | 16 | 35 | | | | |
| | 3225P16 | ▲ | 32 | 25 | 170 | 32 | 12.5 | 35 | I60M4×15X | R16BS | SM6×10XA | WT15IP WH40L |
| | 4040S16 | △ | 40 | 40 | 250 | 40 | 20 | 40 | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For semi-finishing | For roughing | For Al machining |
|------------------|--|--|---|
| Inserts shape |  A96 |  A96 | LH  A96 |
| Tool holder type | SRDCN□□K/M/H08 | RCMT0803MO | RCMT0803MO |
| | SRDCN□□K/M10 | RCMT10T3MO | RCMT10T3MO |
| | SRDCN□□M/P12 | RCMT1204MO | RCMT1204MO |
| | SRDCN□□P/S16 | RCMT1606MO | RCMT1606MO |

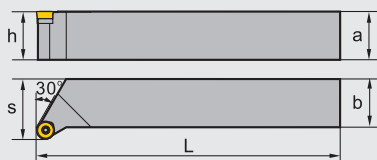


Corresponding tool holders of insert **RC** S-type clamping

SRGCRIL







R-type shown



General turning

External turning tools

| Type | | Stock | | Basic dimensions(mm) | | | | | Screw | Shim | Shim screw | Wrench |
|----------------|----------------|-------|---|----------------------|----|-----|----|----|---|---|---|---|
| | | R | L | a | b | L | h | s |  |  |  |  |
| SRGCR/L | 1616H08 | △ | △ | 16 | 16 | 100 | 16 | 20 | I60M3×7 | --- | --- | WT10IP |
| | 2020K08 | △ | △ | 20 | 20 | 125 | 20 | 25 | | | | |
| | 2525M08 | △ | △ | 25 | 25 | 150 | 25 | 32 | | | | |
| | 1616H10 | △ | △ | 16 | 16 | 100 | 16 | 20 | I60M3.5×10 | --- | --- | WT15IP |
| | 2020K10 | ▲ | ▲ | 20 | 20 | 125 | 20 | 25 | | | | |
| | 2525M10 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | | | | |
| | 2020K12 | ▲ | △ | 20 | 20 | 125 | 20 | 27 | I60M3.5×12 | R12BS | SM5×8.65XA | WT15IP WH35L |
| | 2525M12 | ▲ | ▲ | 25 | 25 | 150 | 25 | 32 | | | | |
| | 3232P16 | ▲ | △ | 32 | 32 | 170 | 32 | 40 | I60M4×15X | R16BS | SM6×10XA | WT15IP WH40L |

▲Stock available △Make-to-order

Applicable inserts

| Application | For semi-finishing | For roughing | For AI machining |
|------------------|--|--|---|
| Inserts shape |  A96 |  A96 | LH  A96 |
| Tool holder type | SRGCR/L□□H/K/M08 | RCMT0803MO | RCMT0803MO RCGX0803MO-LH |
| | SRGCR/L□□H/K/M10 | RCMT10T3MO | RCMT10T3MO |
| | SRGCR/L□□K/M12 | RCMT1204MO | RCMT1204MO |
| | SRGCR/L□□P16 | RCMT1606MO | RCMT1606MO |



TURNING / General Turning Tools

External turning tools

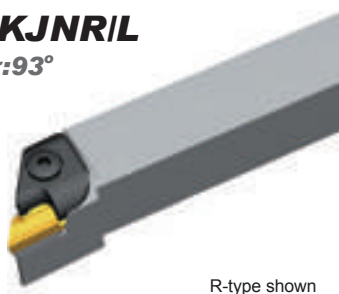
General turning

External turning tools

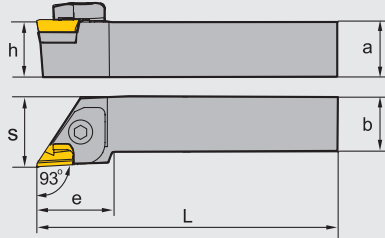
Corresponding tool holders of insert **KNUX** C-type clamping

CKJNRIL

Kr:93°



R-type shown



| Type | Stock | Basic dimensions(mm) | | | | | | Applicable inserts | Clamp | Clamp screw | Spring | Clamping stud | Shim | Shim screw | Wrench | |
|--------------|----------------|----------------------|----|----|-----|----|----|--------------------|-------|-------------|--------------|---------------|--------|------------|----------------|----|
| | | a | b | L | h | s | e | | | | | | | | | |
| CKJNR | 2525M16 | △ | 25 | 25 | 150 | 25 | 32 | KNUX1604□□R A87 | C6R1T | CM6×25A | SPR1 SPR2 | P0515 | K16CC | SM3×10B | WH20L WH40L | |
| | 3232P16 | △ | 32 | 32 | 170 | 32 | 40 | | | | | | | | | 32 |
| | 4040R16 | △ | 40 | 40 | 200 | 40 | 50 | | | | | | | | | 32 |
| CKJNL | 2525M16 | △ | 25 | 25 | 150 | 25 | 32 | KNUX1604□□L A87 | C6L1T | CM6×25A | SPR1 SPR2 | P0515 | K16CCL | SM3×10B | WH20L WH40L | |
| | 3232P16 | △ | 32 | 32 | 170 | 32 | 40 | | | | | | | | | 32 |
| | 4040R16 | △ | 40 | 40 | 200 | 40 | 50 | | | | | | | | | 32 |

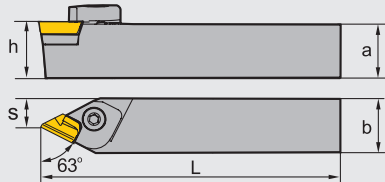
▲Stock available △Make-to-order

CKNNRIL

Kr:63°



R-type shown

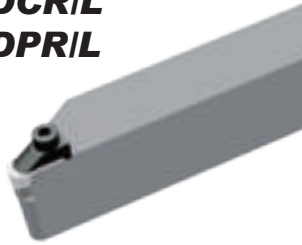


| Type | Stock | Basic dimensions(mm) | | | | | | Applicable inserts | Clamp | Clamp screw | Spring | Clamping stud | Shim | Shim screw | Wrench |
|--------------|----------------|----------------------|----|----|-----|----|------|--------------------|-------|-------------|--------------|---------------|--------|------------|----------------|
| | | a | b | L | h | s | e | | | | | | | | |
| CKNNR | 2525M16 | △ | 25 | 25 | 150 | 25 | 14.3 | KNUX1604□□R A87 | C6R1T | CM6×25A | SPR1 SPR2 | P0515 | K16CC | SM3×10B | WH20L WH40L |
| | 3232P16 | △ | 32 | 32 | 170 | 32 | 16.8 | | | | | | | | |
| CKNNL | 2525M16 | △ | 25 | 25 | 150 | 25 | 14.3 | KNUX1604□□L A87 | C6L1T | CM6×25A | SPR1 SPR2 | P0515 | K16CCL | SM3×10B | WH20L WH40L |
| | 3232P16 | △ | 32 | 32 | 170 | 32 | 16.8 | | | | | | | | |

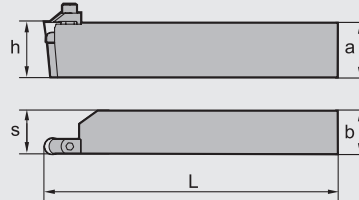
▲Stock available △Make-to-order

Corresponding tool holders of insert **RC/P** C-type clamping

CRDCRIL
CRDPRIL



R-type shown



General turning

External turning tools for ceramic inserts

| Type | | Stock | | Basic dimensions(mm) | | | | | | Applicable inserts | Clamp | Clamping screw | Wrench | Shim |
|----------------|--------------------|-------|---|----------------------|----|-----|----|------|----|--|-------|----------------|--------|--------|
| | | R | L | a | b | L | h | s | Ar | | | | | |
| CRDCR/L | 2525M09V-19 | △ | △ | 25 | 25 | 150 | 25 | 25.5 | 19 | RCGN0907 <input type="checkbox"/> <input type="checkbox"/> A152 | C3RH | M5*16(GB70-85) | WH40L | RC09XC |
| | 3232P09V-28 | △ | △ | 32 | 32 | 170 | 32 | 32.5 | 28 | | | | | |
| | 4040S09V-38 | △ | △ | 40 | 40 | 250 | 40 | 40.5 | 38 | | | | | |
| | 2525M12V-19 | △ | △ | 25 | 25 | 150 | 25 | 25.5 | 19 | RCGN1207 <input type="checkbox"/> <input type="checkbox"/> A152 | C4RH | M6*20(GB70-85) | WH50L | RC12XC |
| | 3232P12V-28 | △ | △ | 32 | 32 | 170 | 32 | 32.5 | 28 | | | | | |
| | 4040S12V-38 | △ | △ | 40 | 40 | 250 | 40 | 40.5 | 38 | | | | | |
| CRDPR/L | 2525M09V-19 | △ | △ | 25 | 25 | 150 | 25 | 25.5 | 19 | RPGN0907 <input type="checkbox"/> <input type="checkbox"/> A152 | C3RH | M5*16(GB70-85) | WH40L | RP09XC |
| | 3232P09V-28 | △ | △ | 32 | 32 | 170 | 32 | 32.5 | 28 | | | | | |
| | 4040S09V-38 | △ | △ | 40 | 40 | 250 | 40 | 40.5 | 38 | | | | | |
| | 2525M12V-19 | △ | △ | 25 | 25 | 150 | 25 | 25.5 | 19 | RPGN1207 <input type="checkbox"/> <input type="checkbox"/> A152 | C4RH | M6*20(GB70-85) | WH50L | RP12XC |
| | 3232P12V-28 | △ | △ | 32 | 32 | 170 | 32 | 32.5 | 28 | | | | | |
| | 4040S12V-38 | △ | △ | 40 | 40 | 250 | 40 | 40.5 | 38 | | | | | |

▲Stock available △Make-to-order



How to select internal turning tools

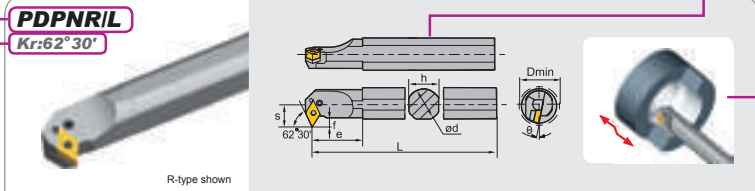
How to select internal turning tools

Explanation of internal turning tools detailed table

- Listed according to clamping types.

- Approach angle of tools
- Tools type
The first 4 letters in the type description stands for tool shape and applicatio.
- Insert type
- Specification chart
- Application chart
The arrow shows suitable applications such as internal turning, profiling and end turning, etc.

Corresponding tool holders of insert DN P-type clamping



| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | Lever | Shim | Shim pin |
|------------------|-------|---|----------------------|----|----|-----|----|---------|--------|-------|-------|----------|
| | R | L | Dmin | ød | h | L | S | | | | | |
| S32T-PDPNR/L15-3 | ▲ | ▲ | 40 | 32 | 30 | 300 | 22 | LEM8×21 | WH30L | L4 | D15AP | SP4 |
| S40U-PDPNR/L15-3 | ▲ | ▲ | 50 | 40 | 38 | 350 | 27 | LEM8×21 | WH30L | L4B | D15AP | SP4 |
| S32T-PDPNR/L15 | △ | △ | 40 | 32 | 30 | 300 | 22 | LEM8×21 | WH30L | L4B | D15AP | SP4 |
| S40U-PDPNR/L15 | △ | △ | 50 | 40 | 38 | 350 | 27 | LEM8×21 | WH30L | L4B | D15AP | SP4 |

▲ Stock available △ Make-to-order

| Application | Applicable inserts | | | | | |
|------------------|---------------------------------------|-------------------------------------|---------------------------------------|-------------------------------------|---------------------------------------|-------------------------------------|
| | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining | PCBN/PCD inserts |
| Inserts shape | DF Wiper A61 | WGM Wiper A63 | DR Double side A65 | HDR A66 | Without chipbreaker A66 | A121 -A122 |
| | WGF Wiper A61 | PM A63 | DR Single side A65 | | | A122 -A123 |
| | SF A62 | DM A64 | ER Double side A65 | | | A123 |
| | EF A62 | EM A64 | ER Single side A65 | | | |
| | NF A62 | NM A64 | SNR Double side A65 | | | |
| | NGF A62 | | LR Single side A65 | | | |
| Tool holder type | <input type="checkbox"/> -PDPNR/L15-3 | <input type="checkbox"/> -PDPNR/L15 | <input type="checkbox"/> -PDPNR/L15-3 | <input type="checkbox"/> -PDPNR/L15 | <input type="checkbox"/> -PDPNR/L15-3 | <input type="checkbox"/> -PDPNR/L15 |

- Tool holders with oil hole
- Products specification
Including product description, stock (left and right hand), basic dimensions and applicable spare parts.
- Applicable inserts
Including applications of inserts, reference page, insert shape and corresponding tool holders.



TURNING



Internal turning tools >>>

Internal turning tools overview ● A209

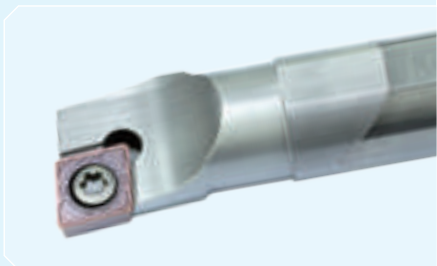
Internal turning tools code key ● A210-A211

Detailed table of internal turning tools ● A212-A240

Internal turning Tools by P-type clamping ● A212-A217

Internal turning tools by S-type clamping ● A218-A233

Damping internal turning tools and their features ● A234-A240



Internal turning tools





| Name | Feature | 62°30' | 75° | 90° | 90° | 93° | 93° | 95° | 95° | 107°30' |
|--------------------------------|--|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | | | | | | | | | | |
| P-type internal turning tools | <ul style="list-style-type: none"> The minimum machining diameter is 20mm. Applicable inserts are economic negative inserts. Hole clamping | PDPN A213 | PSKN A215 | PTFN A216 | | | PDUN A214 | | PCLN A212 | |
| | | | | | | | | | PWLN A217 | |
| S-type internal turning tools | <ul style="list-style-type: none"> The minimum machining diameter is 10mm. Applicable inserts are 5°, 7° and 11° positive inserts. Screw clamping. | | SSKC A222 | SCFC A232 | STFC A223 | STUP A231 | SDUC A220 | SDZC A221 | | SDQC A219 |
| | | | | | | | SDUP A230 | | SCLC A218 | SDQP A229 |
| | | | | | | | SVUC A225 | | SCLP A233 | SVQB A226 |
| | | | | | | | SVUB A227 | | SCLP A228 | SVQC A224 |
| Damping internal turning tools | <ul style="list-style-type: none"> The minimum diameter can be machined is 12mm. Applicable inserts are 7°, 11° positive inserts. Good Performance on reducing shake. | | | | | STUP A238 | SDUP A237 | | SCLP A235 | SDQP A236 |
| | | | | | | | SVUC A240 | | | SVQC A239 |

General turning

Internal turning tools overview



TURNING / General Turning Tools

Internal turning tools code key

General turning

Internal turning tools code key

| Type of tool holder | |
|---------------------|--|
| Code | Type |
| A | Steel tool holder with oil-hole |
| C | Cemented carbide tool holder |
| E | Cemented carbide tool holder with oil hole |
| S | Steel tool holder |
| X | Special inserts applied |

| Diameter of tool holder | |
|-------------------------|----------|
| Code | Diameter |
| 08 | 08 |
| 10 | 10 |
| 16 | 16 |
| 20 | 20 |
| 25 | 25 |
| 32 | 32 |
| 40 | 40 |
| 50 | 50 |

| Length of tool holder | |
|-----------------------|--------|
| Code | Length |
| H | 100 |
| K | 125 |
| M | 150 |
| N | 160 |
| Q | 180 |
| R | 200 |
| S | 250 |
| T | 300 |
| U | 350 |
| V | 400 |

| Clamping system | |
|-----------------|-------------------------|
| | P-Hole clamping |
| | M-Top and hole clamping |
| | S-Screw on |
| | C-Top clamping |


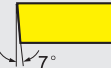
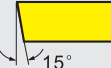



| Inserts shape | |
|---------------|---|
| | C |
| | D |
| | R |
| | S |
| | T |
| | V |
| | W |

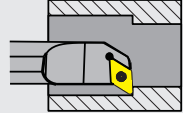
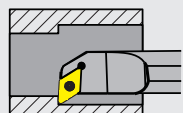
S 16 R - S D U

| Tool holder style and approach angle | | | | | | | |
|--------------------------------------|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H |
| | | | | | | | |
| J | K | L | M | N | O | P | Q |
| | | | | | | | |
| R | S | T | U | V | W | X | |
| | | | | | | | |



Internal turning tools code key

| Clearance angle of insert | |
|---|----------|
|  | B |
|  | C |
|  | D |
|  | E |
|  | N |
|  | P |







| Cutting direction | |
|---|-----------------------|
|  | L - Left hand |
|  | R - Right hand |

| Manufacture option | |
|--------------------|------------------------------|
| D | Increase offset f size+1.0mm |
| E | Increase offset f size+2.0mm |
| R | Round shank |
| W | Wedge clamping |
| X | Back boring |



General turning

Internal turning tools code key

| Length of cutting edge | | | | | | | |
|------------------------|----------------------------|---|---|---|---|---|---|
| Inserts shape | C | D | R | S | T | V | W |
| | |  |  |  |  |  |  |
| Inscribed circle | Length of cutting edge(mm) | | | | | | |
| 5.556 | --- | -- | --- | -- | 09 | -- | --- |
| 6.350 | 06 | 07 | --- | -- | 11 | -- | --- |
| 9.525 | 09 | 11 | 09 | 09 | 16 | 16 | 06 |
| 12.700 | 12 | 15 | 12 | 12 | 22 | 22 | 08 |
| 15.875 | 16 | 19 | 15 | 15 | 27 | -- | --- |
| 19.050 | 19 | -- | 19 | 19 | 33 | -- | --- |
| 25.400 | 25 | -- | 25 | 25 | 44 | -- | --- |



TURNING / General Turning Tools

Internal turning tools

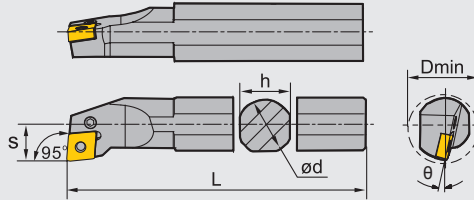
Corresponding tool holders of insert **CN** P-type clamping

PCLNRIL

Kr:95°



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | Lever | Shim | Shim pin |
|----------------|-------|---|----------------------|----|----|-----|------|----------|--------|-------|--------|----------|
| | R | L | Dmin | ød | h | L | s | | | | | |
| S16Q-PCLNR/L09 | △ | △ | 20 | 16 | 15 | 180 | 10 | LEM5×12 | WH20L | L3C | --- | --- |
| S20R-PCLNR/L09 | △ | △ | 25 | 20 | 19 | 200 | 12.5 | | | | | |
| S25S-PCLNR/L09 | △ | △ | 32 | 25 | 24 | 250 | 15 | LEM6×14 | WH25L | L4A | --- | --- |
| S25S-PCLNR/L12 | △ | △ | 32 | 25 | 24 | 250 | 16 | | | | | |
| S32T-PCLNR/L12 | ▲ | ▲ | 40 | 32 | 30 | 300 | 21 | LEM8×21 | WH30L | L4 | C12APB | SP4 |
| S40U-PCLNR/L12 | ▲ | ▲ | 50 | 40 | 38 | 350 | 26 | | | | | |
| S50V-PCLNR/L12 | ▲ | ▲ | 63 | 50 | 48 | 400 | 31 | LEM8×25 | WH30L | L5 | C16AP | SP5 |
| S50V-PCLNR/L16 | △ | △ | 63 | 50 | 48 | 400 | 31 | | | | | |
| S50S-PCLNR/L19 | △ | △ | 63 | 50 | 47 | 250 | 35 | LEM10×27 | WH40L | L6 | C19AP | SP6 |
| S50W-PCLNR/L19 | ▲ | ▲ | 63 | 50 | 47 | 450 | 35 | | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining Without chipbreaker | PCBN/PCD inserts |
|---------------|---|---|---|--|---|---|
| Inserts shape | DF  A54 | WGM Wiper  A55 | DR Double-side  A58 | HDR  A59 |  A59 |  A118 |
| | WGF Wiper  A54 | PM  A55 | DR Single-side  A58 | HPR  A59 | |  A118 -A119 |
| | SF  A54 | DM  A56 | ER Double-side  A58 | | |  A119 |
| | EF  A54 | EM  A56 | ER Single-side  A58 | | | |
| | NF  A55 | NM  A57 | SNR Double-side  A58 | | | |
| | | | LR Single-side  A57 | | | |

| Tool holder type | □□-PCLNR/L09 | CN□□0903□□ | CN□□0903□□ | □□-PCLNR/L12 | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ | CN□□1204□□ |
|------------------|--------------|------------|------------|--------------|------------|------------|------------|------------|------------|------------|
| | □□-PCLNR/L16 | CN□□1606□□ | CN□□1606□□ | □□-PCLNR/L19 | CN□□1906□□ | CN□□1906□□ | CN□□1906□□ | CN□□1906□□ | CN□□1906□□ | CN□□1906□□ |

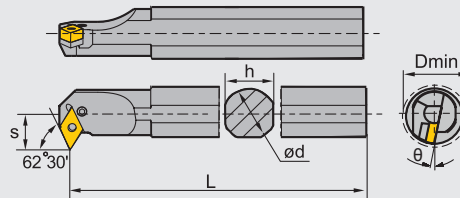


Corresponding tool holders of insert **DN** P-type clamping

PDPNRIL
Kr:62° 30'



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | Lever | Shim | Shim pin |
|------------------|-------|---|----------------------|----|----|-----|----|---------|--------|-------|-------|----------|
| | R | L | Dmin | ød | h | L | S | | | | | |
| S32T-PDPNR/L15-3 | ▲ | ▲ | 40 | 32 | 30 | 300 | 22 | LEM8×21 | WH30L | L4 | D15AP | SP4 |
| S40U-PDPNR/L15-3 | ▲ | ▲ | 50 | 40 | 38 | 350 | 27 | | | | | |
| S32T-PDPNR/L15 | △ | △ | 40 | 32 | 30 | 300 | 22 | LEM8×21 | WH30L | L4B | D15AP | SP4 |
| S40U-PDPNR/L15 | △ | △ | 50 | 40 | 38 | 350 | 27 | | | | | |

▲Stock available △Make-to-order

General turning

Internal turning tools

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining | PCBN/PCD inserts | |
|------------------|---------------------------------------|----------------------------|----------------------------------|---------------------|----------------------------|------------------|------------|
| Inserts shape | DF Wiper A61 | WGM Wiper A63 | DR Double-side A65 | HDR A66 | Without chipbreaker A66 | A121 -A122 | |
| | WGF Wiper A61 | PM A63 | DR Single-side A65 | | | A122 -A123 | |
| | SF A62 | DM A64 | ER Double-side A65 | | | A123 | |
| | EF A62 | EM A64 | ER Single-side A65 | | | | |
| | NF A62 | NM A64 | SNR Double-side A65 | | | | |
| | NGF A62 | | LR Single-side A65 | | | | |
| Tool holder type | <input type="checkbox"/> -PDPNR/L15-3 | DN□□1504□□ | DN□□1504□□ | DN□□1504□□ | | DN□□1504□□ | DN□□1504□□ |
| | <input type="checkbox"/> -PDPNR/L15 | DN□□1506□□ | DN□□1506□□ | DN□□1506□□ | DN□□1506□□ | DN□□1506□□ | DN□□1506□□ |



TURNING / General Turning Tools

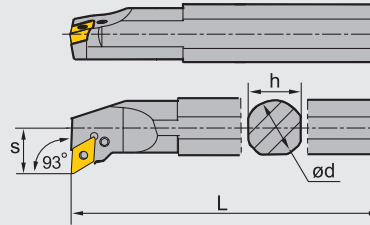
Internal turning tools

Corresponding tool holders of insert **DN** P-type clamping

PDUNRIL
Kr:93°

























R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | Lever | Shim | Shim pin |
|------------------|-------|---|----------------------|----|----|-----|----|---------|--------|-------|-------|----------|
| | R | L | Dmin | ød | h | L | S | | | | | |
| S20R-PDUNR/L11 | △ | △ | 25 | 20 | 19 | 200 | 13 | LEM5×12 | WH20L | L3D | --- | --- |
| S25S-PDUNR/L11 | △ | △ | 32 | 25 | 24 | 250 | 17 | | | | | |
| S32T-PDUNR/L15 | △ | △ | 40 | 32 | 30 | 300 | 23 | LEM8×21 | WH30L | L4B | D15AP | SP4 |
| S32T-PDUNR/L15-3 | △ | △ | 40 | 32 | 30 | 300 | 23 | LEM8×21 | WH30L | L4 | D15AP | SP4 |
| S40U-PDUNR/L15 | △ | △ | 50 | 40 | 38 | 350 | 27 | LEM8×21 | WH30L | L4B | D15AP | SP4 |
| S40U-PDUNR/L15-3 | ▲ | ▲ | 50 | 40 | 38 | 350 | 27 | LEM8×21 | WH30L | L4 | D15AP | SP4 |

▲Stock available △Make-to-order

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining | PCBN/PCD inserts |
|------------------|---|---|---|--|---|--|
| Inserts shape | DF  A61 | WGM Wiper  A63 | DR Double-side  A65 | HDR  A66 | Without chipbreaker  A66 |  A121 -A122 |
| | WGF Wiper  A61 | PM  A63 | DR Single-side  A65 | | |  A122 -A123 |
| | SF  A62 | DM  A64 | ER Double-side  A65 | | |  A123 |
| | EF  A62 | EM  A64 | ER Single-side  A65 | | | |
| | NF  A62 | NM  A64 | SNR Double-side  A65 | | | |
| | NGF  A62 | | LR Single-side  A65 | | | |
| Tool holder type | <input type="checkbox"/> -PDUNR/L11 | DN <input type="checkbox"/> 1104 <input type="checkbox"/> | DN <input type="checkbox"/> 1104 <input type="checkbox"/> | DN <input type="checkbox"/> 1104 <input type="checkbox"/> | | |
| | <input type="checkbox"/> -PDUNR/L15-3 | DN <input type="checkbox"/> 1504 <input type="checkbox"/> | DN <input type="checkbox"/> 1504 <input type="checkbox"/> | DN <input type="checkbox"/> 1504 <input type="checkbox"/> | DN <input type="checkbox"/> 1504 <input type="checkbox"/> | DN <input type="checkbox"/> 1504 <input type="checkbox"/> |
| | <input type="checkbox"/> -PDUNR/L15 | DN <input type="checkbox"/> 1506 <input type="checkbox"/> | DN <input type="checkbox"/> 1506 <input type="checkbox"/> | DN <input type="checkbox"/> 1506 <input type="checkbox"/> | DN <input type="checkbox"/> 1506 <input type="checkbox"/> | DN <input type="checkbox"/> 1506 <input type="checkbox"/> |

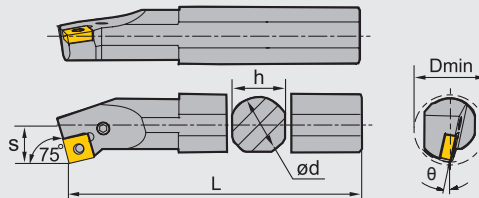


Corresponding tool holders of insert **SN** P-type clamping

PSKNRIL
Kr:75°



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | Lever | Shim | Shim pin |
|-----------------------|-------|---|----------------------|----|----|-----|----|---------|--------|-------|--------|----------|
| | R | L | Dmin | ød | h | L | S | | | | | |
| S25S-PSKNR/L12 | ▲ | ▲ | 32 | 25 | 24 | 250 | 17 | LEM6×14 | WH25L | L4A | --- | --- |
| S32T-PSKNR/L12 | △ | △ | 41 | 32 | 30 | 300 | 22 | LEM8×21 | WH30L | L4 | S12APB | SP4 |
| S40U-PSKNR/L12 | △ | △ | 50 | 40 | 38 | 350 | 27 | | | | | |

▲Stock available △Make-to-order

General turning

Internal turning tools

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For roughing | PCBN/PCD inserts |
|------------------|--|---|---|---|---|---|
| Inserts shape | DF A67 | PM A68 | DR Double-side A70 | HDR A72 | Without chipbreaker A74 | A126 |
| | EF A67 | DM A68 | DR Single-side A70-71 | HPR A72 | | A127 |
| | SF A67 | EM A69 | ER Double-side A71 | | | A128 |
| | | NM A69 | ER Single-side A71 | | | |
| | | | SNR Double-side A71 | | | |
| | | | LR Single-side A69 | | | |
| Tool holder type | <input type="checkbox"/> <input type="checkbox"/> -PSKNR/L12 | SN <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | SN <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | SN <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | SN <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | SN <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |



TURNING / General Turning Tools

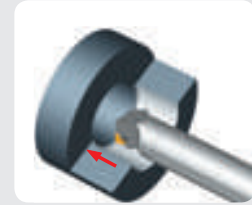
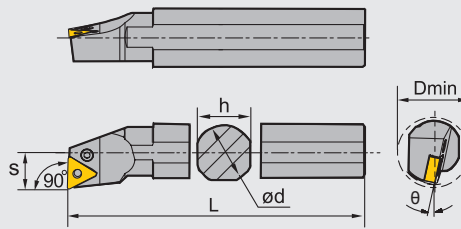
Internal turning tools

Corresponding tool holders of insert **TN** P-type clamping

PTFNRIL
Kr:90°



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | Lever | Shim | Shim pin |
|-----------------------|-------|---|----------------------|----|----|-----|----|---------|--------|-------|--------|----------|
| | R | L | Dmin | ød | h | L | S | | | | | |
| S25S-PTFNR/L16 | ▲ | ▲ | 32 | 25 | 24 | 250 | 16 | LEM5×12 | WH20L | L3B | --- | --- |
| S32T-PTFNR/L16 | △ | △ | 41 | 32 | 30 | 300 | 21 | LEM6×17 | WH25L | L3 | T16APB | SP3 |
| S40U-PTFNR/L16 | △ | △ | 50 | 40 | 38 | 350 | 26 | | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For heavy machining | For cast iron machining | PCBN/PCD inserts |
|------------------|-------------------------------------|---|---|---|---|---|
| Inserts shape | DF A75 | WGM Wiper A76 | DR Double-side A78 | HDR A79 | Without chipbreaker A80 | A130 |
| | WG Wiper A75 | PM A76 | DR Single-side A78 | | | A130 -A131 |
| | SF A75 | DM A77 | ER Double-side A78 | | | A131 |
| | EF A76 | EM A77 | SNR Double-side A78 | | | |
| | | | LR Single-side A77 | | | |
| Tool holder type | <input type="checkbox"/> -PTFNR/L16 | TN <input type="checkbox"/> 1604 <input type="checkbox"/> | TN <input type="checkbox"/> 1604 <input type="checkbox"/> | TN <input type="checkbox"/> 1604 <input type="checkbox"/> | TN <input type="checkbox"/> 1604 <input type="checkbox"/> | TN <input type="checkbox"/> 1604 <input type="checkbox"/> |



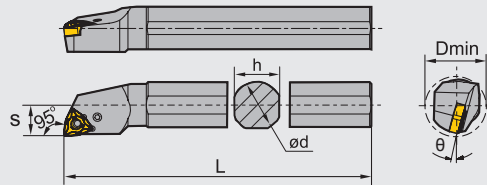
Corresponding tool holders of insert **WN** P-type clamping

PWLNRL

Kr:95°



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | Lever | Shim | Shim pin |
|-----------------|-------|---|----------------------|----|----|-----|------|---------|--------|-------|-------|----------|
| | R | L | Dmin | ød | h | L | S | | | | | |
| S16R-PWLNRL/L06 | △ | △ | 20 | 16 | 15 | 200 | 10 | LEM5X12 | WH20L | L3D | --- | --- |
| S20R-PWLNRL/L06 | △ | △ | 25 | 20 | 19 | 200 | 12 | | | L3B | | |
| S25S-PWLNRL/L06 | △ | △ | 35 | 25 | 24 | 250 | 15 | | | | | |
| S20R-PWLNRL/L08 | △ | △ | 23 | 20 | 19 | 200 | 12.5 | LEM6X14 | WH25L | L4A | --- | --- |
| S25S-PWLNRL/L08 | △ | △ | 32 | 25 | 24 | 250 | 16 | | | | | |
| S32T-PWLNRL/L08 | △ | △ | 41 | 32 | 30 | 300 | 21 | LEM8X21 | WH30L | L4 | W08AP | SP4 |

▲Stock available △Make-to-order

General turning

Internal turning tools

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For cast iron machining | PCBN/PCD inserts |
|------------------|--------------------------------------|---|---|---|---|
| Inserts shape | DF A83 | WGM Wiper A84 | DR Double-side A86 | Without chipbreaker A86 | A136 |
| | WGF Wiper A83 | PM A85 | SNR Double-side A86 | | A136 -A137 |
| | SF A83 | DM A85 | | | A137 |
| | EF A84 | EM A85 | | | |
| | NF A84 | NM A86 | | | |
| Tool holder type | <input type="checkbox"/> -PWLNRL/L06 | WN <input type="checkbox"/> 0604 <input type="checkbox"/> | WN <input type="checkbox"/> 0604 <input type="checkbox"/> | WN <input type="checkbox"/> 0604 <input type="checkbox"/> | WN <input type="checkbox"/> 0604 <input type="checkbox"/> |
| | <input type="checkbox"/> -PWLNRL/L08 | WN <input type="checkbox"/> 0804 <input type="checkbox"/> | WN <input type="checkbox"/> 0804 <input type="checkbox"/> | WN <input type="checkbox"/> 0804 <input type="checkbox"/> | WN <input type="checkbox"/> 0804 <input type="checkbox"/> |



TURNING / General Turning Tools

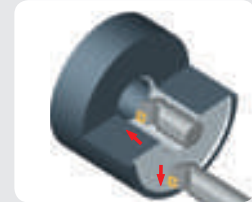
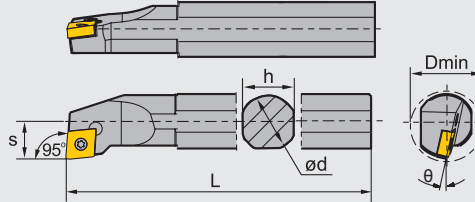
Internal turning tools

Corresponding tool holders of insert **CC** S-type clamping

SCLCR/L
Kr:95°















R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | Shim | Shim screw |
|----------------|-------|---|----------------------|----|-----|-----|------|-------------|-----------------|-------|------------|
| | R | L | Dmin | ød | h | L | S | | | | |
| S08K-SCLCR/L06 | ▲ | ▲ | 10 | 8 | 7.4 | 125 | 5 | I60M2.5×5.5 | WT07IP | --- | --- |
| S10K-SCLCR/L06 | ▲ | ▲ | 13 | 10 | 9 | 125 | 6.5 | | | | |
| S12M-SCLCR/L06 | ▲ | ▲ | 16 | 12 | 11 | 150 | 9 | | | | |
| S12M-SCLCR/L09 | ▲ | ▲ | 16 | 12 | 11 | 150 | 9 | I60M3.5×8 | WT15IP | --- | --- |
| S14N-SCLCR/L09 | △ | △ | 18 | 14 | 13 | 160 | 9 | | | | |
| S16Q-SCLCR/L09 | △ | △ | 20 | 16 | 15 | 180 | 10 | | | | |
| S20R-SCLCR/L09 | △ | △ | 25 | 20 | 19 | 200 | 12 | I60M3.5×10 | WT15IP | --- | --- |
| S25S-SCLCR/L09 | △ | △ | 32 | 25 | 24 | 250 | 15.5 | | | | |
| S20R-SCLCR/L12 | △ | △ | 25 | 20 | 19 | 200 | 12.5 | I60M4×11X | WT15IP | --- | --- |
| S25S-SCLCR/L12 | ▲ | ▲ | 32 | 25 | 24 | 250 | 15.5 | I60M4×11X | WT15IP | --- | --- |
| S32T-SCLCR/L12 | △ | △ | 39 | 32 | 30 | 300 | 20 | I60M4×11X | WH40L WT15IP | C12BS | SM6×10×A |
| S40U-SCLCR/L12 | △ | △ | 50 | 40 | 38 | 350 | 24.5 | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For extra finishing | For finishing | For semi-finishing | For roughing | For Al machining | For cast iron machining Without chipbreaker | PCBN/PCD inserts |
|------------------|---|--|--|--|--|---|--|
| Inserts shape | USF  A89 | HF  A89 | HM  A90 | HR  A91 | LH  A91-92 |  A92 |  A139 |
| | SF  A89 | EF  A90 | EM  A90 | | LC  A91 | |  A144 |
| Tool holder type | <input type="checkbox"/> -SCLCR/L06 | CC <input type="checkbox"/> 0602 <input type="checkbox"/> | CC <input type="checkbox"/> 0602 <input type="checkbox"/> | CC <input type="checkbox"/> 0602 <input type="checkbox"/> | CC <input type="checkbox"/> 0602 <input type="checkbox"/> | CCGX0602 <input type="checkbox"/> | CC <input type="checkbox"/> 0602 <input type="checkbox"/> |
| | <input type="checkbox"/> -SCLCR/L09 | CC <input type="checkbox"/> 09T3 <input type="checkbox"/> | CC <input type="checkbox"/> 09T3 <input type="checkbox"/> | CC <input type="checkbox"/> 09T3 <input type="checkbox"/> | CC <input type="checkbox"/> 09T3 <input type="checkbox"/> | CCGX09T3 <input type="checkbox"/> | CC <input type="checkbox"/> 09T3 <input type="checkbox"/> |
| | <input type="checkbox"/> -SCLCR/L12 | | CC <input type="checkbox"/> 1204 <input type="checkbox"/> | CC <input type="checkbox"/> 1204 <input type="checkbox"/> | CC <input type="checkbox"/> 1204 <input type="checkbox"/> | CCGX1204 <input type="checkbox"/> | CC <input type="checkbox"/> 1204 <input type="checkbox"/> |

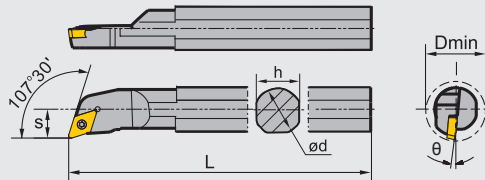


Corresponding tool holders of insert **DC** S-type clamping

SDQCRIL
Kr:107° 30'



R-type shown















| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | --- | --- |
|----------------|-------|---|----------------------|----|----|-----|----|-------------|--------|-----|-----|
| | R | L | Dmin | ød | h | L | S | | | | |
| S10K-SDQCR/L07 | ▲ | ▲ | 13 | 10 | 9 | 125 | 7 | I60M2.5×5.5 | WT07IP | --- | --- |
| S12M-SDQCR/L07 | ▲ | ▲ | 16 | 12 | 11 | 150 | 9 | | | | |
| S16Q-SDQCR/L07 | △ | △ | 20 | 16 | 15 | 180 | 11 | I60M3.5×8 | WT15IP | --- | --- |
| S20R-SDQCR/L11 | △ | △ | 25 | 20 | 19 | 200 | 13 | | | | |
| S25S-SDQCR/L11 | △ | △ | 32 | 25 | 24 | 250 | 17 | I60M3.5×10 | WT15IP | --- | --- |
| S32T-SDQCR/L11 | △ | △ | 40 | 32 | 30 | 300 | 22 | | | | |
| S40T-SDQCR/L11 | △ | △ | 50 | 40 | 38 | 350 | 27 | | | | |

▲Stock available △Make-to-order

General turning

Internal turning tools

Applicable inserts

| Application | For extra finishing | For finishing | For semi-finishing | For roughing | For AI machining | For cast iron machining | PCBN/PCD inserts | |
|------------------|---|---|---|---|---|--|---|---|
| Inserts shape | USF  A93 | HF  A93 | HM  A94 | HR  A95 | LH  A95 |  A95 Without chipbreaker |  A140 | |
| | SF  A93 | EF  A94 | EM  A94 | | LC  A95 | |  A145 | |
| Tool holder type | <input type="checkbox"/> -SDQCR/L07 | DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/> | DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/> | DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/> | | DCGX0702 <input type="checkbox"/> <input type="checkbox"/> | DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/> | DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/> |
| | <input type="checkbox"/> -SDQCR/L11 | DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/> | DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/> | DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/> | DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/> | DCGX11T3 <input type="checkbox"/> <input type="checkbox"/> | DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/> | DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/> |



TURNING / General Turning Tools

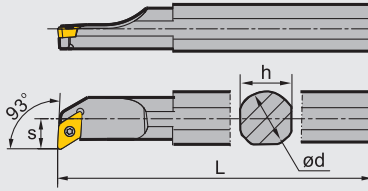
Internal turning tools

Corresponding tool holders of insert **DC** S-type clamping

SDUCRIL
Kr:93°















R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | --- | --- |
|----------------|-------|---|----------------------|----|----|-----|----|-------------|--------|-----|-----|
| | R | L | Dmin | ød | h | L | S | | | | |
| S10K-SDUCR/L07 | ▲ | ▲ | 13 | 10 | 9 | 125 | 7 | I60M2.5×5.5 | WT07IP | --- | --- |
| S12M-SDUCR/L07 | ▲ | ▲ | 16 | 12 | 11 | 150 | 9 | | | | |
| S16Q-SDUCR/L07 | △ | △ | 20 | 16 | 15 | 180 | 11 | I60M3.5×8 | WT15IP | --- | --- |
| S20R-SDUCR/L11 | △ | △ | 25 | 20 | 19 | 200 | 13 | | | | |
| S25S-SDUCR/L11 | △ | △ | 32 | 25 | 24 | 250 | 17 | I60M3.5×10 | WT15IP | --- | --- |
| S32T-SDUCR/L11 | △ | △ | 40 | 32 | 30 | 300 | 22 | | | | |
| S40U-SDUCR/L11 | △ | △ | 50 | 40 | 38 | 350 | 27 | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For extra finishing | For finishing | For semi-finishing | For roughing | For Al machining | For cast iron machining | PCBN/PCD inserts | |
|------------------|---|--|--|--|--|---|--|------------|
| Inserts shape | USF  A93 | HF  A93 | HM  A94 | HR  A95 | LH  A95 | Without chipbreaker  A95 |  A140 | |
| | SF  A93 | EF  A94 | EM  A94 | | LC  A95 | |  A145 | |
| Tool holder type | <input type="checkbox"/> -SDUCR/L07 | DC□□0702□□ | DC□□0702□□ | DC□□0702□□ | | DCGX0702□□ | DC□□0702□□ | DC□□0702□□ |
| | <input type="checkbox"/> -SDUCR/L11 | DC□□11T3□□ | DC□□11T3□□ | DC□□11T3□□ | DC□□11T3□□ | DCGX11T3□□ | DC□□11T3□□ | DC□□11T3□□ |

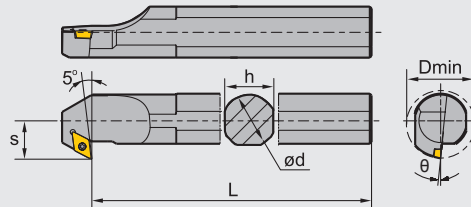


Corresponding tool holders of insert **DC** S-type clamping

SDZCRIL
Kr:95°



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | Shim | Shim screw |
|-----------------------|-------|---|----------------------|----|----|-----|----|------------|-----------------|-------|------------|
| | R | L | Dmin | ød | h | L | S | | | | |
| S25S-SDZCR/L11 | △ | △ | 33 | 25 | 24 | 250 | 18 | I60M3.5×10 | WT15IP | --- | --- |
| S32T-SDZCR/L11 | △ | △ | 40 | 32 | 30 | 300 | 22 | | | | |
| S40U-SDZCR/L11 | △ | △ | 48 | 40 | 38 | 350 | 27 | I60M3.5×12 | WT15IP WH35L | D11BS | SM5×8.65XA |

▲Stock available △Make-to-order

General turning

Internal turning tools

Applicable inserts

| Application | For extra finishing | For finishing | For semi-finishing | For roughing | For Al machining | For cast iron machining | PCBN/PCD inserts |
|------------------|--|----------------------|----------------------|----------------------|----------------------|---------------------------------------|------------------|
| Inserts shape | USF A93 | HF A93 | HM A94 | HR A95 | LH A95 | Without chipbreaker A95 | A140 |
| | SF A93 | EF A94 | EM A94 | | LC A95 | | A145 |
| Tool holder type | □□-SDZCR/L11 DC□□11T3□□ DC□□11T3□□ DC□□11T3□□ DC□□11T3□□ DCGX11T3□□ DC□□11T3□□ DC□□11T3□□ | | | | | | |

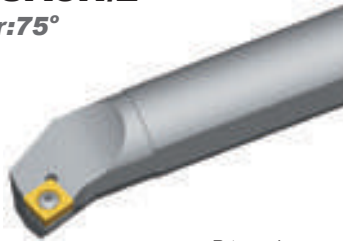


TURNING / General Turning Tools

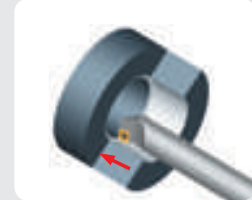
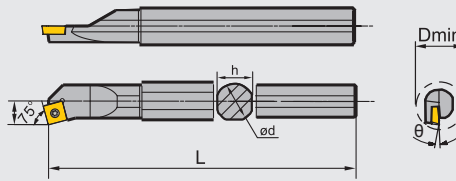
Internal turning tools

Corresponding tool holders of insert **SC** S-type clamping

SSKCRIL
Kr:75°











R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | Shim | Shim screw |
|-----------------------|-------|---|----------------------|----|----|-----|----|-----------|-----------------|-------|------------|
| | R | L | Dmin | ød | h | L | S | | | | |
| S12M-SSKCR/L09 | ▲ | △ | 16 | 12 | 11 | 150 | 9 | I60M3.5×8 | WT15IP | --- | --- |
| S16Q-SSKCR/L09 | △ | △ | 20 | 16 | 15 | 180 | 11 | | | | |
| S20R-SSKCR/L09 | △ | △ | 25 | 20 | 19 | 200 | 13 | | | | |
| S25S-SSKCR/L12 | △ | △ | 32 | 25 | 24 | 250 | 17 | I60M4×11X | WT15IP | --- | --- |
| S32T-SSKCR/L12 | △ | △ | 40 | 32 | 30 | 300 | 22 | | WT15IP WH40L | S12BS | SM6×10XA |

▲Stock available △Make-to-order

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For Al machining | For cast iron machining | |
|------------------|---|---|---|---|--|---|
| Inserts shape | HF  A98 | HM  A98 | HR  A99 | LH  A99 | Without chipbreaker  A99 | |
| | EF  A98 | EM  A98 | | LC  A99 | | |
| Tool holder type | <input type="checkbox"/> -SSKCR/L09 | SC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> | SC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> | SC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> | SCGX09T3 <input type="checkbox"/> <input type="checkbox"/> | SC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> |
| | <input type="checkbox"/> -SSKCR/L12 | | SC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/> | SC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/> | SCGX1204 <input type="checkbox"/> <input type="checkbox"/> | SC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/> |

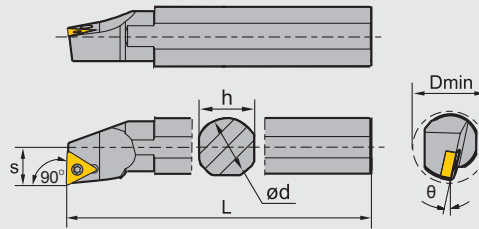


Corresponding tool holders of insert **TC** S-type clamping

STFCRIL
Kr:90°



R-type shown












General turning

Internal turning tools

| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | Shim | Shim screw |
|-----------------------|-------|---|----------------------|----|----|-----|----|-------------|-----------------|-------|------------|
| | R | L | Dmin | ød | h | L | S | | | | |
| S12M-STFCR/L11 | ▲ | ▲ | 16 | 12 | 11 | 150 | 9 | I60M2.5×6.5 | WT07IP | --- | --- |
| S16Q-STFCR/L11 | △ | △ | 20 | 16 | 15 | 180 | 10 | | | | |
| S20R-STFCR/L11 | △ | △ | 25 | 20 | 19 | 200 | 12 | | | | |
| S25S-STFCR/L16 | △ | △ | 32 | 25 | 24 | 250 | 16 | I60M3.5×10 | WT15IP | --- | --- |
| S32T-STFCR/L16 | △ | △ | 40 | 32 | 30 | 300 | 21 | I60M3.5×12 | WT15IP WH35L | T16BS | SM5×8.65XA |
| S40U-STFCR/L16 | △ | △ | 50 | 40 | 38 | 350 | 25 | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | For Al machining | For cast iron machining | PCBN/PCD inserts | |
|------------------|---|---|---|--|---|--|--|
| Inserts shape | HF  A101 | HM  A103 | HR  A103 | LH  A104 | Without chipbreaker  A104 |  A141 | |
| | | EF  A102 | EM  A102 | | | | LC  A103 |
| Tool holder type | <input type="checkbox"/> -STFCR/L11 | TC <input type="checkbox"/> 1102 <input type="checkbox"/> | TC <input type="checkbox"/> 1102 <input type="checkbox"/> | TC <input type="checkbox"/> 1102 <input type="checkbox"/> | TCGX1102 <input type="checkbox"/> | TC <input type="checkbox"/> 1102 <input type="checkbox"/> | TC <input type="checkbox"/> 1102 <input type="checkbox"/> |
| | <input type="checkbox"/> -STFCR/L16 | TC <input type="checkbox"/> 16T3 <input type="checkbox"/> | TC <input type="checkbox"/> 16T3 <input type="checkbox"/> | TC <input type="checkbox"/> 16T3 <input type="checkbox"/> | TCGX16T3 <input type="checkbox"/> | TC <input type="checkbox"/> 16T3 <input type="checkbox"/> | TC <input type="checkbox"/> 16T3 <input type="checkbox"/> |



TURNING / General Turning Tools

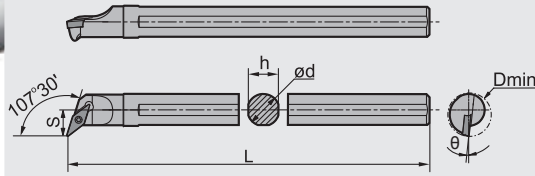
Internal turning tools

Corresponding tool holders of insert VC □ □ S-type clamping

SVQCRIL
Kr:107° 30'











R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | Shim | Shim screw |
|-----------------------|-------|---|----------------------|----|----|-----|----|-------------------------------|-------------------------------|------|------------|
| | R | L | Dmin | ød | h | L | S | | | | |
| S16Q-SVQCR/L11 | ▲ | ▲ | 22 | 16 | 15 | 180 | 13 | I60M2.5×6.5 I60M3.5×12 | WT071P WT151P WH35L | --- | --- |
| S20R-SVQCR/L16 | △ | △ | 27 | 16 | 19 | 200 | 14 | | | | |
| S25S-SVQCR/L16 | △ | △ | 35 | 25 | 24 | 250 | 20 | | | | |
| S32T-SVQCR/L16 | △ | △ | 42 | 32 | 30 | 300 | 23 | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For extra finishing | For finishing | For AI machining | PCBN/PCD inserts |
|------------------|---|--|---|--|
| Inserts shape | USF  A105 | HF  A105 | LH  A106 |  A143 |
| | SF  A105 | NF  A105 | LC  A106 |  A148 |
| Tool holder type | □□-SVQCR/L11 | VC□□1103□□ | VC□□1103□□ | VCGX1103□□ |
| | □□-SVQCR/L16 | | VC□□1604□□ | VCGX1604□□ |

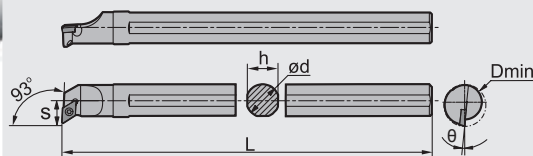


Corresponding tool holders of insert VC □ □ S-type clamping

SVUCRIL
Kr:93°



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | Shim | Shim screw |
|----------------|-------|---|----------------------|----|----|-----|----|-------------|--------|-------|------------|
| | R | L | Dmin | ød | h | L | S | | | | |
| S16Q-SVUCR/L11 | △ | △ | 24 | 16 | 15 | 180 | 15 | I60M2.5×6.5 | WT07IP | --- | --- |
| S20R-SVUCR/L11 | △ | △ | 28 | 20 | 19 | 200 | 17 | | | | |
| S25S-SVUCR/L16 | △ | △ | 35 | 25 | 24 | 250 | 20 | I60M3.5×12 | WT15IP | V16BS | SM5×8.65×A |
| S32T-SVUCR/L16 | △ | △ | 42 | 32 | 30 | 300 | 23 | | | | |









▲Stock available △Make-to-order

General turning

Internal turning tools



Applicable inserts

| Application | For extra finishing | For finishing | For Al machining | PCBN/PCD inserts |
|------------------|---|--|---|---|
| Inserts shape | USF  A105 | HF  A105 | LH  A106 |  A143 |
| | SF  A105 | NF  A105 | LC  A106 |  A148 |
| Tool holder type | □□-SVUCR/L11 | VC□□1103□□ | VC□□1103□□ | VCGX1103□□ |
| | □□-SVUCR/L16 | | VC□□1604□□ | VC□□1604□□ |

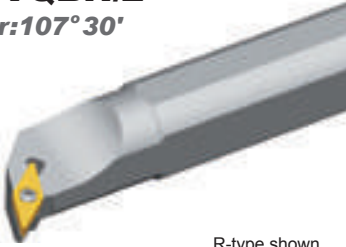


TURNING / General Turning Tools

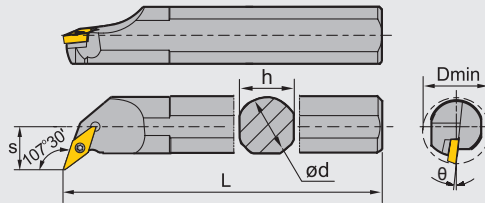
Internal turning tools

Corresponding tool holders of insert **VB** S-type clamping

SVQBRIL
Kr:107° 30'



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | Shim | Shim screw |
|-----------------------|-------|---|----------------------|----|----|-----|----|------------|-----------------|-------|------------|
| | R | L | Dmin | ød | h | L | S | | | | |
| S20R-SVQBR/L16 | △ | △ | 27 | 20 | 19 | 200 | 14 | I60M3.5×12 | WT15IP WH35L | V16BS | SM5×8.65XA |
| S25S-SVQBR/L16 | △ | △ | 35 | 25 | 24 | 250 | 20 | | | | |
| S32T-SVQBR/L16 | ▲ | ▲ | 42 | 32 | 30 | 300 | 23 | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | PCBN/PCD inserts |
|------------------|-------------------------------------|---|---|---|
| Inserts shape | EF A108 | HM A109 | HR A109 | A147 |
| | NF A108 | EM A109 | SNR A109 | A147 |
| | NGF A108 | | | |
| Tool holder type | <input type="checkbox"/> -SVQBR/L16 | VB <input type="checkbox"/> 1604 <input type="checkbox"/> | VB <input type="checkbox"/> 1604 <input type="checkbox"/> | VB <input type="checkbox"/> 1604 <input type="checkbox"/> |

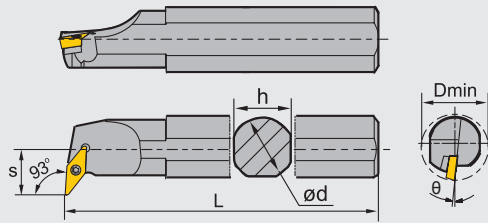


Corresponding tool holders of insert **VB** S-type clamping

SVUBRIL
Kr:93°



R-type shown












| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | Shim | Shim screw |
|-----------------------|-------|---|----------------------|----|----|-----|----|------------|-----------------|-------|------------|
| | R | L | Dmin | ød | h | L | S | | | | |
| S25S-SVUBR/L16 | △ | △ | 35 | 25 | 24 | 250 | 20 | I60M3.5×12 | WT15IP WH35L | V16BS | SM5×8.65XA |
| S32T-SVUBR/L16 | △ | △ | 42 | 32 | 30 | 300 | 23 | | | | |

▲Stock available △Make-to-order

General turning

Internal turning tools

Applicable inserts

| Application | For finishing | For semi-finishing | For roughing | PCBN/PCD inserts |
|------------------|---|--|--|---|
| Inserts shape | EF  A108 | HM  A109 | HR  A109 |  A147 |
| | NF  A108 | EM  A109 | SNR  A109 |  A147 |
| | NGF  A108 | | | |
| Tool holder type | <input type="checkbox"/> -SVUBR/L16 | VB <input type="checkbox"/> 1604 <input type="checkbox"/> | VB <input type="checkbox"/> 1604 <input type="checkbox"/> | VB <input type="checkbox"/> 1604 <input type="checkbox"/> |



TURNING / General Turning Tools

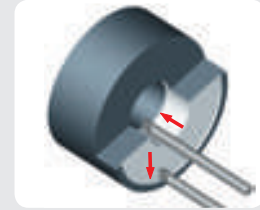
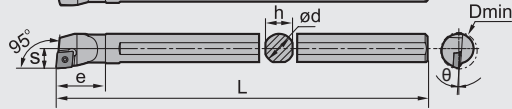
Internal turning tools

Corresponding tool holders of insert CP S-type clamping

SCLPR/L
Kr:95°




R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | | | Screw | Wrench | --- | --- |
|----------------|-------|---|----------------------|----|----|-----|----|-----|----|-------------|--------|-----|-----|
| | R | L | Dmin | ød | h | L | S | θ | e | | | | |
| S10K-SCLPR/L06 | ▲ | ▲ | 12 | 10 | 9 | 125 | 6 | -7° | 17 | I60M2.5×5.5 | WT07IP | --- | --- |
| S12M-SCLPR/L06 | ▲ | ▲ | 16 | 12 | 11 | 150 | 8 | -4° | 20 | | | | |
| S16Q-SCLPR/L09 | ▲ | ▲ | 20 | 16 | 15 | 180 | 10 | -4° | 29 | I60M3.5×8 | WT15IP | --- | --- |
| S20R-SCLPR/L09 | △ | △ | 25 | 20 | 18 | 200 | 13 | -4° | 35 | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For extra finishing |
|------------------|--|
| Inserts shape | SF  A110 |
| Tool holder type | <input type="checkbox"/> -SCLPR/L06 CP <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/> |
| | <input type="checkbox"/> -SCLPR/L09 CP <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> |



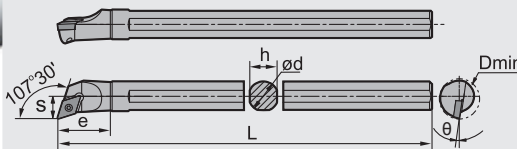
Corresponding tool holders of insert **DP** S-type clamping

SDQPRIL

Kr:107° 30'



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | | | Screw | Wrench | --- | --- |
|----------------|-------|---|----------------------|----|----|-----|----|-----|----|-------------|--------|-----|-----|
| | R | L | Dmin | ød | h | L | S | θ | e | | | | |
| S10K-SDQPR/L07 | △ | △ | 13 | 10 | 9 | 125 | 7 | -8° | 20 | I60M2.5×5.5 | WT07IP | --- | --- |
| S12M-SDQPR/L07 | ▲ | △ | 16 | 12 | 11 | 150 | 9 | -8° | 22 | | | | |
| S16Q-SDQPR/L07 | ▲ | △ | 20 | 16 | 15 | 180 | 11 | -6° | 27 | I60M2.5×6.5 | WT15IP | --- | --- |
| S16Q-SDQPR/L11 | ▲ | △ | 20 | 16 | 15 | 180 | 11 | -6° | 32 | I60M3.5×8 | | | |
| S16Q-SDQPR/L11 | △ | △ | 25 | 20 | 18 | 200 | 13 | -6° | 33 | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For extra finishing |
|------------------|--|
| Inserts shape | USF A111 |
| | SF A111 |
| Tool holder type | <input type="checkbox"/> -SDQPR/L07 DP <input type="checkbox"/> 0702 <input type="checkbox"/> |
| | <input type="checkbox"/> -SDQPR/L11 DP <input type="checkbox"/> 11T3 <input type="checkbox"/> |

General turning

Internal turning tools





TURNING / General Turning Tools

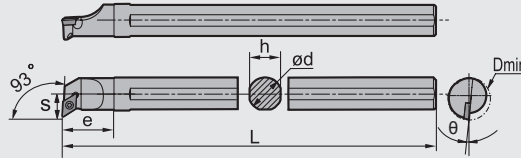
Internal turning tools

Corresponding tool holders of insert **DP** S-type clamping

SDUPRIL
Kr:93°




R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | | | Screw | Wrench | --- | --- |
|-----------------------|-------|---|----------------------|----|----|-----|----|-----|----|-------------|--------|-----|-----|
| | R | L | Dmin | ød | h | L | S | θ | e | | | | |
| S10K-SDUPR/L07 | ▲ | ▲ | 15 | 10 | 9 | 125 | 9 | -8° | 18 | I60M2.5×5.5 | WT07IP | --- | --- |
| S12M-SDUPR/L07 | ▲ | △ | 16 | 12 | 11 | 150 | 9 | -8° | 19 | | | | |
| S16Q-SDUPR/L07 | △ | △ | 20 | 16 | 15 | 180 | 11 | -6° | 25 | | | | |

▲Stock available △Make-to-order

Applicable inserts

| | |
|------------------|--|
| Application | For extra finishing |
| Inserts shape | SF  A111 |
| Tool holder type | <input type="checkbox"/> -SDUPR/L07 DP <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/> |



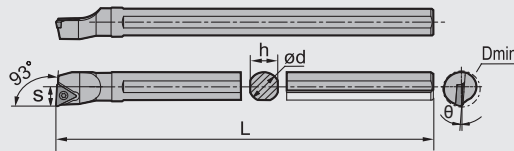
Corresponding tool holders of insert TP



S-type clamping

STUPRIL
Kr:93°



R-type shown




| Type | Stock | | Basic dimensions(mm) | | | | | Screw | Wrench | --- | --- |
|----------------|-------|---|----------------------|----|------|-----|-----|---|--|-----|-----|
| | R | L | Dmin | ød | h | L | S |  |  | --- | --- |
| S10M-STUPR/L09 | △ | △ | 13 | 10 | 9.4 | 150 | 6 | I60M2.2×5.5 | WT07IP | --- | --- |
| S10M-STUPR/L11 | △ | △ | 13 | 10 | 9.4 | 150 | 6 | | | --- | --- |
| S12Q-STUPR/L11 | △ | △ | 16 | 12 | 11.4 | 180 | 7.5 | I60M2.5×6.5 | WT07IP | --- | --- |
| S16R-STUPR/L11 | △ | △ | 20 | 16 | 15 | 200 | 10 | | | --- | --- |

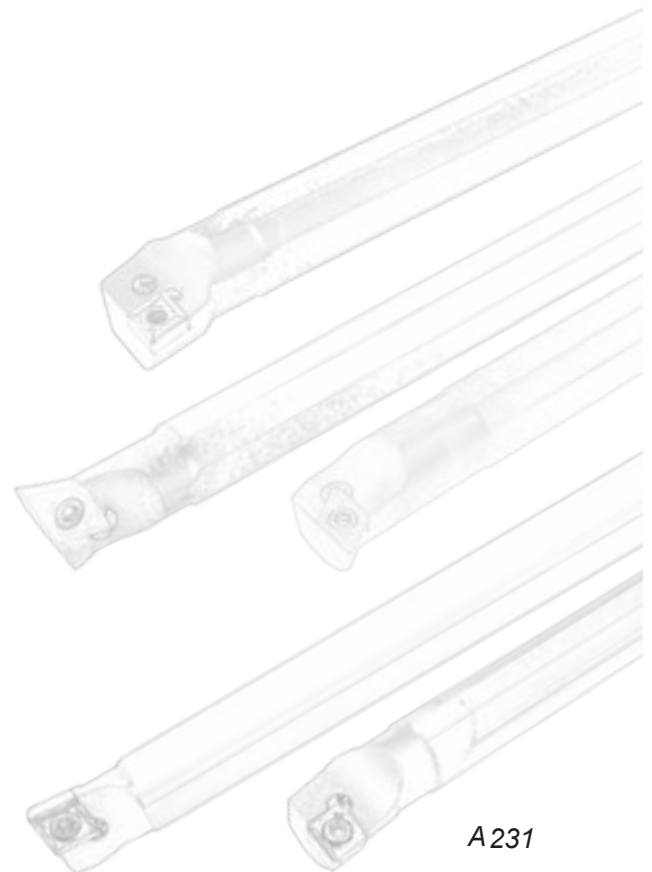
▲Stock available △Make-to-order

General turning

Internal turning tools

Applicable inserts

| Application | For extra finishing |
|------------------|--|
| Inserts shape | SF  A113 |
| Tool holder type | <input type="checkbox"/> -STUPR/L09 TP <input type="checkbox"/> 0902 <input type="checkbox"/> |
| | <input type="checkbox"/> -STUPR/L11 TP <input type="checkbox"/> 1103 <input type="checkbox"/> |





TURNING / General Turning Tools

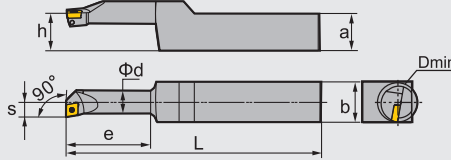
Internal turning tools

Corresponding tool holders of insert **CC** S-type clamping

SCFCRIL
Kr:90°



R-type shown















General turning

Internal turning tools

| Type | Stock | | Basic dimensions(mm) | | | | | | | Screw | Wrench | --- | --- |
|-------------------|-------|---|----------------------|----|-----|----|----|----|----|-------------|--------|-----|-----|
| | R | L | Dmin | ød | L | s | a | b | e | | | | |
| S10M-SCFCR/L06S25 | ▲ | ▲ | 13 | 10 | 150 | 7 | 27 | 25 | 30 | I60M2.5×5.5 | WT07IP | --- | --- |
| S12P-SCFCR/L06S25 | ▲ | ▲ | 16 | 12 | 170 | 9 | 27 | 25 | 35 | | | | |
| S16Q-SCFCR/L09S25 | ▲ | ▲ | 20 | 16 | 180 | 11 | 27 | 25 | 40 | I60M3.5×8 | WT15IP | --- | --- |
| S20R-SCFCR/L09S25 | △ | △ | 25 | 20 | 200 | 13 | 27 | 25 | 45 | | | | |
| S25R-SCFCR/L12S25 | △ | △ | 30 | 25 | 200 | 16 | 27 | 25 | 50 | I60M4×11X | | --- | --- |

▲Stock available △Make-to-order

Applicable inserts

| Application | For extra finishing | For finishing | For semi-finishing | For roughing | For Al machining | For cast iron machining | PCBN/PCD inserts | |
|------------------|---|---|---|---|---|--|---|---|
| Inserts shape | USF  A89 | HF  A89 | HM  A90 | HR  A91 | LH  A91-92 |  A92 Without chipbreaker |  A139 | |
| | SF  A89 | EF  A90 | EM  A90 | | LC  A91 | |  A144 | |
| Tool holder type | <input type="checkbox"/> -SCFCR/L06S25 | CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/> | CCGX0602 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/> |
| | <input type="checkbox"/> -SCFCR/L09S25 | CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> | CCGX09T3 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> |
| | <input type="checkbox"/> -SCFCR/L12S25 | | CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/> | CCGX1204 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/> |

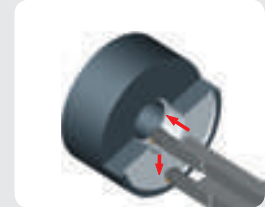
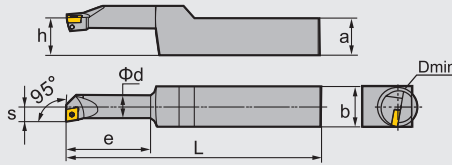


Corresponding tool holders of insert **CC** S-type clamping

SCLCR/L
Kr:95°



R-type shown















| Type | Stock | | Basic dimensions(mm) | | | | | | | Screw | Wrench | --- | --- |
|-------------------|-------|---|----------------------|----|-----|----|----|----|----|-------------|--------|-----|-----|
| | R | L | Dmin | ød | L | s | a | b | e | | | | |
| S10M-SCLCR/L06S20 | ▲ | ▲ | 13 | 10 | 150 | 7 | 22 | 20 | 30 | I60M2.5×5.5 | WT07IP | --- | --- |
| S12P-SCLCR/L06S20 | ▲ | ▲ | 16 | 12 | 170 | 9 | 22 | 20 | 35 | | | | |
| S16Q-SCLCR/L09S20 | ▲ | ▲ | 20 | 16 | 180 | 11 | 22 | 20 | 40 | I60M3.5×8 | WT15IP | --- | --- |
| S20R-SCLCR/L09S20 | △ | △ | 25 | 20 | 200 | 13 | 22 | 20 | 60 | | | | |

▲Stock available △Make-to-order

General turning

Internal turning tools

Applicable inserts

| Application | For extra finishing | For finishing | For semi-finishing | For roughing | For Al machining | For cast iron machining | PCBN/PCD inserts | |
|------------------|--|---|---|---|---|--|---|---|
| Inserts shape | USF  A89 | HF  A89 | HM  A90 | HR  A91 | LH  A91-92 | Without chipbreaker  A92 |  A139 | |
| | SF  A89 | EF  A90 | EM  A90 | | LC  A91 | |  A144 | |
| Tool holder type | <input type="checkbox"/> -SCLCR/L06S20 | CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/> | CCGX0602 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/> |
| | <input type="checkbox"/> -SCLCR/L09S20 | CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> | CCGX09T3 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> | CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> |



Damping tool holders for internal turning

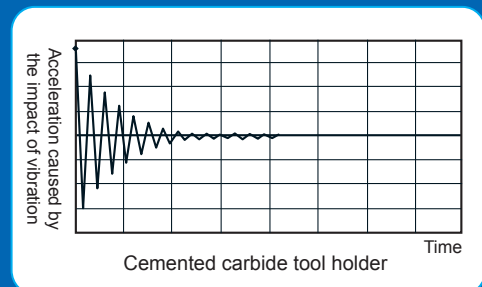
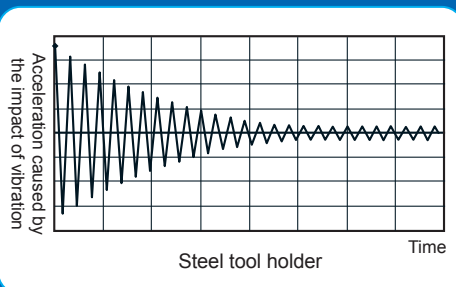
Technical features

Increasing material rigidity of tool holder can reduce the amplitude, or obtain larger overhang under the condition of same systemic stability. Therefore, compared with steel tool holder, cemented carbide tool holder has better dampening effect, smaller amplitude and reaches convergence point sooner. As for machining under the condition of long overhang and easy vibration, they can exert excellent performance and achieve higher dimensional accuracy and surface quality.



Under the same machining condition

the maximum overhang of cemented carbide tool holder can reach $L \leq 6D$, while the recommended maximum overhang of steel tool holder is $L \leq 3D$.





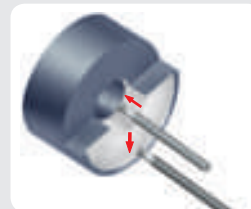
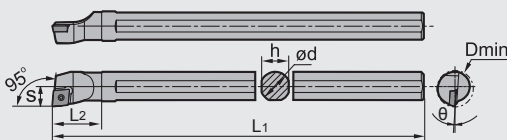
Corresponding tool holders of insert **CP** (Damping tool holder) S-type clamping

SCLPR/L

Kr:95°



R-type shown




| Type | Stock | | Basic dimensions(mm) | | | | | | | Screw | Wrench | --- | --- |
|----------------|-------|---|----------------------|----|----|-----|----|----|-----|-------------|--------|-----|-----|
| | R | L | Dmin | ød | s | L1 | L2 | h | θ | | | | |
| C10M-SCLPR/L06 | ▲ | △ | 12 | 10 | 6 | 150 | 17 | 9 | -7° | I60M2.5×5.5 | WT07IP | -- | -- |
| C12Q-SCLPR/L06 | △ | △ | 16 | 12 | 8 | 180 | 20 | 11 | -4° | | | | |
| C16R-SCLPR/L09 | ▲ | △ | 20 | 16 | 10 | 200 | 29 | 15 | -4° | I60M3.5×8 | WT15IP | -- | -- |
| C20S-SCLPR/L09 | △ | △ | 25 | 20 | 13 | 250 | 35 | 18 | -4° | | | | |

▲Stock available △Make-to-order

General turning

Internal turning tools

Applicable inserts

| Application | For extra finishing |
|------------------|--|
| Inserts shape | SF  A110 |
| Tool holder type | <input type="checkbox"/> -SCLPR/L06 CP <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/> |
| | <input type="checkbox"/> -SCLPR/L09 CP <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/> |



TURNING / General Turning Tools

Internal turning tools

General turning

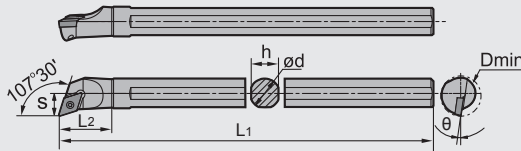
Internal turning tools

Corresponding tool holders of insert **DP** (Damping tool holder) S-type clamping

SDQPRIL
Kr:107° 30'




R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | | | Screw | Wrench | --- | --- |
|----------------|-------|---|----------------------|----|----|-----|----|----|-----|-------------|--------|-----|-----|
| | R | L | Dmin | ød | s | L1 | L2 | h | θ | | | | |
| C10M-SDQPR/L07 | ▲ | △ | 13 | 10 | 7 | 150 | 20 | 9 | -8° | I60M2.5×5.5 | WT07IP | --- | --- |
| C12Q-SDQPR/L07 | △ | △ | 16 | 12 | 9 | 180 | 22 | 11 | -8° | | | | |
| C16R-SDQPR/L07 | △ | △ | 20 | 16 | 11 | 200 | 27 | 15 | -6° | I60M2.5×6.5 | WT15IP | --- | --- |
| C16R-SDQPR/L11 | △ | △ | 20 | 16 | 11 | 200 | 32 | 15 | -6° | | | | |
| C20S-SDQPR/L11 | ▲ | △ | 25 | 20 | 13 | 250 | 33 | 18 | -6° | I60M3.5×8 | WT15IP | --- | --- |

▲Stock available △Make-to-order

Applicable inserts

| Application | For extra finishing |
|------------------|--|
| Inserts shape | SF  A111 |
| Tool holder type | □□-SDQPR/L07 DP□□0702□□ □□-SDQPR/L11 DP□□11T3□□ |



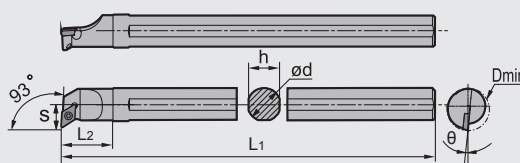
Corresponding tool holders of insert **DP** □ □ (Damping tool holder) S-type clamping




SDUPRIL

Kr:93°




R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | | | Screw | Wrench | --- | --- | |
|-----------------------|-------|---|----------------------|----|----|-----|----|----|-----|---|--|--------|-----|-----|
| | R | L | Dmin | ød | s | L1 | L2 | h | θ |  |  | --- | --- | |
| C10M-SDUPR/L07 | △ | △ | 15 | 10 | 9 | 150 | 18 | 9 | -8° | I60M2.5×5.5 |  | --- | --- | |
| C12Q-SDUPR/L07 | △ | △ | 16 | 12 | 9 | 180 | 19 | 11 | -8° | | | WT07IP | --- | --- |
| C16R-SDUPR/L07 | △ | △ | 20 | 16 | 11 | 200 | 25 | 15 | -6° | | | --- | --- | |

▲Stock available △Make-to-order

Applicable inserts

| | |
|------------------|--|
| Application | For extra finishing |
| Inserts shape | SF  A111 |
| Tool holder type | □□-SDUPR/L07 DP□□0702□□ |

General turning

Internal turning tools



TURNING / General Turning Tools

Internal turning tools

General turning

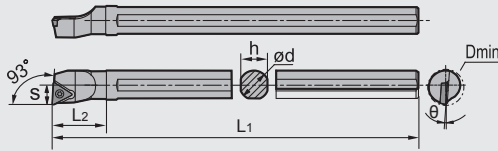
Internal turning tools

Corresponding tool holders of insert **TP** (Damping tool holder) S-type clamping

STUPRIL
Kr:93°




R-type shown

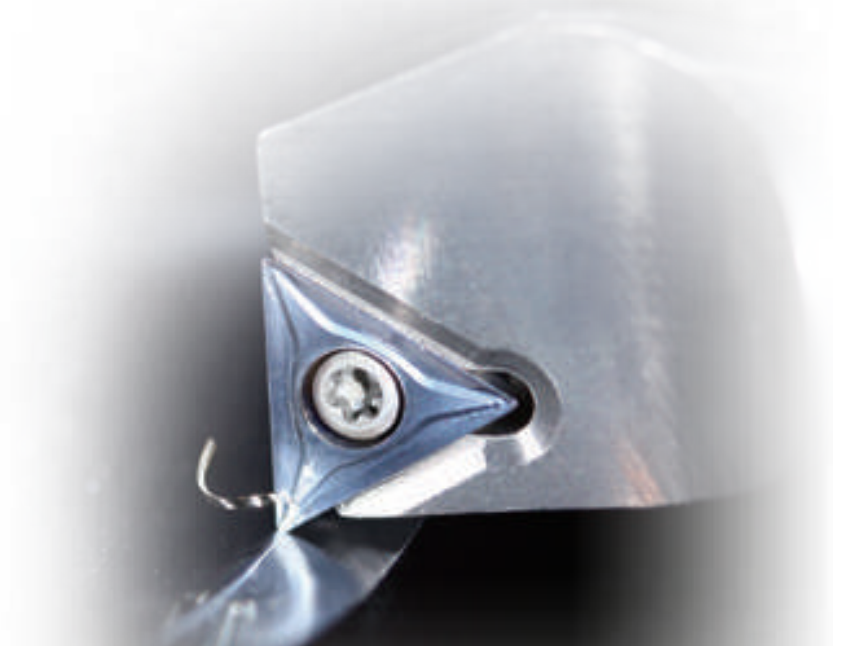


| Type | Stock | | Basic dimensions(mm) | | | | | | | Screw | Wrench | --- | --- |
|----------------|-------|---|----------------------|----|----|-----|----|----|-----|-------------|--------|-----|-----|
| | R | L | Dmin | ød | s | L1 | L2 | h | θ | | | | |
| C10M-STUPR/L09 | ▲ | △ | 12 | 10 | 6 | 150 | 20 | 9 | -6° | I60M2.2×5.5 | WT07IP | --- | --- |
| C12Q-STUPR/L09 | ▲ | △ | 16 | 12 | 8 | 180 | 22 | 11 | -4° | | | | |
| C12Q-STUPR/L11 | ▲ | △ | 16 | 12 | 8 | 180 | 25 | 11 | -4° | I60M2.5×6.5 | WT07IP | --- | --- |
| C16R-STUPR/L11 | ▲ | △ | 20 | 16 | 10 | 200 | 27 | 15 | -3° | | | | |

▲Stock available △Make-to-order

Applicable inserts

| Application | For extra finishing |
|-------------------------------------|--|
| Inserts shape | SF  A113 |
| Tool holder type | |
| <input type="checkbox"/> -STUPR/L09 | TP <input type="checkbox"/> 0902 <input type="checkbox"/> |
| <input type="checkbox"/> -STUPR/L11 | TP <input type="checkbox"/> 1103 <input type="checkbox"/> |



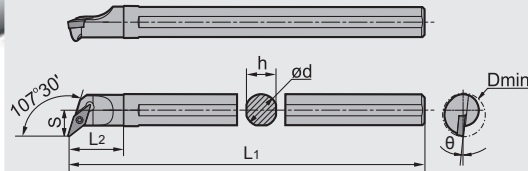




Corresponding tool holders of insert VC□□ (Damping tool holder) S-type clamping

SVQCRIL
Kr:107° 30'



R-type shown






| Type | Stock | | Basic dimensions(mm) | | | | | | | Screw | Wrench | --- | --- |
|-----------------------|-------|---|----------------------|----|----|-----|----|----|-----|---|--|-----|-----|
| | R | L | Dmin | ød | s | L1 | L2 | h | θ |  |  | --- | --- |
| C16R-SVQCR/L11 | △ | △ | 22 | 16 | 13 | 200 | 28 | 15 | -6° | I60M2.5×6.5 | WT07IP | --- | --- |
| C20S-SVQCR/L11 | △ | △ | 26 | 20 | 15 | 250 | 32 | 18 | -4° | | | --- | --- |

▲Stock available △Make-to-order

General turning

Internal turning tools

Applicable inserts

| Application | For extra finishing | For finishing | For AI machining |
|------------------|---|--|---|
| Inserts shape | USF  A105 | HF  A105 | LH  A106 |
| | SF  A105 | | LC  A106 |
| Tool holder type | VC□□1103□□ | VC□□1103□□ | VCGX1103□□ |



TURNING / General Turning Tools

Internal turning tools

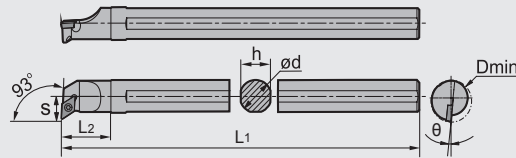
General turning
Internal turning tools

Corresponding tool holders of insert VC□□ (Damping tool holder) S-type clamping

SVUCRIL
Kr:93°



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | | | Screw | Wrench | --- | --- |
|-----------------------|-------|---|----------------------|----|----|-----|----|----|-----|-------------|--------|-----|-----|
| | R | L | Dmin | ød | s | L1 | L2 | h | θ | | | | |
| C16R-SVUCR/L11 | △ | △ | 24 | 16 | 15 | 200 | 25 | 15 | -6° | I60M2.5×6.5 | WT07IP | --- | --- |
| C20S-SVUCR/L11 | △ | △ | 28 | 20 | 17 | 250 | 30 | 18 | -4° | | | | |

▲Stock available △Make-to-order

Applicable inserts






| Application | For extra finishing | For finishing | For AI machining |
|------------------|--|---|--|
| Inserts shape | USF  A105 | HF  A105 | LH  A106 |
| | SF  A105 | | LC  A106 |
| Tool holder type | VC□□1103□□ | VC□□1103□□ | VCGX1103□□ |



Table of recommended cutting parameters for general turning

| ISO | Materials | Hardness HB | CVD Coating | | | | | PVD Coating | | | Cermet | Coated cermet | Cemented carbide | | | |
|-----------------------|------------------|-------------|--------------------|---------|---------|---------|---------|-------------|---------|---------|----------|---------------|------------------|---------|---------|---------|
| | | | YBC151 | YBC251 | YBC152 | YBC252 | YBC351 | YBC352 | YBG102 | YBG202 | YBG302 | YNG151 | YNG151C | YC10 | YC40 | |
| | | | Feed rate (mm/rev) | | | | | | | | | | | | | |
| | | | 0.1-0.6 | 0.1-0.8 | 0.1-0.6 | 0.1-0.8 | 0.2-1.0 | 0.2-1.0 | 0.2-0.4 | 0.1-0.6 | 0.05-0.8 | 0.05-0.2 | 0.05-0.2 | 0.1-0.4 | 0.1-0.5 | |
| Cutting speed (m/min) | | | | | | | | | | | | | | | | |
| P | Carbon steel | C=0.15% | 125 | 430-200 | 430-190 | 500-270 | 480-240 | 380-165 | 430-220 | 460-220 | 380-180 | 360-165 | 550-350 | 580-350 | 360-165 | 300-145 |
| | | C=0.35% | 150 | 380-180 | 410-180 | 460-250 | 460-230 | 300-150 | 350-200 | 440-210 | 300-170 | 280-150 | 500-300 | 520-300 | 280-150 | 220-130 |
| | | C=0.60% | 200 | 330-150 | 350-150 | 400-220 | 400-200 | 260-130 | 310-180 | 380-180 | 260-150 | 240-130 | 460-260 | 480-260 | 240-130 | 180-80 |
| | Alloy steel | Anneal | 180 | 350-170 | 350-150 | 400-180 | 400-200 | 200-100 | 250-150 | 380-180 | 200-120 | 180-100 | 410-240 | 430-240 | 180-100 | 160-80 |
| | | Hardened | 275 | 230-100 | 210-100 | 280-150 | 260-140 | 140-70 | 200-120 | 240-120 | 140-90 | 120-70 | 300-180 | 320-180 | 120-70 | 120-50 |
| | | Hardened | 300 | 210-100 | 190-70 | 260-150 | 240-120 | 125-60 | 180-110 | 220-100 | 125-80 | 100-60 | 250-170 | 270-170 | 100-60 | 80-40 |
| | High alloy steel | Hardened | 350 | 180-80 | 170-70 | 230-120 | 220-120 | 110-55 | 160-100 | 200-100 | 110-75 | 90-55 | 230-150 | 250-150 | 90-55 | 70-45 |
| | | Anneal | 200 | 320-150 | 260-120 | 360-190 | 310-170 | 175-80 | 220-130 | 290-150 | 175-100 | 155-80 | 350-200 | 370-200 | 155-80 | 135-60 |
| | Cast steel | Hardene | 325 | 140-90 | 100-50 | 190-130 | 150-100 | 85-40 | 140-90 | 130-80 | 85-60 | 65-40 | 170-110 | 190-110 | 65-40 | 45-30 |
| | | Non-Alloy | 180 | 240-120 | 200-100 | 280-160 | 250-140 | 135-75 | 190-130 | 230-125 | 135-95 | 115-75 | 260-170 | 280-170 | 115-75 | 95-55 |
| | | Low alloy | 200 | 230-70 | 170-60 | 280-110 | 220-110 | 120-80 | 170-130 | 200-90 | 120-100 | 100-80 | 260-170 | 280-170 | 100-80 | 80-60 |
| | | High alloy | 225 | 160-70 | 140-50 | 210-110 | 190-100 | 95-55 | 150-110 | 170-80 | 95-55 | 95-55 | 260-100 | 280-100 | 95-55 | 75-35 |

| ISO | Materials | Hardness HB | CVD Coating | | | | PVD Coating | | | Cermet | Coated cermet | | |
|-----------------------|-----------------|-------------|--------------------|---------|---------|---------|-------------|---------|---------|---------|---------------|---------|---------|
| | | | YBM151 | YBM153 | YBM251 | YBM253 | YBM215 | YBG202 | YBG205 | YBG302 | YNG151 | YNG151C | |
| | | | Feed rate (mm/rev) | | | | | | | | | | |
| | | | 0.2-0.6 | 0.2-0.6 | 0.2-0.6 | 0.2-0.6 | 0.2-0.4 | 0.1-0.4 | 0.2-0.4 | 0.2-0.6 | 0.1-0.3 | 0.1-0.3 | |
| Cutting speed (m/min) | | | | | | | | | | | | | |
| M | Stainless steel | Ferrite | 180 | 280-180 | 280-180 | 250-140 | 260-140 | 290-190 | 300-190 | 290-190 | 250-150 | 330-220 | 350-210 |
| | | Austenite | 260 | 250-150 | 250-150 | 200-110 | 210-110 | 240-160 | 250-160 | 240-160 | 220-120 | 250-150 | 270-140 |
| | | Martensite | 330 | 200-140 | 200-140 | 210-130 | 220-130 | 250-170 | 260-170 | 250-170 | 210-120 | 270-170 | 290-160 |

General turning

Application information of general turning



TURNING / General Turning Tools

Application information of general turning

Recommended table of cutting parameters for general turning

General turning

Application information of general turning

| ISO | Materials | | Hardness HB | CVD Coating | | | | Cermet | Coated cermet | Ceramics | Cemented carbide | | |
|-----------------------|---------------------|----------|-------------|--------------------|---------|---------|---------|---------|---------------|----------|------------------|---------|--|
| | | | | YBD052 | YBD102 | YBD152 | YBD252 | YNG151 | YNG151C | CN3100 | YC10 | YC40 | |
| | | | | Feed rate (mm/rev) | | | | | | | | | |
| | | | | 0.1-0.4 | 0.1-0.4 | 0.1-0.5 | 0.1-0.8 | 0.1-0.4 | 0.1-0.4 | 0.1-1.5 | 0.1-0.3 | 0.1-0.4 | |
| Cutting speed (m/min) | | | | | | | | | | | | | |
| K | Malleable cast iron | Ferrite | 130 | 350-230 | 330-220 | 320-105 | 250-170 | 280-160 | 300-180 | 800-600 | 150-90 | 105-45 | |
| | | Pearlite | 230 | 250-105 | 230-100 | 230-100 | 180-75 | 220-120 | 240-150 | 700-500 | 120-70 | 80-30 | |
| | Low cast iron | | 180 | 520-200 | 480-200 | 480-190 | 380-150 | 400-250 | 420-270 | 700-500 | 170-100 | 130-60 | |
| | High cast iron | | 260 | 230-120 | 220-115 | 210-100 | 170-90 | 360-240 | 380-260 | 800-600 | 130-70 | 95-40 | |
| | Nodular cast iron | Ferrite | 160 | 310-150 | 300-150 | 290-140 | 220-110 | 330-190 | 350-210 | 600-450 | 140-80 | 115-45 | |
| | | Pearlite | 250 | 230-110 | 220-105 | 210-100 | 170-90 | 310-200 | 330-220 | 500-350 | 110-70 | 80-30 | |

| ISO | Materials | | Hardness HB | PVD Coating | | | | | Cemented carbide | Ceramics | | |
|---|---------------------|---------------------|-------------|--------------------|-----------|----------|----------|----------|------------------|----------|--|--|
| | | | | YBG102 | YBG105 | YBG202 | YBS103 | YBG212 | YD101 | CN3100 | | |
| | | | | Feed rate (mm/rev) | | | | | | | | |
| | | | | 0.05-0.15 | 0.05-0.15 | 0.05-0.2 | 0.05-0.2 | 0.05-0.2 | 0.05-0.35 | 0.05-0.2 | | |
| Cutting speed (m/min) | | | | | | | | | | | | |
| N | Al alloy | No heat treatment | 60 | | | | | | 1750-800 | | | |
| | | Heat treatment | 100 | | | | | | 510-250 | | | |
| | Cast aluminum alloy | No heat treatment | 75 | | | | | | 460-175 | | | |
| | | Heat treatment | 90 | | | | | | 300-110 | | | |
| | Copper alloy | Lead alloy | 110 | | | | | | 610-205 | | | |
| | | Copper, pure copper | 90 | | | | | | 310-195 | | | |
| Copper, nonleaded Copper, electrolytic copper | | 100 | | | | | | 225-115 | | | | |
| S | Ni-base alloy | Ni-base alloy | 40 | 90-30 | 90-40 | 90-30 | 90-20 | 90-30 | 70-20 | 15-260 | | |



Recommended table of cutting parameters for general turning

| ISO | Materials | PCBN | | | | | | | | | | | |
|----------|---|-----------------------|--------|---------|--------|----------|---------|---------|---------|-----------|---------|--------|--------|
| | | BK1011 | BK1021 | BK2511 | BK2541 | BH0121 | BH1020 | BH2011 | BH2511 | BH3511 | BS1011 | BS2011 | BS3011 |
| | | Feed rate (mm/rev) | | | | | | | | | | | |
| | | 0.02-0.5 | | 0.1-0.5 | | 0.05-0.5 | | | | 0.05-0.25 | | | |
| | | Cutting speed (m/min) | | | | | | | | | | | |
| K | Gray cast iron | 400-1500 | | 300-600 | | | | | | | | | |
| | Hard cast iron | 80-160 | | 50-150 | | | | | | | | | |
| S | Powder metallurgy and high temperature alloys | | | | | | | | | 70-180 | 100-200 | 50-160 | |
| H | Hardened steel | | | | | 150-250 | 140-220 | 100-170 | 120-180 | 80-150 | | | |

General turning

Application information of general turning

| ISO | Materials | PCD | | | |
|----------|--------------------------------------|-----------------------|-----------|----------|---------|
| | | DN0121 | DN0511 | DN1021 | DN3021 |
| | | Feed rate (mm/rev) | | | |
| | | 0.05~0.4 | | | |
| | | Cutting speed (m/min) | | | |
| N | Silumin (si≤12%) | 500~1000 | 900~3500 | 400~1200 | 300~700 |
| | fibre reinforced composite materials | 200~1000 | | | |
| | Metal base compound | | 1500~1800 | | |
| | Copper and magnesium alloy silumin | | 400~1260 | 400~1260 | |
| | Cemented carbide | | 20~40 | | |
| | Unsintered ceramic materials | | | | 100~200 |
| | Sintered Ceramic | | | | 20~50 |



General Turning Tools

Application information of general turning

Table of correctional cutting parameters of internal turning

Internal turning tools by P-type clamping

| | Workpiece material | Hardness HB | Machining category | L/D≤3 | | L/D=3-4 (Diameter of shank ≥ Φ 16mm) | |
|----------|---|-------------|--------------------|-----------------------|--------------------|---|--------------------|
| | | | | Feed rate (mm/rev) | Cutting depth (mm) | Feed rate (mm/rev) | Cutting depth (mm) |
| P | Carbon steel, Alloy steel 45 [#] , 42CrMo | HB180—280 | For semi-finishing | 0.1- 0.25 -0.4 | <5.0 | 0.1- 0.2 -0.3 | <4.0 |
| M | Stainless steel 1Cr18Ni9Ti 0Cr18Ni9 | ≤HB220 | For semi-finishing | 0.1- 0.2 -0.3 | <4.0 | 0.1- 0.15 -0.25 | <3.0 |
| K | Cast iron HT250 | HB170—230 | For semi-finishing | 0.1- 0.25 -0.4 | <5.0 | 0.1- 0.2 -0.3 | <4.0 |

Internal turning tools by S-type clamping

| | Workpiece material | Hardness HB | Machining category | L/D≤3 | | L/D=4 | | L/D=5 | | L/D=6 | |
|----------|---|-------------|--------------------|-------------------------|--------------------|------------------------|--------------------|------------------------|--------------------|------------------------|--------------------|
| | | | | Feed rate (mm/rev) | Cutting depth (mm) | Feed rate (mm/rev) | Cutting depth (mm) | Feed rate (mm/rev) | Cutting depth (mm) | Feed rate (mm/rev) | Cutting depth (mm) |
| P | Carbon steel, Alloy steel 45 [#] , 42CrMo | HB180-280 | For finishing | 0.05- 0.1 -0.15 | <0.2 | 0.05- 0.1 -0.15 | <0.2 | | | | |
| | | | For semi-finishing | 0.15- 0.25 -0.35 | <3.0 | 0.1- 0.15 -0.2 | <1.5 | | | | |
| M | Stainless steel 1Cr18Ni9Ti 0Cr18Ni9 | ≤HB220 | For finishing | 0.05- 0.1 -0.15 | <0.2 | 0.05- 0.1 -0.15 | <0.2 | | | | |
| | | | For semi-finishing | 0.15- 0.2 -0.25 | <2.0 | 0.1- 0.15 -0.2 | <1.0 | | | | |
| N | Al alloy | --- | For finishing | 0.05- 0.1 -0.15 | <0.2 | 0.05- 0.1 -0.15 | <0.2 | 0.05- 0.1 -0.15 | -0.15 | 0.05- 0.1 -0.15 | <0.1 |
| | | | For semi-finishing | 0.05- 0.1 -0.15 | <2.0 | 0.05- 0.1 -0.15 | <1.5 | 0.05- 0.1 -0.15 | -1.0 | 0.05- 0.1 -0.15 | <1.0 |

Damping internal turning tools

| | Workpiece material | Machining conditions | Chipbreaker | Inserts material | Feed rate (mm/rev) | Cutting depth (mm) |
|----------|------------------------|----------------------|-------------|-------------------|------------------------|---------------------------|
| P | Steel HB180—280 | For finishing | SF | YNG151 YNG151C | 0.05- 0.2 -0.35 | 0.05- 0.1-0.3 -0.5 |
| M | Stainless steel ≤HB220 | | | | 0.05- 0.2 -0.35 | 0.05- 0.1-0.3 -0.5 |
| K | Cast iron HB170—230 | | | | 0.05- 0.2 -0.35 | 0.05- 0.1-0.3 -0.5 |

Blue words are recommended cutting parameters.

General turning

Application information of general turning



Frequent problems of turning and solutions

| Common problem | Cause | Solutions | Tool material | | Cutting conditions | | | | Tool shape | | | | | Machine clamping system | | | | | |
|---------------------------------|--|--|------------------------------|-------------------|--------------------|-----------|---------------|----------------|-------------------------------|-----------|-------------|----------------|-----------------------|-------------------------------|----------------------------------|---------------------------------------|-------------------------|-----------|---|
| | | | Harder materials | Tougher materials | Cutting speed | Feed rate | Cutting depth | Cutting liquid | Change chipbreaker of inserts | Rake face | Nose radius | Approach angle | Cutting edge strength | Increase precision of inserts | Increase rigidity of tool holder | Clamping of tool holder and workpiece | Overhang of tool holder | Power gap | |
| Over abrasion on nose | Bad precision during machining | Abrasion intensified on flank | ✓ | | | | | | | | | | | | | | | | |
| | | Unsuitable cutting conditions | | | ↓ | ↑ | | | | | | | | | | | | | |
| Surface precision deterioration | Bad surface quality | Abrasion intensified and cutting edge not sharp enough | ✓ | | ↓ | | | | ✓ | | ↑ | ↑ | | ↓ | ✓ | | | | |
| | | Cutting edge breakage | | ✓ | | ↓ | ↓ | | ✓ | | ↑ | | ↑ | | | ✓ | ✓ | ✓ | |
| | | Unsuitable geometrical shape of cutting edge | | | | | | | ✓ | | ↑ | | ↓ | ✓ | | | | | |
| | | Unsuitable cutting conditions | | | ↑ | ↓ | ↓ | ✓ | | | | | | | | | | | |
| | | Vibration | | ✓ | | ↑ | ↓ | ↓ | ✓ | ✓ | ↑ | ↓ | ↑ | ↓ | | ✓ | ✓ | ✓ | ✓ |
| | | Built-up edge | | | | ↑ | ↑ | | ✓ | ✓ | ↑ | | | ↓ | ✓ | | | | |
| Radiation of heat | Effect of cutting heat | Unsuitable cutting conditions | | | ↓ | ↓ | ↓ | | | | | | | | | | | | |
| | | Unsuitable geometrical shape of cutting edge | ✓ | | | | | | ✓ | ↑ | | | ↓ | | | | | | |
| Bad precision of dimensions | Dimensions fluctuate during cutting | Insert tolerance | | | | | | | | | | | ✓ | | | | | | |
| | | Offset of workpiece or tools | | | | | | | ✓ | ↑ | ↓ | ↑ | | | ✓ | ✓ | ✓ | ✓ | |
| Breakage | Abrasion on flank and rake face | Abrasion on clearance face | ✓ | | ↓ | | | | ✓ | ↑ | ↑ | | ↓ | | | | | | |
| | | Abrasion on rake face | ✓ | | ↓ | ↓ | ↓ | | ✓ | ↑ | | ↓ | | | | | | | |
| | Edge chipping | Vibration and impact | | ✓ | | ↓ | ↓ | | ✓ | | | ↓ | ↑ | | ✓ | ✓ | ✓ | ✓ | |
| | Built-up edge | Unsuitable workpiece hardness for cutting conditions | | | ↑ | ↑ | | ✓ | ✓ | ↑ | | ↓ | ✓ | | | | | | |
| | Thermal cracking | Hardness of workpiece material and tool material unsuitable for cutting conditions | | | ↓ | ↓ | ↓ | ✓ | ✓ | ↑ | | ↓ | | | | | | | |
| | Cutting edge nose deformation | Occurring during intermittent machining with high feed rate | ✓ | | ↑ | ↓ | ↓ | ✓ | ✓ | ↑ | ↑ | ↓ | ↓ | | | | | | |
| | Tool life | Unsuitable materials and cutting conditions | | ✓ | | ↓ | ↓ | | ✓ | | ↑ | ↓ | ↑ | | ✓ | ✓ | ✓ | ✓ | |
| | Chip controlling | Long, unbroken and snarled chips | Unsuitable cutting condition | | | ↓ | ↑ | ↑ | ✓ | | | | | | | | | | |
| Unsuitable geometry | | | | | | | | | ✓ | | ↓ | ↑ | | | | | | | |
| Too short and hard chips | | Unsuitable cutting condition | | | | ↓ | ↓ | ✓ | | | | | | | | | | | |
| | | Unsuitable geometrical shape of cutting edge | | | | | | | ✓ | | ↑ | ↓ | | | | | | | |
| Burr and knockdown flange | Steel and Al, burrs occurring | Unsuitable cutting condition | | | ↑ | ↓ | | ✓ | | | | | | | | | | | |
| | | Tool abrasion and unsuitable geometrical shape | ✓ | | | | | | ✓ | ↑ | ↓ | ↑ | ↓ | | | | | | |
| | Edge break out on cast iron | Unsuitable cutting conditions | | | ↓ | ↑ | | ✓ | | | | | | | | | | | |
| | | Tool abrasion and unsuitable geometrical shape | ✓ | | | | | | ✓ | ✓ | ↓ | ↓ | ↓ | | | | | | |
| Heavy burr on soft steel | Unsuitable cutting condition | | | | ↓ | ↓ | | | | | | | | | | | | | |
| | Tool abrasion and unsuitable geometrical shape | ✓ | | | | | | ✓ | ↑ | ↑ | | ↑ | | ✓ | ✓ | ✓ | ✓ | | |

General turning

Application information of general turning



Abrasion of tools and various damages

| Tool damage type | Phenomenon | Cause | Solution |
|--|--|---|--|
| Flank wear | Cutting resistant force increasing Groove wear on flank | Tool material is too soft. Cutting speed is too high. Clearance angle is too small. Feed rate is too low. | <ul style="list-style-type: none"> ◆ Select tool materials with good wear resistance. ◆ Reduce cutting speed. ◆ Enlarge clearance angle. ◆ Increase feed rate. |
| Rake face wear (Crater wear) | Bad chip controlling Surface quality deterioration | Tool material is too soft. Cutting speed is too high. Feed rate is too high. | <ul style="list-style-type: none"> ◆ Select tool materials with good wear resistance. ◆ Reduce cutting speed. ◆ Reduce feed rate. |
| Cutting edge breakage | Occasional breakage Instability of tool life | Tool material is too hard. Feed rate is high. Cutting edge strength is not high enough. Rigidity of tool holder and tool bar is small. | <ul style="list-style-type: none"> ◆ Select tool materials with good toughness. ◆ Reduce feed rate. ◆ Increase land width (if rounding changes into chamfering). ◆ Enlarge tool bar size. |
| Breakage | Cutting resistant force increasing Deterioration of surface roughness | Tool material is too hard. Feed rate is high. Cutting edge strength is not high enough. Rigidity of tool holder and tool bar is low. | <ul style="list-style-type: none"> ◆ Select tool materials with good toughness. ◆ Reduce feed rate. ◆ Increase land width (if rounding changes into chamfering). ◆ Enlarge tool bar size. |
| Plastic deformation (Cutting edge collapse) | Workpiece dimensions change Nose abrasion | Tool material is too soft. Cutting speed is too high. Cutting depth and feed rate are too high. Cutting edge temperature is too high. | <ul style="list-style-type: none"> ◆ Select tool material with good wear resistance ◆ Reduce cutting speed. ◆ Reduce cutting depth and feed rate. ◆ Select tool materials with good heat conductivity. |
| Built-up edge (Bonding) | Surface quality deterioration during finishing Cutting resistant force increasing | Cutting speed is low. Cutting edge is not sharp enough. Tool material is unsuitable. | <ul style="list-style-type: none"> ◆ Increase cutting speed. ◆ Enlarge rake angle. ◆ Select tool materials that are not easy to adhere together (coating, cermet, etc.) |
| Thermal cracking | Damage because of thermal circulation Normally occurring during intermittent machining | Premature edge failure due to thermal cracks. Tool material is too hard. | <ul style="list-style-type: none"> ◆ Adopt dry cutting. ◆ Select tool materials with good toughness. |
| Chattering | burrs occurring Cutting resistant force increasing | Feed rate and cutting speed are too high. | <ul style="list-style-type: none"> ◆ Select tool materials with good wear resistance. ◆ Sharpen cutting edge by enlarging rake angle. ◆ Reduce cutting speed. |
| Flaking | Usually occurring when machining super hard materials, which is accompanied with vibration | Bonding occurs on cutting edge. Chip flow is obstructed. | <ul style="list-style-type: none"> ◆ Sharpen cutting edge by enlarging rake angle. ◆ Enlarge chip pocket. |

*Parting and
grooving tools*





TURNING Parting and grooving tools

How to select parting and grooving tools

How to select parting and grooving tools

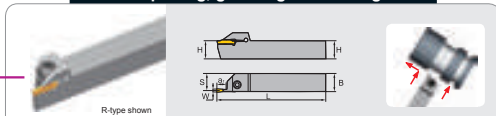
Structure of parting and grooving tools selection table

- Categorized as external machining, internal machining and profile machining.
- Concluded and separately listed according to product series (Little squirrel series and Supplementary series).

Dimensions

Application of external machining, internal machining and profile machining

External parting, grooving and turning tools

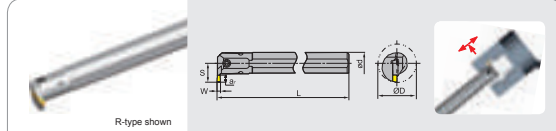


| Type | Stock | | Basic dimensions(mm) | | | | | | Applicable inserts | Screw | Wrench | |
|------|-----------|---|----------------------|----|----|-----|------|-----|--------------------|-----------|-----------------|------------------|
| | R | L | H | X | B | L | S | W | | | | B _{max} |
| QEAD | 1212R/L07 | ▲ | ▲ | 12 | 12 | 125 | 11.4 | 1.5 | 7 | ZCAD01500 | GB70-85-M4 × 12 | WH30L |
| | 1212R/L12 | ▲ | ▲ | 12 | 12 | 125 | 11.4 | 1.5 | 12 | ZCAD01500 | | |
| | 1616R/L07 | ▲ | ▲ | 16 | 16 | 125 | 15.4 | 1.5 | 7 | ZCAD01500 | | |
| | 1616R/L12 | ▲ | ▲ | 16 | 16 | 125 | 15.4 | 1.5 | 12 | ZCAD01500 | | |
| | 2020R/L07 | ▲ | ▲ | 20 | 20 | 125 | 19.4 | 1.5 | 7 | ZCAD01500 | GB70-85-M5 × 16 | WH40L |
| QEBD | 1212R/L07 | ▲ | ▲ | 12 | 12 | 125 | 11.2 | 2 | 7 | ZCB00000 | GB70-85-M4 × 12 | WH30L |
| | 1212R/L10 | ▲ | ▲ | 12 | 12 | 125 | 11.2 | 2 | 10 | ZCB00000 | | |
| | 1212R/L14 | ▲ | ▲ | 12 | 12 | 125 | 11.2 | 2 | 14 | ZCB00000 | | |
| | 1616R/L07 | ▲ | ▲ | 16 | 16 | 125 | 15.2 | 2 | 7 | ZCB00000 | | |
| | 1616R/L10 | ▲ | ▲ | 16 | 16 | 125 | 15.2 | 2 | 10 | ZCB00000 | | |
| QEED | 1616R/L10 | ▲ | ▲ | 16 | 16 | 125 | 15 | 2.5 | 10 | ZCE00000 | GB70-85-M5 × 20 | WH40L |
| | 1616R/L17 | ▲ | ▲ | 16 | 16 | 125 | 15 | 2.5 | 17 | ZCE00000 | | |
| | 2020R/L10 | ▲ | ▲ | 20 | 20 | 125 | 19 | 2.5 | 10 | ZCE00000 | | |
| | 2020R/L17 | ▲ | ▲ | 20 | 20 | 125 | 19 | 2.5 | 17 | ZCE00000 | GB70-85-M6 × 20 | WH50L |
| | 2525R/L10 | ▲ | ▲ | 25 | 25 | 150 | 24 | 2.5 | 10 | ZCE00000 | | |
| QEFD | 1616R/L10 | ▲ | ▲ | 16 | 16 | 125 | 14.8 | 3 | 10 | ZCF00000 | GB70-85-M5 × 20 | WH40L |
| | 1616R/L17 | ▲ | ▲ | 16 | 16 | 125 | 14.8 | 3 | 17 | ZCF00000 | | |
| | 2020R/L10 | ▲ | ▲ | 20 | 20 | 125 | 18.8 | 3 | 10 | ZCF00000 | | |
| | 2020R/L17 | ▲ | ▲ | 20 | 20 | 125 | 18.8 | 3 | 17 | ZCF00000 | GB70-85-M6 × 20 | WH50L |
| | 2525R/L10 | ▲ | ▲ | 25 | 25 | 150 | 23.8 | 3 | 10 | ZCF00000 | | |
| QEGD | 2020R/L13 | ▲ | ▲ | 20 | 20 | 140 | 18.5 | 4 | 13 | ZCG00000 | GB70-85-M6 × 20 | WH50L |
| | 2020R/L12 | ▲ | ▲ | 20 | 20 | 140 | 18.5 | 4 | 22 | ZCG00000 | | |
| | 2525R/L15 | ▲ | ▲ | 25 | 25 | 150 | 23.5 | 4 | 13 | ZCG00000 | | |

▲ Stock available △ Make-to-order

Specification of products Including type, basic dimensions, applicable inserts and accessories.

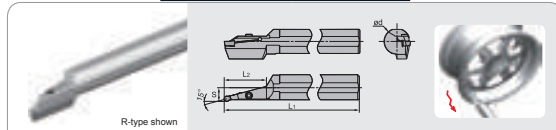
Internal grooving and turning tools



| Type | Stock | | Basic dimensions(mm) | | | | | | Applicable inserts | Screw | Wrench |
|------------------|-------|---|----------------------|-----|------|-----|-------------------|-------------------|------------------------|-----------------|--------|
| | R | L | ed | L | S | W | ar _{max} | ØD _{min} | | | |
| C20Q-QEDR/L05-27 | ▲ | ▲ | 20 | 180 | 15.2 | 2.5 | 5 | 27 | ZTED02500 ZRED02500 | GB70-85-M4 × 12 | WH30L |
| C25R-QEDR/L07-33 | ▲ | ▲ | 25 | 200 | 20.3 | 2.5 | 7 | 33 | | GB70-85-M5 × 16 | WH40L |
| C32S-QEDR/L09-42 | ▲ | ▲ | 32 | 250 | 25.3 | 2.5 | 9 | 42 | | GB70-85-M5 × 20 | WH40L |
| C20Q-QFDR/L05-27 | ▲ | ▲ | 20 | 180 | 15.2 | 3 | 5 | 27 | ZTF00300 ZRF00300 | GB70-85-M4 × 12 | WH30L |
| C25R-QFDR/L07-33 | ▲ | ▲ | 25 | 200 | 20.3 | 3 | 7 | 33 | | GB70-85-M5 × 16 | WH40L |
| C32S-QFDR/L09-42 | ▲ | ▲ | 32 | 250 | 25.3 | 3 | 9 | 42 | | GB70-85-M5 × 20 | WH40L |
| C25R-QGDR/L08-35 | ▲ | ▲ | 25 | 200 | 21.5 | 4 | 8 | 35 | | GB70-85-M5 × 16 | WH40L |
| C32S-QGDR/L11-44 | ▲ | ▲ | 32 | 250 | 27.5 | 4 | 11 | 44 | ZTGD0400 ZRGD0400 | GB70-85-M6 × 20 | WH50L |
| C40T-QGDR/L13-54 | ▲ | ▲ | 40 | 300 | 33.5 | 4 | 13 | 54 | | GB70-85-M6 × 20 | WH50L |
| C25R-QHDR/L08-35 | ▲ | ▲ | 25 | 200 | 21.5 | 5 | 8 | 35 | | GB70-85-M5 × 16 | WH40L |
| C32S-QHDR/L11-44 | ▲ | ▲ | 32 | 250 | 27.5 | 5 | 11 | 44 | ZTHD0500 ZRH0500 | GB70-85-M6 × 20 | WH50L |
| C40T-QHDR/L13-54 | ▲ | ▲ | 40 | 300 | 33.5 | 5 | 13 | 54 | | GB70-85-M6 × 20 | WH50L |
| C25R-QKDR/L08-35 | ▲ | ▲ | 25 | 200 | 21.5 | 6 | 8 | 35 | | GB70-85-M5 × 16 | WH40L |
| C32S-QKDR/L11-44 | ▲ | ▲ | 32 | 250 | 27.5 | 6 | 11 | 44 | ZTKD0600 ZRKD0600 | GB70-85-M6 × 20 | WH50L |
| C40T-QKDR/L13-54 | ▲ | ▲ | 40 | 300 | 33.5 | 6 | 13 | 54 | | GB70-85-M6 × 20 | WH50L |

▲ Stock available △ Make-to-order

Profile turning tools for Al



| Type | Stock | | Basic dimensions(mm) | | | | | Applicable inserts | Screw | Wrench |
|-------------------|-------|---|---------------------------------|----|----|----------------|----------------|--------------------|-----------------|--------|
| | R | L | ØD (minimum machining diameter) | ed | S | L ₁ | L ₂ | | | |
| C40X-QLDR/L65-15A | ▲ | ▲ | 160 | 40 | 21 | 320 | 65 | ZRLD08-LH | | |
| C40X-QLDR/L80-15A | ▲ | ▲ | 160 | 40 | 21 | 320 | 80 | ZRLD08-LH | | |
| C40X-QKDR/L60-15A | ▲ | ▲ | 160 | 40 | 20 | 320 | 60 | ZRKD06-LH | GB70-85-M6 × 20 | WH50L |
| C40X-QKDR/L75-15A | ▲ | ▲ | 160 | 40 | 20 | 320 | 75 | ZRKD06-LH | | |

▲ Stock available △ Make-to-order

Indicating the minimum machining diameter

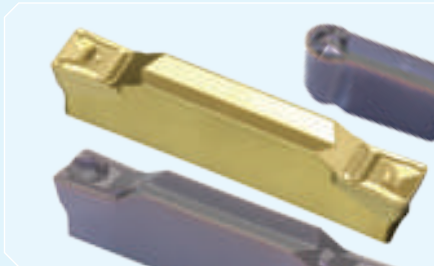
The minimum machining diameter is very important for internal machining.



TURNING



Parting and grooving tools



Parting and grooving tools overview ● A250-A252

Parting and grooving inserts ● A253-A269

Introduction of Little Squirrel series inserts chipbreaker ● A254-A257

Parting, grooving and profiling inserts code key ● A258

Inserts of Little Squirrel series ● A259-A265

QC series shallow grooving inserts code key ● A266

QC series shallow grooving inserts ● A267-A268

Inserts of ZQMX series ● A269

Parting and grooving tools ● A270-A288

Little squirrel series ●

Little squirrel series parting and grooving tools code key A270-A271

External parting, grooving and turning tools A272-A273

Precise grooving and turning tools A274

External recess and profiling tools A274

External grooving tools for materials hard to be machined A275

External parting inserts and holder for external parting A275

Surface grooving and turning tools A276-A283

Internal grooving and turning tools A284

Profile turning tools for Al A284

QC series shallow grooving tools ●

QC series shallow grooving tools code key A285

External shallow grooving tools A286

Internal shallow grooving tools A286

Supplementary series ●

Supplementary series parting and grooving tools code key A287

QZQ external grooving series A288

Application information on parting and grooving ● A289-A290



















TURNING Parting and grooving tools

Parting and grooving tools overview

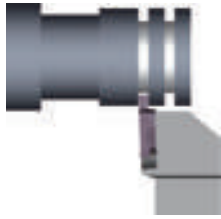






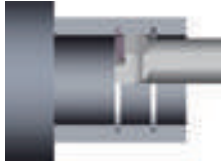









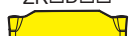




General turning
Parting and grooving

Parting and grooving tools overview

| Machining application | Machining type | Applicable tools | Corresponding inserts | Tool features and parameters | |
|-----------------------|--|---|---|---|--|
| External machining | Parting | <p>Little squirrel series QZ□□+QE□□</p>  <p>A275</p> | <p>Parting inserts ZP□S□□</p>  | <ul style="list-style-type: none"> Assemble structure of parting blade and holder; good rigidity; adjustable parting range. The maximum parting diameter is 120mm. | |
| | | <p>Little squirrel series QE□□R/L</p>  <p>A272-A273</p> | <p>ZP□D□□</p>  <p>ZP□S□</p>  | <ul style="list-style-type: none"> Inserts have three-dimensional chipbreaker with low cutting force and good performance on chip-breaking. The maximum parting diameter is 60mm. | |
| | | <p>Supplementary series QZQ□□R/L</p>  <p>A288</p> | <p>ZQMX□□</p>  | <ul style="list-style-type: none"> Cutting edge strength is suitable for bad machining conditions. The maximum parting diameter is 70mm. | |
| | Grooving and turning |  | <p>Little squirrel series QE□□R/L</p>  <p>A272-A273</p> | <p>Double cutting edges for parting ZT□D□□</p>  <p>Profile turning ZR□D□□</p>  <p>Single cutting edge for deep grooving ZT□S□□</p>  | <ul style="list-style-type: none"> A single tool with multiple applications such as grooving, parting and profile turning, reducing tools categories needed. A multifunctional tool when used with grooving inserts. Suitable for profile machining. The maximum slot depth machinable is 30mm. |
| | | | Precise grooving |  | <p>Little squirrel series QECD</p>  <p>A273</p> |
| | <p>Little squirrel series QE□□R/L</p>  <p>A272-A273</p> | <p>Precise grooving ZT□D□□-EG</p>  <p>Edge width 2.4~6.5mm</p> | | | |



Parting and grooving tools overview

| Machining application | Machining type | Applicable tools | Corresponding inserts | Tool features and parameters |
|--|--|---|---|--|
| External machining | Shallow grooving |  <p>QC series GQCR/L</p>  <p>A286</p> | <p>QC16/22□□□□</p>  | <ul style="list-style-type: none"> • Fine grinding of blades with high precision. • Sharp edges and high machining accuracy. • Three finely ground cutting edges for good economy. • For cutting shallow grooves, groove width 0.5-4.8mm. • Maximum depth of cut 4mm. |
| | Grooving and turning |  <p>Little squirrel series C□□-Q□□R/L□</p>  <p>A284</p> | <p>Grooving, Turning ZT□□□□</p>  <p>Profile turning ZR□□□□</p>  | <ul style="list-style-type: none"> • By using inserts for grooving and profiling, one tool can be versatile, reducing the tool categories needed. • The maximum slot depth machinable is 13mm. • The minimum machining diameter is 27mm. |
| Internal machining | Shallow grooving |  <p>QC series S□□□-QC□□R/L□</p>  <p>A286</p> | <p>QC11/16/22□□□□</p>  | <ul style="list-style-type: none"> • Fine grinding of blades with high precision. • Machining groove width 0.5-4.8mm. • Minimum machining diameter 16mm. • Maximum depth of cut 4mm. |
| | End surface machining | Grooving and turning |  <p>Little squirrel series QF□□□□H</p>  <p>A278-A281</p> | <p>Grooving, Turning ZT□□□□</p>  <p>Profile turning ZR□□□□</p>  |
|  <p>Little squirrel series QF□□□□L</p>  <p>A282-A283</p> | | | <p>Grooving, Turning ZT□□□□</p>  <p>Profile turning ZR□□□□</p>  | <ul style="list-style-type: none"> • 90°holder, top clamping. • By using inserts for grooving and profiling, one tool can be versatile, reducing the tool categories needed. • Grooving diameter is 48~400mm. • Grooving depth is 10~30mm. |
| Recess machining |  <p>Little squirrel series QX□□□□□□</p>  <p>A274</p> | <p>Grooving, Turning ZT□□□□</p>  <p>Profile turning ZR□□□□</p>  | <ul style="list-style-type: none"> • The unique tool for recess machining. • Complete range of specifications, able to achieve various recess machining. | |

General turning
Parting and grooving

Parting and grooving tools overview













TURNING / Parting and grooving tools

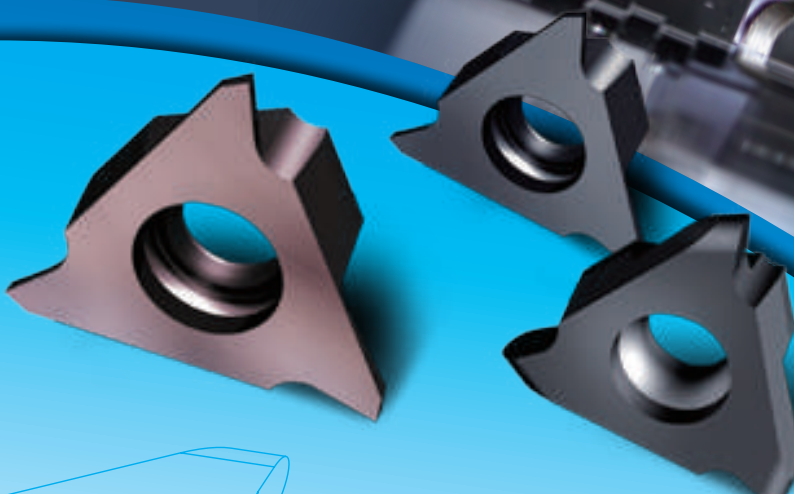
Parting and grooving tools overview

General turning
Parting and grooving

Parting and grooving tools overview

| Machining application | Machining type | Applicable tools | Corresponding inserts | Tool features and parameters |
|---|----------------------------------|--|---|--|
| AI profiling | External machining |  <p>Little squirrel series QE□□R/L</p>  <p>A272-A273</p> | <p>Little squirrel series ZR□□-LH</p>  | <ul style="list-style-type: none"> • The unique tool for profiling of Al material. • Cutting edge is designed to combine sharpness and strength, suitable for continuous and intermittent turning. • Used for external, surface and inner wall machining of Al wheel hub. |
| | Inner wall and surface machining |  <p>Little squirrel series C40X□□</p>  <p>A284</p> | | |
| Tools for aviation and aerospace industries | External machining |  <p>Little squirrel series QE□S□□N</p>  <p>A274</p> | <p>Little squirrel series ZIG□□□</p>  <p>Little squirrel series ZIMF□□</p>  | <ul style="list-style-type: none"> • V-type locating, top clamping, precise locating, safe clamping. • Normal square-ended inserts and precise square-ended inserts are suitable for adhesive materials hard to machine such as Ni-base high-temperature alloy, Ti alloy and stainless steel, etc. |
| | Non-standard Tools |  <p>Non-standard tools to match workpiece</p> | <p>Select and manufacture as required</p> | <ul style="list-style-type: none"> • Tailor made solutions for machining various parts to satisfy your requirements. |

Little squirrel series



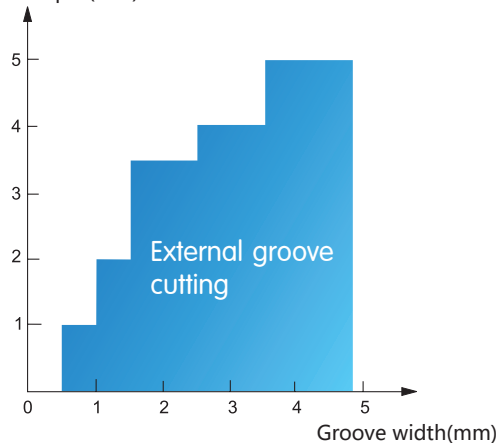
QC series shallow grooving tools

Machine industry shallow groove processing tool

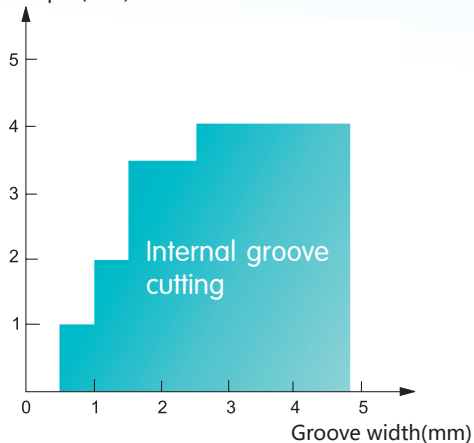
Widely used for shallow groove machining of shaft and ring parts in machinery industry

 **Shallow groove series tool grooving range**

Groove depth(mm)



Groove depth(mm)



Little-Squirrel Series

Profile turning inserts for parting of aviation titanium alloy, high temperature alloy

-NF

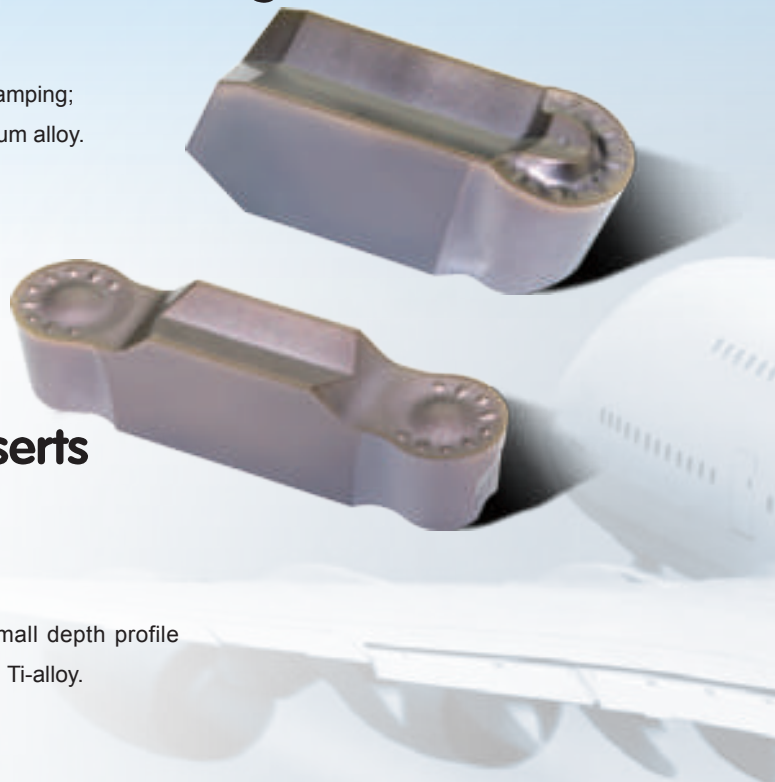
Single-headed precision profile turning inserts

Sharp edge, small cutting force, good surface quality;
Indexing accuracy reaches $\pm 0.025\text{mm}$, safe and stable clamping;
Mainly applied in finishing of high-temperature alloy, titanium alloy.

-NM

Precision profile turning inserts

Sharp edge, small cutting force, good surface quality;
Indexing accuracy reaches $\pm 0.025\text{mm}$;
Highly economical, two edges available;
Compatible with little squirrel tool holder, suitable for small depth profile finishing and semi-finishing of high-temperature alloy and Ti-alloy.



-SM

Single-headed groove turning inserts

Straight edge, excellent surface quality;
Sharp edge, smaller cutting force;
Good chip breaking;
Mainly used for rough machining of high-temperature alloy and titanium alloy.



-MM

Straight edge groove turning inserts

High edge strength, sharp edge;
Highly economical, two edges available, compatible with little squirrel tool holder;
With special grades, suitable for roughing with small cutting depths of high-temperature alloy and titanium alloy.



Case

Insert: YBG105/ZIMF604N-SM
Hardness of workpiece material: GH4169 (HB380)
Cutting data: $V_c=45\text{m/min}$, $f=0.2\text{mm/r}$
Coolant: Water



Products of company A



YBG105/ZIMF604N-SM

Conclusion: Under the same conditions, chip breaking performance is better and the time for stopping the removal of long winding chips is reduced.

-MG Chipbreaker

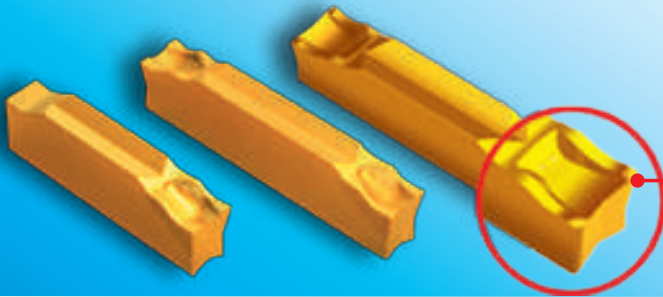
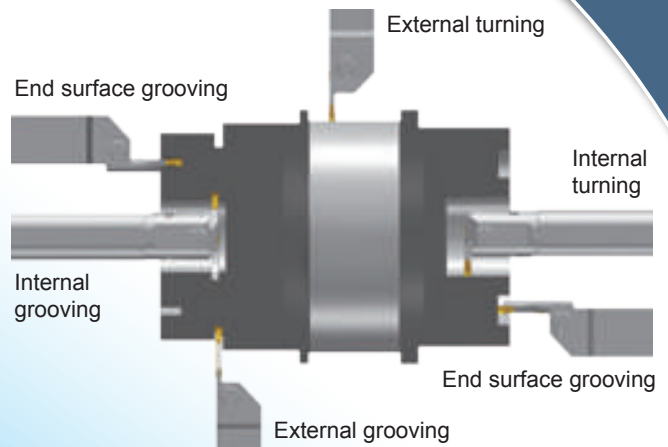


Customized -MG chipbreaker series

Suitable for parting ,grooving, profile turning and turning, etc. Easy machining and unobstructed chip flow lead to improved surface quality.

Human-centered design realizes various application of one single insert, reducing number of tools needed

Inserts of the same edge with can work with corresponding tool holders to satisfy the requirements of external, internal and surface grooving and turning by using minimum numbers of inserts and tool holders, effectively reducing cost of tool storage and management.



The cutting force is reduced by 20%, and the vibration is diminished.

Unique and professional structure design of parting inserts

- A special flank structure is designed to reduce cutting resistant force by 20% and diminish vibration, which improves the surface quality.
- A special edge design requires less rigidity of machine. It can be used on low power machines.



Little squirrel series

-EG

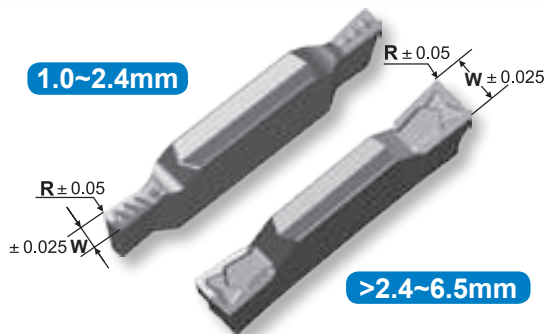
Precision grooving and profile turning inserts

Special chipbreaker design, suitable for precise grooving of low-carbon steel, stainless steel, adhesive materials and non-ferrous metal.

The tolerance of the edge width S of precise grooving and profiling inserts can reach ± 0.025 . Inserts can also be mounted on the corresponding specifications of original tool series.

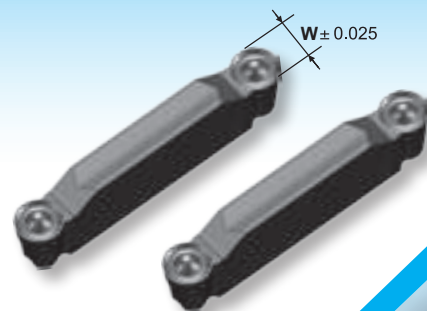
-EG Precision grooving inserts

The edge width can be anything between **1.0-6.5MM** according to your requirements.



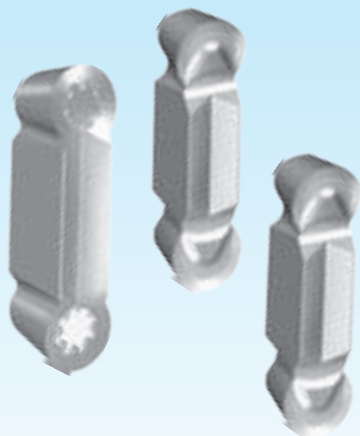
The width of the Little Squirrel series precise grooving inserts can be anything between 1.0mm to 6.5mm, which means products with any edge width or nose radius can be provided according to customers' requirements. The inserts are mainly used for precise grooving, such as sealing slot and locating slot, etc.

-EG Precision profile turning inserts



The Little Squirrel series precise profiling and turning inserts are mainly used for Precise grooving and profiling.

-LC/-LH



Profile turning inserts for Al

The special chipbreaker for aluminum profiling is designed to combine sharpness and strength of the cutting edge, effectively reducing the friction between chips and the rake face. The inserts are suitable for continuous and intermittent profiling of Al alloy.

Suitable for various machining of Al wheel boss periphery, surface and inner wall, etc.



TURNING Parting and grooving tools

Little squirrel series parting and grooving inserts

Little squirrel series parting, grooving and profiling inserts code key

General turning

Parting and grooving

Little squirrel series parting and grooving inserts

Insert applications

- ZP** > Parting **ZT** > Grooving and turning
- ZR** > Profiling

Code of locating slot

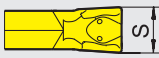
| Code of locating slot | A | B | E | F | G | H | K | L |
|-------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Corresponding edge width of inserts | 1.5 | 2.0 | 2.5 | 3.0 | 4.0 | 5.0 | 6.0 | 8.0 |

Code of cutting edge number

- S** > Single cutting edge **D** > Double cutting edge

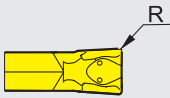
ZP G D 04 04 - M G

Cutting edge width



- 015=1.5mm
- 02=2.0mm
- 025=2.5mm
- 03=3.0mm
- 04=4.0mm
- 05=5.0mm
- 06=6.0mm
- 08=8.0mm

Nose radius



- 02=0.2mm
- 03=0.3mm
- 04=0.4mm
- 08=0.8mm

Tolerance class

- M** > M-level tolerance
- E** > E-level tolerance

Chipbreaker code

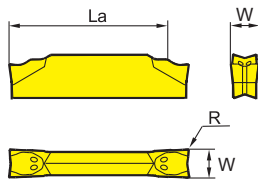
- G** > Curve edges universal chipbreaker, suitable for machining various materials
- M** > linear edges universal chipbreaker, suitable for machining various materials
- F** > Special chipbreaker



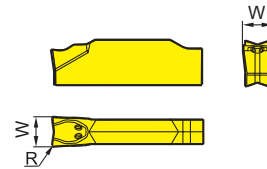
Parting inserts



Double edges



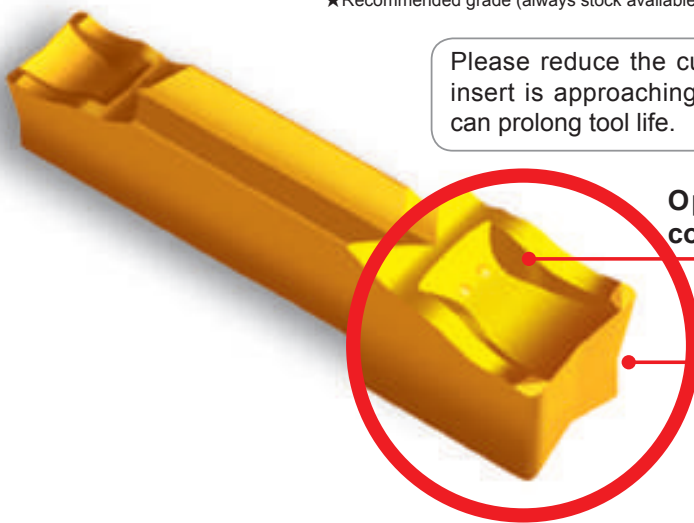
Single edge



| Type | | Basic dimensions(mm) | | | Grade | | | | |
|--------------|--------------|----------------------|---------------|-------------------------|-------------|--------|-------------|--------|------------------|
| | | | | | CVD Coating | | PVD Coating | | Cemented carbide |
| | | $W_{0}^{+0.1}$ | $R_{\pm 0.1}$ | Cutting depth L_{max} | YBC151 | YBC251 | YBG205 | YBG302 | YD101 |
| Double edges | ZPAD01502-MG | 1.5 | 0.2 | 12 | | ○ | ★ | ○ | |
| | ZPBD0202-MG | 2.0 | 0.2 | 14 | | ○ | ★ | ○ | |
| | ZPED02502-MG | 2.5 | 0.2 | 17 | | ○ | ★ | ★ | |
| | ZPFD0302-MG | 3.0 | 0.2 | 17 | | ○ | ★ | ○ | |
| | ZPGD0402-MG | 4.0 | 0.2 | 22 | | ○ | ★ | ○ | |
| | ZPHD0503-MG | 5.0 | 0.3 | 22 | | ○ | ★ | ○ | |
| | ZPKD0604-MG | 6.0 | 0.4 | 22 | | ○ | ★ | ○ | |
| Single edge | ZPES02502-MG | 2.5 | 0.2 | | | ○ | ★ | ★ | |
| | ZPFS0302-MG | 3.0 | 0.2 | | | ○ | ★ | ○ | |
| | ZPGS0402-MG | 4.0 | 0.2 | | | ○ | ★ | ○ | |
| | ZPHS0503-MG | 5.0 | 0.3 | | | ○ | ★ | ○ | |
| | ZPKS0604-MG | 6.0 | 0.4 | | | ○ | ★ | ○ | |

Single edge tool for cutter plate only

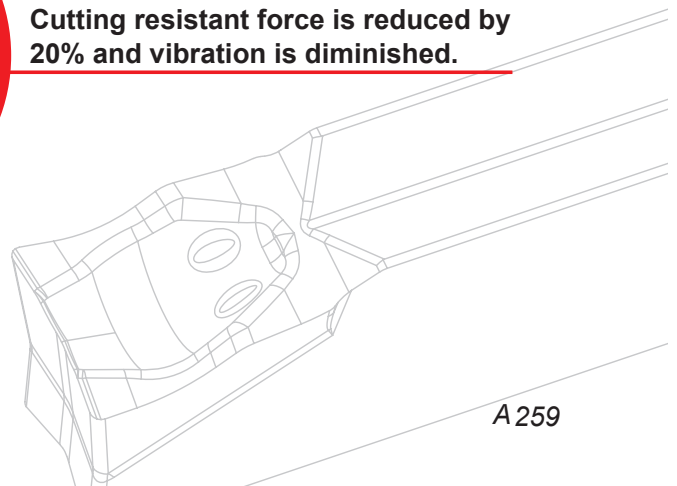
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



Please reduce the cutting speed by 30% when the insert is approaching the centre of workpiece. This can prolong tool life.

Optimal chipbreaker structure can control chip flow and curling well.

Cutting resistant force is reduced by 20% and vibration is diminished.



General turning

Parting and grooving

Little squirrel series parting and grooving inserts



TURNING Parting and grooving tools

Little squirrel series parting and grooving inserts

Grooving and turning inserts

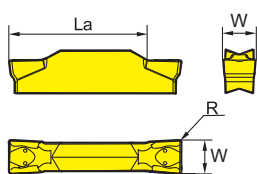
General turning

Parting and grooving

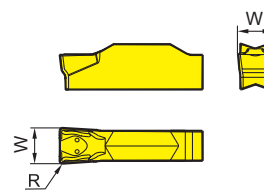
Little squirrel series parting and grooving inserts



Double edges

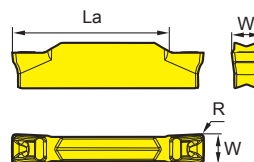


Single edge



| Type | Basic dimensions(mm) | | | Grade | | | | | | |
|--------------|----------------------|----------------|-------------------------|-------------|--------|-------------|--------|--------|------------------|--|
| | $W_{0}^{+0.1}$ | $R_{\pm 0.10}$ | Cutting depth L_{max} | CVD Coating | | PVD Coating | | | Cemented carbide | |
| | | | | YBC151 | YBC251 | YBG202 | YBG205 | YBG302 | YD101 | |
| Double edges | ZTED02503-MG | 2.5 | 0.3 | 17 | ○ | ○ | ● | ★ | ★ | |
| | ZTFD0303-MG | 3.0 | 0.3 | 17 | ○ | ○ | ● | ★ | ★ | |
| | ZTGD0404-MG | 4.0 | 0.4 | 22 | ● | ○ | ● | ★ | ★ | |
| | ZTHD0504-MG | 5.0 | 0.4 | 22 | | ○ | ● | ★ | ★ | |
| | ZTKD0608-MG | 6.0 | 0.8 | 22 | | ○ | ● | ★ | ★ | |
| Single edge | ZTHS0504-MG | 5.0 | 0.4 | | | ○ | ○ | ★ | ○ | |
| | ZTKS0608-MG | 6.0 | 0.8 | | | ○ | ○ | ★ | ○ | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



| Type | Basic dimensions(mm) | | | Grade | | | | | | |
|--------------|----------------------|---------------|-------------------------|-------------|--------|-------------|--------|--------|------------------|--|
| | W | $R_{\pm 0.1}$ | Cutting depth L_{max} | CVD Coating | | PVD Coating | | | Cemented carbide | |
| | | | | YBC151 | YBC251 | YBG202 | YBG205 | YBG302 | YD101 | |
| Double edges | ZTAD01502-MM | 1.5±0.03 | 0.2 | 12 | ○ | ○ | ● | ★ | ○ | |
| | ZTBD02002-MM | 2.0±0.03 | 0.2 | 14 | ○ | ○ | ● | ★ | ○ | |
| | ZTED02503-MM | 2.5±0.03 | 0.3 | 17 | ○ | ○ | ● | ★ | ○ | |
| | ZTFD0303-MM | 3.0±0.03 | 0.3 | 17 | ○ | ○ | ● | ★ | ○ | |
| | ZTGD0404-MM | 4.0±0.04 | 0.4 | 22 | ○ | ○ | ● | ★ | ○ | |
| | ZTHD0504-MM | 5.0±0.04 | 0.4 | 22 | ○ | ○ | ● | ★ | ○ | |
| | ZTKD0608-MM | 6.0±0.04 | 0.8 | 22 | ○ | ○ | ● | ★ | ○ | |
| | ZTLD0808-MM | 8.0±0.05 | 0.8 | 28 | ○ | ○ | ● | ★ | ○ | |

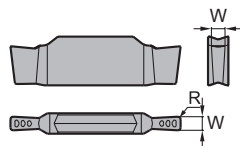
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



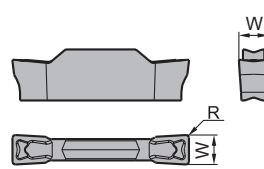
Precise grooving and turning inserts



1.0~2.4mm series



>2.4~6.5mm series



| Type | | Basic dimensions(mm) | | | Grade | | | | | |
|--------------|------------------------------|----------------------|--------------------|-------------------------|-------------|--------|-------------|--------|--------|------------------|
| | | | | | CVD Coating | | PVD Coating | | | Cemented carbide |
| | | $W \pm 0.025$ | $R^{(2)} \pm 0.05$ | Cutting depth L_{max} | YBC151 | YBC251 | YBG202 | YBG205 | YBG302 | YD101 |
| Double edges | ZTCD□□□□□ ⁽¹⁾ -EG | 1.0~1.6 | See note. (2) | 2.6 | ○ | ○ | ○ | ★ | ○ | |
| | | 1.6~2.4 | | 3.4 | ○ | ○ | ○ | ★ | ○ | |
| | ZTED□□□□□-EG | 2.4~3.0 | | 17 | ○ | ○ | ○ | ★ | ○ | |
| | ZTFD□□□□□-EG | 3.0~3.8 | | 17 | ○ | ○ | ○ | ★ | ○ | |
| | ZTGD□□□□□-EG | 3.8~4.8 | | 22 | ○ | ○ | ○ | ★ | ○ | |
| | ZTHD□□□□□-EG | 4.8~5.8 | | 22 | ○ | ○ | ○ | ★ | ○ | |
| ZTKD□□□□□-EG | 5.8~6.5 | 22 | ○ | ○ | ○ | ★ | ○ | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Note: (1) □ The code here in the description is determined by edge width and nose radius requested by customers. For example, when the customer requires an edge width of 3.5mm and a nose radius of 0.3mm, the description of the insert would be ZTFD03503-EG.

(2) The nose radius range is $0.2 \leq R \leq 0.5$ on request.

General turning

Parting and grooving

Little squirrel series parting and grooving inserts





TURNING Parting and grooving tools

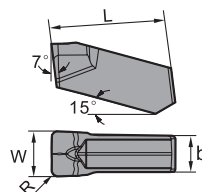
Little squirrel series parting and grooving inserts

General turning

Parting and grooving

Little squirrel series parting and grooving inserts

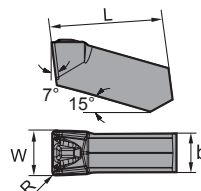
Single-edge grooving and turning inserts for semi-finishing and roughing difficult-to-machine materials



| Type | Basic dimensions(mm) | | | | Grade | | | | |
|-------------|----------------------|-------|-----|------|-------------|--------|--------|--------|------------------|
| | | | | | PVD Coating | | | | Cemented carbide |
| | W±0.05 | R±0.1 | b | L | YBG102 | YBG202 | YBG205 | YBS103 | YD101 |
| ZIMF304N-NM | 3 | 0.4 | 2.4 | 15.3 | ★ | ○ | ★ | ● | ○ |
| ZIMF406N-NM | 4 | 0.6 | 3.2 | 15.3 | ★ | ○ | ★ | ● | ○ |
| ZIMF506N-NM | 5 | 0.6 | 4.0 | 15.3 | ★ | ○ | ★ | ○ | ○ |
| ZIMF608N-NM | 6 | 0.8 | 4.0 | 15.3 | ★ | ○ | ★ | ○ | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Single-edge grooving and turning inserts for semi-finishing and roughing difficult-to-machine materials

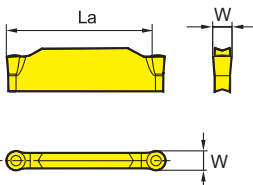


| Type | Basic dimensions(mm) | | | | Grade | | | | |
|-------------|----------------------|-------|-----|------|-------------|--------|--------|--------|------------------|
| | | | | | PVD Coating | | | | Cemented carbide |
| | W±0.05 | R±0.1 | b | L | YBG105 | YBG212 | YBG205 | YBS103 | YD101 |
| ZIMF304N-SM | 3 | 0.4 | 2.4 | 15.3 | ★ | ★ | | ● | ○ |
| ZIMF404N-SM | 4 | 0.4 | 3.2 | 15.3 | ★ | ★ | | ○ | ○ |
| ZIMF504N-SM | 5 | 0.4 | 4.0 | 15.3 | ★ | ★ | | ○ | ○ |
| ZIMF604N-SM | 6 | 0.4 | 5.1 | 15.3 | ★ | ★ | | ○ | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



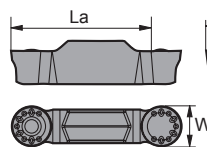
Profiling inserts



| Type | Basic dimensions(mm) | | Grade | | | | | | |
|--------------|----------------------|-------------------------|-------------|--------|-------------|--------|--------|------------------|--|
| | | | CVD Coating | | PVD Coating | | | Cemented carbide | |
| | $W_{+0.1}^0$ | Cutting depth L_{max} | YBC151 | YBC251 | YBG202 | YBG205 | YBG302 | YD101 | |
| Double edges | ZRED025-MG | 2.5 | 17.5 | | ○ | ● | ★ | ★ | |
| | ZRFD03-MG | 3.0 | 17 | | ○ | ● | ★ | ★ | |
| | ZRGD04-MG | 4.0 | 21 | | ○ | ● | ★ | ★ | |
| | ZRHD05-MG | 5.0 | 20 | | ○ | ○ | ★ | ★ | |
| | ZRKD06-MG | 6.0 | 19 | | ○ | ● | ★ | ★ | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

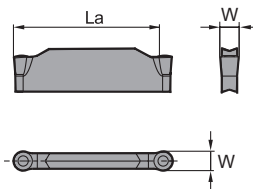
Profiling inserts



| Type | Basic dimensions(mm) | | Grade | | | | | | |
|--------------|----------------------|-------------------------|-------------|--------|-------------|--------|--------|------------------|-------|
| | | | CVD Coating | | PVD Coating | | | Cemented carbide | |
| | $W_{\pm 0.025}$ | Cutting depth L_{max} | YBC151 | YBC251 | YBG105 | YBG212 | YBG302 | YBS103 | YD101 |
| Double edges | ZRFD03-NM | 3 | 17 | | | ★ | ★ | | ● |
| | ZRGD04-NM | 4 | 21 | | | ★ | ★ | | ● |
| | ZRHD05-NM | 5 | 20 | | | ★ | ★ | | ○ |
| | ZRKD06-NM | 6 | 19 | | | ★ | ★ | | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Precision profiling inserts



| Type | Basic dimensions(mm) | | Grade | | | | | |
|--------------|----------------------|-------------------------|-------------|--------|-------------|--------|------------------|--|
| | | | CVD Coating | | PVD Coating | | Cemented carbide | |
| | $W_{\pm 0.025}$ | Cutting depth L_{max} | YBC151 | YBC251 | YBG202 | YBG302 | YD101 | |
| Double edges | ZRFD03-EG | 3.0 | 17 | | ○ | | ○ | |
| | ZRGD04-EG | 4.0 | 21 | | ○ | | ○ | |
| | ZRHD05-EG | 5.0 | 20 | | ○ | | ○ | |
| | ZRKD06-EG | 6.0 | 19 | | ○ | | ○ | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

Little squirrel series parting and grooving inserts



TURNING Parting and grooving tools

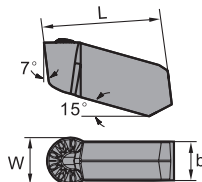
Little squirrel series parting and grooving inserts

General turning

Parting and grooving

Little squirrel series parting and grooving inserts

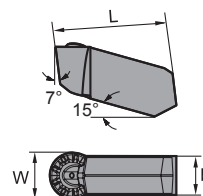
Single-edge inserts for profiling materials hard to be machined



| Type | Basic dimensions(mm) | | | Grade | | | |
|-----------|----------------------|-----|------|-------------|--------|--------|------------------|
| | | | | PVD Coating | | | Cemented carbide |
| | $W \pm 0.025$ | b | L | YBG102 | YBG202 | YBS103 | YD101 |
| ZIGQ3N-NM | 3 | 2.4 | 15.3 | ★ | ○ | ● | ○ |
| ZIGQ4N-NM | 4 | 3.2 | 15.3 | ★ | ○ | ● | ○ |
| ZIGQ5N-NM | 5 | 4.0 | 15.3 | ★ | ○ | ○ | ○ |
| ZIGQ6N-NM | 6 | 5.0 | 15.3 | ★ | ○ | ○ | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Single-edge inserts for profiling materials hard to be machined

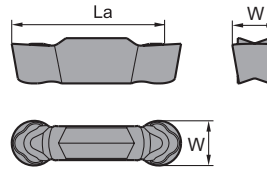


| Type | Basic dimensions(mm) | | | Grade | | | |
|-----------|----------------------|-----|------|-------------|--------|--------|------------------|
| | | | | PVD Coating | | | Cemented carbide |
| | $W \pm 0.025$ | b | L | YBG105 | YBG212 | YBS103 | YD101 |
| ZIGQ3N-NF | 3 | 2.4 | 15.3 | ★ | ★ | ● | |
| ZIGQ4N-NF | 4 | 3.2 | 15.3 | ★ | ★ | ○ | |
| ZIGQ5N-NF | 5 | 4.0 | 15.3 | ★ | ★ | ○ | |
| ZIGQ6N-NF | 6 | 5.0 | 15.3 | ★ | ★ | ○ | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



Profiling inserts for Al



| Type | Basic dimensions(mm) | | Grade |
|-----------|----------------------|------------------------------------|------------------|
| | W±0.02 | Cutting depth L _{amax} | Cemented carbide |
| ZRKD06-LH | 6.0 | 19 | YD101 |
| ZRLD08-LH | 8.0 | 22 | YD101 |

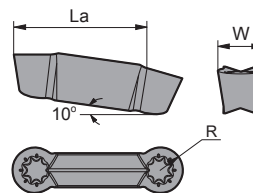
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

Little squirrel series parting and grooving inserts

Profiling inserts for Al



| Type | Basic dimensions(mm) | | | Grade |
|-----------|----------------------|-----|------------------------------------|------------------|
| | W±0.02 | R | Cutting depth L _{amax} | Cemented carbide |
| ZILD08-LC | 8.0 | 4.0 | 22 | YD101 |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



TURNING Parting and grooving tools

QC series shallow grooving inserts

QC series shallow grooving inserts code key

● Square head shallow groove inserts



QC

Shallow grooving inserts

22

| Cutting edge length code | Inner tangent circle diameter(mm) |
|--------------------------|-----------------------------------|
| 11 | 6.35 |
| 16 | 9.525 |
| 22 | 12.70 |
| | |
| | |



R

| Direction | |
|-----------|---|
| Code | Form |
| R | Rightward  |
| L | Leftward  |

300

| Grooving width(mm) | |
|--------------------|-------|
| Code | Width |
| 050 | 0.50 |
| 100 | 1.00 |
| ... | ... |
| 480 | 4.80 |

R

| Inserts tip form | |
|------------------|--|
| Code | Form |
| R | Circular arc  |
| C | Chamfering  |

03

| Rounding or chamfering(mm) | |
|----------------------------|------|
| Code | Size |
| 02 | 0.2 |
| 03 | 0.3 |
| 04 | 0.4 |

● Round head shallow groove inserts



QC

Shallow grooving inserts

22

| Cutting edge length code | Inner tangent circle diameter(mm) |
|--------------------------|-----------------------------------|
| 11 | 6.35 |
| 16 | 9.525 |
| 22 | 12.70 |
| | |
| | |

R

| Direction | |
|-----------|---|
| Code | Form |
| R | Rightward  |
| L | Leftward  |

300

| Grooving width(mm) | |
|--------------------|-------|
| Code | Width |
| 050 | 0.50 |
| 100 | 1.00 |
| ... | ... |
| 480 | 4.80 |

R

Head form: round head

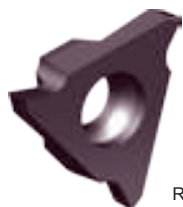
General turning

Parting and grooving

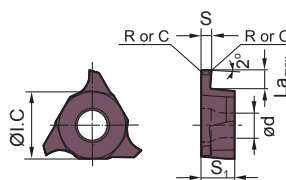
QC series shallow grooving inserts



Square head shallow groove inserts



R-type shown



| Type | | Basic dimensions(mm) | | | | | | Grade | |
|---------|---------|----------------------|-------------------|------|-------|----------------|-----|-------------|--------|
| | | S ± 0.025 | La _{max} | R/C | ØI.C | S ₁ | ød | PVD Coating | |
| | | | | | | | | YBG202 | YBG205 |
| QC11R/L | 120-R02 | 1.20 | 1.50 | R0.2 | 6.35 | 3.18 | 2.8 | ○ | ○ |
| | 125-R02 | 1.25 | 1.50 | R0.2 | 6.35 | 3.18 | 2.8 | ○ | ○ |
| | 145-R02 | 1.45 | 1.50 | R0.2 | 6.35 | 3.18 | 2.8 | ○ | ○ |
| | 150-R02 | 1.50 | 1.50 | R0.2 | 6.35 | 3.18 | 2.8 | ○ | ○ |
| | 200-R02 | 2.00 | 2.00 | R0.2 | 6.35 | 3.18 | 2.8 | ○ | ○ |
| | 225-R02 | 2.25 | 2.00 | R0.2 | 6.35 | 3.18 | 2.8 | ○ | ○ |
| QC16R/L | 110-R01 | 1.10 | 2.00 | R0.1 | 9.525 | 3.18 | 4.4 | ○ | ○ |
| | 125-R02 | 1.25 | 2.00 | R0.2 | 9.525 | 3.18 | 4.4 | ○ | ○ |
| | 145-R02 | 1.45 | 2.00 | R0.2 | 9.525 | 3.18 | 4.4 | ○ | ○ |
| | 150-R02 | 1.50 | 2.00 | R0.2 | 9.525 | 3.18 | 4.4 | ○ | ★ |
| | 175-R02 | 1.75 | 2.00 | R0.2 | 9.525 | 3.18 | 4.4 | ○ | ○ |
| | 185-R02 | 1.85 | 2.50 | R0.2 | 9.525 | 3.18 | 4.4 | ○ | ○ |
| | 200-R02 | 2.00 | 2.50 | R0.2 | 9.525 | 3.18 | 4.4 | ○ | ★ |
| | 250-R02 | 2.50 | 2.50 | R0.2 | 9.525 | 3.18 | 4.4 | ○ | ★ |
| | 300-R02 | 3.00 | 3.00 | R0.2 | 9.525 | 3.18 | 4.4 | ○ | ★ |
| QC22R/L | 125-R02 | 1.25 | 2.00 | R0.2 | 12.70 | 4.76 | 5.5 | ○ | ○ |
| | 145-R02 | 1.45 | 2.00 | R0.2 | 12.70 | 4.76 | 5.5 | ○ | ○ |
| | 150-R02 | 1.50 | 3.50 | R0.2 | 12.70 | 4.76 | 5.5 | ○ | ★ |
| | 175-R02 | 1.75 | 3.50 | R0.2 | 12.70 | 4.76 | 5.5 | ○ | ○ |
| | 185-R02 | 1.85 | 3.50 | R0.2 | 12.70 | 4.76 | 5.5 | ○ | ○ |
| | 200-R02 | 2.00 | 3.50 | R0.2 | 12.70 | 4.76 | 5.5 | ○ | ★ |
| | 230-R02 | 2.30 | 3.50 | R0.2 | 12.70 | 4.76 | 5.5 | ○ | ○ |
| | 250-R03 | 2.50 | 4.00 | R0.3 | 12.70 | 4.76 | 5.5 | ○ | ★ |
| | 265-R03 | 2.65 | 4.00 | R0.3 | 12.70 | 4.76 | 5.5 | ○ | ○ |
| | 280-R03 | 2.80 | 4.00 | R0.3 | 12.70 | 4.76 | 5.5 | ○ | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

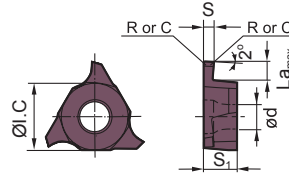
QC series shallow grooving inserts



Square head shallow groove inserts



R-type shown



| Type | | Basic dimensions(mm) | | | | | | Grade | |
|---------|---------|----------------------|-------------------|------|-------|----------------|-----|-------------|--------|
| | | S ± 0.025 | La _{max} | R/C | ØI.C | S ₁ | ød | PVD Coating | |
| | | | | | | | | YBG202 | YBG205 |
| QC22R/L | 300-R03 | 3.00 | 4.00 | R0.3 | 12.70 | 4.76 | 5.5 | ○ | ★ |
| | 320-R03 | 3.20 | 4.00 | R0.3 | 12.70 | 4.76 | 5.5 | ○ | ○ |
| | 330-R03 | 3.30 | 4.00 | R0.3 | 12.70 | 4.76 | 5.5 | ○ | ○ |
| | 350-R03 | 3.50 | 5.00 | R0.3 | 12.70 | 4.76 | 5.5 | ○ | ★ |
| | 400-R04 | 4.00 | 5.00 | R0.4 | 12.70 | 4.76 | 5.5 | ○ | ★ |
| | 430-R04 | 4.30 | 5.00 | R0.4 | 12.70 | 4.76 | 5.5 | ○ | ○ |
| | 450-R04 | 4.50 | 5.00 | R0.4 | 12.70 | 4.76 | 5.5 | ○ | ○ |
| | 480-R04 | 4.80 | 5.00 | R0.4 | 12.70 | 5.06 | 5.5 | ○ | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

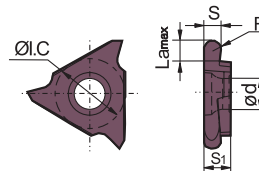
Example of special specification customization:

1. Custom-made insert width of 1.6mm, the tip form of the arc form, arc radius of 0.3mm right blade, I.C value of 12.7mm, then the custom-made insert model is QC22R160-R03.
2. Customized edge width range: QC11: 0.50~3.0mm; QC16: 0.50~3.0mm; QC22: 1.0~4.8mm.

Round head shallow groove inserts



R-type shown



| Type | | Basic dimensions(mm) | | | | | | Grade | |
|---------|------|----------------------|-------------------|------|-------|----------------|-----|-------------|--------|
| | | S ± 0.025 | La _{max} | R/C | ØI.C | S ₁ | ød | PVD Coating | |
| | | | | | | | | YBG202 | YBG205 |
| QC16R/L | 200R | 2.00 | 2.50 | 1.00 | 12.70 | 3.18 | 4.4 | ○ | ○ |
| | 300R | 3.00 | 2.50 | 1.50 | 12.70 | 3.18 | 4.4 | ○ | ○ |
| QC22R/L | 100R | 1.00 | 2.00 | 0.50 | 12.70 | 4.76 | 5.5 | ○ | ○ |
| | 150R | 1.50 | 3.50 | 0.75 | 12.70 | 4.76 | 5.5 | ○ | ○ |
| | 200R | 2.00 | 3.50 | 1.00 | 12.70 | 4.76 | 5.5 | ○ | ○ |
| | 250R | 2.50 | 4.00 | 1.25 | 12.70 | 4.76 | 5.5 | ○ | ○ |
| | 300R | 3.00 | 4.00 | 1.50 | 12.70 | 4.76 | 5.5 | ○ | ○ |
| | 400R | 4.00 | 5.00 | 2.00 | 12.70 | 4.76 | 5.5 | ○ | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Example of special specification customization:

Custom-made inserts width of 1.6mm, the tip form of the arc form, the arc radius of 0.8mm right insert, then the custom-made insert model is QC22R160R.

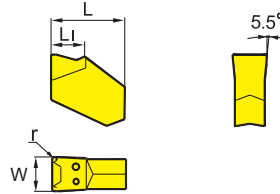
General turning

Parting and grooving

QC series shallow grooving inserts



ZQMX series



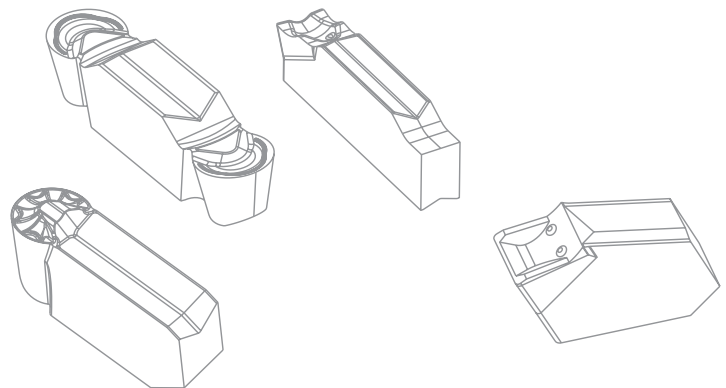
| Type | Basic dimensions(mm) | | | | Grade | | |
|-------------|----------------------|-------|-----|----|-------------|------------------|-------|
| | | | | | CVD Coating | Cemented carbide | |
| | L1 | W | r | L | YBC251 | YC40 | YD201 |
| ZQMX3N11-1E | 4.4 | 3.125 | 0.3 | 11 | ● | ● | ● |
| ZQMX4N11-1E | 4.95 | 4.125 | 0.3 | 11 | ● | ● | ● |
| ZQMX5N11-1E | 5.0 | 5.125 | 0.3 | 11 | ● | ● | ● |
| ZQMX6N11-1E | 5.28 | 6.4 | 0.3 | 11 | ● | ● | ○ |
| ZQMX7N11-1E | 4.53 | 7.05 | 0.3 | 14 | | ○ | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

Supplementary series parting and grooving inserts





TURNING Parting and grooving tools

Little squirrel series parting and grooving tools

Little squirrel series parting and grooving tools code key

● External and surface turning

General turning

Parting and grooving

Little squirrel series parting and grooving tools

Code of grooving tools

Machining mode

E > External cutting **F** > End surface cutting

Code of locating slot

Accords with locating slot code of insert and corresponds to certain range of insert edge width

Code of edge number of corresponding inserts

S > Single cutting edge **D** > Double cutting edge

Q E G D - [**2525 R 13**
32 N]

Q F G D 2525 R 22 S - 130 H

Nose height and width of tool holder

Left and right hand of tool

R > Right **L** > Left **N** > Both are acceptable

Maximum cutting depth

Supplementary code

S: Strengthened tool holder for external and surface deep grooving

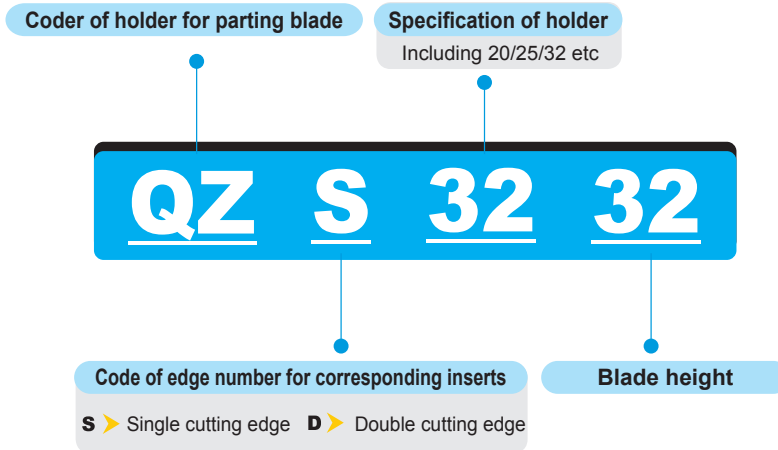
The minimum diameter of end surface grooving tools for initial machining

Holder type of end surface grooving tools

H > Straight holder **L** > 90° holder

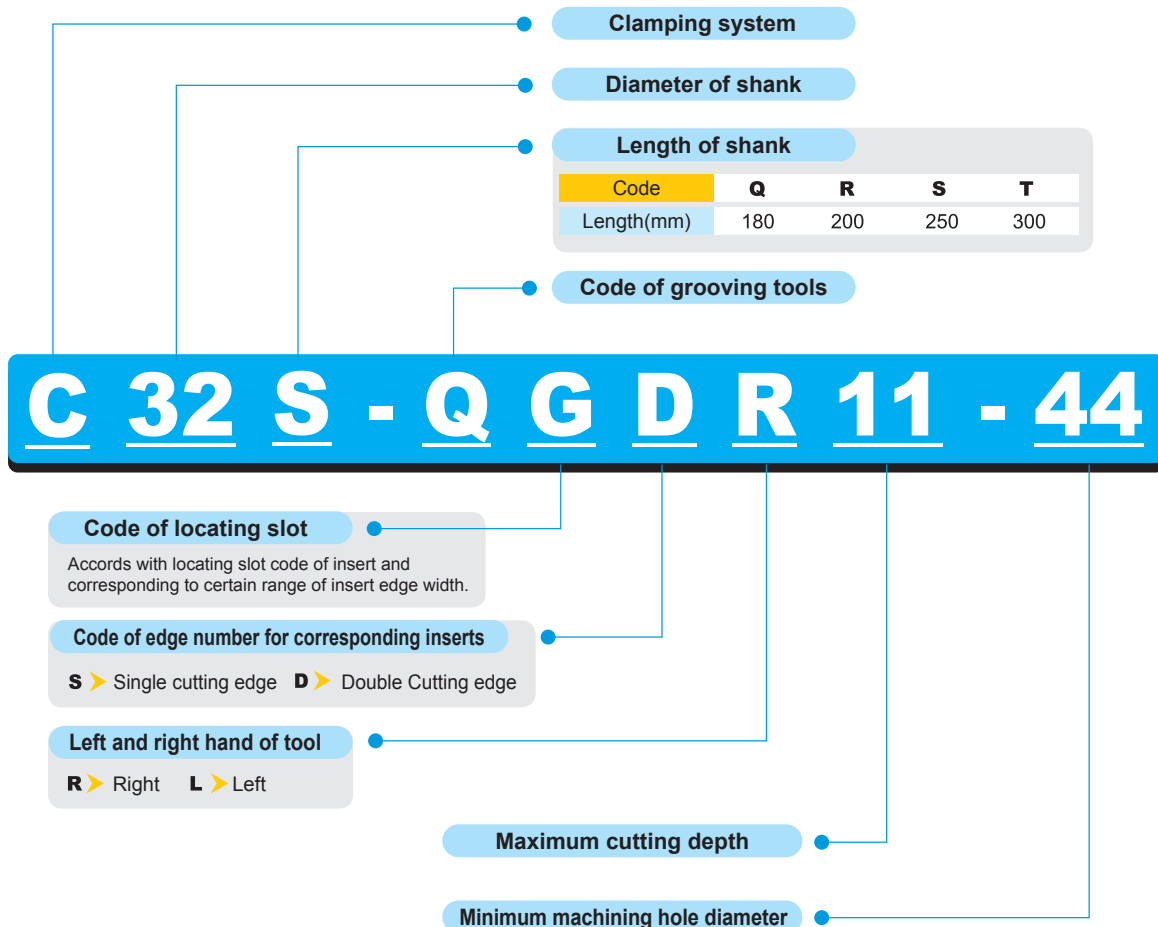


● Holder for parting blade



General turning
Parting and grooving
Little squirrel series parting and grooving tools

● Internal machining

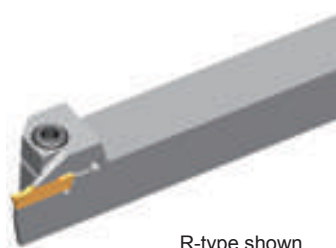




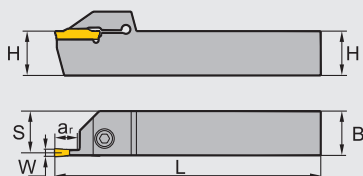
TURNING Parting and grooving tools

Little squirrel series parting and grooving tools

External parting, grooving and turning tools



R-type shown



General turning

Parting and grooving

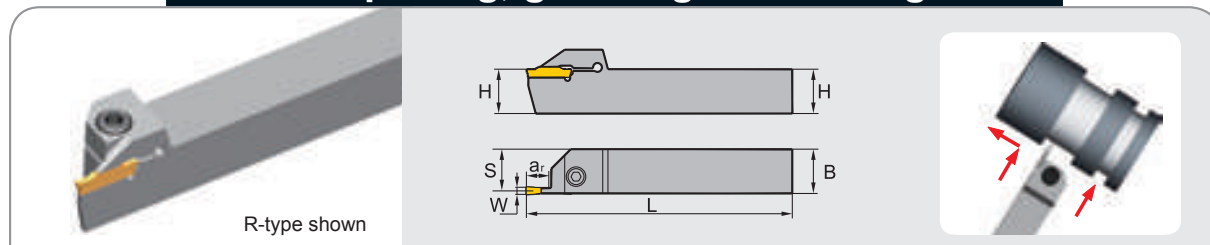
Little squirrel series parting and grooving tools

| Type | | Stock | | Basic dimensions(mm) | | | | | Applicable inserts | Screw | Wrench | |
|-------------|-------------|-----------|---|----------------------|-------|------|------|--------|--------------------|---------------|---------------|-------|
| | | R | L | H×B | L | S | W | ar max | | | | |
| QEAD | 1212R/L07 | ▲ | ▲ | 12×12 | 125 | 11.4 | 1.5 | 7 | Z□AD015□□ | GB70-85-M4×12 | WH30L | |
| | 1212R/L12 | ▲ | ▲ | 12×12 | 125 | 11.4 | 1.5 | 12 | Z□AD015□□ | | | |
| | 1616R/L07 | ▲ | ▲ | 16×16 | 125 | 15.4 | 1.5 | 7 | Z□AD015□□ | | | |
| | 1616R/L12 | ▲ | ▲ | 16×16 | 125 | 15.4 | 1.5 | 12 | Z□AD015□□ | GB70-85-M5×16 | WH40L | |
| | 2020R/L07 | ▲ | ▲ | 20×20 | 125 | 19.4 | 1.5 | 7 | Z□AD015□□ | | | |
| | 2020R/L12 | ▲ | ▲ | 20×20 | 125 | 19.4 | 1.5 | 12 | Z□AD015□□ | | | |
| QEBD | 1212R/L07 | ▲ | ▲ | 12×12 | 125 | 11.2 | 2 | 7 | Z□BD02□□ | GB70-85-M4×12 | WH30L | |
| | 1212R/L10 | ▲ | ▲ | 12×12 | 125 | 11.2 | 2 | 10 | Z□BD02□□ | | | |
| | 1212R/L14 | ▲ | ▲ | 12×12 | 125 | 11.2 | 2 | 14 | Z□BD02□□ | | | |
| | 1616R/L07 | ▲ | ▲ | 16×16 | 125 | 15.2 | 2 | 7 | Z□BD02□□ | GB70-85-M5×16 | WH40L | |
| | 1616R/L10 | ▲ | ▲ | 16×16 | 125 | 15.2 | 2 | 10 | Z□BD02□□ | | | |
| | 1616R/L14 | ▲ | ▲ | 16×16 | 125 | 15.2 | 2 | 14 | Z□BD02□□ | | | |
| | 2020R/L07 | ▲ | ▲ | 20×20 | 125 | 19.2 | 2 | 7 | Z□BD02□□ | GB70-85-M6×20 | WH50L | |
| | 2020R/L10 | ▲ | ▲ | 20×20 | 125 | 19.2 | 2 | 10 | Z□BD02□□ | | | |
| | 2020R/L14 | ▲ | ▲ | 20×20 | 125 | 19.2 | 2 | 14 | Z□BD02□□ | | | |
| | QEED | 2525R/L07 | ▲ | ▲ | 25×25 | 150 | 24.2 | 2 | 7 | Z□BD02□□ | GB70-85-M5×20 | WH40L |
| | | 2525R/L10 | ▲ | ▲ | 25×25 | 150 | 24.2 | 2 | 10 | Z□BD02□□ | | |
| | | 2525R/L14 | ▲ | ▲ | 25×25 | 150 | 24.2 | 2 | 14 | Z□BD02□□ | | |
| 1616R/L10 | | ▲ | ▲ | 16×16 | 125 | 15 | 2.5 | 10 | Z□ED025□□ | GB70-85-M6×20 | WH50L | |
| 1616R/L17 | | ▲ | ▲ | 16×16 | 125 | 15 | 2.5 | 17 | Z□ED025□□ | | | |
| 2020R/L10 | | ▲ | ▲ | 20×20 | 125 | 19 | 2.5 | 10 | Z□ED025□□ | | | |
| QEFD | 2020R/L17 | ▲ | ▲ | 20×20 | 125 | 19 | 2.5 | 17 | Z□ED025□□ | GB70-85-M5×20 | WH40L | |
| | 2525R/L10 | ▲ | ▲ | 25×25 | 150 | 24 | 2.5 | 10 | Z□ED025□□ | | | |
| | 2525R/L17 | ▲ | ▲ | 25×25 | 150 | 24 | 2.5 | 17 | Z□ED025□□ | | | |
| | 1616R/L10 | ▲ | ▲ | 16×16 | 125 | 14.8 | 3 | 10 | Z□FD03□□ | GB70-85-M6×20 | WH50L | |
| | 1616R/L17 | ▲ | ▲ | 16×16 | 125 | 14.8 | 3 | 17 | Z□FD03□□ | | | |
| | 2020R/L10 | ▲ | ▲ | 20×20 | 125 | 18.8 | 3 | 10 | Z□FD03□□ | | | |
| QEGD | 2020R/L17 | ▲ | ▲ | 20×20 | 125 | 18.8 | 3 | 17 | Z□FD03□□ | GB70-85-M5×20 | WH40L | |
| | 2525R/L10 | ▲ | ▲ | 25×25 | 150 | 23.8 | 3 | 10 | Z□FD03□□ | | | |
| | 2525R/L17 | ▲ | ▲ | 25×25 | 150 | 23.8 | 3 | 17 | Z□FD03□□ | | | |
| QEGD | 2020R/L13 | ▲ | ▲ | 20×20 | 140 | 18.5 | 4 | 13 | Z□GD04□□ | GB70-85-M6×20 | WH50L | |
| | 2020R/L22 | ▲ | ▲ | 20×20 | 140 | 18.5 | 4 | 22 | Z□GD04□□ | | | |
| | 2525R/L13 | ▲ | ▲ | 25×25 | 150 | 23.5 | 4 | 13 | Z□GD04□□ | | | |

▲Stock available △Make-to-order



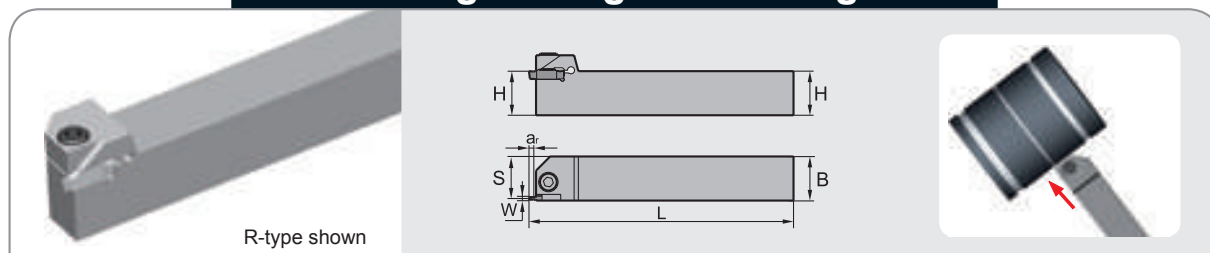
External parting, grooving and turning tools



| Type | | Stock | | Basic dimensions(mm) | | | | Applicable inserts | Screw | Wrench | |
|-------------|-----------|-------|---|----------------------|-----|------|---|--------------------|-------------|---------------|--------|
| | | R | L | H×B | L | S | W | | | | ar max |
| QEGD | 2525R/L22 | ▲ | ▲ | 25×25 | 150 | 23.5 | 4 | 22 | Z□GD04□□ | GB70-85-M6×20 | WH50L |
| | 3232R/L13 | ▲ | ▲ | 32×32 | 170 | 30.5 | 4 | 13 | Z□GD04□□ | | |
| | 3232R/L22 | ▲ | ▲ | 32×32 | 170 | 30.5 | 4 | 22 | Z□GD04□□ | | |
| QEHD | 2525R/L13 | ▲ | ▲ | 25×25 | 150 | 23 | 5 | 13 | Z□HD05□□ | GB70-85-M6×20 | WH50L |
| | 2525R/L22 | ▲ | ▲ | 25×25 | 150 | 23 | 5 | 22 | Z□HD05□□ | | |
| QEHS | 2525N30 | ▲ | ▲ | 25×25 | 150 | 12.5 | 5 | 30 | Z□HS05□□ | | |
| QEHD | 3232R/L13 | ▲ | ▲ | 32×32 | 170 | 30 | 5 | 13 | Z□HD05□□ | | |
| | 3232R/L22 | ▲ | ▲ | 32×32 | 170 | 30 | 5 | 22 | Z□HD05□□ | | |
| QEHS | 3232N30 | ▲ | ▲ | 32×32 | 170 | 16 | 5 | 30 | Z□HS05□□ | | |
| QEKD | 2525R/L13 | ▲ | ▲ | 25×25 | 150 | 22.6 | 6 | 13 | Z□KD06□□ | GB70-85-M6×20 | WH50L |
| | 2525R/L22 | ▲ | ▲ | 25×25 | 150 | 22.6 | 6 | 22 | Z□KD06□□ | | |
| QEKS | 2525N30 | ▲ | ▲ | 25×25 | 150 | 12.5 | 6 | 30 | Z□KS06□□ | | |
| QEKD | 3232R/L13 | ▲ | ▲ | 32×32 | 170 | 29.6 | 6 | 13 | Z□KD06□□ | | |
| | 3232R/L22 | ▲ | ▲ | 32×32 | 170 | 29.6 | 6 | 22 | Z□KD06□□ | | |
| QEKS | 3232N30 | ▲ | ▲ | 32×32 | 170 | 16 | 6 | 30 | Z□KS06□□ | | |
| QELD | 2525R/L16 | ▲ | ▲ | 25×25 | 150 | 22 | 8 | 16 | ZTLD0808-MM | GB70-85-M6×20 | WH50L |
| | 2525R/L25 | ▲ | ▲ | 25×25 | 150 | 22 | 8 | 25 | ZTLD0808-MM | GB70-85-M6×20 | WH50L |
| | 3232R/L28 | ▲ | ▲ | 32×32 | 170 | 29 | 8 | 28 | ZTLD0808-MM | GB70-85-M8×30 | WH60L |

▲Stock available △Make-to-order

Precision grooving and turning tools



| Type | | Stock | | Basic dimensions(mm) | | | | Applicable inserts | Screw | Wrench | |
|-------------|------------|-------|---|----------------------|-----|-------|---------|--------------------|--------------|---------------|--------|
| | | R | L | H×B | L | S | W | | | | ar max |
| QECD | 1616R/L025 | △ | △ | 16×16 | 125 | 14.75 | 1.0~2.4 | 2.5 | ZTCD□□□□□-EG | GB70-85-M5×20 | WH40L |
| | 2020R/L025 | ▲ | △ | 20×20 | 125 | 18.75 | | | | GB70-85-M6×20 | WH50L |
| | 2525R/L025 | ▲ | △ | 25×25 | 150 | 23.75 | | | | GB70-85-M6×20 | WH50L |

▲Stock available △Make-to-order

General turning

Parting and grooving

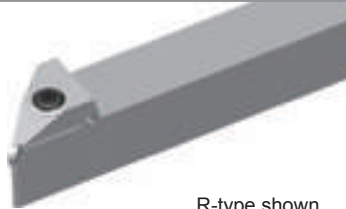
Little squirrel series parting and grooving tools



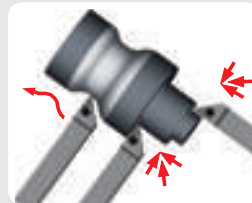
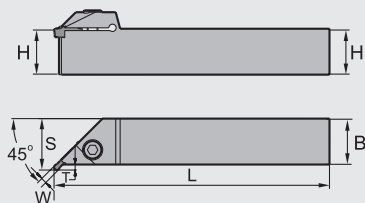
TURNING Parting and grooving tools

Little squirrel series parting and grooving tools

External relief groove machining and profiling tools



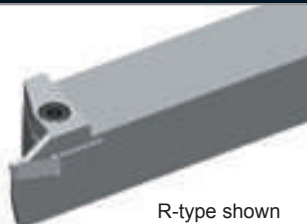
R-type shown



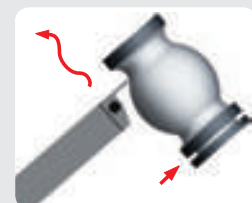
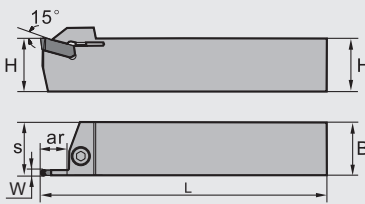
| Type | | Stock | | Basic dimensions(mm) | | | | | Applicable inserts | Screw | Wrench |
|-------------|--------------|-------|---|----------------------|-----|----|-----|--------|--------------------|---------------|--------|
| | | R | L | H×B | L | S | W | ar max | | | |
| QXFD | 2020R/L03-45 | △ | △ | 20×20 | 125 | 23 | 3.0 | 3.0 | ZR(T)FD03-□□ | GB70-85-M6×20 | WH50L |
| | 2525R/L03-45 | △ | △ | 25×25 | 150 | 28 | | | | | |
| | 3232R/L03-45 | △ | △ | 32×32 | 170 | 35 | | | | | |
| QXGD | 2020R/L03-45 | △ | △ | 20×20 | 125 | 23 | 4.0 | 3.0 | ZR(T)GD04-□□ | | |
| | 2525R/L03-45 | △ | △ | 25×25 | 150 | 28 | | | | | |
| | 3232R/L03-45 | △ | △ | 32×32 | 170 | 35 | | | | | |
| QXHD | 2020R/L04-45 | △ | △ | 20×20 | 125 | 24 | 5.0 | 4.0 | ZR(T)HD05-□□ | | |
| | 2525R/L04-45 | △ | △ | 25×25 | 150 | 29 | | | | | |
| | 3232R/L04-45 | △ | △ | 32×32 | 170 | 36 | | | | | |
| QXKD | 2020R/L04-45 | △ | △ | 20×20 | 125 | 24 | 6.0 | 4.0 | ZR(T)KD06-□□ | | |
| | 2525R/L04-45 | △ | △ | 25×25 | 150 | 29 | | | | | |
| | 3232R/L04-45 | △ | △ | 32×32 | 170 | 36 | | | | | |

▲Stock available △Make-to-order

External grooving tools for difficult-to-machine materials



R-type shown



| Type | | Stock | | Basic dimensions(mm) | | | | | Applicable inserts | Screw | Wrench |
|-------------|--------------|-------|---|----------------------|-----|------|---|--------|--------------------------|---------------|--------|
| | | R | L | H×B | L | S | W | ar max | | | |
| QEFS | 2525R/L12-3N | △ | △ | 25×25 | 150 | 25.3 | 3 | 12 | ZIGQ3N-□□ ZIMF304N-□□ | GB70-85-M6×20 | WH50L |
| | 3232R/L22-3N | △ | △ | 32×32 | 170 | 32.3 | 3 | 22 | | | |
| QEGS | 2525R/L12-4N | △ | △ | 25×25 | 150 | 25.3 | 4 | 12 | ZIGQ4N-□□ ZIMF40□N-□□ | | |
| | 3232R/L22-4N | △ | △ | 32×32 | 170 | 32.3 | 4 | 22 | | | |
| QEHS | 2525R/L12-5N | △ | △ | 25×25 | 150 | 25.4 | 5 | 12 | ZIGQ5N-□□ ZIMF50□N-□□ | | |
| | 3232R/L22-5N | △ | △ | 32×32 | 170 | 32.4 | 5 | 22 | | | |
| QEKs | 2525R/L12-6N | △ | △ | 25×25 | 150 | 25.4 | 6 | 12 | ZIGQ6N-□□ ZIMF60□N-□□ | | |
| | 3232R/L22-6N | △ | △ | 32×32 | 170 | 32.4 | 6 | 22 | | | |

▲Stock available △Make-to-order

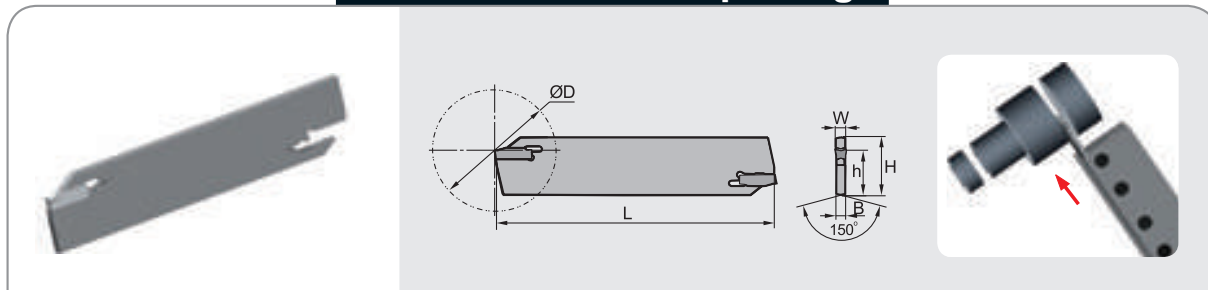
General turning

Parting and grooving

Little squirrel series parting and grooving tools



Blade for external parting

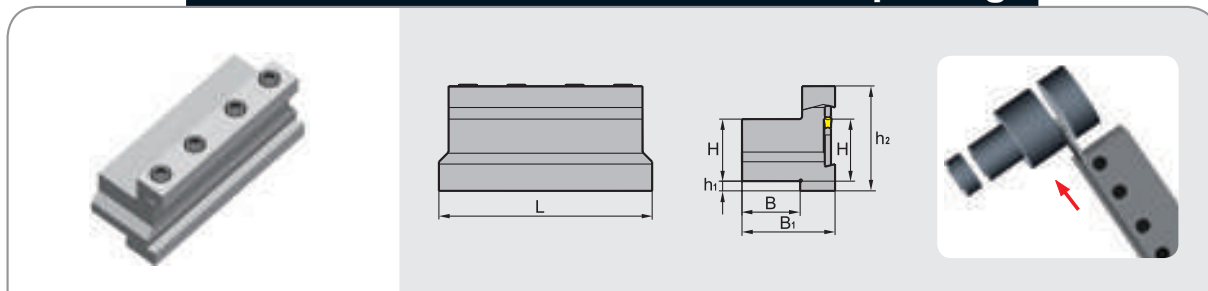


| Type | Stock | Basic dimensions(mm) | | | | | | Applicable inserts | Wrench |
|---------|-------|----------------------|----|------|-----|-----|---|--------------------|--------|
| | | L | H | h | B | W | ØD _{max} (Maximum parting diameter) | | |
| QEES26N | ▲ | 110 | 26 | 19 | 2 | 2.5 | 60 | ZPES02502-MG | W50RL |
| QEFS26N | ▲ | 110 | 26 | 19 | 2.4 | 3 | 60 | ZPFS0302-MG | |
| QEGS26N | ▲ | 110 | 26 | 19 | 3.2 | 4 | 70 | ZPGS0402-MG | |
| QEHS26N | ▲ | 110 | 26 | 19 | 4 | 5 | 70 | ZPHS0503-MG | |
| QEKS26N | ▲ | 110 | 26 | 19 | 5 | 6 | 70 | ZPKS0604-MG | |
| QEES32N | ▲ | 150 | 32 | 24.6 | 2 | 2.5 | 100 | ZPES02502-MG | |
| QEFS32N | ▲ | 150 | 32 | 24.6 | 2.4 | 3 | 100 | ZPFS0302-MG | |
| QEGS32N | ▲ | 150 | 32 | 24.6 | 3.2 | 4 | 120 | ZPGS0402-MG | |
| QEHS32N | ▲ | 150 | 32 | 24.6 | 4 | 5 | 120 | ZPHS0503-MG | |
| QEKS32N | ▲ | 150 | 32 | 24.6 | 5 | 6 | 120 | ZPKS0604-MG | |

▲Stock available

△Make-to-order

Holder for blade used for external parting



| Type | Stock | Basic dimensions(mm) | | | | | | Clamp | Screw | Wrench |
|---------|-------|----------------------|----|----------------|----------------|----|----------------|-------|---------------|--------|
| | | L | H | h ₁ | h ₂ | B | B ₁ | | | |
| QZS2026 | ▲ | 86 | 20 | 10 | 46.6 | 19 | 38 | QZC26 | GB70-85-M6×20 | WH50L |
| QZS2526 | ▲ | 86 | 25 | 5 | 46.6 | 23 | 42 | QZC26 | | |
| QZS3226 | ▲ | 86 | 30 | 3 | 51.6 | 30 | 48 | QZC26 | | |
| QZS2032 | ▲ | 110 | 20 | 13 | 50 | 19 | 38 | QZC32 | | |
| QZS2532 | ▲ | 110 | 25 | 8 | 50 | 23 | 42 | QZC32 | | |
| QZS3232 | ▲ | 110 | 32 | 5 | 54 | 30 | 48 | QZC32 | | |

▲Stock available

△Make-to-order

General turning

Parting and grooving

Little squirrel series parting and grooving tools



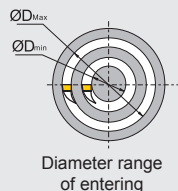
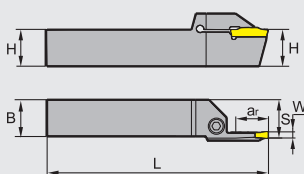
TURNING Parting and grooving tools

Little squirrel series parting and grooving tools

End surface grooving and turning tools



L-type shown



Diameter range of entering



General turning

Parting and grooving

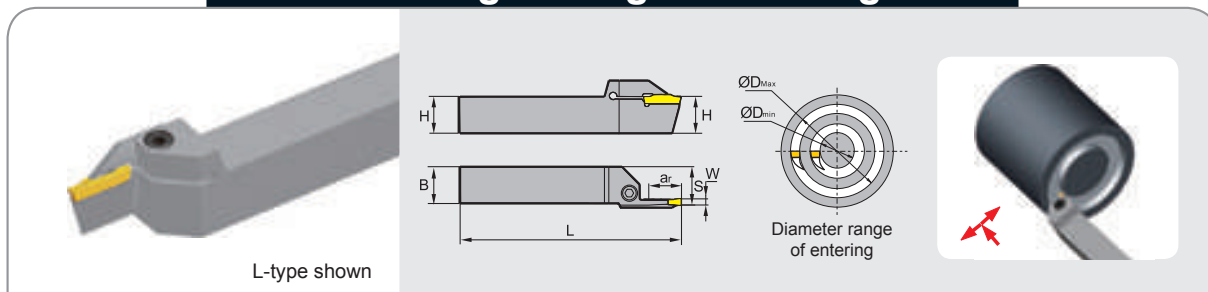
Little squirrel series parting and grooving tools

| Type | Stock | | Basic dimensions(mm) | | | | | | Applicable inserts | Screw | Wrench | |
|----------------|----------------|---|----------------------|-------|-----|----|--------|--------------|--------------------|-------------|---------------|-------|
| | R | L | H×B | L | S | W | ar max | ØD (min-max) | | | | |
| QFFD | 2020R/L7-48H | ▲ | ▲ | 20×20 | 150 | 21 | 3 | 7 | 48-66 | ZTFD0303-□□ | GB70-85-M6×20 | WH50L |
| | 2020R/L10-48H | ▲ | ▲ | 20×20 | 150 | 21 | 3 | 10 | 48-66 | | | |
| | 2525R/L10-48H | ▲ | ▲ | 25×25 | 150 | 26 | 3 | 10 | 48-66 | | | |
| | 2525R/L17-48H | ▲ | ▲ | 25×25 | 150 | 26 | 3 | 17 | 48-66 | | | |
| | 2020R/L7-60H | △ | △ | 20×20 | 150 | 21 | 3 | 7 | 60-80 | | | |
| | 2020R/L10-60H | △ | △ | 20×20 | 150 | 21 | 3 | 10 | 60-80 | | | |
| | 2525R/L10-60H | ▲ | ▲ | 25×25 | 150 | 26 | 3 | 10 | 60-80 | | | |
| | 2525R/L17-60H | ▲ | ▲ | 25×25 | 150 | 26 | 3 | 17 | 60-80 | | | |
| | 2020R/L7-74H | △ | △ | 20×20 | 150 | 21 | 3 | 7 | 74-110 | | | |
| | 2020R/L10-74H | △ | ▲ | 20×20 | 150 | 21 | 3 | 10 | 74-110 | | | |
| | 2525R/L10-74H | ▲ | ▲ | 25×25 | 150 | 26 | 3 | 10 | 74-110 | | | |
| | 2525R/L17-74H | ▲ | ▲ | 25×25 | 150 | 26 | 3 | 17 | 74-110 | | | |
| | 2020R/L7-100H | △ | △ | 20×20 | 150 | 21 | 3 | 7 | 100-150 | | | |
| | 2020R/L10-100H | △ | △ | 20×20 | 150 | 21 | 3 | 10 | 100-150 | | | |
| | 2525R/L10-100H | ▲ | ▲ | 25×25 | 150 | 26 | 3 | 10 | 100-150 | | | |
| 2525R/L17-100H | ▲ | ▲ | 25×25 | 150 | 26 | 3 | 17 | 100-150 | | | | |
| QFGD | 2020R/L10-52H | △ | △ | 20×20 | 150 | 21 | 4 | 10 | 52-72 | ZTGD0404-□□ | GB70-85-M6×20 | WH50L |
| | 2525R/L13-52H | ▲ | ▲ | 25×25 | 150 | 26 | 4 | 13 | 52-72 | | | |
| | 2020R/L15-52H | △ | △ | 20×20 | 150 | 21 | 4 | 15 | 52-72 | | | |
| | 2525R/L22-52H | ▲ | ▲ | 25×25 | 150 | 26 | 4 | 22 | 52-72 | | | |
| | 2020R/L10-64H | △ | ▲ | 20×20 | 150 | 21 | 4 | 10 | 64-100 | | | |
| | 2525R/L13-64H | ▲ | ▲ | 25×25 | 150 | 26 | 4 | 13 | 64-100 | | | |
| | 2020R/L15-64H | △ | △ | 20×20 | 150 | 21 | 4 | 15 | 64-100 | | | |
| | 2525R/L22-64H | ▲ | ▲ | 25×25 | 150 | 26 | 4 | 22 | 64-100 | | | |
| | 2020R/L10-90H | △ | △ | 20×20 | 150 | 21 | 4 | 10 | 90-140 | | | |
| | 2525R/L13-90H | ▲ | ▲ | 25×25 | 150 | 26 | 4 | 13 | 90-140 | | | |
| | 2020R/L15-90H | △ | △ | 20×20 | 150 | 21 | 4 | 15 | 90-140 | | | |
| | 2525R/L22-90H | ▲ | ▲ | 25×25 | 150 | 26 | 4 | 22 | 90-140 | | | |
| | 2020R/L10-130H | △ | △ | 20×20 | 150 | 21 | 4 | 10 | 130-230 | | | |
| | 2525R/L13-130H | ▲ | ▲ | 25×25 | 150 | 26 | 4 | 13 | 130-230 | | | |
| | 2020R/L15-130H | △ | △ | 20×20 | 150 | 21 | 4 | 15 | 130-230 | | | |
| 2525R/L22-130H | ▲ | ▲ | 25×25 | 150 | 26 | 4 | 22 | 130-230 | | | | |

▲Stock available △Make-to-order



End surface grooving and turning tools



| Type | Stock | | Basic dimensions(mm) | | | | | | Applicable inserts | Screw | Wrench | |
|-------------|----------------|---|----------------------|-------|-----|----|--------|--------------|--------------------|-------------|---------------|-------|
| | R | L | H×B | L | S | W | ar max | ØD (min-max) | | | | |
| QFHD | 2525R/L13-58H | ▲ | ▲ | 25×25 | 150 | 26 | 5 | 13 | 58-96 | ZTHD0504-□□ | GB70-85-M6×20 | WH50L |
| | 2525R/L22-58H | ▲ | ▲ | 25×25 | 150 | 26 | 5 | 22 | 58-96 | | | |
| | 2525R/L13-86H | △ | ▲ | 25×25 | 150 | 26 | 5 | 13 | 86-140 | | | |
| | 2525R/L22-86H | ▲ | ▲ | 25×25 | 150 | 26 | 5 | 22 | 86-140 | | | |
| | 2525R/L13-130H | ▲ | ▲ | 25×25 | 150 | 26 | 5 | 13 | 130-200 | | | |
| | 2525R/L22-130H | ▲ | ▲ | 25×25 | 150 | 26 | 5 | 22 | 130-200 | | | |
| | 2525R/L13-185H | ▲ | ▲ | 25×25 | 150 | 26 | 5 | 13 | 185-400 | | | |
| | 2525R/L22-185H | ▲ | ▲ | 25×25 | 150 | 26 | 5 | 22 | 185-400 | | | |
| QFHS | 2525R/L30-185H | △ | △ | 25×25 | 150 | 26 | 5 | 30 | 185-400 | ZTHS0504-MG | | |
| QFKD | 2525R/L13-60H | ▲ | ▲ | 25×25 | 150 | 26 | 6 | 13 | 60-100 | ZTKD0608-□□ | GB70-85-M6×20 | WH50L |
| | 2525R/L22-60H | ▲ | ▲ | 25×25 | 150 | 26 | 6 | 22 | 60-100 | | | |
| | 2525R/L13-88H | △ | ▲ | 25×25 | 150 | 26 | 6 | 13 | 88-180 | | | |
| | 2525R/L22-88H | ▲ | ▲ | 25×25 | 150 | 26 | 6 | 22 | 88-180 | | | |
| | 2525R/L13-160H | ▲ | ▲ | 25×25 | 150 | 26 | 6 | 13 | 160-400 | | | |
| | 2525R/L22-160H | ▲ | ▲ | 25×25 | 150 | 26 | 6 | 22 | 160-400 | | | |
| QFKS | 2525R/L30-160H | △ | △ | 25×25 | 150 | 26 | 6 | 30 | 160-400 | ZTKS0608-MG | | |
| QFLD | 2525R/L25-75H | ▲ | ▲ | 25×25 | 150 | 27 | 8 | 25 | 75-150 | ZTLD0808-MM | GB70-85-M6×20 | WH50L |
| | 2525R/L25-140H | ▲ | ▲ | 25×25 | 150 | 27 | 8 | 25 | 140-400 | ZTLD0808-MM | GB70-85-M6×20 | WH50L |
| | 3232R/L28-140H | ▲ | ▲ | 32×32 | 170 | 30 | 8 | 28 | 140-400 | ZTLD0808-MM | GB70-85-M8×30 | WH60L |

▲Stock available △Make-to-order

General turning

Parting and grooving

Little squirrel series parting and grooving tools



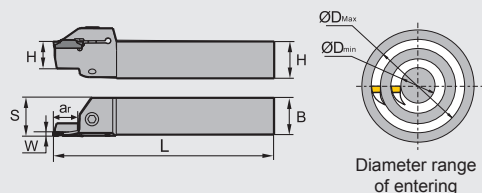
TURNING Parting and grooving tools

Little squirrel series parting and grooving tools

End surface grooving and turning tools



RR-type shown



Diameter range of entering



General turning

Parting and grooving

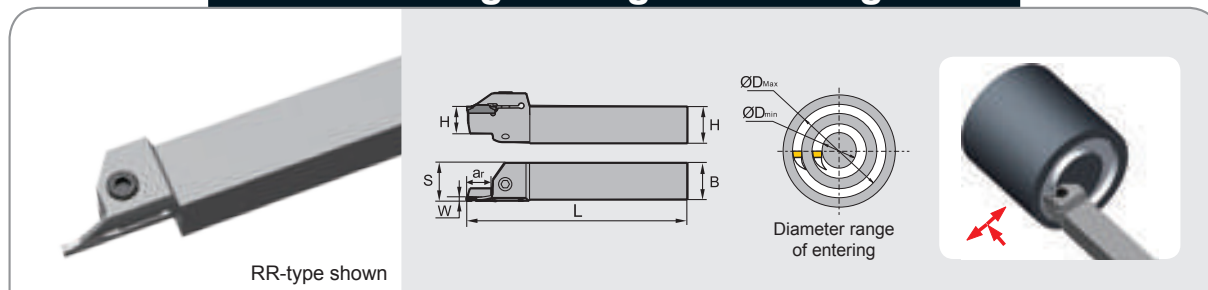
Little squirrel series parting and grooving tools

| Type | Stock | Basic dimensions(mm) | | | | | | | Applicable inserts | Screw | Wrench |
|---------------|---------------|----------------------|-------|-----|----|--------|--------------|---------|--------------------|---------------|--------|
| | | H×B | L | S | W | ar max | ØD (min-max) | | | | |
| QFFD | 2020RR7-48H | △ | 20×20 | 150 | 21 | 3 | 7 | 48-66 | ZTFD0303-□□ | GB70-85-M6×20 | WH50L |
| | 2020RR10-48H | △ | 20×20 | 150 | 21 | 3 | 10 | 48-66 | | | |
| | 2525RR10-48H | △ | 25×25 | 150 | 26 | 3 | 10 | 48-66 | | | |
| | 2525RR17-48H | △ | 25×25 | 150 | 26 | 3 | 17 | 48-66 | | | |
| | 2020RR7-60H | △ | 20×20 | 150 | 21 | 3 | 7 | 60-80 | | | |
| | 2020RR10-60H | △ | 20×20 | 150 | 21 | 3 | 10 | 60-80 | | | |
| | 2525RR10-60H | △ | 25×25 | 150 | 26 | 3 | 10 | 60-80 | | | |
| | 2525RR17-60H | △ | 25×25 | 150 | 26 | 3 | 17 | 60-80 | | | |
| | 2020RR7-74H | △ | 20×20 | 150 | 21 | 3 | 7 | 74-110 | | | |
| | 2020RR10-74H | △ | 20×20 | 150 | 21 | 3 | 10 | 74-110 | | | |
| | 2525RR10-74H | △ | 25×25 | 150 | 26 | 3 | 10 | 74-110 | | | |
| | 2525RR17-74H | △ | 25×25 | 150 | 26 | 3 | 17 | 74-110 | | | |
| | 2020RR7-100H | △ | 20×20 | 150 | 21 | 3 | 7 | 100-150 | | | |
| | 2020RR10-100H | △ | 20×20 | 150 | 21 | 3 | 10 | 100-150 | | | |
| | 2525RR10-100H | △ | 25×25 | 150 | 26 | 3 | 10 | 100-150 | | | |
| 2525RR17-100H | △ | 25×25 | 150 | 26 | 3 | 17 | 100-150 | | | | |
| QFGD | 2020RR10-52H | △ | 20×20 | 150 | 21 | 4 | 10 | 52-72 | ZTGD0404-□□ | GB70-85-M6×20 | WH50L |
| | 2020RR15-52H | △ | 20×20 | 150 | 26 | 4 | 15 | 52-72 | | | |
| | 2525RR13-52H | △ | 25×25 | 150 | 21 | 4 | 13 | 52-72 | | | |
| | 2525RR22-52H | △ | 25×25 | 150 | 26 | 4 | 22 | 52-72 | | | |
| | 2020RR10-64H | △ | 20×20 | 150 | 21 | 4 | 10 | 64-100 | | | |
| | 2020RR15-64H | △ | 20×20 | 150 | 26 | 4 | 15 | 64-100 | | | |
| | 2525RR13-64H | △ | 25×25 | 150 | 21 | 4 | 13 | 64-100 | | | |
| | 2525RR22-64H | △ | 25×25 | 150 | 26 | 4 | 22 | 64-100 | | | |
| | 2020RR10-90H | △ | 20×20 | 150 | 21 | 4 | 10 | 90-140 | | | |
| | 2020RR15-90H | △ | 20×20 | 150 | 26 | 4 | 15 | 90-140 | | | |
| | 2525RR13-90H | △ | 25×25 | 150 | 21 | 4 | 13 | 90-140 | | | |
| | 2525RR22-90H | △ | 25×25 | 150 | 26 | 4 | 22 | 90-140 | | | |
| | 2020RR10-130H | △ | 20×20 | 150 | 21 | 4 | 10 | 130-230 | | | |
| | 2020RR15-130H | △ | 20×20 | 150 | 26 | 4 | 15 | 130-230 | | | |
| | 2525RR13-130H | △ | 25×25 | 150 | 21 | 4 | 13 | 130-230 | | | |
| 2525RR22-130H | △ | 25×25 | 150 | 26 | 4 | 22 | 130-230 | | | | |

▲Stock available △Make-to-order



End surface grooving and turning tools



RR-type shown

| Type | Stock | Basic dimensions(mm) | | | | | | | Applicable inserts | Screw | Wrench |
|-------------|----------------------|----------------------|-------|-----|----|--------|--------------|---------|--------------------|---------------|--------|
| | | H×B | L | S | W | ar max | ØD (min-max) | | | | |
| QFHD | 2525RR13-58H | △ | 25×25 | 150 | 26 | 5 | 13 | 58-96 | ZTHD0504-□□ | GB70-85-M6×20 | WH50L |
| | 2525RR22-58H | △ | 25×25 | 150 | 26 | 5 | 22 | 58-96 | | | |
| | 2525RR13-86H | △ | 25×25 | 150 | 26 | 5 | 13 | 86-140 | | | |
| | 2525RR22-86H | △ | 25×25 | 150 | 26 | 5 | 22 | 86-140 | | | |
| | 2525RR13-130H | △ | 25×25 | 150 | 26 | 5 | 13 | 130-200 | | | |
| | 2525RR22-130H | △ | 25×25 | 150 | 26 | 5 | 22 | 130-200 | | | |
| | 2525RR13-185H | △ | 25×25 | 150 | 26 | 5 | 13 | 185-400 | | | |
| | 2525RR22-185H | △ | 25×25 | 150 | 26 | 5 | 22 | 185-400 | | | |
| QFHS | 2525RR30-185H | △ | 25×25 | 150 | 26 | 5 | 30 | 185-400 | ZTHS0504-MG | | |
| QFKD | 2525RR13-60H | △ | 25×25 | 150 | 26 | 6 | 13 | 60-100 | ZTKD0608-□□ | GB70-85-M6×20 | WH50L |
| | 2525RR22-60H | △ | 25×25 | 150 | 26 | 6 | 22 | 60-100 | | | |
| | 2525RR13-88H | △ | 25×25 | 150 | 26 | 6 | 13 | 88-180 | | | |
| | 2525RR22-88H | △ | 25×25 | 150 | 26 | 6 | 22 | 88-180 | | | |
| | 2525RR13-160H | △ | 25×25 | 150 | 26 | 6 | 13 | 160-400 | | | |
| | 2525RR22-160H | △ | 25×25 | 150 | 26 | 6 | 22 | 160-400 | | | |
| QFKS | 2525RR30-160H | △ | 25×25 | 150 | 26 | 6 | 30 | 160-400 | ZTKS0608-MG | | |

▲Stock available

△Make-to-order

General turning

Parting and grooving

Little squirrel series parting and grooving tools



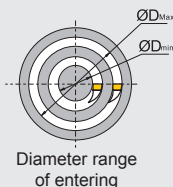
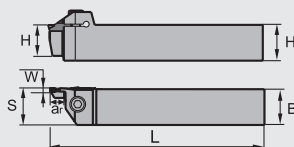
TURNING Parting and grooving tools

Little squirrel series parting and grooving tools

End surface grooving and turning tools



LL-type shown



Diameter range of entering



General turning

Parting and grooving

Little squirrel series parting and grooving tools

| Type | Stock | Basic dimensions(mm) | | | | | | | Applicable inserts | Screw | Wrench |
|---------------|---------------|----------------------|-------|-----|----|--------|--------------|---------|--------------------|---------------|--------|
| | | H×B | L | S | W | ar max | ØD (min-max) | | | | |
| QFFD | 2020LL7-48H | △ | 20×20 | 150 | 21 | 3 | 7 | 48-66 | ZTFD0303-□□ | GB70-85-M6×20 | WH50L |
| | 2020LL10-48H | △ | 20×20 | 150 | 21 | 3 | 10 | 48-66 | | | |
| | 2525LL10-48H | △ | 25×25 | 150 | 26 | 3 | 10 | 48-66 | | | |
| | 2525LL17-48H | △ | 25×25 | 150 | 26 | 3 | 17 | 48-66 | | | |
| | 2020LL7-60H | △ | 20×20 | 150 | 21 | 3 | 7 | 60-80 | | | |
| | 2020LL10-60H | △ | 20×20 | 150 | 21 | 3 | 10 | 60-80 | | | |
| | 2525LL10-60H | △ | 25×25 | 150 | 26 | 3 | 10 | 60-80 | | | |
| | 2525LL17-60H | △ | 25×25 | 150 | 26 | 3 | 17 | 60-80 | | | |
| | 2020LL7-74H | △ | 20×20 | 150 | 21 | 3 | 7 | 74-110 | | | |
| | 2020LL10-74H | △ | 20×20 | 150 | 21 | 3 | 10 | 74-110 | | | |
| | 2525LL10-74H | △ | 25×25 | 150 | 26 | 3 | 10 | 74-110 | | | |
| | 2525LL17-74H | △ | 25×25 | 150 | 26 | 3 | 17 | 74-110 | | | |
| | 2020LL7-100H | △ | 20×20 | 150 | 21 | 3 | 7 | 100-150 | | | |
| | 2020LL10-100H | △ | 20×20 | 150 | 21 | 3 | 10 | 100-150 | | | |
| | 2525LL10-100H | △ | 25×25 | 150 | 26 | 3 | 10 | 100-150 | | | |
| 2525LL17-100H | △ | 25×25 | 150 | 26 | 3 | 17 | 100-150 | | | | |
| QFGD | 2020LL10-52H | △ | 20×20 | 150 | 21 | 4 | 10 | 52-72 | ZTGD0404-□□ | GB70-85-M6×20 | WH50L |
| | 2020LL15-52H | △ | 20×20 | 150 | 26 | 4 | 15 | 52-72 | | | |
| | 2525LL13-52H | △ | 25×25 | 150 | 21 | 4 | 13 | 52-72 | | | |
| | 2525LL22-52H | △ | 25×25 | 150 | 26 | 4 | 22 | 52-72 | | | |
| | 2020LL10-64H | △ | 20×20 | 150 | 21 | 4 | 10 | 64-100 | | | |
| | 2020LL15-64H | △ | 20×20 | 150 | 26 | 4 | 15 | 64-100 | | | |
| | 2525LL13-64H | △ | 25×25 | 150 | 21 | 4 | 13 | 64-100 | | | |
| | 2525LL22-64H | △ | 25×25 | 150 | 26 | 4 | 22 | 64-100 | | | |
| | 2020LL10-90H | △ | 20×20 | 150 | 21 | 4 | 10 | 90-140 | | | |
| | 2020LL15-90H | △ | 20×20 | 150 | 26 | 4 | 15 | 90-140 | | | |
| | 2525LL13-90H | △ | 25×25 | 150 | 21 | 4 | 13 | 90-140 | | | |
| | 2525LL22-90H | △ | 25×25 | 150 | 26 | 4 | 22 | 90-140 | | | |
| | 2020LL10-130H | △ | 20×20 | 150 | 21 | 4 | 10 | 130-230 | | | |
| | 2020LL15-130H | △ | 20×20 | 150 | 26 | 4 | 15 | 130-230 | | | |
| | 2525LL13-130H | △ | 25×25 | 150 | 21 | 4 | 13 | 130-230 | | | |
| 2525LL22-130H | △ | 25×25 | 150 | 26 | 4 | 22 | 130-230 | | | | |

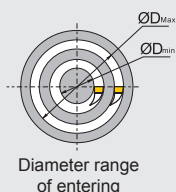
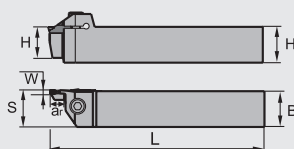
▲Stock available

△Make-to-order

End surface grooving and turning tools



LL-type shown



Diameter range of entering



| Type | Stock | Basic dimensions(mm) | | | | | | | Applicable inserts | Screw | Wrench |
|-------------|----------------------|----------------------|-------|-----|----|--------|--------------|---------|--------------------|---------------|--------|
| | | H×B | L | S | W | αr max | ∅D (min-max) | | | | |
| QFHD | 2525LL13-58H | △ | 25×25 | 150 | 26 | 5 | 13 | 58-96 | ZTHD0504-□□ | GB70-85-M6×20 | WH50L |
| | 2525LL22-58H | △ | 25×25 | 150 | 26 | 5 | 22 | 58-96 | | | |
| | 2525LL13-86H | △ | 25×25 | 150 | 26 | 5 | 13 | 86-140 | | | |
| | 2525LL22-86H | △ | 25×25 | 150 | 26 | 5 | 22 | 86-140 | | | |
| | 2525LL13-130H | △ | 25×25 | 150 | 26 | 5 | 13 | 130-200 | | | |
| | 2525LL22-130H | △ | 25×25 | 150 | 26 | 5 | 22 | 130-200 | | | |
| | 2525LL13-185H | △ | 25×25 | 150 | 26 | 5 | 13 | 185-400 | | | |
| | 2525LL22-185H | △ | 25×25 | 150 | 26 | 5 | 22 | 185-400 | | | |
| QFHS | 2525LL30-185H | △ | 25×25 | 150 | 26 | 5 | 30 | 185-400 | ZTHS0504-MG | | |
| QFKD | 2525LL13-60H | △ | 25×25 | 150 | 26 | 6 | 13 | 60-100 | ZTKD0608-□□ | GB70-85-M6×20 | WH50L |
| | 2525LL22-60H | △ | 25×25 | 150 | 26 | 6 | 22 | 60-100 | | | |
| | 2525LL13-88H | △ | 25×25 | 150 | 26 | 6 | 13 | 88-180 | | | |
| | 2525LL22-88H | △ | 25×25 | 150 | 26 | 6 | 22 | 88-180 | | | |
| | 2525LL13-160H | △ | 25×25 | 150 | 26 | 6 | 13 | 160-400 | | | |
| | 2525LL22-160H | △ | 25×25 | 150 | 26 | 6 | 22 | 160-400 | | | |
| QFKS | 2525LL30-160H | △ | 25×25 | 150 | 26 | 6 | 30 | 160-400 | ZTKS0608-MG | | |

▲Stock available

△Make-to-order

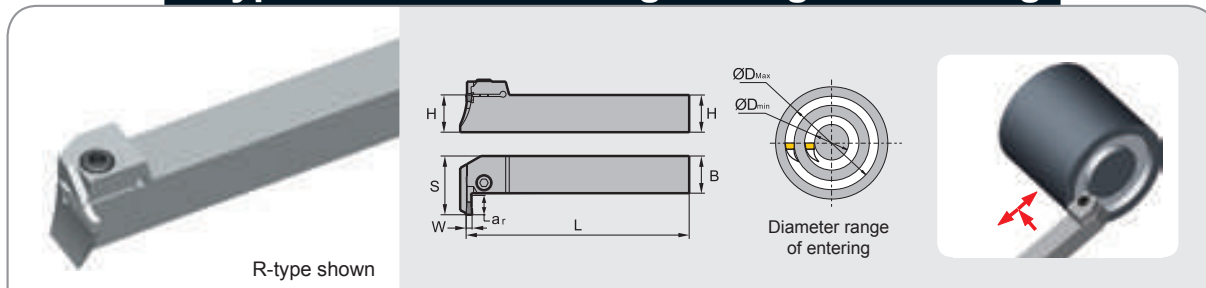
General turning

Parting and grooving

Little squirrel series parting and grooving tools



L type tools for surface grooving and turning



R-type shown

| Type | Stock | | Basic dimensions(mm) | | | | | | Applicable inserts | Screw | Wrench | |
|----------------|----------------|---|----------------------|-------|------|------|--------|--------------|--------------------|-------------|---------------|-------|
| | R | L | H×B | L | S | W | ar max | ØD (min-max) | | | | |
| QFFD | 2020R/L7-48L | △ | △ | 20×20 | 150 | 28.5 | 3 | 7 | 48-66 | ZTFD0303-□□ | GB70-85-M6×20 | WH50L |
| | 2020R/L10-48L | △ | △ | 20×20 | 150 | 31.5 | 3 | 10 | 48-66 | | | |
| | 2525R/L10-48L | ▲ | ▲ | 25×25 | 150 | 36.5 | 3 | 10 | 48-66 | | | |
| | 2525R/L17-48L | △ | △ | 25×25 | 150 | 43.5 | 3 | 17 | 48-66 | | | |
| | 2020R/L7-60L | △ | △ | 20×20 | 150 | 28.5 | 3 | 7 | 60-80 | | | |
| | 2020R/L10-60L | △ | △ | 20×20 | 150 | 31.5 | 3 | 10 | 60-80 | | | |
| | 2525R/L10-60L | ▲ | ▲ | 25×25 | 150 | 36.5 | 3 | 10 | 60-80 | | | |
| | 2525R/L17-60L | △ | △ | 25×25 | 150 | 43.5 | 3 | 17 | 60-80 | | | |
| | 2020R/L7-74L | △ | △ | 20×20 | 150 | 28.5 | 3 | 7 | 74-110 | | | |
| | 2020R/L10-74L | △ | △ | 20×20 | 150 | 31.5 | 3 | 10 | 74-110 | | | |
| | 2525R/L10-74L | ▲ | ▲ | 25×25 | 150 | 36.5 | 3 | 10 | 74-110 | | | |
| | 2525R/L17-74L | △ | △ | 25×25 | 150 | 43.5 | 3 | 17 | 74-110 | | | |
| | 2020R/L7-100L | △ | △ | 20×20 | 150 | 28.5 | 3 | 7 | 100-150 | | | |
| | 2020R/L10-100L | △ | △ | 20×20 | 150 | 31.5 | 3 | 10 | 100-150 | | | |
| | 2525R/L10-100L | ▲ | ▲ | 25×25 | 150 | 36.5 | 3 | 10 | 100-150 | | | |
| 2525R/L17-100L | △ | △ | 25×25 | 150 | 43.5 | 3 | 17 | 100-150 | | | | |
| QFGD | 2020R/L10-52L | △ | △ | 20×20 | 150 | 31.5 | 4 | 10 | 52-72 | ZTGD0404-□□ | GB70-85-M6×20 | WH50L |
| | 2525R/L13-52L | ▲ | △ | 25×25 | 150 | 39.5 | 4 | 13 | 52-72 | | | |
| | 2020R/L15-52L | △ | △ | 20×20 | 150 | 36.5 | 4 | 15 | 52-72 | | | |
| | 2525R/L22-52L | △ | △ | 25×25 | 150 | 48.5 | 4 | 22 | 52-72 | | | |
| | 2020R/L10-64L | △ | △ | 20×20 | 150 | 31.5 | 4 | 10 | 64-100 | | | |
| | 2525R/L13-64L | △ | △ | 25×25 | 150 | 39.5 | 4 | 13 | 64-100 | | | |
| | 2020R/L15-64L | △ | △ | 20×20 | 150 | 36.5 | 4 | 15 | 64-100 | | | |
| | 2525R/L22-64L | △ | △ | 25×25 | 150 | 48.5 | 4 | 22 | 64-100 | | | |
| | 2020R/L10-90L | △ | △ | 20×20 | 150 | 31.5 | 4 | 10 | 90-140 | | | |
| | 2525R/L13-90L | △ | △ | 25×25 | 150 | 39.5 | 4 | 13 | 90-140 | | | |
| | 2020R/L15-90L | △ | △ | 20×20 | 150 | 36.5 | 4 | 15 | 90-140 | | | |
| | 2525R/L22-90L | ▲ | △ | 25×25 | 150 | 48.5 | 4 | 22 | 90-140 | | | |
| | 2020R/L10-130L | △ | △ | 20×20 | 150 | 31.5 | 4 | 10 | 130-230 | | | |
| | 2525R/L13-130L | △ | △ | 25×25 | 150 | 39.5 | 4 | 13 | 130-230 | | | |
| | 2020R/L15-130L | △ | △ | 20×20 | 150 | 36.5 | 4 | 15 | 130-230 | | | |
| 2525R/L22-130L | ▲ | ▲ | 25×25 | 150 | 48.5 | 4 | 22 | 130-230 | | | | |

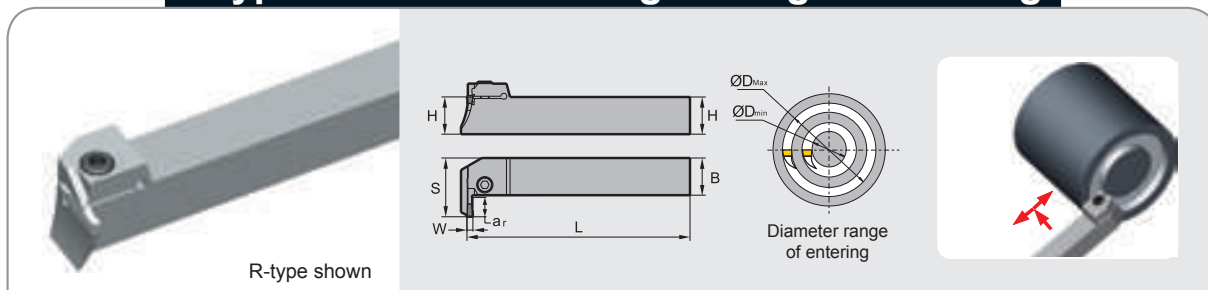
▲ Stock available △ Make-to-order

General turning

Parting and grooving

Little squirrel series parting and grooving tools

L type tools for surface grooving and turning



R-type shown

| Type | | Stock | | Basic dimensions(mm) | | | | | | Applicable inserts | Screw | Wrench |
|-------------|----------------|-------|---|----------------------|-----|------|---|--------|--------------|--------------------|---------------|--------|
| | | R | L | H×B | L | S | W | ar max | ØD (min-max) | | | |
| QFHD | 2525R/L13-58L | △ | △ | 25×25 | 150 | 39.5 | 5 | 13 | 58-96 | ZTHD0504-□□ | GB70-85-M6×20 | WH50L |
| | 2525R/L22-58L | △ | △ | 25×25 | 150 | 48.5 | 5 | 22 | 58-96 | | | |
| | 2525R/L13-86L | △ | △ | 25×25 | 150 | 39.5 | 5 | 13 | 86-140 | | | |
| | 2525R/L22-86L | △ | △ | 25×25 | 150 | 48.5 | 5 | 22 | 86-140 | | | |
| | 2525R/L13-130L | △ | △ | 25×25 | 150 | 39.5 | 5 | 13 | 130-200 | | | |
| | 2525R/L22-130L | △ | △ | 25×25 | 150 | 48.5 | 5 | 22 | 130-200 | | | |
| | 2525R/L13-185L | △ | △ | 25×25 | 150 | 39.5 | 5 | 13 | 185-400 | | | |
| | 2525R/L22-185L | ▲ | △ | 25×25 | 150 | 48.5 | 5 | 22 | 185-400 | | | |
| QFHS | 2525R/L30-185L | △ | △ | 25×25 | 150 | 56.5 | 5 | 30 | 185-400 | ZTHS0504-MG | | |
| QFKD | 2525R/L13-60L | ▲ | ▲ | 25×25 | 150 | 39.5 | 6 | 13 | 60-100 | ZTKD0608-□□ | GB70-85-M6×20 | WH50L |
| | 2525R/L22-60L | ▲ | ▲ | 25×25 | 150 | 48.5 | 6 | 22 | 60-100 | | | |
| | 2525R/L13-88L | △ | ▲ | 25×25 | 150 | 39.5 | 6 | 13 | 88-180 | | | |
| | 2525R/L22-88L | ▲ | ▲ | 25×25 | 150 | 48.5 | 6 | 22 | 88-180 | | | |

▲Stock available △Make-to-order

General turning

Parting and grooving

Little squirrel series parting and grooving tools

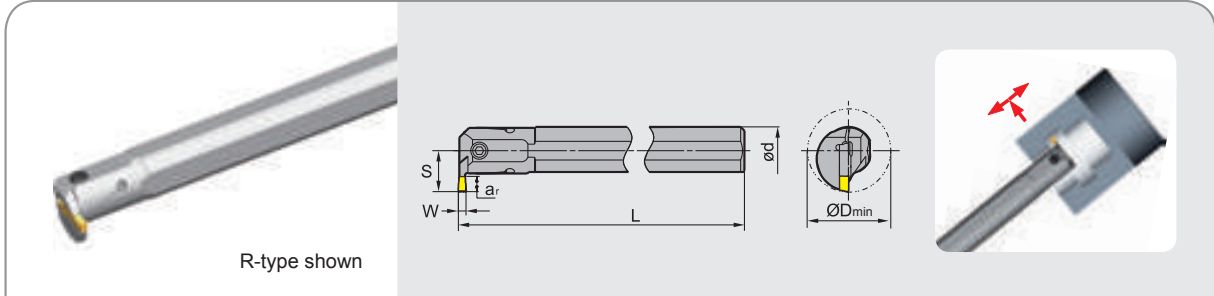




TURNING Parting and grooving tools

Little squirrel series parting and grooving tools

Internal grooving and turning tools

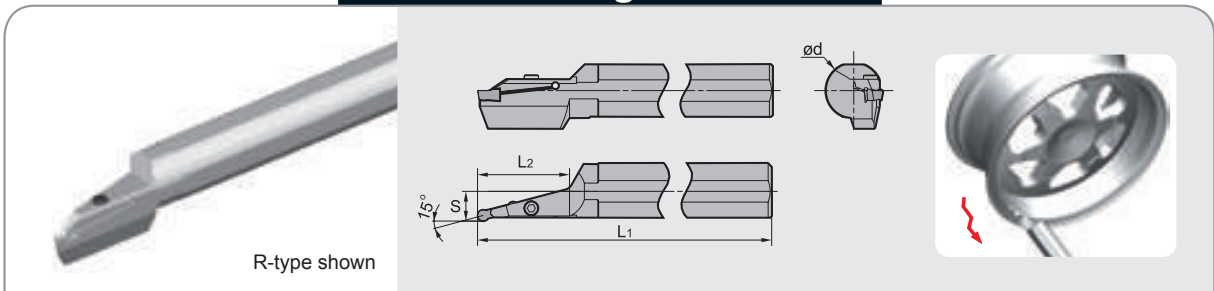


R-type shown

| Type | Stock | | Basic dimensions(mm) | | | | | | Applicable inserts | Screw | Wrench |
|------------------|-------|---|----------------------|-----|------|-----|-------------------|-------------------|------------------------|---------------|--------|
| | R | L | ød | L | S | W | ar _{max} | ØD _{min} | | | |
| C20Q-QEDR/L05-27 | ▲ | ▲ | 20 | 180 | 15.2 | 2.5 | 5 | 27 | ZTED025□□ ZRED025□□ | GB70-85-M4×12 | WH30L |
| C25R-QEDR/L07-33 | ▲ | ▲ | 25 | 200 | 20.3 | 2.5 | 7 | 33 | | GB70-85-M5×16 | WH40L |
| C32S-QEDR/L09-42 | ▲ | ▲ | 32 | 250 | 25.3 | 2.5 | 9 | 42 | ZTFD03□□ ZRFD03□□ | GB70-85-M5×20 | WH30L |
| C20Q-QFDR/L05-27 | ▲ | ▲ | 20 | 180 | 15.2 | 3 | 5 | 27 | | GB70-85-M4×12 | |
| C25R-QFDR/L07-33 | ▲ | ▲ | 25 | 200 | 20.3 | 3 | 7 | 33 | ZTGD04□□ ZRGD04□□ | GB70-85-M5×16 | WH40L |
| C32S-QFDR/L09-42 | ▲ | ▲ | 32 | 250 | 25.3 | 3 | 9 | 42 | | GB70-85-M5×20 | |
| C25R-QGDR/L08-35 | ▲ | ▲ | 25 | 200 | 21.5 | 4 | 8 | 35 | ZTHD05□□ ZRHD05□□ | GB70-85-M5×16 | WH40L |
| C32S-QGDR/L11-44 | ▲ | ▲ | 32 | 250 | 27.5 | 4 | 11 | 44 | | GB70-85-M6×20 | |
| C40T-QGDR/L13-54 | ▲ | ▲ | 40 | 300 | 33.5 | 4 | 13 | 54 | ZTKD06□□ ZRKD06□□ | GB70-85-M6×20 | WH50L |
| C25R-QHDR/L08-35 | ▲ | ▲ | 25 | 200 | 21.5 | 5 | 8 | 35 | | GB70-85-M5×16 | |
| C32S-QHDR/L11-44 | ▲ | ▲ | 32 | 250 | 27.5 | 5 | 11 | 44 | ZTKD06□□ ZRKD06□□ | GB70-85-M6×20 | WH50L |
| C40T-QHDR/L13-54 | ▲ | ▲ | 40 | 300 | 33.5 | 5 | 13 | 54 | | GB70-85-M6×20 | |
| C25R-QKDR/L08-35 | ▲ | ▲ | 25 | 200 | 21.5 | 6 | 8 | 35 | ZTKD06□□ ZRKD06□□ | GB70-85-M5×16 | WH40L |
| C32S-QKDR/L11-44 | ▲ | ▲ | 32 | 250 | 27.5 | 6 | 11 | 44 | | GB70-85-M6×20 | |
| C40T-QKDR/L13-54 | ▲ | ▲ | 40 | 300 | 33.5 | 6 | 13 | 54 | ZTKD06□□ ZRKD06□□ | GB70-85-M6×20 | WH50L |

▲Stock available △Make-to-order

Profile turning tools for Al



R-type shown

| Type | Stock | | Basic dimensions(mm) | | | | | Applicable inserts | Screw | Wrench |
|-------------------|-------|---|------------------------------------|----|----|----------------|----------------|--------------------|---------------|--------|
| | R | L | ØD (Minimum machining diameter) | ød | S | L ₁ | L ₂ | | | |
| C40X-QLDR/L65-15A | ▲ | ▲ | 160 | 40 | 21 | 320 | 65 | ZRLD08-LH | GB70-85-M6×20 | WH50L |
| C40X-QLDR/L80-15A | ▲ | △ | 160 | 40 | 21 | 320 | 80 | ZRLD08-LH | | |
| C40X-QKDR/L60-15A | △ | △ | 160 | 40 | 20 | 320 | 60 | ZRKD06-LH | | |
| C40X-QKDR/L75-15A | △ | △ | 160 | 40 | 20 | 320 | 75 | ZRKD06-LH | | |

▲Stock available △Make-to-order

General turning

Parting and grooving

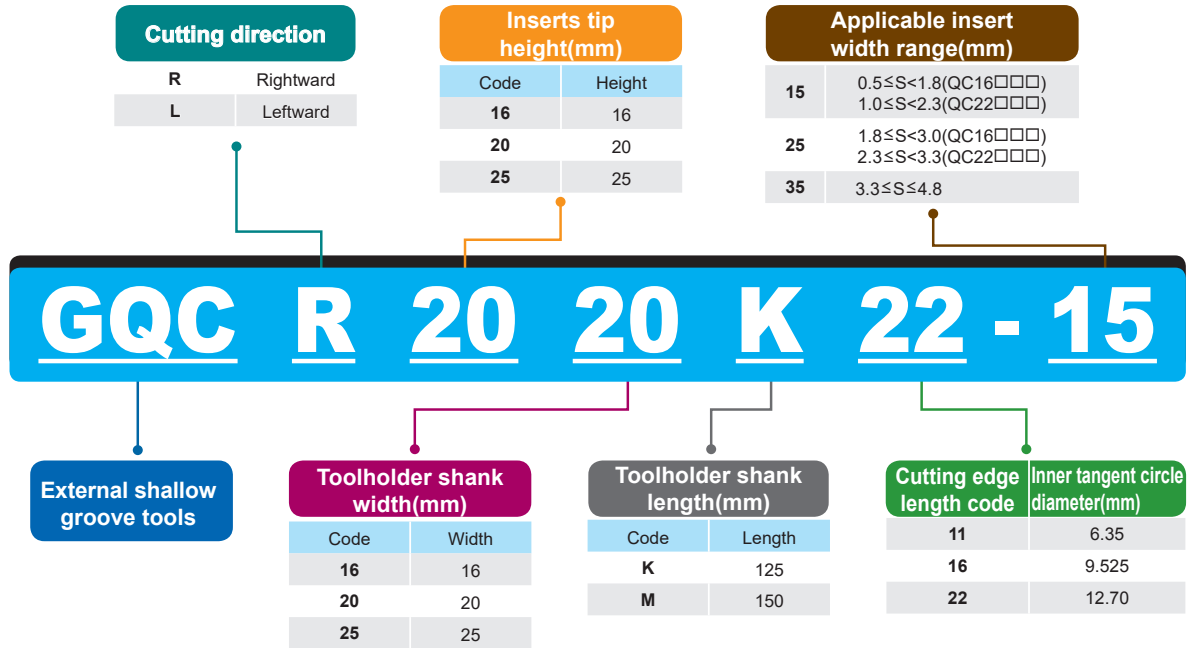
Little squirrel series parting and grooving tools



QC series

shallow grooving tools code key

● External shallow groove tools

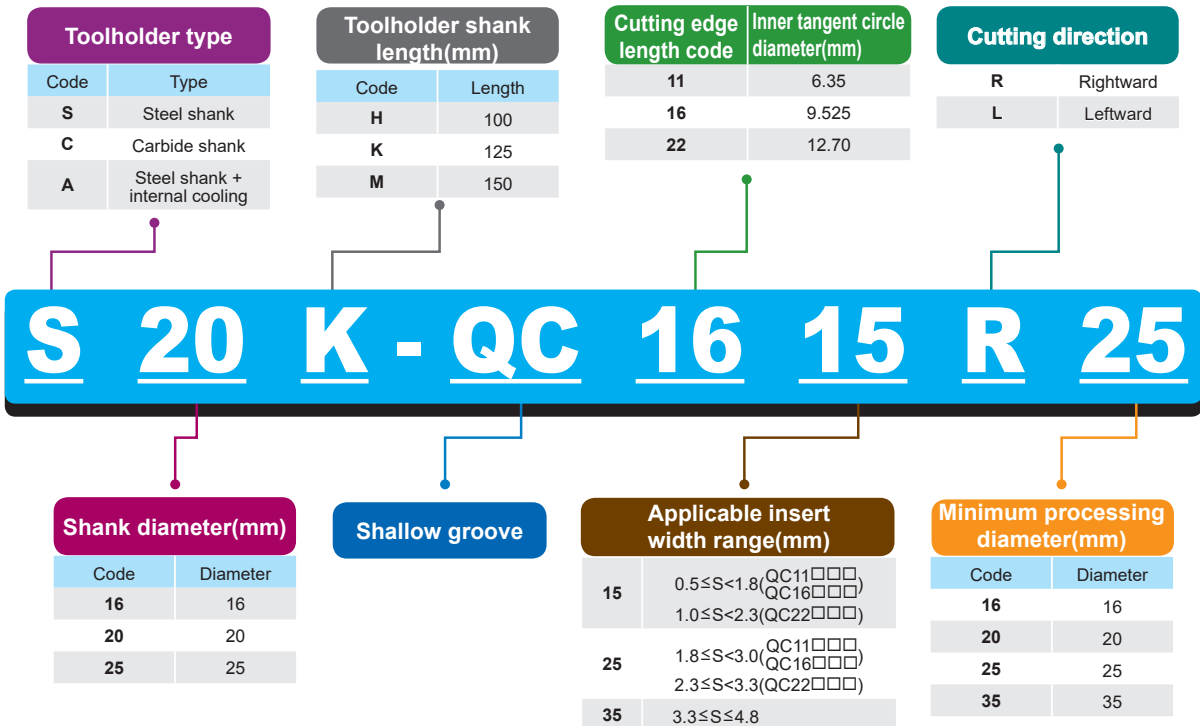


General turning

Parting and grooving

QC series shallow grooving tools

● Internal shallow groove tools

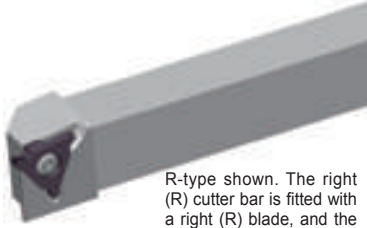




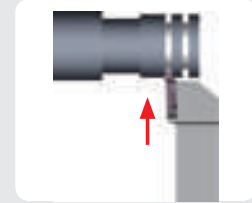
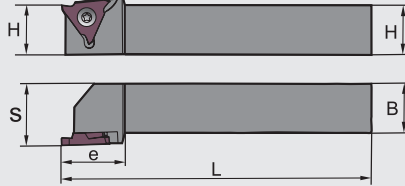
TURNING Parting and grooving tools

QC series shallow grooving tools

External shallow groove tools



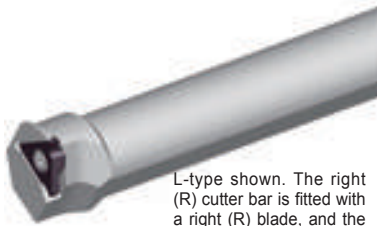
R-type shown. The right (R) cutter bar is fitted with a right (R) blade, and the left (L) cutter bar is fitted with a left (L) blade.



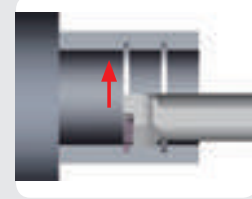
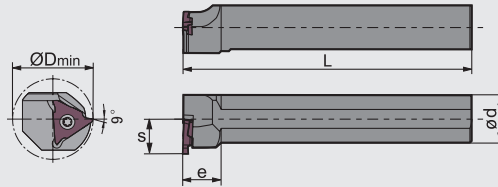
| Type | Stock | Basic dimensions(mm) | | | | | Width (mm) | Applicable inserts | Screw | Wrench |
|---------------|-------|----------------------|----|----|------|-----|------------|--------------------|------------|--------|
| | | H | B | S | e | L | | | | |
| GQCR/L | ▲ | 16 | 16 | 21 | 25.5 | 125 | 1.1-1.8 | QC16R/L 110~180 | I60M3.5×10 | WT15IP |
| | ▲ | 20 | 20 | 25 | | 125 | | | | |
| | ▲ | 25 | 25 | 30 | | 150 | | | | |
| | ▲ | 16 | 16 | 21 | | 125 | 1.8-3.0 | QC16R/L 180~300 | | |
| | ▲ | 20 | 20 | 25 | | 125 | | | | |
| | ▲ | 25 | 25 | 30 | | 150 | | | | |
| | ▲ | 20 | 20 | 25 | | 125 | 1.0-2.3 | QC22R/L 100~230 | I60M5×13 | WT20IP |
| | ▲ | 25 | 25 | 30 | | 150 | | | | |
| | ▲ | 20 | 20 | 25 | | 125 | | | | |
| | ▲ | 25 | 25 | 30 | | 150 | | | | |
| | ▲ | 20 | 20 | 25 | | 125 | 3.3-4.8 | QC22R/L 330~480 | | |
| | ▲ | 25 | 25 | 30 | | 150 | | | | |

▲Stock available △Make-to-order

Internal shallow groove tools



L-type shown. The right (R) cutter bar is fitted with a right (R) blade, and the left (L) cutter bar is fitted with a left (L) blade.



| Type | Stock | Basic dimensions(mm) | | | | | Width (mm) | Applicable inserts | Screw | Wrench | | |
|--------------------------|-------|----------------------|----|------|----|-----|------------|--------------------|-------------|--------|----------------|--------|
| | | ØD _{min} | ød | S | e | L | | | | | | |
| S20K-QC1115R/L 16 | ▲ | 16 | 20 | 11.1 | 40 | 125 | 1.2-1.8 | QC11R/L 120~180 | I60M2.5×6.5 | WT07IP | | |
| S20K-QC1125R/L 16 | ▲ | 16 | 20 | 11.1 | 40 | 125 | 1.8-3.0 | | | | QC11R/L180~300 | |
| S16H-QC1115R/L 20 | ▲ | 21 | 16 | 11.5 | 12 | 100 | 1.2-1.8 | QC11R/L 120~180 | | | | |
| S16H-QC1125R/L 20 | ▲ | 21 | 16 | 11.5 | 12 | 100 | 1.8-3.0 | QC11R/L180~300 | | | | |
| S20M-QC1615R/L 25 | ▲ | 26 | 20 | 12.5 | 15 | 150 | 1.1-1.8 | QC16R/L110~180 | | | I60M3.5×10 | WT15IP |
| S20M-QC1625R/L 25 | ▲ | | | 12.5 | | | 1.8-3.0 | QC16R/L180~300 | | | | |
| S25M-QC2215R/L 35 | ▲ | 35 | 25 | 18.2 | 20 | 150 | 1.0-2.3 | QC22R/L100~230 | I60M5×13 | WT20IP | | |
| S25M-QC2225R/L 35 | ▲ | | | 18.2 | | | 2.3-3.3 | QC22R/L230~330 | | | | |
| S25M-QC2235R/L 35 | ▲ | | | 18.2 | | | 3.3-4.8 | QC22R/L 330~480 | | | | |

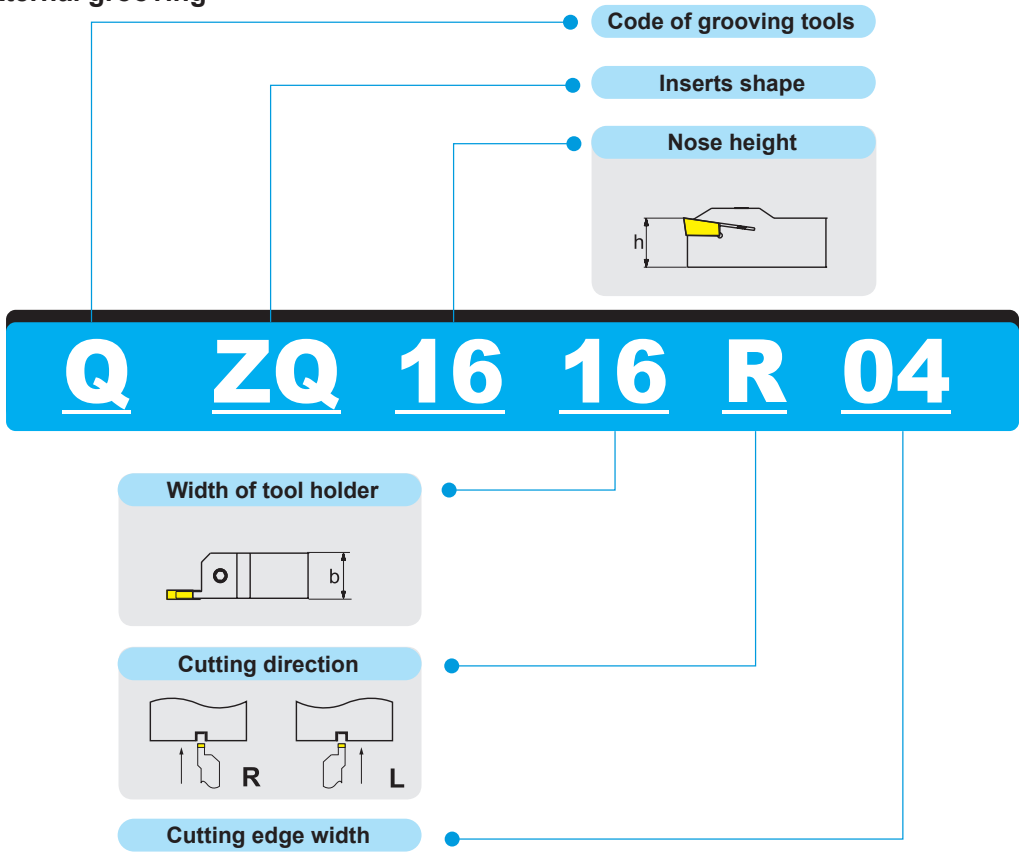
▲Stock available △Make-to-order

General turning
Parting and grooving

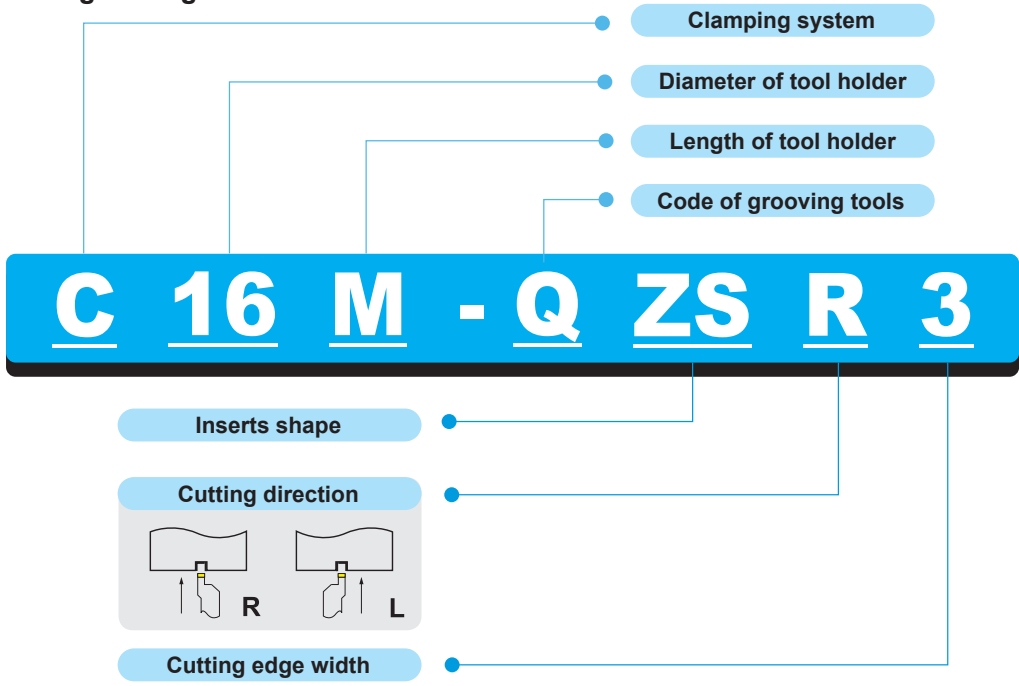
QC series shallow grooving tools

Parting and grooving tools code key

● External grooving



● Internal grooving

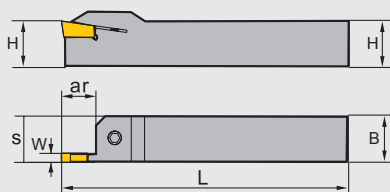







External parting and grooving tools: QZQ series



R-type shown



| Type | Stock | | Basic dimensions(mm) | | | | | | | Applicable inserts | Screw | Wrench |
|------------|-----------|---|----------------------|----|----|-----|------|-------------------|--|---|---|--------|
| | R | L | H | B | L | S | W | ar _{max} |  |  |  | |
| QZQ | 1616R/L03 | ▲ | ▲ | 16 | 16 | 100 | 16.4 | 3 | 16 | ZQMX3N11-IE | GB70-85-M5 × 16 | WH40L |
| | 1616R/L04 | ▲ | ▲ | 16 | 16 | 100 | 16.4 | 4 | 18 | ZQMX4N11-IE | | |
| | 2020R/L03 | ▲ | ▲ | 20 | 20 | 125 | 20.4 | 3 | 20 | ZQMX3N11-IE | | |
| | 2020R/L04 | ▲ | ▲ | 20 | 20 | 125 | 20.4 | 4 | 20 | ZQMX4N11-IE | | |
| | 2525R/L03 | ▲ | ▲ | 25 | 25 | 150 | 25.4 | 3 | 20 | ZQMX3N11-IE | | |
| | 2525R/L04 | ▲ | ▲ | 25 | 25 | 150 | 25.4 | 4 | 20 | ZQMX4N11-IE | | |
| | 2525R/L05 | ▲ | ▲ | 25 | 25 | 150 | 25.4 | 5 | 25 | ZQMX5N11-IE | GB70-85-M6 × 20 | WH50L |
| | 2525R/L06 | ▲ | ▲ | 25 | 25 | 150 | 25.7 | 6 | 32 | ZQMX6N11-IE | | |
| | 3225R/L03 | ▲ | ▲ | 32 | 25 | 170 | 25.4 | 3 | 25 | ZQMX3N11-IE | | |
| | 3225R/L04 | ▲ | ▲ | 32 | 25 | 170 | 25.4 | 4 | 25 | ZQMX4N11-IE | | |
| | 3225R/L05 | ▲ | ▲ | 32 | 25 | 170 | 25.4 | 5 | 25 | ZQMX5N11-IE | | |
| | 3225R/L06 | ▲ | ▲ | 32 | 25 | 170 | 25.7 | 6 | 35 | ZQMX6N11-IE | | |

▲ Stock available △ Make-to-order

General turning

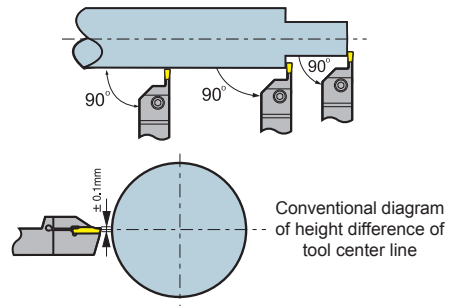
Parting and grooving

Supplementary series parting and grooving inserts



Center height control of parting and grooving tools

- No matter which parting or grooving tools you select, the ideal surface quality is only achieved by ensuring that insert is vertical from the center line of workpiece, which can also effectively reduce vibration during machining.
- The height tolerance between insert edge bottom and the center height of workpiece should be remained in $\pm 0.1\text{mm}$, especially for lever parting and grooving workpieces with small diameter. This can improve tool life, reduce cutting resistant force, and diminish burrs.



Parting

- When the insert is approaching the center of workpiece, the cutting speed should be reduced by 30%, which is good for improving life and surface quality.
- As long as conditions allow, try to shorten the overhang of tools as much as possible to ensure good stability.

External grooving, turning and profiling

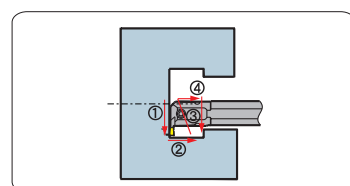
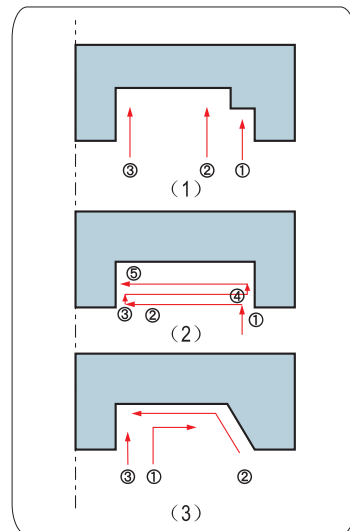
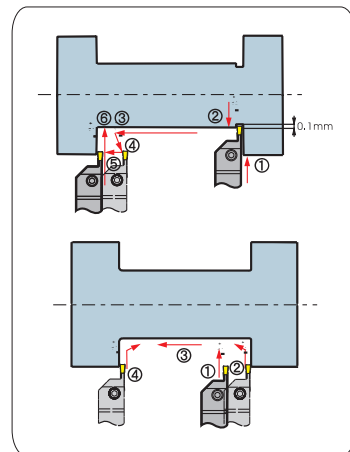
- In-feed sequence: When cutting depth $> 0.5\text{mm}$, radial in-feed (Max. cutting depth can be $0.75 \times \text{insert edge width } S$) → radial out-feed about 0.1mm → axial in-feed → flank out-feed → axial in-feed → radial machining to required depth.
- When finishing, adopt the sequence shown in the diagram. It can reduce vibration caused by the friction between tools and chips.

Surface grooving and turning

- Finishing (Multi-slot cutting)
Cut inwards from Max. diameter. Inserts offset to inward flange when retracting, as is shown in diagram (1).
- Recess turning
Axial turning depth should not exceed $0.75 \times S$ (cutting edge width).
If slot width is larger than slot depth, it is recommended to adopt recess turning, as is shown in diagram (2).
If slot depth is larger than slot depth, it is recommended to adopt multi-slot cutting.
- Finish machining
First finish bottom and external diameter fringe, then finish the internal diameter to required size, as is shown in diagram (3).

Internal grooving and turning

- To facilitate chip flow, always feed along the direction of moving from the deepest in the hole to outside.





TURNING Parting and grooving tools

Application information of parting and grooving

The cutting parameters recommended are suitable for wet machining.

General turning

Parting and grooving

Application information of parting and grooving

| Insert size | Recommended feed rate(mm/r) | | | | | | |
|-------------|-----------------------------|-----------|-----------|---------------|-----------|--------------|-----------|
| | Insert width(mm) | Parting | Grooving | Grooving(-MM) | Turning | Turning(-MM) | Profiling |
| 2.5 | | 0.05-0.15 | 0.05-0.15 | 0.05-0.2 | 0.05-0.15 | 0.05-0.2 | 0.05-0.15 |
| 3 | | 0.05-0.15 | 0.05-0.15 | 0.05-0.2 | 0.07-0.15 | 0.07-0.2 | 0.1-0.2 |
| 4 | | 0.05-0.2 | 0.05-0.2 | 0.05-0.25 | 0.07-0.25 | 0.07-0.3 | 0.1-0.2 |
| 5 | | 0.07-0.2 | 0.07-0.22 | 0.07-0.25 | 0.1-0.25 | 0.1-0.3 | 0.15-0.3 |
| 6 | | 0.1-0.3 | 0.07-0.25 | 0.07-0.3 | 0.1-0.3 | 0.1-0.35 | 0.15-0.3 |
| 8 | | | | 0.1-0.4 | | 0.15-0.45 | |

| Workpiece material | Hardness | YBG302 | YBG202 YBG205 | YBG105 | YBG212 | YBC151 | YBC251 | YBS103 | YD101 | YD201 | YBG102 | YC10 | YC40 |
|------------------------------------|-------------------|----------------|------------------|---------|--------|---------|---------|--------|---------|--------|--------|---------|---------|
| P Carbon steel | 125 ≤ HB ≤ 170 | 120-260 | 150-280 | | | 140-280 | 150-280 | | | | | 130-280 | 110-260 |
| | Low alloy steel | 180 ≤ HB ≤ 275 | 80-175 | 110-200 | | 100-240 | 110-200 | | | | | 90-200 | 70-175 |
| | High alloy steel | 180 ≤ HB ≤ 325 | 80-160 | 110-190 | | 100-220 | 110-190 | | | | | 90-190 | 70-160 |
| | Cast steel | 180 ≤ HB ≤ 250 | 75-140 | 100-170 | | 80-160 | 100-170 | | | | | 80-170 | 60-140 |
| M Ferrite, Martensite | 200 ≤ HB ≤ 300 | 70-170 | 100-200 | | | | 100-200 | | | | | 80-200 | 60-170 |
| | Austenite | 180 ≤ HB ≤ 300 | 80-200 | 110-220 | | | 110-220 | | | | | 90-220 | 70-200 |
| K Malleable cast iron | 130 ≤ HB ≤ 230 | 100-200 | 130-220 | | | | | | | 90-160 | | | |
| | Grey cast iron | 180 ≤ HB ≤ 220 | 90-170 | 120-200 | | | | | | 80-140 | | | |
| | Nodular cast iron | 160 ≤ HB ≤ 250 | 80-150 | 110-180 | | | | | | 60-140 | | | |
| N Al alloy | -- | | | | | | | | 200-400 | | | | |
| S High temperature alloy | ≤ 400 | | | 40-70 | 20-50 | | | 30-80 | 20-50 | | 30-60 | | |

The cutting parameters recommended are suitable for wet machining.

Advice: internal machining and end machining, The cutting speed should be reduced by 30%-40%.

● Recommended cutting parameters for QC series shallow groove tools

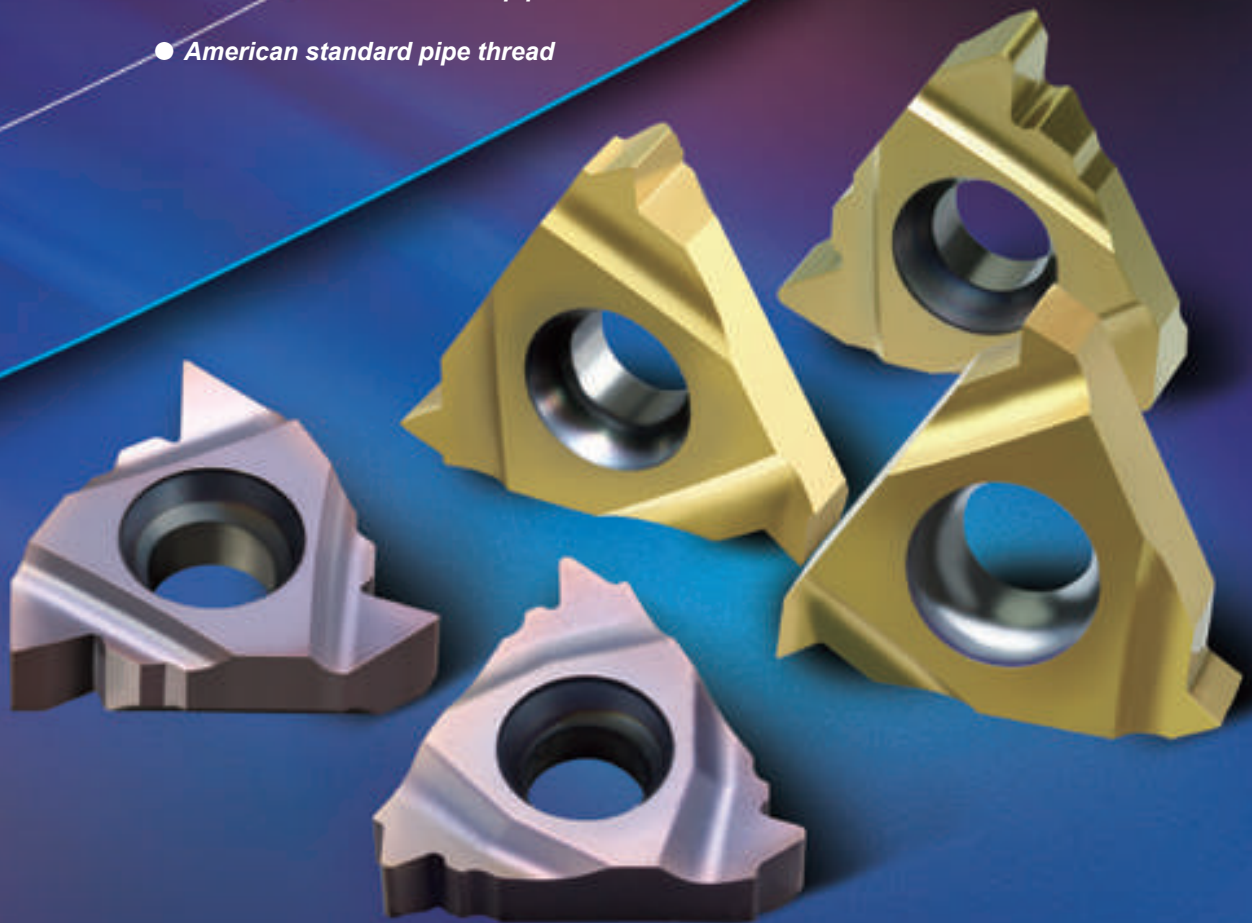
| Processed material | Recommended insert material (cutting speed m/min) | | A: Tool feed for grooving(mm/r) | | | | |
|--------------------|---|--------|--|----------------|----------------|----------------|----------------|
| | PVD Coating | | B: Tool feed for transverse machining(mm/r) | | | | |
| | YBG202 | YBG205 | C: Depth of cut for transverse machining(mm) | | | | |
| | | | QC**R/L050-120 | QC**R/L125-225 | QC**R/L230-325 | QC**R/L330-400 | QC**R/L400-480 |
| Carbon Steel | 80-180 | 80-180 | A: 0.03-0.08 | A: 0.04-0.09 | A: 0.05-0.1 | A: 0.05-0.12 | A: 0.05-0.12 |
| | | | Non-horizontal processing | B: 0.04-0.09 | B: 0.05-0.1 | B: 0.05-0.1 | B: 0.05-1 |
| | | | Non-horizontal processing | C: 0.3(MAX) | C: 0.5(MAX) | C: 0.5(MAX) | C: 0.8(MAX) |
| Alloy Steel | 80-160 | 80-160 | A: 0.03-0.07 | A: 0.04-0.08 | A: 0.05-0.09 | A: 0.05-0.1 | A: 0.05-0.1 |
| | | | Non-horizontal processing | B: 0.04-0.08 | B: 0.05-0.09 | B: 0.05-0.1 | B: 0.05-1 |
| | | | Non-horizontal processing | C: 0.3(MAX) | C: 0.5(MAX) | C: 0.5(MAX) | C: 0.5(MAX) |
| Stainless Steel | 60-130 | 60-130 | A: 0.03-0.07 | A: 0.04-0.08 | A: 0.05-0.09 | A: 0.05-0.1 | A: 0.05-0.1 |
| | | | Non-horizontal processing | B: 0.04-0.08 | B: 0.05-0.09 | B: 0.05-0.1 | B: 0.05-1 |
| | | | Non-horizontal processing | C: 0.3(MAX) | C: 0.5(MAX) | C: 0.5(MAX) | C: 0.5(MAX) |

The cutting parameters above are applicable to external grooving. When machining internal hole grooves, please reduce the cutting speed and feed by 10%.



6series

- *ISO metric thread*
- *General pitch thread*
- *Whitworth thread*
- *Unified thread*
- *British standard pipe thread*
- *American standard pipe thread*



Threading insert

Fully ground high precision inserts for high quality, high precision threading in a variety of materials e.g. steel, stainless steel, hard-to-machine materials.

TURNING Threading Tools

How to select threading tools

How to select threading tools

Structure of threading tools selected table

- Categorized as external threading and internal threading according to machining type.
- Separately listed out according to series.

Dimensions of product

Indicating external threading or internal threading

External threading tools

R-type shown

Threading insert type Including type, standard, tolerance class

Diagram of thread pitch

ISO metric thread (with end)

ISO 965-1980 DIN 13
GB/T 197-2003 Tolerance class: 6g/6H

R type L type

Product specification Including type (right hand and left hand), basic dimensions, applicable inserts, spare parts

Product specification Including type (right hand and left hand), basic dimensions, stock

Dimension diagram of insert

| Type | Stock | Basic dimensions(mm) | | | | | Applicable inserts | Inserts screw | Shim | Shim screw | Wrench | |
|------|---------|----------------------|----|----|----|-----|--------------------|---------------|-------------|------------|--------|--------|
| | | a | h | b | L | s | | | | | | |
| ZSER | 1616H16 | ▲ | 16 | 16 | 16 | 100 | 20 | Z16ERC□□□□ | 80 M3.5X12T | MT16-□□MN | SM4X8C | WT15IP |
| | 2020K16 | ▲ | 20 | 20 | 20 | 125 | 25 | | | | | |
| | 2525M16 | ▲ | 25 | 25 | 25 | 150 | 32 | | | | | |
| | 3225P16 | ▲ | 32 | 32 | 25 | 170 | 32 | | | | | |
| | 3232P16 | ▲ | 32 | 32 | 32 | 170 | 40 | | | | | |
| | 4040S22 | △ | 40 | 40 | 40 | 250 | 50 | | | | | |
| ZSEL | 1616H16 | ▲ | 16 | 16 | 16 | 100 | 20 | Z16EL□□□□ | 80 M3.5X12T | MT16-□□MN | SM4X8C | WT15IP |
| | 2020K16 | ▲ | 20 | 20 | 20 | 125 | 25 | | | | | |
| | 2525M16 | ▲ | 25 | 25 | 25 | 150 | 32 | | | | | |
| | 3225P16 | ▲ | 32 | 32 | 25 | 170 | 32 | | | | | |
| | 3232P16 | ▲ | 32 | 32 | 32 | 170 | 40 | | | | | |
| | 4040S22 | △ | 40 | 40 | 40 | 250 | 50 | | | | | |

▲ Stock available △ Make-to-order

| Type | Basic dimensions(mm) | | | | | Recommended coating grade | |
|--------------|----------------------|------|------|-------|-----|---------------------------|--------|
| | Pitch | S | ØL.C | ed | | YBG203 | YBG205 |
| Z16ER0.SISO | Z16EL0.SISO | 0.50 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| Z16ER0.75ISO | Z16EL0.75ISO | 0.75 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| Z16ER1.0ISO | Z16EL1.0ISO | 1.00 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| Z16ER1.25ISO | Z16EL1.25ISO | 1.25 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| Z16ER1.5ISO | Z16EL1.5ISO | 1.50 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| Z16ER1.75ISO | Z16EL1.75ISO | 1.75 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| Z16ER2.0ISO | Z16EL2.0ISO | 2.00 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| Z16ER2.5ISO | Z16EL2.5ISO | 2.50 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| Z16ER3.0ISO | Z16EL3.0ISO | 3.00 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| Z22ER3.SISO | Z22EL3.SISO | 3.50 | 4.65 | 12.7 | 5.0 | ★ | ○ |
| Z22ER4.SISO | Z22EL4.SISO | 4.00 | 4.65 | 12.7 | 5.0 | ★ | ○ |
| Z22ER4.5ISO | Z22EL4.5ISO | 4.50 | 4.65 | 12.7 | 5.0 | ★ | ○ |
| Z22ER5.0ISO | Z22EL5.0ISO | 5.00 | 4.65 | 12.7 | 5.0 | ★ | ○ |
| Z22ER5.5ISO | Z22EL5.5ISO | 5.50 | 4.65 | 12.7 | 5.0 | ★ | ○ |
| Z22ER6.0ISO | Z22EL6.0ISO | 6.00 | 4.65 | 12.7 | 5.0 | ★ | ○ |

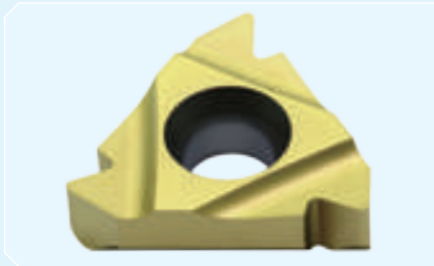
★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order



TURNING



Threading Tools



| | | |
|---|---|-----------|
| Threading tools overview | • | A294-A295 |
| Introduction on threading insert grade and chipbreaker | • | A296 |
| Threading insert | • | A297-A304 |
| Thin Threading insert code key | | A297 |
| Thin ISO metric external thread | | A298-A299 |
| Thin General pitch thread | | A300 |
| Thin Whitworth thread | | A301 |
| Thin Unified thread | | A302 |
| Thin British standard pipe thread | | A303 |
| Thin American standard pipe thread | | A304 |
| Thin threading insert code key | | A305 |
| Thin ISO metric external thread | | A306 |
| Thin general pitch thread | | A307 |
| Thin Whitworth thread | | A308 |
| Thin unified thread | | A309 |
| Thin British standard pipe thread | | A310 |
| Thin American standard pipe thread | | A311 |
| Threading tools | • | A312-A314 |
| Threading tools code key | | A312 |
| External threading tools | | A313 |
| Internal threading tools | | A314 |
| Application information on threading | • | A315-A325 |

TURNING Threading Tools

Threading tools overview

General turning
Parting and grooving
Threading

Threading tools overview

| Applications | | For general use | | | |
|---|--|--|-------------------------------------|-------------------------------------|-----------------------|
| Legend | | | | | |
| Thread name | | ISO metric thread With end | General pitch thread Without end | General pitch thread Without end | |
| Profil | | GM | 60 | 55 | |
| Shape of insert (length: 11, 16, 22mm) | | R style shown A298-299 | R style shown A300 | R style shown A300 | |
| Tool holder | Pitch | Dimensions (mm) (H×W×L) (Dia×L×Min. dia) | Pitch/mm | Pitch/mm (pitch/Inch) | Pitch/mm (pitch/Inch) |
| | External thread R-type shown A313 | 16×16×100 20×20×125 25×25×150 32×25×170 32×32×170 40×40×250 | 0.5~6.0 | 0.5~5.0 (5~48) | 0.5~5.0 (5~48) |
| Internal thread R-type shown A314 | 16×125×12 16×150×16 16×150×20 20×150×25 20×180×25 25×150×32 32×200×40 32×250×40 40×300×50 50×350×63 | 0.5~6.0 | 0.5~5.0 (5~48) | 0.5~5.0 (5~48) | |



| For general use | For aerospace industry | Heater, gas and water pipe thread | For gas and water faucet and pipe connection |
|-----------------------|---|-------------------------------------|--|
| | | | |
| Whitworth thread | Unified thread (American standard threads) | British standard taper pipe threads | American standard taper pipe threads |
| W | UN | BSPT | NPT |
| R style shown | R style shown | R style shown | R style shown |
| <p>A301</p> | <p>A302</p> | <p>A303</p> | <p>A304</p> |
| Pitch/mm (pitch/Inch) | Pitch/mm (pitch/Inch) | Pitch/mm (pitch/Inch) | Pitch/mm (pitch/Inch) |
| 8~19 | 8~24 | 11~28 | 8~27 |
| 8~19 | 8~24 | 11~28 | 8~27 |

General turning

Parting and grooving

Threading

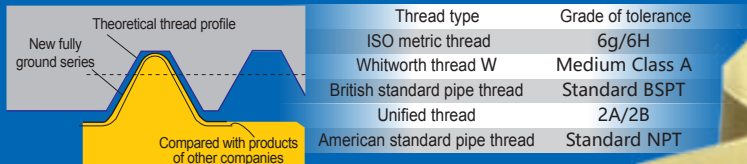
Threading tools overview

suitable for threading in a variety of materials

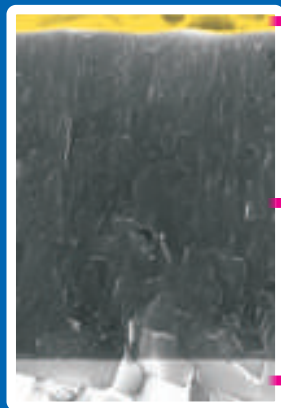
New nano coating grade

YBG203

- Specially treated edge for superior surface quality
- Sharp nose with small cutting resistance and superior performance
- Full ground inserts with high dimensional precision for high quality threading



- New nano coating grade specially designed for threading with longer insert life



Advanced surface treatment techniques effectively reduce friction and allows for better wear observation.

Advanced TiAlN substrate nano coating, in combination with proper coating ingredients, improves the mechanical and thermal properties of coating.

Further optimizing coating structure, improving coating stress, enhancing bond strength of coating and substrate.



A 296



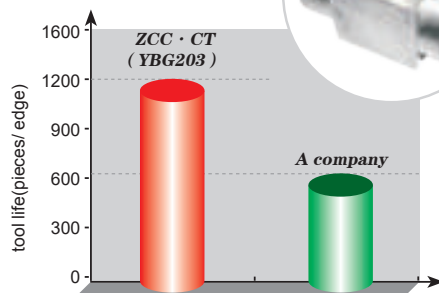
Case:

Workpiece material: 42CrMo(HB260)

Insert: Z16ER2.0ISO/YBG203

Thread pitch: p=2.0mm

Cutting data: Vc=120 m/min



84% tool life improvement of ZCC·CT product than that of company A under the same cutting condition.



Threading inserts code key

General turning
Parting and grooving
Threading
Threading insert

| Insert size | |
|-------------|--------------------|
| Code | Diameter of IC(mm) |
| Z11 | ø6.35 |
| Z16 | ø9.525 |
| Z22 | ø12.7 |

| Cutting style | |
|---------------|-----------------------------|
| E | -External threading inserts |
| I | -Internal threading inserts |

| Cutting direction | |
|-------------------|--------|
| R | -Right |
| L | -Left |

Z16 E R 2.0 ISO (PP)

| Screw pitch | | |
|--|-----------------------|-------|
| Full profile (Range of screw pitch is indicated by numbers). | | |
| mm | TPI | |
| 0.5-6.0 | 48-5 | |
| V profile (Range of screw pitch is indicated by letters). | | |
| | mm | TPI |
| A | 0.5-1.5 | 48-16 |
| AG | 0.5-3.0 | 48-8 |
| G | 1.75-3.0 | 14-8 |
| N | 3.5-5.0 | 7-5 |
| Thread specification | Range of thread pitch | |
| ISO metric thread | 0.5-6.0 | |
| General pitch thread | 0.5-5.0 | |
| Whitworth thread W | 8-19 | |
| British standard pipe thread | 11-28 | |
| Unified thread | 8-24 | |
| American standard pipe thread | 8-27 | |

| Profile | |
|---------|--|
| ISO | —ISO metric 60° thread |
| 60 | —60° general pitch thread |
| 55 | —55° general pitch thread |
| W | —Whitworth thread |
| UN | —Unified thread(American standard threads) |
| BSPT | —British standard taper pipe thread |
| NPT | —American standard taper pipe thread |

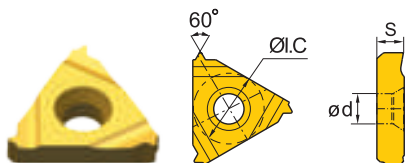
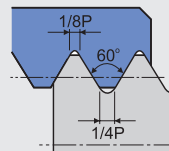
| Chip breaker | |
|--------------|-------------------------------------|
| □ | —fully ground edge insert |
| PP | —3-Dimensional chip-breaking insert |

A TURNING Threading Tools

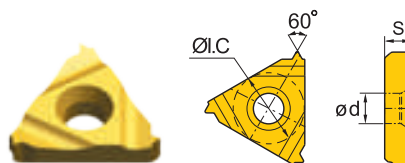
Threading insert

ISO metric thread (with end)

ISO 965-1980 DIN 13
GB/T 197-2003 Tolerance class: 6g/6H



R type



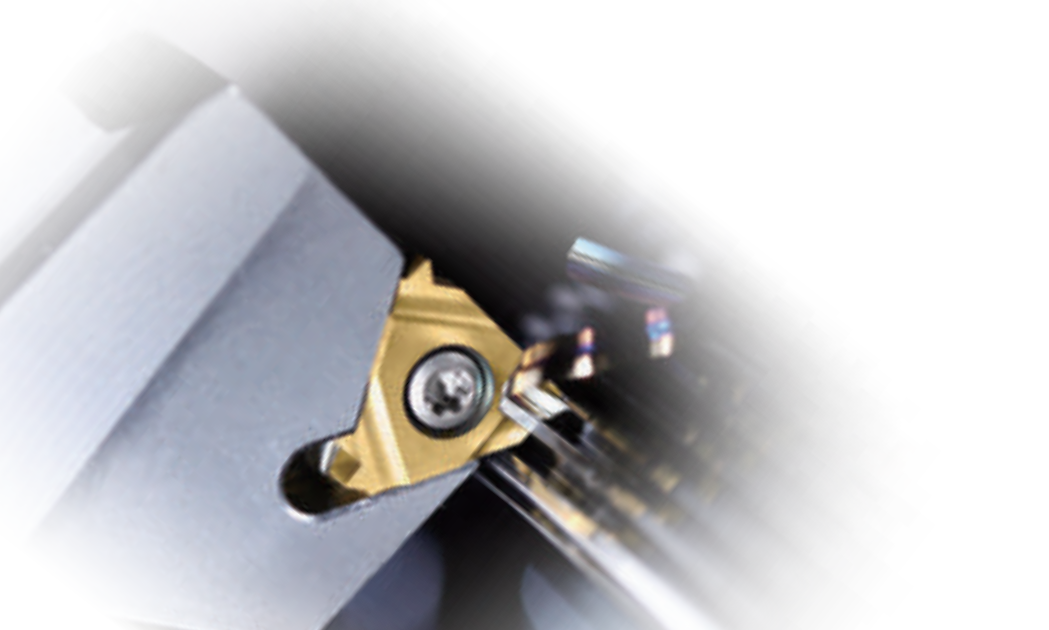
L type

| | Type | | Basic dimensions(mm) | | | | Recommended coating grade | |
|-----------------|----------------------|---------------------|----------------------|------|-------|-----|---------------------------|--------|
| | The right hand tools | The left hand tools | Pitch | S | ØI.C | ød | YBG203 | YBG205 |
| External thread | Z16ER0.5ISO | Z16EL0.5ISO | 0.50 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER0.75ISO | Z16EL0.75ISO | 0.75 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER1.0ISO | Z16EL1.0ISO | 1.00 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER1.25ISO | Z16EL1.25ISO | 1.25 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER1.5ISO | Z16EL1.5ISO | 1.50 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER1.75ISO | Z16EL1.75ISO | 1.75 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER2.0ISO | Z16EL2.0ISO | 2.00 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER2.5ISO | Z16EL2.5ISO | 2.50 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER3.0ISO | Z16EL3.0ISO | 3.00 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z22ER3.5ISO | Z22EL3.5ISO | 3.50 | 4.65 | 12.7 | 5.0 | ★ | ○ |
| | Z22ER4.0ISO | Z22EL4.0ISO | 4.00 | 4.65 | 12.7 | 5.0 | ★ | ○ |
| | Z22ER4.5ISO | Z22EL4.5ISO | 4.50 | 4.65 | 12.7 | 5.0 | ★ | ○ |
| | Z22ER5.0ISO | Z22EL5.0ISO | 5.00 | 4.65 | 12.7 | 5.0 | ★ | ○ |
| | Z22ER5.5ISO | Z22EL5.5ISO | 5.50 | 4.65 | 12.7 | 5.0 | ★ | ○ |
| | Z22ER6.0ISO | Z22EL6.0ISO | 6.00 | 4.65 | 12.7 | 5.0 | ★ | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

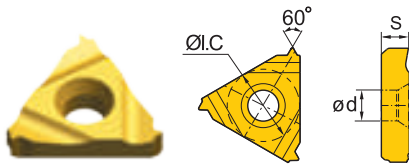
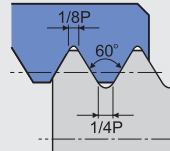
General turning
Parting and grooving
Threading

Threading insert

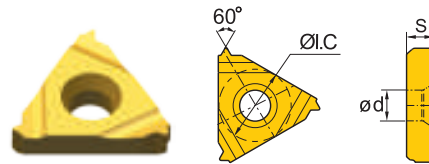


ISO metric thread (with end)

ISO 965-1980 DIN 13
GB/T 197-2003 Tolerance class: 6g/6H



R type



L type

| | Type | | Basic dimensions(mm) | | | | Recommended coating grade | |
|-----------------|----------------------|---------------------|----------------------|------|-------|-----|---------------------------|--------|
| | The right hand tools | The left hand tools | Pitch | S | ØI.C | ød | YBG203 | YBG205 |
| Internal thread | Z111R0.5ISO | Z111L0.5ISO | 0.50 | 3.05 | 6.35 | 3.2 | ★ | ○ |
| | Z111R0.75ISO | Z111L0.75ISO | 0.75 | 3.05 | 6.35 | 3.2 | ★ | ○ |
| | Z111R1.0ISO | Z111L1.0ISO | 1.00 | 3.05 | 6.35 | 3.2 | ★ | ○ |
| | Z111R1.25ISO | Z111L1.25ISO | 1.25 | 3.05 | 6.35 | 3.2 | ★ | ○ |
| | Z111R1.5ISO | Z111L1.5ISO | 1.50 | 3.05 | 6.35 | 3.2 | ★ | ○ |
| | Z111R1.75ISO | Z111L1.75ISO | 1.75 | 3.05 | 6.35 | 3.2 | ★ | ○ |
| | Z111R2.0ISO | Z111L2.0ISO | 2.00 | 3.05 | 6.35 | 3.2 | ★ | ○ |
| | Z161R0.5ISO | Z161L0.5ISO | 0.50 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z161R0.75ISO | Z161L0.75ISO | 0.75 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z161R1.0ISO | Z161L1.0ISO | 1.00 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z161R1.25ISO | Z161L1.25ISO | 1.25 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z161R1.5ISO | Z161L1.5ISO | 1.50 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z161R1.75ISO | Z161L1.75ISO | 1.75 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z161R2.0ISO | Z161L2.0ISO | 2.00 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z161R2.5ISO | Z161L2.5ISO | 2.50 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z161R3.0ISO | Z161L3.0ISO | 3.00 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z221R3.5ISO | Z221L3.5ISO | 3.50 | 4.65 | 12.7 | 5.0 | ★ | ○ |
| | Z221R4.0ISO | Z221L4.0ISO | 4.00 | 4.65 | 12.7 | 5.0 | ★ | ○ |
| | Z221R4.5ISO | Z221L4.5ISO | 4.50 | 4.65 | 12.7 | 5.0 | ★ | ○ |
| | Z221R5.0ISO | Z221L5.0ISO | 5.00 | 4.65 | 12.7 | 5.0 | ★ | ○ |
| Z221R5.5ISO | Z221L5.5ISO | 5.50 | 4.65 | 12.7 | 5.0 | ★ | ○ | |
| Z221R6.0ISO | Z221L6.0ISO | 6.00 | 4.65 | 12.7 | 5.0 | ★ | ○ | |

★Recommended grade (always stock available) ● Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

Threading

Threading insert



TURNING Threading Tools

Threading insert

General turning

Parting and grooving

Threading

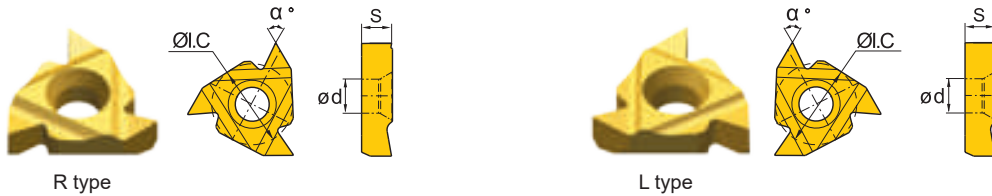
Threading insert

General pitch thread (without end)



| | | Type | | Basic dimensions(mm) | | | | Recommended coating grade | | |
|-----------------|-----|----------------------|---------------------|-----------------------|------|-------|-----|---------------------------|--------|--------|
| | | The right hand tools | The left hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | α° | YBG203 | YBG205 |
| External thread | 55° | Z16ERA55 | Z16ELA55 | 0.5-1.5(48-16) | 3.52 | 9.525 | 4.0 | 55° | ★ | ○ |
| | | Z16ERG55 | Z16ELG55 | 1.75-3.0(14-8) | 3.52 | 9.525 | 4.0 | 55° | ★ | ○ |
| | | Z16ERAG55 | Z16ELAG55 | 0.5-3.0(48-8) | 3.52 | 9.525 | 4.0 | 55° | ★ | ○ |
| | | Z22ERN55 | Z22ELN55 | 3.5-5.0(7-5) | 4.65 | 12.7 | 5.0 | 55° | ★ | ○ |
| | 60° | Z16ERA60 | Z16ELA60 | 0.5-1.5(48-16) | 3.52 | 9.525 | 4.0 | 60° | ★ | ○ |
| | | Z16ERG60 | Z16ELG60 | 1.75-3.0(14-8) | 3.52 | 9.525 | 4.0 | 60° | ★ | ○ |
| | | Z16ERAG60 | Z16ELAG60 | 0.5-3.0(48-8) | 3.52 | 9.525 | 4.0 | 60° | ★ | ○ |
| | | Z22ERN60 | Z22ELN60 | 3.5-5.0(7-5) | 4.65 | 12.7 | 5.0 | 60° | ★ | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



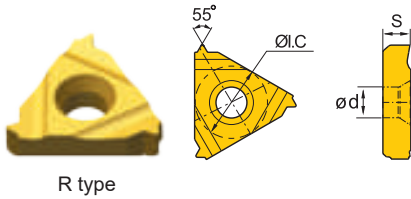
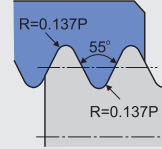
| | | Type | | Basic dimensions(mm) | | | | Recommended coating grade | | |
|-----------------|-----|----------------------|---------------------|-----------------------|------|-------|-----|---------------------------|--------|--------|
| | | The right hand tools | The left hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | α° | YBG203 | YBG205 |
| Internal thread | 55° | Z11IRA55 | Z11ILA55 | 0.5-1.5(48-16) | 3.05 | 6.35 | 3.2 | 55° | ★ | ○ |
| | | Z16IRA55 | Z16ILA55 | 0.5-1.5(48-16) | 3.52 | 9.525 | 4.0 | 55° | ★ | ○ |
| | | Z16IRG55 | Z16ILG55 | 1.75-3.0(14-8) | 3.52 | 9.525 | 4.0 | 55° | ★ | ○ |
| | | Z16IRAG55 | Z16ILAG55 | 0.5-3.0(48-8) | 3.52 | 9.525 | 4.0 | 55° | ★ | ○ |
| | | Z22IRN55 | Z22ILN55 | 3.5-5.0(7-5) | 4.65 | 12.7 | 5.0 | 55° | ★ | ○ |
| | 60° | Z11IRA60 | Z11ILA60 | 0.5-1.5(48-16) | 3.05 | 6.35 | 3.2 | 60° | ★ | ○ |
| | | Z16IRA60 | Z16ILA60 | 0.5-1.5(48-16) | 3.52 | 9.525 | 4.0 | 60° | ★ | ○ |
| | | Z16IRG60 | Z16ILG60 | 1.75-3.0(14-8) | 3.52 | 9.525 | 4.0 | 60° | ★ | ○ |
| | | Z16IRAG60 | Z16ILAG60 | 0.5-3.0(48-8) | 3.52 | 9.525 | 4.0 | 60° | ★ | ○ |
| | | Z22IRN60 | Z22ILN60 | 3.5-5.0(7-5) | 4.65 | 12.7 | 5.0 | 60° | ★ | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

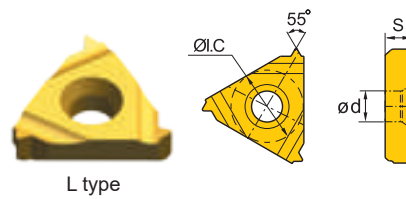


Whitworth thread (with end)

ISO 228/1:1982,
DIN 259, B.S.84:1956
Tolerance class: Medium class A



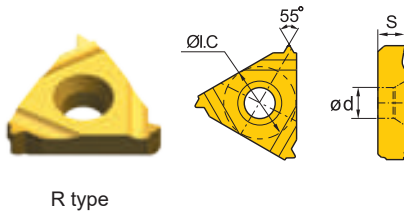
R type



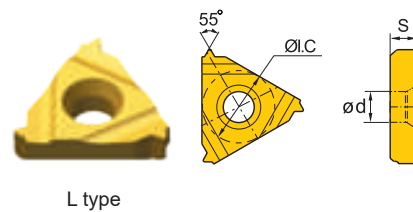
L type

| | Type | | Basic dimensions(mm) | | | | Recommended coating grade | |
|-----------------|----------------------|---------------------|-----------------------|------|-------|-----|---------------------------|--------|
| | The right hand tools | The left hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | YBG203 | YBG205 |
| External thread | Z16ER8W | Z16EL8W | 8 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER9W | Z16EL9W | 9 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER10W | Z16EL10W | 10 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER11W | Z16EL11W | 11 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER12W | Z16EL12W | 12 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER14W | Z16EL14W | 14 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER16W | Z16EL16W | 16 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER18W | Z16EL18W | 18 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER19W | Z16EL19W | 19 | 3.52 | 9.525 | 4.0 | ★ | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



R type



L type

| | Type | | Basic dimensions(mm) | | | | Recommended coating grade | |
|-----------------|----------------------|---------------------|-----------------------|------|-------|-----|---------------------------|--------|
| | The right hand tools | The left hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | YBG203 | YBG205 |
| Internal thread | Z16IR8W | Z16IL8W | 8 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR9W | Z16IL9W | 9 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR10W | Z16IL10W | 10 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR11W | Z16IL11W | 11 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR12W | Z16IL12W | 12 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR14W | Z16IL14W | 14 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR16W | Z16IL16W | 16 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR18W | Z16IL18W | 18 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR19W | Z16IL19W | 19 | 3.52 | 9.525 | 4.0 | ★ | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

Threading

Threading insert



TURNING Threading Tools

Threading insert

General turning

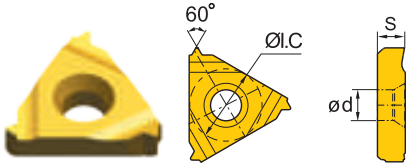
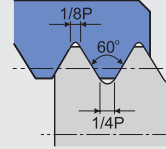
Parting and grooving

Threading

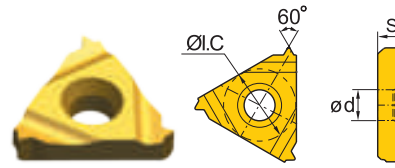
Threading insert

Unified thread (with end)

ASME B1.1-1989
Tolerance class: 2A/2B



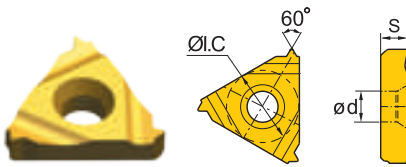
R type



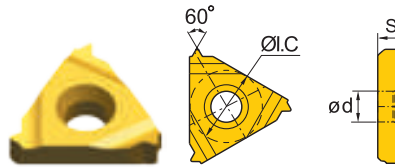
L type

| | Type | | Basic dimensions(mm) | | | | Recommended coating grade | |
|-----------------|----------------------|---------------------|-----------------------|------|-------|-----|---------------------------|--------|
| | The right hand tools | The left hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | YBG203 | YBG205 |
| External thread | Z16ER8UN | Z16EL8UN | 8 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER10UN | Z16EL10UN | 10 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER12UN | Z16EL12UN | 12 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER14UN | Z16EL14UN | 14 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER16UN | Z16EL16UN | 16 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER18UN | Z16EL18UN | 18 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER20UN | Z16EL20UN | 20 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER24UN | Z16EL24UN | 24 | 3.52 | 9.525 | 4.0 | ★ | ○ |

★Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order



R type



L type

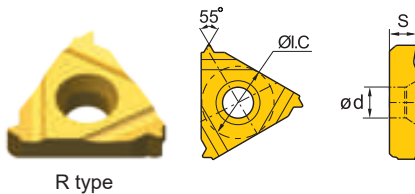
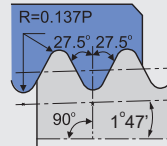
| | Type | | Basic dimensions(mm) | | | | Recommended coating grade | |
|-----------------|----------------------|---------------------|-----------------------|------|-------|-----|---------------------------|--------|
| | The right hand tools | The left hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | YBG203 | YBG205 |
| Internal thread | Z16IR8UN | Z16IL8UN | 8 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR10UN | Z16IL10UN | 10 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR12UN | Z16IL12UN | 12 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR14UN | Z16IL14UN | 14 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR16UN | Z16IL16UN | 16 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR18UN | Z16IL18UN | 18 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR20UN | Z16IL20UN | 20 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR24UN | Z16IL24UN | 24 | 3.52 | 9.525 | 4.0 | ★ | ○ |

★Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

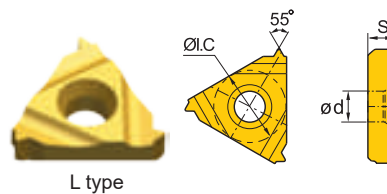


British standard taper piper thread (with end)

ISO 7/1:1994
B.S.21:1985
Standard BSPT



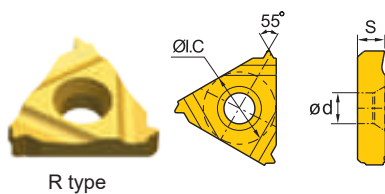
R type



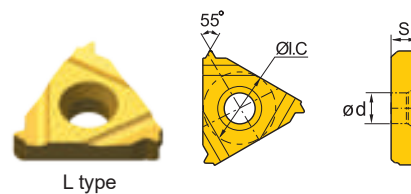
L type

| | Type | | Basic dimensions(mm) | | | | Recommended coating grade | |
|-----------------|----------------------|---------------------|-----------------------|------|-------|-----|---------------------------|--------|
| | The right hand tools | The left hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | YBG203 | YBG205 |
| External thread | Z16ER11BSPT | Z16EL11BSPT | 11 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER14BSPT | Z16EL14BSPT | 14 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER19BSPT | Z16EL19BSPT | 19 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER28BSPT | Z16EL28BSPT | 28 | 3.52 | 9.525 | 4.0 | ★ | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



R type



L type

| | Type | | Basic dimensions(mm) | | | | Recommended coating grade | |
|-----------------|----------------------|---------------------|-----------------------|------|-------|-----|---------------------------|--------|
| | The right hand tools | The left hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | YBG203 | YBG205 |
| Internal thread | Z16IR11BSPT | Z16IL11BSPT | 11 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR14BSPT | Z16IL14BSPT | 14 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR19BSPT | Z16IL19BSPT | 19 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR28BSPT | Z16IL28BSPT | 28 | 3.52 | 9.525 | 4.0 | ★ | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

Threading

Threading insert



TURNING Threading Tools

Threading insert

General turning

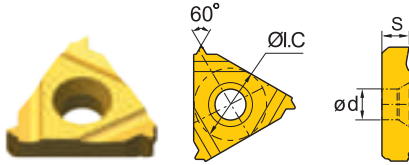
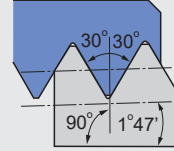
Parting and grooving

Threading

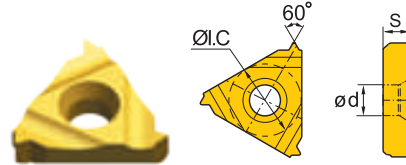
Threading insert

American standard taper pipe thread (with end)

ASME B1.20.1-1983
Standard NPT



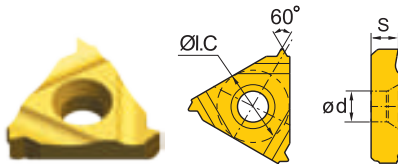
R type



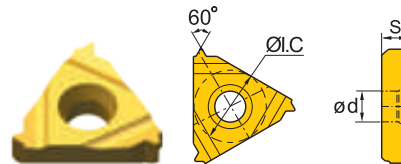
L type

| | Type | | Basic dimensions(mm) | | | | Recommended coating grade | |
|-----------------|----------------------|---------------------|-----------------------|------|-------|-----|---------------------------|--------|
| | The right hand tools | The left hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | YBG203 | YBG205 |
| External thread | Z16ER8NPT | Z16EL8NPT | 8 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER11.5NPT | Z16EL11.5NPT | 11.5 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER14NPT | Z16EL14NPT | 14 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER18NPT | Z16EL18NPT | 18 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16ER27NPT | Z16EL27NPT | 27 | 3.52 | 9.525 | 4.0 | ★ | ○ |

★Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order



R type



L type

| | Type | | Basic dimensions(mm) | | | | Recommended coating grade | |
|-----------------|----------------------|---------------------|-----------------------|------|-------|-----|---------------------------|--------|
| | The right hand tools | The left hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | YBG203 | YBG205 |
| Internal thread | Z16IR8NPT | Z16IL8NPT | 8 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR11.5NPT | Z16IL11.5NPT | 11.5 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR14NPT | Z16IL14NPT | 14 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR18NPT | Z16IL18NPT | 18 | 3.52 | 9.525 | 4.0 | ★ | ○ |
| | Z16IR27NPT | Z16IL27NPT | 27 | 3.52 | 9.525 | 4.0 | ★ | ○ |

★Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order



Threading inserts code key

Cutting direction

R > Right rotation L > Left rotation

Insert shape



T

Other

Z

22 > Indicates that the inner cutting circle diameter of the blade is 12.7

16 > Indicates that the inner cutting circle diameter of the blade is 9.525

11 > Indicates that the inner cutting circle diameter of the blade is 6.35

Number of cutting edge teeth

01 > Number of teeth per cutting edge

Cutting Type

W > External thread cutting inserts

N > Internal thread cutting inserts

R T 16. 01 W- 3.00 GM (B)

Pitch

Full tooth shape
(pitch range is indicated by numbers)

| mm | TPI |
|----------|------|
| 0.35-9.0 | 72-2 |

V-tooth
(pitch range is indicated by letter)

| | mm | TPI |
|-----------|----------|---------|
| A | 0.5-1.5 | 48-16 |
| AG | 0.5-3.0 | 48-8 |
| G | 1.75-3.0 | 14-8 |
| N | 3.5-5.0 | 7-5 |
| Q | 5.5-6.0 | 4 1/2-4 |

Threaded tooth shape

| | |
|-------------|-------------------------------|
| GM | ISO metric 60° thread |
| 60 | 60° general pitch thread |
| 55 | 55° general pitch thread |
| W | Whitworth thread |
| UN | Unified thread |
| BSPT | British standard pipe thread |
| NPT | American standard pipe thread |

Supplementary number

B > Thin Threaded Inserts

TURNING Threading Tools

Threading tools

General turning

Parting and grooving

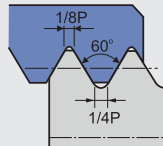
Threading

Threading tools

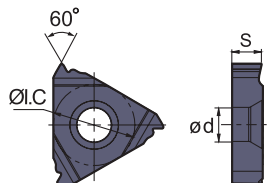
ISO metric thread (with end) **Thin type**

ISO 965-1980, DIN 13, GB/T 197-2003

Tolerance class: 6g/6H



R type

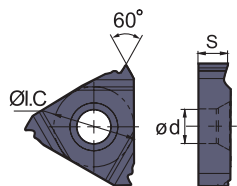


| | Type | Basic dimensions(mm) | | | | Recommended coating grade |
|-----------------|----------------------|----------------------|------|-------|-----|---------------------------|
| | The right hand tools | Pitch/mm | S | ØI.C | ød | YBG202 |
| External thread | RT16.01W-0.50GMB | 0.50 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-0.75GMB | 0.75 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-1.00GMB | 1.00 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-1.25GMB | 1.25 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-1.50GMB | 1.50 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-1.75GMB | 1.75 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-2.00GMB | 2.00 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-2.50GMB | 2.50 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-3.00GMB | 3.00 | 3.52 | 9.525 | 4.0 | ★ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



R type



| | Type | Basic dimensions(mm) | | | | Recommended coating grade |
|-----------------|----------------------|----------------------|------|-------|-----|---------------------------|
| | The right hand tools | Pitch/mm | S | ØI.C | ød | YBG202 |
| Internal thread | RT16.01N-0.50GMB | 0.50 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-0.75GMB | 0.75 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-1.00GMB | 1.00 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-1.25GMB | 1.25 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-1.50GMB | 1.50 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-1.75GMB | 1.75 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-2.00GMB | 2.00 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-2.50GMB | 2.50 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-3.00GMB | 3.00 | 3.52 | 9.525 | 4.0 | ★ |

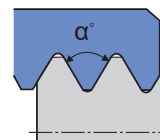
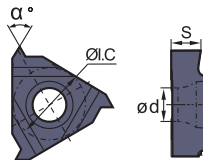
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



General pitch thread (without end) Thin type



R type



| | | Type | Basic dimensions(mm) | | | | Recommended coating grade | |
|-----------------|-----|----------------------|-----------------------|------|-------|-----|---------------------------|--------|
| | | The right hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | α° | YBG202 |
| External thread | 60° | RT16.01W-A60B | 0.5-1.5(48-16) | 3.52 | 9.525 | 4.0 | 60° | ★ |
| | | RT16.01W-G60B | 1.75-3.0(14-8) | 3.52 | 9.525 | 4.0 | 60° | ★ |
| | | RT16.01W-AG60B | 0.5-3.0(48-8) | 3.52 | 9.525 | 4.0 | 60° | ★ |
| | 55° | RT16.01W-A55B | 0.5-1.5(48-16) | 3.52 | 9.525 | 4.0 | 55° | ★ |
| | | RT16.01W-G55B | 1.75-3.0(14-8) | 3.52 | 9.525 | 4.0 | 55° | ★ |
| | | RT16.01W-AG55B | 0.5-3.0(48-8) | 3.52 | 9.525 | 4.0 | 55° | ★ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

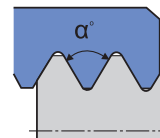
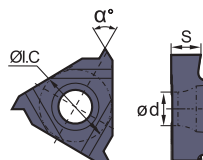
Parting and grooving

Threading

Threading tools



R type



| | | Type | Basic dimensions(mm) | | | | Recommended coating grade | |
|-----------------|-----|----------------------|-----------------------|------|-------|-----|---------------------------|--------|
| | | The right hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | α° | YBG202 |
| Internal thread | 60° | RT16.01N-A60B | 0.5-1.5(48-16) | 3.52 | 9.525 | 4.0 | 60° | ★ |
| | | RT16.01N-G60B | 1.75-3.0(14-8) | 3.52 | 9.525 | 4.0 | 60° | ★ |
| | | RT16.01N-AG60B | 0.5-3.0(48-8) | 3.52 | 9.525 | 4.0 | 60° | ★ |
| | 55° | RT16.01N-A55B | 0.5-1.5(48-16) | 3.52 | 9.525 | 4.0 | 55° | ★ |
| | | RT16.01N-G55B | 1.75-3.0(14-8) | 3.52 | 9.525 | 4.0 | 55° | ★ |
| | | RT16.01N-AG55B | 0.5-3.0(48-8) | 3.52 | 9.525 | 4.0 | 55° | ★ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

A TURNING Threading Tools

Threading tools

General turning

Parting and grooving

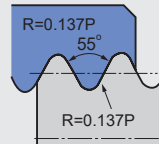
Threading

Threading tools

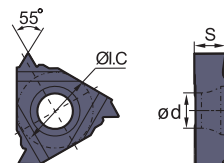
Whitworth thread (with end) **Thin type**

ISO 228/1:1982, DIN 259, B.S.84:1956

Tolerance class: Medium class A



R type

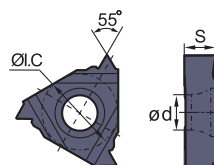


| | Type | Basic dimensions(mm) | | | | Recommended coating grade |
|-----------------|----------------------|-----------------------|------|-------|-----|---------------------------|
| | The right hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | YBG202 |
| External thread | RT16.01W-8WB | 8 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-9WB | 9 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-10WB | 10 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-11WB | 11 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-12WB | 12 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-14WB | 14 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-16WB | 16 | 3.52 | 9.525 | 4.0 | ★ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



R type



| | Type | Basic dimensions(mm) | | | | Recommended coating grade |
|-----------------|----------------------|-----------------------|------|-------|-----|---------------------------|
| | The right hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | YBG202 |
| Internal thread | RT16.01N-8WB | 8 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-9WB | 9 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-10WB | 10 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-11WB | 11 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-12WB | 12 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-14WB | 14 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-16WB | 16 | 3.52 | 9.525 | 4.0 | ★ |

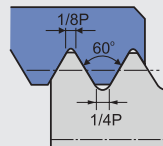
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



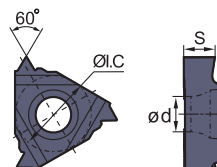
Unified thread (with end) **Thin type**

ASME B1.1-1989

Tolerance class: 2A/2B



R type

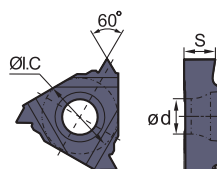


| | Type | Basic dimensions(mm) | | | | Recommended coating grade |
|-----------------|-----------------------|-----------------------|------|-------|-----|---------------------------|
| | The right hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | YBG202 |
| External thread | RT16.01W-8UNB | 8 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-10UNB | 10 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-12UNB | 12 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-14UNB | 14 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-16UNB | 16 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-18UNB | 18 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-20UNB | 20 | 3.52 | 9.525 | 4.0 | ★ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



R type



| | Type | Basic dimensions(mm) | | | | Recommended coating grade |
|-----------------|-----------------------|-----------------------|------|-------|-----|---------------------------|
| | The right hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | YBG202 |
| Internal thread | RT16.01N-8UNB | 8 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-10UNB | 10 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-12UNB | 12 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-14UNB | 14 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-16UNB | 16 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-18UNB | 18 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-20UNB | 20 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-24UNB | 24 | 3.52 | 9.525 | 4.0 | ★ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

Threading

Threading tools

TURNING Threading Tools

Threading tools

General turning

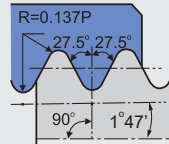
Parting and grooving

Threading

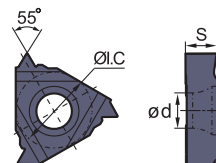
Threading tools

British standard taper pipe thread (with end) **Thin type**

ISO 7/1:1994,B.S.21:1985
Standard BSPT



R type

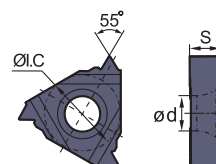


| | Type | Basic dimensions(mm) | | | | Recommended coating grade |
|-----------------|----------------------|-----------------------|------|-------|-----|---------------------------|
| | | Pitch/mm (pitch/Inch) | S | ØI.C | ød | |
| | The right hand tools | | | | | YBG202 |
| External thread | RT16.01W-11BSPTB | 11 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-14BSPTB | 14 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-19BSPTB | 19 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-28BSPTB | 28 | 3.52 | 9.525 | 4.0 | ★ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



R type



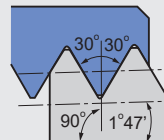
| | Type | Basic dimensions(mm) | | | | Recommended coating grade |
|-----------------|----------------------|-----------------------|------|-------|-----|---------------------------|
| | | Pitch/mm (pitch/Inch) | S | ØI.C | ød | |
| | The right hand tools | | | | | YBG202 |
| Internal thread | RT16.01N-11BSPTB | 11 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-14BSPTB | 14 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-19BSPTB | 19 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-28BSPTB | 28 | 3.52 | 9.525 | 4.0 | ★ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

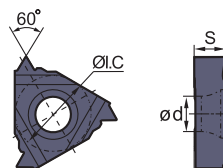


American standard taper pipe thread (with end) **Thin type**

ASME B1.20.1-1983
Standard NPT



R type

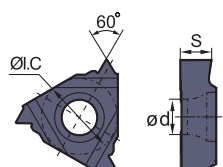


| | Type | Basic dimensions(mm) | | | | Recommended coating grade |
|-----------------|----------------------|-----------------------|------|-------|-----|---------------------------|
| | The right hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | YBG202 |
| External thread | RT16.01W-8NPTB | 8 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-11.5NPTB | 11.5 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-14NPTB | 14 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-18NPTB | 18 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01W-27NPTB | 27 | 3.52 | 9.525 | 4.0 | ★ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



R type



| | Type | Basic dimensions(mm) | | | | Recommended coating grade |
|-----------------|----------------------|-----------------------|------|-------|-----|---------------------------|
| | The right hand tools | Pitch/mm (pitch/Inch) | S | ØI.C | ød | YBG202 |
| Internal thread | RT16.01N-8NPTB | 8 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-11.5NPTB | 11.5 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-14NPTB | 14 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-18NPTB | 18 | 3.52 | 9.525 | 4.0 | ★ |
| | RT16.01N-27NPTB | 27 | 3.52 | 9.525 | 4.0 | ★ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

Threading

Threading tools

A TURNING Threading Tools

Threading tools

General turning
Parting and grooving
Threading

Threading tools

Threading tools code key

Clamping system

Top clamping Screw clamping

ZC **ZS**

Thread type

I > Internal thread
E > External thread

Cutting direction

Right hand Left hand

R **L**

ZS E R 20 20 K 16

Nose height

Note: 00 for round tool holder.
Only to integer, for example:
h=8mm is labeled as 08.

Shank width

Note: Diameter for round tool holder
for example: b=8mm is labeled as 08.

Tool length

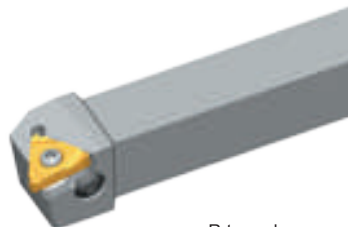
| Code | H | K | M | P | Q | R | S | T | U |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Length | 100 | 125 | 150 | 170 | 180 | 200 | 250 | 300 | 350 |

Insert size

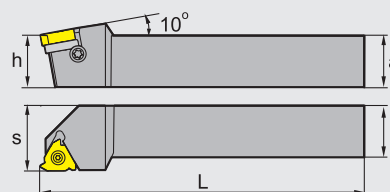
| Code | 11 | 16 | 22 |
|----------------------|------|-------|-------|
| Triangle side length | 11 | 16 | 22 |
| Inscribed circle | 6.35 | 9.525 | 12.70 |



External threading tools



R-type shown



| Type | Stock | Basic dimensions(mm) | | | | | Applicable inserts | Inserts screw | Shim | Shim screw | Wrench | |
|---------|---------|----------------------|----|----|-----|-----|--------------------|---------------|------|------------|--------|--|
| | | a | h | b | L | s | | | | | | |
| ZSER | 1616H16 | ▲ | 16 | 16 | 16 | 100 | 20 | | | | | |
| | 2020K16 | ▲ | 20 | 20 | 20 | 125 | 25 | | | | | |
| | 2525M16 | ▲ | 25 | 25 | 25 | 150 | 32 | | | | | |
| | 3225P16 | ▲ | 32 | 32 | 25 | 170 | 32 | | | | | |
| | 3232P16 | ▲ | 32 | 32 | 32 | 170 | 40 | | | | | |
| | 2525M22 | ▲ | 25 | 25 | 25 | 150 | 32 | | | | | |
| | 3225P22 | ▲ | 32 | 32 | 25 | 170 | 32 | | | | | |
| | 3232P22 | ▲ | 32 | 32 | 32 | 170 | 40 | | | | | |
| 4040S22 | △ | 40 | 40 | 40 | 250 | 50 | | | | | | |
| ZSEL | 1616H16 | ▲ | 16 | 16 | 16 | 100 | 20 | | | | | |
| | 2020K16 | ▲ | 20 | 20 | 20 | 125 | 25 | | | | | |
| | 2525M16 | ▲ | 25 | 25 | 25 | 150 | 32 | | | | | |
| | 3225P16 | ▲ | 32 | 32 | 25 | 170 | 32 | | | | | |
| | 3232P16 | ▲ | 32 | 32 | 32 | 170 | 40 | | | | | |
| | 2525M22 | ▲ | 25 | 25 | 25 | 150 | 32 | | | | | |
| | 3225P22 | ▲ | 32 | 32 | 25 | 170 | 32 | | | | | |
| | 3232P22 | ▲ | 32 | 32 | 32 | 170 | 40 | | | | | |
| 4040S22 | △ | 40 | 40 | 40 | 250 | 50 | | | | | | |

▲Stock available

△Make-to-order

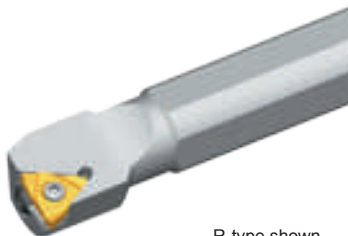
General turning

Parting and grooving

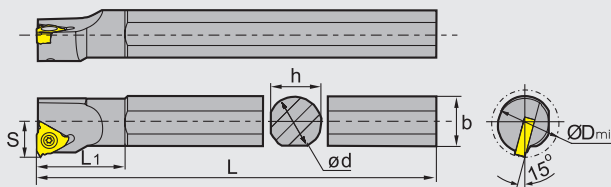
Threading

Threading tools

Internal threading tools



R-type shown



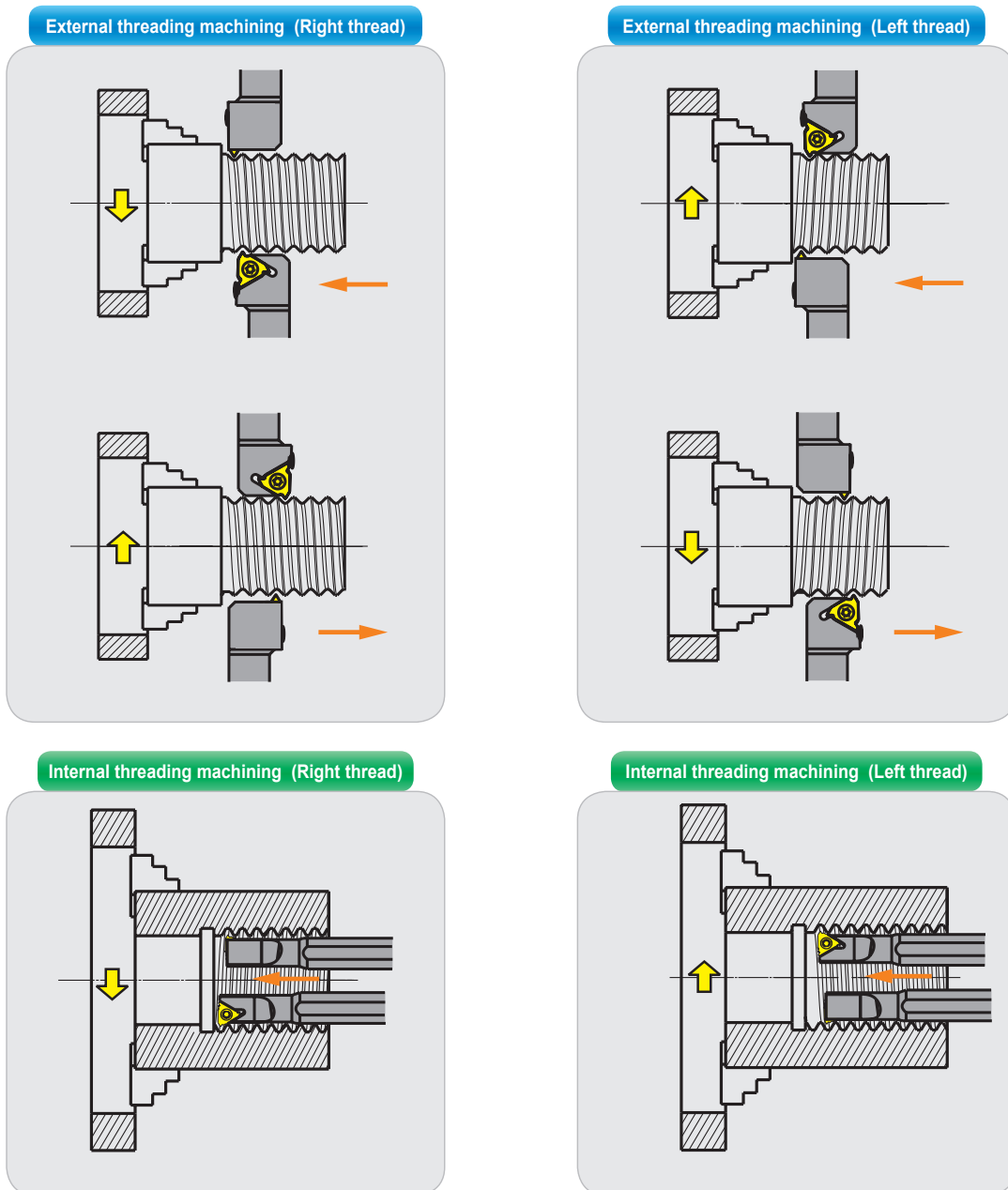
| Type | Stock | Basic dimensions(mm) | | | | | | | | Applicable inserts | Inserts screw | Shim | Shim screw | Wrench | |
|---------|---------|----------------------|-----|------|------------------|------|------|----------------|-----------|--------------------|---------------|---------------|------------|--------|-----|
| | | d | L | b | D _{min} | s | h | L ₁ | | | | | | | |
| ZSIR | 0016K11 | ▲ | 16 | 125 | 15.5 | 12 | 10 | 15 | 20.9 | Z11IR□□□□ | I60 M2.5X6.5T | --- | --- | WT08IP | |
| | 0016M11 | ▲ | 16 | 150 | 16 | 16 | 10.5 | 15 | 25.9 | | Z16IR□□□□ | I60 M3.5X08TT | --- | | --- |
| | 0016M16 | ▲ | 16 | 150 | 15.5 | 20 | 12 | 15 | 27 | | | | | | |
| | 0020M16 | ▲ | 20 | 150 | 19 | 25 | 14 | 18 | 28.7 | | | | | | |
| | 0020Q16 | ▲ | 20 | 180 | 19 | 25 | 14 | 18 | 34 | | | | | | |
| | 0025M16 | ▲ | 25 | 150 | 24 | 32 | 17 | 23 | 28.8 | | | | | | |
| | 0032R16 | ▲ | 32 | 200 | 31 | 40 | 22 | 30 | 30.9 | Z22IR□□□□ | I60 M3.5X12TT | MT16-□□MN | SM4X8C | WT15IP | |
| | 0032S16 | ▲ | 32 | 250 | 31 | 40 | 22 | 30 | 30.9 | | | | | | |
| | 0040T16 | ▲ | 40 | 300 | 38.5 | 50 | 27 | 37 | 31.5 | | | | | | |
| | 0050U16 | ▲ | 50 | 350 | 48.5 | 63 | 35 | 49 | 40.2 | Z22IR□□□□ | I60 M5×13.2 | --- | --- | WT20IP | |
| | 0020Q22 | ▲ | 20 | 180 | 19 | 25 | 15 | 18 | 35 | | | | | | |
| | 0025R22 | ▲ | 25 | 200 | 24 | 32 | 19 | 23 | 39 | | | | | | |
| | 0032S22 | ▲ | 32 | 250 | 31 | 40 | 22 | 30 | 36.4 | | | | | | |
| | 0040T22 | ▲ | 40 | 300 | 38.5 | 50 | 27 | 37 | 37.2 | | | | | | |
| | 0050U22 | ▲ | 50 | 350 | 48.5 | 63 | 35 | 47 | 42.6 | Z11IL□□□□ | I60 M2.5X6.5T | --- | --- | WT07IP | |
| 0016K11 | ▲ | 16 | 125 | 15.5 | 12 | 10 | 15 | 20.9 | | | | | | | |
| 0016M11 | ▲ | 16 | 150 | 16 | 16 | 10.5 | 15 | 25.9 | | | | | | | |
| 0016M16 | ▲ | 16 | 150 | 16 | 20 | 12 | 15 | 27 | Z16IL□□□□ | | I60 M3.5X08TT | --- | --- | WT15IP | |
| 0020M16 | ▲ | 20 | 150 | 19 | 25 | 14 | 18 | 28.7 | | | | | | | |
| 0020Q16 | ▲ | 20 | 180 | 19 | 25 | 14 | 18 | 34 | | | | | | | |
| 0025M16 | ▲ | 25 | 150 | 24 | 32 | 17 | 23 | 28.8 | | | | | | | |
| 0032R16 | ▲ | 32 | 200 | 31 | 40 | 22 | 30 | 30.9 | | | | | | | |
| 0032S16 | ▲ | 32 | 250 | 31 | 40 | 22 | 30 | 30.9 | Z22IL□□□□ | | I60 M3.5X12TT | MT16-□□MN | SM4X8C | WT15IP | |
| 0040T16 | ▲ | 40 | 300 | 38.5 | 50 | 27 | 37 | 31.5 | | | | | | | |
| 0050U16 | ▲ | 50 | 350 | 48.5 | 63 | 35 | 49 | 40.2 | | | | | | | |
| 0020Q22 | ▲ | 20 | 180 | 19 | 25 | 15 | 18 | 35 | Z22IL□□□□ | | I60 M5×13.2 | --- | --- | WT20IP | |
| 0025R22 | ▲ | 25 | 200 | 24 | 32 | 19 | 23 | 39 | | | | | | | |
| 0032S22 | ▲ | 32 | 250 | 31 | 40 | 22 | 30 | 36.4 | | | | | | | |
| 0040T22 | ▲ | 40 | 300 | 38.5 | 50 | 27 | 37 | 37.2 | | | | | | | |
| 0050U22 | ▲ | 50 | 350 | 48.5 | 63 | 35 | 47 | 42.6 | | | | | | | |

▲Stock available △Make-to-order

Please follow the following steps to get the best threading result:

- 1 Select proper thread machining method.
- 2 Define helical angle and select shim.
- 3 Select proper insert and tool holder size.
- 4 By checking reference table of standard threading programs, select feasible cutting parameters.
- 5 Select feed way.

Machining method of threading tools





TURNING Threading Tools

Application information of threading

Decide helical angle and select shim

The clearance angle of threading inserts is actually along the edge (flank). This has significant effect on heat diffusion, spread of abrasion as well as tool life, security and pitch quality. The clearance angle of threading pitch on clearance face is determined by thread helical angle. These two angles are similar to each other to some extent. If inclined angle of insert is different from the helical angle, then the clearance angle won't be the same either.

The helical angle of pitch has to be the same with the inclined angle of insert to prevent over wearing on the clearance face which could affect tool life. the helical angle is calculated as below:

$$e = \arctan \frac{p}{d_2 \times \pi}$$

P= Pitch

d₂= pitch diameter

The most common inclined angle is 1°. MT standard shim and its inclined angle is also 1°.

Calculation of clearance angle:

Clearance angle is calculated as below:

$$\beta = \arctan (\tan \theta \times \tan \alpha)$$

2θ=Thread profile angle

α=The rake angle of external standard threading tools is 10°; the rake angle of internal standard threading tools is 15°.

The shim has to be changed when helical angle of thread is ≤ clearance angle of tool, which could cause intervene on insert flank.

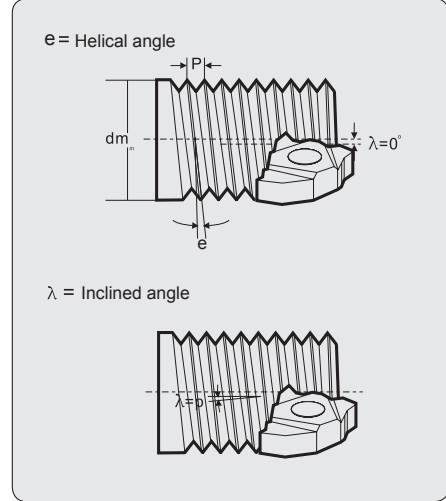
Please change the shim to adjust the difference between helical angle of thread and inclined angle of shim to be within 2°~0°.

For example: when P=1.5, d₂=24mm, helical angle 1.14°-(2°~0°)=inclined angle (-0.86°~1.14°) it is feasible to use standard shim 1°.

Shim specification table is as follows:

| Screw pitch range | Insert dimensions | Inclined angle | Shim |
|-------------------|-------------------|----------------|-----------|
| 0.5-3.0 | 16 | 0 | MT16-00MN |
| | | 1 | MT16-01MN |
| | | 2 | MT16-02MN |
| | | 3 | MT16-03MN |
| 3.5-6.0 | 22 | 0 | MT22-00MN |
| | | 1 | MT22-01MN |
| | | 2 | MT22-02MN |
| | | 3 | MT22-03MN |

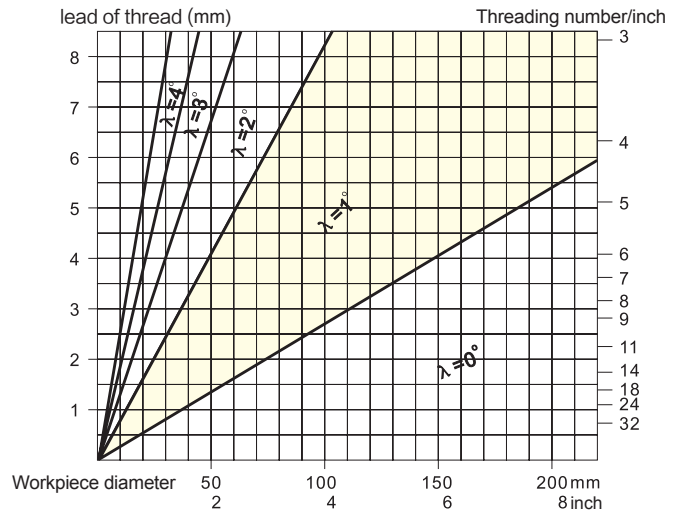
Note: the standard angle of shim for our threading tools is 1°. ((MT16-01MN or MT22-01MN))



Please refer to the table below for actual value:

| Thread profile angle 2θ | β | |
|-------------------------|-----------------|-----------------|
| | External thread | Internal thread |
| 60° | 5.8° | 8.79° |
| 55° | 5.24° | 7.94° |
| 30° | 2.7° | 4.1° |
| 29° | 2.6° | 3.96° |

Select shim:





Select proper inserts and size of tool holder (Please refer to detailed table of threading tools and inserts)

Parameter table for threading program under different standards

Table of recommended in-feed for metric ISO external threading with wiper edge

| Screw pitch | 1.0 | 1.25 | 1.5 | 1.75 | 2.0 | 2.5 | 3.0 | 4.0 | 5.0 |
|--|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Total in-feed | 0.72 | 0.86 | 1.02 | 1.17 | 1.33 | 1.63 | 1.94 | 2.58 | 3.21 |
| Number of passes | 5 | 6 | 7 | 8 | 9 | 11 | 13 | 15 | 17 |
| Order to follow in threading operation | Value of radial in-feed (X) and flank in-feed (Z) | | | | | | | | |
| | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z |
| 1 | 0.20/- | 0.20/- | 0.21/- | 0.22/- | 0.24/- | 0.25/- | 0.26/- | 0.35/- | 0.40/- |
| 2 | 0.18/0.10 | 0.18/0.10 | 0.18/0.10 | 0.20/0.12 | 0.22/0.13 | 0.24/0.14 | 0.24/0.14 | 0.30/0.17 | 0.35/0.20 |
| 3 | 0.16/0.09 | 0.14/0.09 | 0.18/0.10 | 0.18/0.10 | 0.20/0.12 | 0.21/0.12 | 0.20/0.12 | 0.25/0.14 | 0.30/0.17 |
| 4 | 0.10/0.06 | 0.10/0.08 | 0.15/0.09 | 0.15/0.09 | 0.15/0.09 | 0.18/0.10 | 0.20/0.12 | 0.20/0.12 | 0.28/0.16 |
| 5 | 0.08/- | 0.08/0.06 | 0.12/0.07 | 0.13/0.08 | 0.12/0.07 | 0.15/0.09 | 0.18/0.10 | 0.18/0.10 | 0.25/0.14 |
| 6 | | | 0.10/0.06 | 0.11/0.06 | 0.12/0.07 | 0.12/0.07 | 0.15/0.09 | 0.18/0.10 | 0.20/0.12 |
| 7 | | | 0.08/- | 0.10/0.06 | 0.10/0.06 | 0.12/0.07 | 0.13/0.08 | 0.16/0.09 | 0.18/0.10 |
| 8 | | | | 0.08/- | 0.10/0.06 | 0.10/0.06 | 0.12/0.07 | 0.15/0.09 | 0.16/0.09 |
| 9 | | | | | 0.08/- | 0.10/0.06 | 0.10/0.06 | 0.15/0.09 | 0.15/0.09 |
| 10 | | | | | | 0.08/0.05 | 0.10/0.06 | 0.13/0.08 | 0.15/0.09 |
| 11 | | | | | | 0.08/- | 0.08/0.06 | 0.12/0.07 | 0.13/0.08 |
| 12 | | | | | | | 0.08/0.05 | 0.12/0.07 | 0.13/0.08 |
| 13 | | | | | | | | 0.11/0.06 | 0.12/0.07 |
| 14 | | | | | | | | 0.10/0.06 | 0.12/0.07 |
| 15 | | | | | | | | 0.08/- | 0.11/0.06 |
| 16 | | | | | | | | | 0.10/0.06 |
| 17 | | | | | | | | | 0.08/- |

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TURNING Threading Tools

Application information of threading

■ Table of recommended in-feed for metric ISO internal threading with wiper edge

| Screw pitch | 1.00 | 1.25 | 1.5 | 1.75 | 2.0 | 2.5 | 3.0 | 4.0 | 5.0 |
|--|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Total in-feed | 0.62 | 0.77 | 0.92 | 1.06 | 1.21 | 0.15 | 1.79 | 2.36 | 2.95 |
| Number of passes | 5 | 6 | 7 | 8 | 9 | 11 | 13 | 15 | 17 |
| Order to follow in threading operation | Value of radial in-feed (X) and flank in-feed (Z) | | | | | | | | |
| | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z |
| 1 | 0.18/- | 0.20/- | 0.22/- | 0.23/- | 0.24/- | 0.25/- | 0.26/- | 0.30/- | 0.32/- |
| 2 | 0.14/0.08 | 0.15/0.09 | 0.16/0.09 | 0.16/0.09 | 0.18/0.10 | 0.20/0.12 | 0.20/0.12 | 0.25/0.14 | 0.28/0.16 |
| 3 | 0.12/0.07 | 0.12/0.07 | 0.14/0.08 | 0.14/0.08 | 0.15/0.09 | 0.15/0.09 | 0.20/0.12 | 0.22/0.13 | 0.25/0.14 |
| 4 | 0.10/0.06 | 0.12/0.07 | 0.12/0.07 | 0.13/0.08 | 0.14/0.08 | 0.15/0.09 | 0.18/0.10 | 0.20/0.12 | 0.22/0.13 |
| 5 | 0.08/- | 0.10/0.06 | 0.11/0.06 | 0.12/0.07 | 0.12/0.07 | 0.13/0.08 | 0.15/0.09 | 0.18/0.10 | 0.21/0.12 |
| 6 | | | 0.09/0.05 | 0.10/0.06 | 0.11/0.06 | 0.12/0.07 | 0.12/0.07 | 0.15/0.09 | 0.20/0.12 |
| 7 | | | 0.08/- | 0.10/0.06 | 0.10/0.06 | 0.12/0.07 | 0.12/0.07 | 0.15/0.09 | 0.18/0.10 |
| 8 | | | | 0.08/- | 0.09/0.05 | 0.10/0.06 | 0.10/0.06 | 0.15/0.09 | 0.18/0.10 |
| 9 | | | | | 0.08/- | 0.10/0.06 | 0.10/0.06 | 0.12/0.07 | 0.15/0.09 |
| 10 | | | | | | 0.09/0.05 | 0.10/0.06 | 0.12/0.07 | 0.15/0.09 |
| 11 | | | | | | 0.08/- | 0.10/0.06 | 0.12/0.07 | 0.15/0.09 |
| 12 | | | | | | | 0.08/0.05 | 0.11/0.06 | 0.15/0.09 |
| 13 | | | | | | | | 0.11/0.06 | 0.12/0.07 |
| 14 | | | | | | | | 0.10/0.06 | 0.11/0.06 |
| 15 | | | | | | | | 0.08/- | 0.10/0.06 |
| 16 | | | | | | | | | 0.10/0.06 |
| 17 | | | | | | | | | 0.08/- |

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Table of recommended in-feed for American unified standard external threading with wiper edge

| Screw pitch | 24 | 20 | 18 | 16 | 14 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 |
|--|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Total in-feed | 0.649 | 0.779 | 0.866 | 0.974 | 1.113 | 1.299 | 1.416 | 1.558 | 1.731 | 1.948 | 2.226 | 2.597 | 3.116 |
| Number of passes | 5 | 6 | 6 | 7 | 9 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| Order to follow in threading operation | Value of radial in-feed (X) and flank in-feed (Z) | | | | | | | | | | | | |
| | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z |
| 1 | 0.206 / — | 0.210 / — | 0.233 / — | 0.226 / — | 0.196 / — | 0.229 / — | 0.220 / — | 0.214 / — | 0.210 / — | 0.211 / — | 0.213 / — | 0.218 / — | 0.229 / — |
| 2 | 0.148 / 0.086 | 0.163 / 0.094 | 0.181 / 0.104 | 0.188 / 0.109 | 0.189 / 0.110 | 0.222 / 0.128 | 0.228 / 0.132 | 0.240 / 0.139 | 0.256 / 0.148 | 0.276 / 0.160 | 0.304 / 0.176 | 0.343 / 0.198 | 0.399 / 0.230 |
| 3 | 0.114 / 0.066 | 0.125 / 0.072 | 0.139 / 0.080 | 0.145 / 0.083 | 0.146 / 0.084 | 0.170 / 0.098 | 0.176 / 0.102 | 0.184 / 0.106 | 0.196 / 0.113 | 0.212 / 0.122 | 0.234 / 0.135 | 0.263 / 0.152 | 0.306 / 0.177 |
| 4 | 0.096 / 0.055 | 0.105 / 0.061 | 0.117 / 0.068 | 0.122 / 0.070 | 0.123 / 0.071 | 0.143 / 0.083 | 0.148 / 0.086 | 0.155 / 0.090 | 0.165 / 0.095 | 0.179 / 0.103 | 0.197 / 0.114 | 0.222 / 0.128 | 0.258 / 0.149 |
| 5 | 0.085 / 0.049 | 0.093 / 0.054 | 0.103 / 0.059 | 0.107 / 0.062 | 0.108 / 0.062 | 0.126 / 0.073 | 0.131 / 0.075 | 0.137 / 0.079 | 0.146 / 0.084 | 0.158 / 0.091 | 0.173 / 0.100 | 0.195 / 0.113 | 0.227 / 0.131 |
| 6 | | 0.084 / 0.048 | 0.093 / 0.054 | 0.097 / 0.056 | 0.098 / 0.056 | 0.114 / 0.066 | 0.118 / 0.068 | 0.124 / 0.072 | 0.132 / 0.076 | 0.142 / 0.082 | 0.157 / 0.091 | 0.177 / 0.102 | 0.205 / 0.119 |
| 7 | | | | 0.089 / 0.052 | 0.090 / 0.052 | 0.105 / 0.061 | 0.109 / 0.063 | 0.114 / 0.066 | 0.121 / 0.070 | 0.131 / 0.076 | 0.144 / 0.083 | 0.163 / 0.094 | 0.189 / 0.109 |
| 8 | | | | | 0.084 / 0.048 | 0.098 / 0.056 | 0.101 / 0.058 | 0.106 / 0.061 | 0.113 / 0.065 | 0.122 / 0.070 | 0.134 / 0.078 | 0.151 / 0.087 | 0.176 / 0.101 |
| 9 | | | | | | 0.079 / 0.045 | 0.092 / 0.053 | 0.095 / 0.055 | 0.100 / 0.057 | 0.106 / 0.061 | 0.114 / 0.066 | 0.126 / 0.073 | 0.142 / 0.082 |
| 10 | | | | | | | | 0.090 / 0.052 | 0.094 / 0.054 | 0.100 / 0.058 | 0.108 / 0.063 | 0.119 / 0.069 | 0.156 / 0.090 |
| 11 | | | | | | | | | 0.090 / 0.052 | 0.095 / 0.055 | 0.103 / 0.059 | 0.113 / 0.065 | 0.149 / 0.086 |
| 12 | | | | | | | | | | 0.091 / 0.053 | 0.098 / 0.057 | 0.108 / 0.063 | 0.142 / 0.082 |
| 13 | | | | | | | | | | | 0.094 / 0.054 | 0.104 / 0.060 | 0.136 / 0.079 |
| 14 | | | | | | | | | | | | 0.100 / 0.058 | 0.131 / 0.076 |
| 15 | | | | | | | | | | | | | 0.109 / 0.063 |
| 16 | | | | | | | | | | | | | 0.122 / 0.071 |

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A TURNING Threading Tools

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Table of recommended in-feed for American unified standard internal threading with wiper edge

| Screw pitch | 24 | 20 | 18 | 16 | 14 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 |
|--|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|------------------|------------------|
| Total in-feed | 0.573 | 0.687 | 0.764 | 0.860 | 0.982 | 1.146 | 1.250 | 1.375 | 1.528 | 1.719 | 1.964 | 2.291 | 2.750 |
| Number of passes | 5 | 6 | 6 | 7 | 8 | 9 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| Order to follow in threading operation | Value of radial in-feed (X) and flank in-feed (Z) | | | | | | | | | | | | |
| | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z |
| 1 | 0.193 / — | 0.200 / — | 0.222 / — | 0.219 / — | 0.220 / — | 0.228 / — | 0.250 / — | 0.247 / — | 0.246 / — | 0.252 / — | 0.262 / — | 0.278 / — | 0.302 / — |
| 2 | 0.127 / 0.073 | 0.239 / 0.081 | 0.155 / 0.089 | 0.161 / 0.093 | 0.173 / 0.100 | 0.190 / 0.110 | 0.207 / 0.120 | 0.216 / 0.125 | 0.229 / 0.132 | 0.247 / 0.142 | 0.271 / 0.156 | 0.304 / 0.176 | 0.353 / 0.204 |
| 3 | 0.098 / 0.056 | 0.107 / 0.062 | 0.119 / 0.069 | 0.124 / 0.072 | 0.132 / 0.076 | 0.146 / 0.084 | 0.159 / 0.092 | 0.166 / 0.096 | 0.176 / 0.101 | 0.189 / 0.109 | 0.208 / 0.120 | 0.234 / 0.135 | 0.271 / 0.156 |
| 4 | 0.082 / 0.048 | 0.090 / 0.052 | 0.100 / 0.058 | 0.104 / 0.060 | 0.112 / 0.064 | 0.123 / 0.071 | 0.134 / 0.077 | 0.140 / 0.081 | 0.148 / 0.086 | 0.160 / 0.092 | 0.175 / 0.101 | 0.197 / 0.114 | 0.228 / 0.132 |
| 5 | 0.073 / 0.042 | 0.079 / 0.046 | 0.088 / 0.051 | 0.092 / 0.053 | 0.098 / 0.057 | 0.108 / 0.062 | 0.118 / 0.068 | 0.123 / 0.071 | 0.130 / 0.075 | 0.141 / 0.081 | 0.1543 / 0.089 | 0.173 / 0.100 | 0.201 / 0.116 |
| 6 | | 0.072 / 0.041 | 0.080 / 0.046 | 0.083 / 0.048 | 0.089 / 0.051 | 0.098 / 0.056 | 0.107 / 0.062 | 0.111 / 0.064 | 0.118 / 0.068 | 0.127 / 0.073 | 0.140 / 0.081 | 0.157 / 0.091 | 0.182 / 0.105 |
| 7 | | | | 0.077 / 0.044 | 0.082 / 0.047 | 0.090 / 0.052 | 0.098 / 0.057 | 0.102 / 0.059 | 0.108 / 0.063 | 0.117 / 0.067 | 0.128 / 0.074 | 0.144 / 0.083 | 0.167 / 0.097 |
| 8 | | | | | 0.076 / 0.044 | 0.084 / 0.048 | 0.091 / 0.053 | 0.095 / 0.055 | 0.101 / 0.058 | 0.109 / 0.063 | 0.119 / 0.069 | 0.134 / 0.078 | 0.156 / 0.090 |
| 9 | | | | | | 0.079 / 0.045 | 0.086 / 0.050 | 0.090 / 0.052 | 0.095 / 0.055 | 0.102 / 0.059 | 0.112 / 0.065 | 0.126 / 0.073 | 0.146 / 0.084 |
| 10 | | | | | | | | 0.085 / 0.049 | 0.090 / 0.052 | 0.097 / 0.056 | 0.106 / 0.061 | 0.119 / 0.069 | 0.138 / 0.080 |
| 11 | | | | | | | | | 0.085 / 0.049 | 0.092 / 0.053 | 0.101 / 0.058 | 0.113 / 0.065 | 0.131 / 0.076 |
| 12 | | | | | | | | | | 0.088 / 0.051 | 0.096 / 0.056 | 0.108 / 0.063 | 0.126 / 0.073 |
| 13 | | | | | | | | | | | 0.092 / 0.053 | 0.101 / 0.060 | 0.121 / 0.070 |
| 14 | | | | | | | | | | | | 0.100 / 0.058 | 0.116 / 0.067 |
| 15 | | | | | | | | | | | | | 0.112 / 0.065 |

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Application information of threading

Table of recommended in-feed for British standard internal and external threading with wiper edge

| Screw pitch | 28 | 20 | 19 | 16 | 14 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 |
|--|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|------------------|------------------|------------------|
| Total in-feed | 0.581 | 0.813 | 0.856 | 1.017 | 1.162 | 1.355 | 1.479 | 1.626 | 1.807 | 2.033 | 2.324 | 2.711 | 3.253 |
| Number of passes | 5 | 6 | 6 | 8 | 8 | 9 | 9 | 10 | 11 | 12 | 14 | 15 | 16 |
| Order to follow in threading operation | Value of radial in-feed (X) and flank in-feed (Z) | | | | | | | | | | | | |
| | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z |
| 1 | 0.179 / — | 0.211 / — | 0.223 / — | 0.196 / — | 0.223 / — | 0.226 / — | 0.246 / — | 0.236 / — | 0.230 / — | 0.255 / — | 0.195 / — | 0.197 / — | 0.204 / — |
| 2 | 0.134 / 0.070 | 0.172 / 0.089 | 0.181 / 0.094 | 0.186 / 0.097 | 0.213 / 0.111 | 0.234 / 0.122 | 0.255 / 0.133 | 0.226 / 0.139 | 0.282 / 0.147 | 0.304 / 0.158 | 0.322 / 0.167 | 0.361 / 0.189 | 0.421 / 0.219 |
| 3 | 0.104 / 0.054 | 0.132 / 0.069 | 0.139 / 0.072 | 0.143 / 0.074 | 0.163 / 0.085 | 0.180 / 0.093 | 0.197 / 0.102 | 0.206 / 0.106 | 0.216 / 0.113 | 0.233 / 0.121 | 0.247 / 0.128 | 0.278 / 0.145 | 0.323 / 0.168 |
| 4 | 0.087 / 0.045 | 0.111 / 0.058 | 0.117 / 0.061 | 0.120 / 0.063 | 0.138 / 0.072 | 0.151 / 0.079 | 0.165 / 0.086 | 0.172 / 0.090 | 0.182 / 0.095 | 0.197 / 0.102 | 0.208 / 0.108 | 0.234 / 0.122 | 0.272 / 0.142 |
| 5 | 0.077 / 0.040 | 0.098 / 0.051 | 0.103 / 0.054 | 0.106 / 0.055 | 0.121 / 0.063 | 0.133 / 0.069 | 0.145 / 0.076 | 0.152 / 0.079 | 0.161 / 0.084 | 0.1738 / 0.090 | 0.183 / 0.095 | 0.207 / 0.108 | 0.240 / 0.125 |
| 6 | | 0.089 / 0.046 | 0.093 / 0.049 | 0.096 / 0.050 | 0.110 / 0.057 | 0.121 / 0.063 | 0.131 / 0.068 | 0.137 / 0.071 | 0.145 / 0.076 | 0.157 / 0.082 | 0.166 / 0.086 | 0.187 / 0.097 | 0.217 / 0.113 |
| 7 | | | | 0.088 / 0.046 | 0.101 / 0.052 | 0.111 / 0.058 | 0.121 / 0.063 | 0.126 / 0.066 | 0.134 / 0.070 | 0.144 / 0.075 | 0.152 / 0.079 | 0.172 / 0.089 | 0.200 / 0.104 |
| 8 | | | | 0.082 / 0.043 | 0.093 / 0.049 | 0.103 / 0.054 | 0.113 / 0.059 | 0.117 / 0.061 | 0.124 / 0.065 | 0.134 / 0.070 | 0.142 / 0.074 | 0.160 / 0.083 | 0.186 / 0.097 |
| 9 | | | | | | 0.097 / 0.050 | 0.106 / 0.055 | 0.110 / 0.057 | 0.117 / 0.061 | 0.126 / 0.066 | 0.133 / 0.069 | 0.150 / 0.078 | 0.174 / 0.091 |
| 10 | | | | | | | | 0.104 / 0.054 | 0.111 / 0.058 | 0.119 / 0.062 | 0.126 / 0.066 | 0.142 / 0.074 | 0.165 / 0.086 |
| 11 | | | | | | | | | 0.105 / 0.055 | 0.113 / 0.059 | 0.120 / 0.062 | 0.135 / 0.070 | 0.157 / 0.082 |
| 12 | | | | | | | | | | 0.108 / 0.056 | 0.114 / 0.060 | 0.129 / 0.067 | 0.150 / 0.078 |
| 13 | | | | | | | | | | | 0.110 / 0.055 | 0.124 / 0.064 | 0.144 / 0.075 |
| 14 | | | | | | | | | | | | 0.119 / 0.062 | 0.138 / 0.072 |
| 15 | | | | | | | | | | | | | 0.115 / 0.060 |
| 16 | | | | | | | | | | | | | 0.129 / 0.067 |

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Threading

Application information of threading

■ Table of recommended in-feed for NPT internal and external threading with wiper edge

| Screw pitch | 27 | 18 | 14 | 11.5 | 8 |
|--|---|-------------|-------------|-------------|-------------|
| Total in-feed | 0.75 | 1.129 | 1.451 | 1.767 | 2.54 |
| Number of passes | 6 | 8 | 10 | 12 | 14 |
| Order to follow in threading operation | Value of radial in-feed (X) and flank in-feed (Z) | | | | |
| | X/Z | X/Z | X/Z | X/Z | X/Z |
| 1 | 0.19/- | 0.22/- | 0.240/- | 0.24/- | 0.255/- |
| 2 | 0.15/0.087 | 0.181/0.104 | 0.200/0.115 | 0.208/0.120 | 0.250/0.144 |
| 3 | 0.13/0.075 | 0.152/0.088 | 0.170/0.098 | 0.182/0.105 | 0.245/0.141 |
| 4 | 0.11/0.063 | 0.141/0.081 | 0.150/0.086 | 0.168/0.097 | 0.230/0.133 |
| 5 | 0.09/0.052 | 0.131/0.075 | 0.140/0.081 | 0.155/0.089 | 0.210/0.121 |
| 6 | 0.08/0.46 | 0.121/0.070 | 0.130/0.075 | 0.145/0.084 | 0.195/0.112 |
| 7 | | 0.101/0.058 | 0.120/0.069 | 0.138/0.079 | 0.180/0.104 |
| 8 | | 0.082/0.047 | 0.110/0.063 | 0.124/0.072 | 0.175/0.101 |
| 9 | | | 0.100/0.058 | 0.117/0.067 | 0.170/0.098 |
| 10 | | | 0.091/0.052 | 0.105/0.060 | 0.155/0.089 |
| 11 | | | | 0.095/0.055 | 0.140/0.080 |
| 12 | | | | 0.090/0.052 | 0.125/0.072 |
| 13 | | | | | 0.110/0.063 |
| 14 | | | | | 0.100/0.058 |

■ Table of recommended in-feed for BSPT internal and external threading with wiper edge

| Screw pitch | 28 | 19 | 14 | 11 |
|--|---|-------------|-------------|--------------|
| Total in-feed | 0.581 | 0.856 | 1.162 | 1.479 |
| Number of passes | 5 | 6 | 8 | 10 |
| Order to follow in threading operation | Value of radial in-feed (X) and flank in-feed (Z) | | | |
| | X/Z | X/Z | X/Z | X/Z |
| 1 | 0.179/- | 0.223/- | 0.222/- | 0.214/- |
| 2 | 0.134/0.070 | 0.181/0.094 | 0.213/0.111 | 0.242/0.126 |
| 3 | 0.103/0.054 | 0.139/0.072 | 0.163/0.085 | 0.186/0.097 |
| 4 | 0.087/0.045 | 0.117/0.061 | 0.138/0.072 | 0.157/0.082 |
| 5 | 0.078/0.040 | 0.103/0.054 | 0.121/0.063 | 0.138/0.072 |
| 6 | | 0.093/0.049 | 0.110/0.057 | 0.125//0.065 |
| 7 | | | 0.101/0.052 | 0.115/0.060 |
| 8 | | | 0.094/0.049 | 0.107/0.056 |
| 9 | | | | 0.100/0.052 |
| 10 | | | | 0.095//0.049 |



Table of recommended cutting parameters

| ISO | Material | | Unit cutting force Kc0.4 N/mm ² | Hardness HB | Grade | |
|------------------------|----------------------|-----------------------|--|----------------|----------------------------|-------|
| | | | | | YBG202 YBG203 YBG205 | |
| Cutting speed(m/min) | | | | | | |
| P | Carbon steel | C=0.15% | 1900 | 125 | 150-175 | |
| | | C=0.35% | 2100 | 150 | 140-155 | |
| | | C=0.60% | 2250 | 200 | 130-145 | |
| | Alloy steel | Anneal | 2100 | 180 | 110-130 | |
| | | Hardened | 2600 | 275 | 80-100 | |
| | | Hardened | 2700 | 300 | 70-90 | |
| | | Hardened | 2850 | 350 | 60-80 | |
| | High alloy steel | Anneal | 2600 | 200 | 90-115 | |
| | | Hardened | 3900 | 325 | 70-90 | |
| | Cast steel | Non-alloy | 2000 | 180 | 180-210 | |
| low alloy | | 2500 | 200 | 90-115 | | |
| High alloy | | 2700 | 225 | 90-115 | | |
| Martensite steel 12%Mn | | 3600 | 250 | 40-50 | | |
| M | Stainless steel | Austenite | 2450 | 180 | 110-130 | |
| | | Martensite/Ferrite | 2300 | 200 | 130-170 | |
| K | Malleable cast iron | Ferrite | 1100 | 130 | 110-140 | |
| | | Pearlite | 1100 | 230 | 85-105 | |
| | Gray cast iron | Low tensile-strength | 1100 | 180 | 110-140 | |
| | | High tensile-strength | 1500 | 260 | 90-115 | |
| Nodular cast iron | Ferrite | 1100 | 160 | 110-130 | | |
| | Pearlite | 1800 | 250 | 80-100 | | |
| N | Al alloy | Non-aging treatment | 500 | 60 | 1300-1450 | |
| | | Aging treatment | 800 | 100 | 450-500 | |
| | Cast aluminum alloy | Non-aging treatment | 750 | 75 | 430-470 | |
| Aging treatment | | 900 | 90 | 250-290 | | |
| S | Heat resistant alloy | Iron base | Anneal | 3000 | 200 | 35-50 |
| | | | Aging | 3050 | 280 | 25-35 |
| | | Ni- or Co-base | Anneal | 3500 | 250 | 15-25 |
| | | | Aging | 4150 | 350 | 10-20 |
| Casting | 4150 | 320 | 10-15 | | | |
| H | Hardened steel | Hardened steel | 4500 | HRC55 | 40-50 | |

Note:

- The values in the above table are range values. High values in the range could be considered in actual cutting. When trying new cutting speed, please check the cutting edge condition before operation.
- In stainless steel threading, high cutting speed should be used to prevent built-up edge.
- The cutting parameters should be reduced when cutting small pitch thread and when using tools with small nose radius.
- When cutting thread by tools with small nose radius, such as NPT standard thread, it is advisable to use tools with big nose radius first to rough, so as to improve the life of tools with small nose radius.

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Threading

Application information of threading



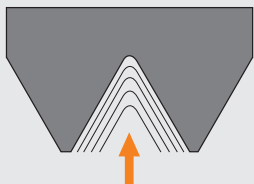
In-feed way of threading tools



- General turning
- Parting and grooving
- Threading

Application information of threading

Radial in-feed



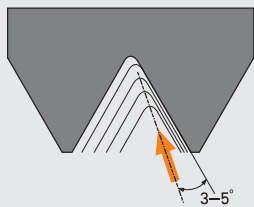
- Easy operating, high general.
- V-shape chip caused by long chip steel workpiece will produce big bend stress on cutting edge.
- It requires low cutting depth, sharp cutting edge and good tough material.
- Big quantity of heat when cutting ,V-shape chip is hard to control.
- Because the interface of cutting chips on the right and left side is long, so it is easy to cause vibration and make the cutting edge suffer more overloading.

Flank in-feed



- Cutting edge suffer small bend stress, stable estate, it is easy for chips formation in deep cutting depth.
- There are enough space to leave chips flow when flank in-feed.
- Big abrasion on right flank.

Modified flank in-feed



- Right Cutting Edge also engage on cutting depth to a certain extent, it can reduce the abrasion on right side of clearance face.
- Cutting edge suffer small bend stress, stable estate, it is easy for chips formation in deep cutting depth.
- Good Cutting Performance.

Alternate flank in-feed



- Cutting edge trade off when machining, equality abrasion on left and right side of clearance face on cutting edge, it can improve the life of tools.
- Chips are flowing from both of right and left side, good chips flowing.
- Recommend using in big screw-pitch thread cutting.

! Recommend adopting flank in-feed or alternate flank in-feed under allowable range of machining equipment or programmer, it can eliminate the machining vibration effectively, and it has enough space discharge the chips between pitch. Cutting edge suffer a small stress, machining stable, it likes the general turning process when machining thread, good chip control without extra chips.



Common problems in threading and solutions

| Problem | Cause | Solutions |
|--|---|---|
| Wear on clearance face | Cutting speed too high. | Reduce cutting speed. |
| | Low cutting depth, abrasion. | Reduce frequency of feed and friction of cutting edge. |
| | Inserts are over the center line. | Adopt correct center height. |
| Asymmetric wear on right and left cutting edge | The inclined angle of insert is different from the helical angle of thread. | Change to proper shim to get correct inclined angle. |
| | Flank in-feed is not correct. | Change the way of flank in-feed. |
| Breakage | Cutting speed too low. | Increase cutting speed. |
| | Cutting force too high. | Increase frequency of feed and reduce Max in-feed. |
| | Unstable clamping. | Check if workpiece vibrates. Reduce overhang of tool. Verify clamping of workpiece and tool. |
| | Chip twisting. | Increase the pressure of cooling liquid to blow away chips. |
| Plastic deformation | High cutting speed, high temperature on cutting area. | Reduce cutting speed. Increase feed frequency and reduce Max cutting depth. |
| | Insufficient cooling fluid. | Increase cooling fluid supply. |
| Low thread surface quality | Cutting speed too low. The insert is over the center line. Chips are not under control. | Increase cutting speed. Adjust centre height. Change the operation way of tools to well control chips. |
| Incorrect profile | Incorrect center height. | Adjust centre height. |
| | Pitch on machine is not correct. | Adjust machine. |
| Shallow profile | Cutting speed set wrong. | Adjust cutting depth. |
| Surface damage | Chips involved or contacted. | Change to flank in-feed to control chip flow direction. |
| Built-up edge | Temperature of cutting edge is too low. Usually occur when machining stainless steel and low carbon steel. | Increase cutting speed as well as pressure and concentration of cooling fluid. Choose inserts with good toughness. |
| Crack on surface | Cutting force too high | Reduce the cutting depth of each feed. |
| Vibration | Incorrect clamping of workpiece or tool | Verify clamping of workpiece and tool. Minimize overhang of tool. |
| | Incorrect cutting parameters | Increase cutting speed or reduce it substantially. |
| | Incorrect tool clamping | Adjust center height. |

General turning

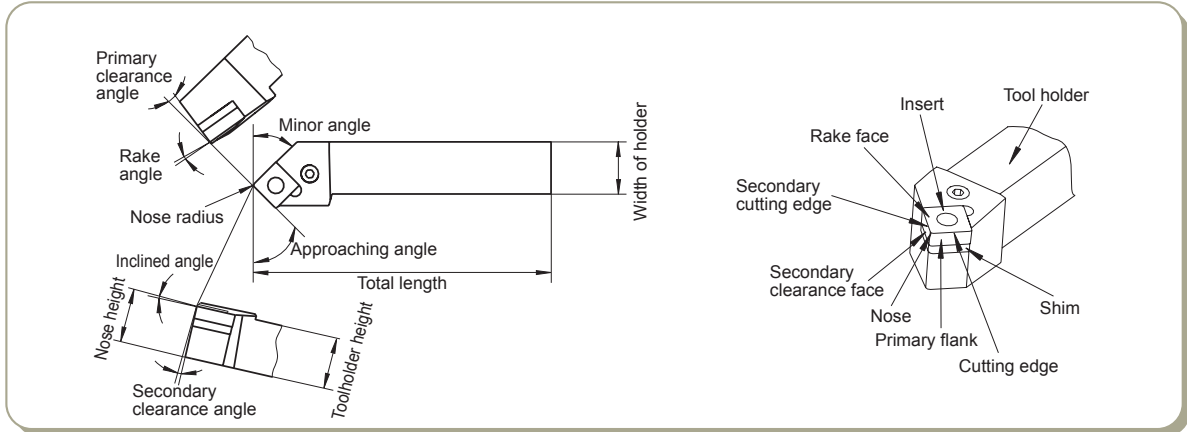
Parting and grooving

Threading

Application information of threading

The functions of each part of turning tools

1 The names of each part of turning tools



2 Effects of rake angle

Larger rake angle makes cutting edge sharper, reduces resistant forces of chip flow, diminishes friction and prevent deformation, leading to smaller cutting forces and cutting power, lower cutting temperature, less abrasion and higher surface quality. However, too large rake angle would reduce the rigidity and strength of tool. Heat can't be diffused easily. Serious breakage and abrasion on tool would occur, reducing tool life. Please choose rake angle according to machining conditions.

| Value selection | Situations |
|------------------|---|
| Small rake angle | <ul style="list-style-type: none"> ● When machining brittle and hard materials ● When roughing and intermittent cutting |
| Big rake angle | <ul style="list-style-type: none"> ● When machining plastic or soft materials ● When finishing |

3 Effects of clearance angle

The main function of clearance angle is to reduce the friction between the clearance face of tool and the surface of workpiece. When the rake angle is fixed, larger clearance angle can increase the sharpness of cutting edge, reduce cutting forces and friction, and then achieve higher surface quality. However, if clearance angle is too large, the strength of cutting edge would decrease. Also, heat can't be diffused easily and serious abrasion would occur, reducing tool life.

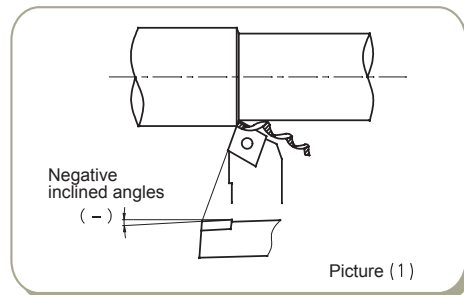
The principle of choosing clearance angle: Choose small clearance angle if friction is not serious.

| Value Selection | Situations |
|-----------------------|---|
| Small clearance angle | <ul style="list-style-type: none"> ● In order to increase nose strength when roughing ● When machining brittle and hard materials |
| Large clearance angle | <ul style="list-style-type: none"> ● In order to reduce friction when finishing ● When machining materials easy to be hardened |

4 Effects of inclined angle

Positive or negative inclined angle determines the direction of chip flow, and also affects the strength and impact resistance of insert nose.

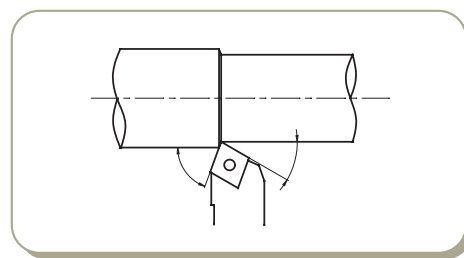
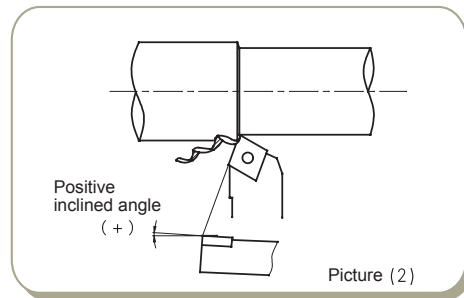
◆As diagram (1) shows, when the inclined angle is negative, namely nose is in the lowest point as apposed to the bottom of tool, chips flow to the machined surface of workpiece.





◆ As diagram (2) shows, when inclined angle is positive, namely the nose is in the highest point as apposed to the bottom of the tool, chips flow to the areas of workpiece surface that haven't been machined.

◆ The change of inclined angle also affects insert nose strength and impact resistance. When the inclined angle is negative, the nose is in the lowest point of cutting edge. When the cutting edge enters the workpiece, the contacting point is on the cutting edge or rake face, protecting the nose from impact and increase the strength of the nose. Normally, negative inclined angle should be chosen for tools with big rake angle. This can not only increase nose strength, but also prevent the impact of entry.



5 Effects of approach angle

Reduced approaching angle increases the strength of tools and enable heat to diffuse easily, improving surface quality. This is because when the approach angle is small, cutting edge width is large, and then the unit width of cutting edge bears less cutting force. Meanwhile, tool life can be improved.

Normally, select 90° approach angle for turning of slender and step shaft; select 45° approach angle for external turning, end surface machining and chamfering. When approach angle is larger, radial force is reduced, cutting is stable, cutting thickness is increased, and chip breaking is excellent.

| Value selection | Situations |
|----------------------|--|
| Small approach angle | For those materials with high intensity, high hardness and hardened layer on the surface |
| Big approach angle | When rigidity of the machine is not enough |

6 Effects of minor angle

Minor angle is the main angle that can affect surface quality, and it can also affect tool strength. If the approach angle is too small, the friction between the secondary flank and machined surface of workpiece will increase, causing vibration.

The principle of selecting minor angle: Select small minor angle when roughing or when the friction is unaffected and there is no vibration. Select large minor angle when finishing.

7 Nose radius

Nose radius significantly affects nose strength and surface quality.

Large nose radius means higher cutting edge strength, and the abrasion on the rake face and clearance face can be reduced to some extent. However, if the nose radius is too large, radial force will increase, and vibration is easy to occur, affecting machining precision and surface quality.

| Value selection | Situations |
|-------------------|---|
| Small nose radius | <ul style="list-style-type: none"> ● Finishing at small cutting depth ● Machining parts such as slender shaft ● When the rigidity of the machine is not enough |
| Large nose radius | <ul style="list-style-type: none"> ● When roughing ● When machining hard materials (intermittent cutting) ● When the rigidity of the machine is not enough |

General turning

Parting and grooving

Threading

General technical information for turning



Calculation method of turning parameters

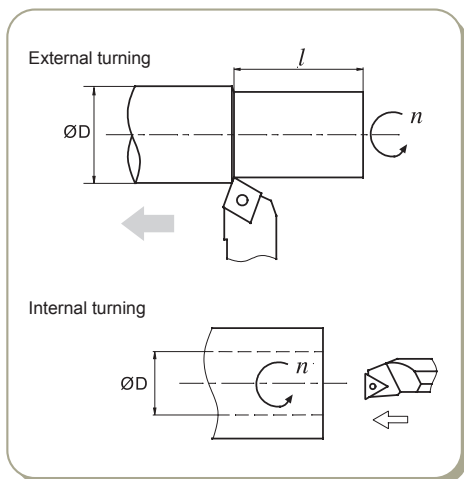
General turning

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General technical information for turning

1 Calculation of cutting speed



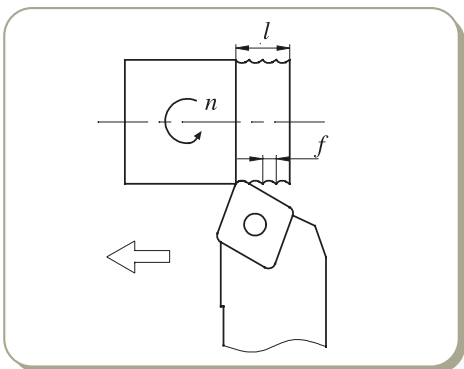
$$V_c = \frac{\pi \times D \times n}{1000} \text{ (m/min)}$$

In the formula: V_c : Cutting speed (m/min)
 n : Rotating speed of main axle (rev/min)
 D : Diameter of workpiece (mm)

For example: When the rotating speed is 280rev/min and the diameter of workpiece is 150mm, the cutting speed should be:

$$V_c = \frac{\pi \times D \times n}{1000} \text{ (m/min)} = 132 \text{ (m/min)}$$

2 Calculation of feed rate



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

In the formula: f : Feed rate per rotation (mm/rev)
 l : Cutting length per minute (mm/min)
 n : Rotating speed of main axle (rev/min)

For example: When the rotating speed of main axle is 500rev/min, and the cutting length per minute is 100mm/min, the feed rate per rotation should be:

$$f = \frac{l}{n} = \frac{100}{500} = 0.2 \text{ (mm/rev)}$$





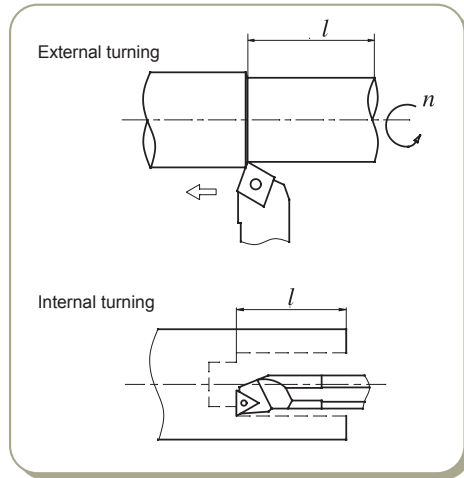
3 Cutting time calculation of external and internal turning

$$T = \frac{l}{f \times n} \text{ (min)}$$

In the formula: T: Cutting time (min)
 l: Length of machined areas (mm)
 f: Feed rate (mm/rev)
 n: Rotating speed of main axle (rev/min)

For example: When the rotating speed of main axle is 250rev/min, and the feed rate is 0.2mm/rev, the time needed for a cutting length of 150mm should be:

$$T = \frac{l}{f \times n} = \frac{150}{0.2 \times 250} = 3 \text{ (min)}$$



General turning

Parting and grooving

Threading

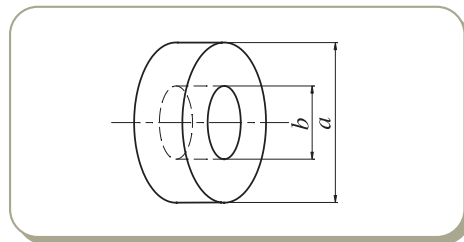
General technical information for turning

4 Time calculation for end surface turning (constant linear speed)

$$T = \frac{\pi \times (a^2 - b^2)}{4000 \times V_c \times f} \text{ (min)}$$

In the formula: T: Cutting time (min)
 V_c: Cutting speed (m/min)
 f: Feed rate (mm/rev)

For end surface without hole, b=0, the formula is still valid.



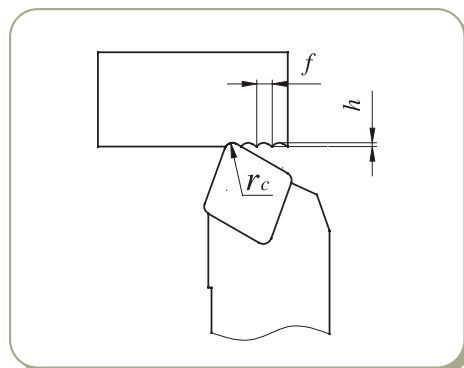
5 Theoretical value calculation of machined surface roughness

$$R = \frac{f^2}{8r_c} \times 1000 \text{ (}\mu\text{m)}$$

In the formula: R: Theoretical roughness value of machined surface
 f: Feed rate (mm/rev)
 r_c: Nose radius (mm)

For example: When the feed rate is 0.2mm/rev, and the nose radius is 0.4mm, the theoretical roughness value of machined surface should be:

$$R = \frac{f^2}{8r_c} \times 1000 = \frac{0.2^2}{8 \times 0.4} \times 1000 = 12.5 \text{ (}\mu\text{m)}$$





Effect of three main turning parameters on machining

General turning

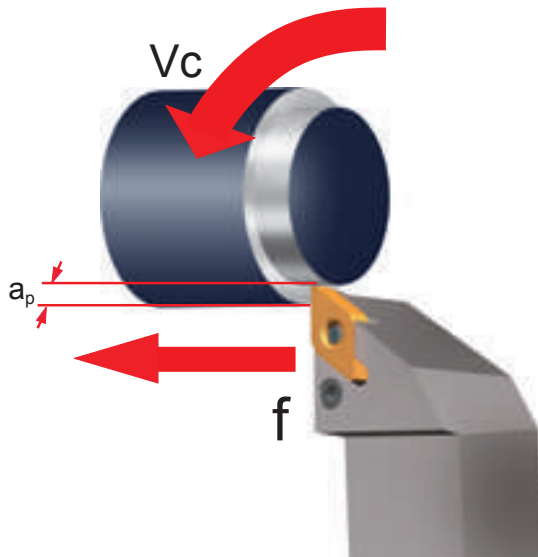
Parting and grooving

Threading

General technical information for turning

Effects of three main parameters

Normally, short machining time, long tool life and high machining precision are expected in machining, so the material quality, hardness, and shape of the workpiece, and properties of machine should be fully considered, and then we can select suitable tools and adopt high-efficiency cutting parameters, namely three parameters.



Cutting speed (V_c)

When the workpiece is rotating on the machine, the number of its rotation per minute is defined as Rotating speed of main axle (n). Because of its rotation, the cutting speed measured on the contacting point of diameter is defined as linear speed, m/min. Normally, linear speed is considered to measure the effect of cutting speed on machining.

Effect of cutting speed

Cutting speed has significant effect on tool life. When the cutting speed is increased, cutting temperature will increase and tool life will be shortened. Cutting speed varies according to the different types and hardness of workpiece. The below conclusions are reached after many cutting experiments:

(1) Normally tool life would be reduced to half when the cutting speed is increased by 20%. Tool life would be 20% of the original life if the cutting speed is raised by 50%.

(2) Low speed (20-40m/min) cutting could easily cause vibration and shorten tool life.

Feed rate (f_n)

Feed rate is defined as the moving distance of tool after workpiece rotates for one circle, measured by mm/rotation.

Effect of feed rate

Feed rate is a key factor that determines surface quality. Meanwhile it also affect the range of chip forming and the thickness of chips during machining.

In term of the effect on tool life, small feed rate leads to serious abrasion on clearance face, greatly reducing tool life.

Cutting depth (a_p)

Cutting depth is defined as the difference between machined surface and unmachined surface, measured by mm. It is half the difference value between the original diameter and machined diameter.

Effect of cutting depth

Cutting depth should be determined by the machining allowance and shape of workpiece, power and rigidity of machine, and tool rigidity.

The change of cutting depth has little effect on tool life. If the cutting depth is too low, the cutting nose only scrapes the hardened layer on the workpiece surface, reducing tool life. When there is hardened oxide layer on workpiece surface, higher cutting depth should be adopted within the possible range of machine's power to avoid cutting nose just cutting the hardened layer of workpiece.



Comparison table for turning inserts chipbreaker

Comparison table for turning insert chipbreaker

Negative inserts

| ISO | Machining range | ZCCCT | SANDVIK | KORLOY | TaeguTec | WALTER | SECO | MITSUBISHI | SUMITOMO | KENAMETAL | DIJET | HITACHI | TUNGALOY | KYOCERA | VALANTTE |
|-----|----------------------------|------------------------------------|----------------------|----------------|--------------------------------------|----------------------|--|----------------------------|----------------------------|--------------|------------------|----------------------------|--------------------------------------|------------------------------------|---|
| | For extra finishing | | QF LC | HU | FA FX | FP5 | FF1 FF2 | PK※FH, FY FP, FS | FB FA, FL | FF | | FE | 01※, TF, ZF 11 | DP※, GP, PP, VF, XP XP-T, XF | F1 |
| | For finishing | DF | PF XF | HF | FG FM | MP3, FV5 NF3, NF4 | MF2 | LP, C SA, SH | FE, SU, LU, SX, SE | LF, FN | PF, UR UA, UT | BE, CE B, BH | NS, 27 TSF, AS, TQ | HQ, CQ PQ | F2(2B), F5(5C) |
| | For finishing (Soft steel) | SF | | HF | FC | | | SY | | | | | 17 | XQ, XS | |
| | For finishing (Wiper) | WGF | WL WF | HW | WS | NF | W-MF2 | SW | LUW SEW | FW | | | AFW, ASW FW, SW | WF WP, WQ | |
| | For semi-finishing | DM PM | PM QM XM | HA HC HM | PC FT MT SM MP | MF3 MV5 | MF3 MF5 M3 M5 | MP MA MH | GU UG UX GE | P MN | PG UB | CT AB AY AE AH | NM, ZM TM, DM 37, AM 33, 38 | PG, C-J, GS, PS HS, PT | F3, F4(8A), M2(2C), M3 M4, M5(5B), M6, M7, 55, M8 |
| | For semi-finishing (Wiper) | WGM | WMX WM | | WT | NM | W-M6 W-M3 W-MF5 | MW | GUW | MW RW | | | | WE | |
| | For light roughing | LR(Single-site) DR(Double-site) | PR, HM XMR | | RT | NM6, RP5 NM9, RP7 | MR7 MR6 | RP GH | MU, MX ME, UZ | RN RP | UD, GG | Y, RE | TH | RH, GT | |
| | For heavy roughing | HDR HPR | QR PR HR MR | HR HH | RX, HD HY, HT RT, RH HZ, EH | NR6 NRF NRR | R5, R56 R4, R6 R7, PR9 R57, RR6 R8 | HM, HL HZ, HX HV, HR | MP, HG HP, HU HW, HF | MR, RM RH | UC | TE, UE HX, HE H | TU, TRS TUS | PX | R3, R4, R6(9A) R7(9B), R9(9C) |

※ Periphery grinding type

Comparison table for turning inserts chipbreaker

Threading

Parting and grooving

General turning



Comparison table for turning inserts chipbreaker

General turning

Parting and grooving

Threading

Comparison table for turning inserts chipbreaker

Comparison table for turning insert chipbreaker

Negative inserts

| ISO | Machining range | ZCCCT | SANDVIK | KORLOY | TaeguTec | WALTER | SECO | MITSUBISHI | SUMITOMO | KENNAMETAL | DIJET | HITACHI | TUNGALOY | KYOCERA | VALANTTE |
|--------------|--------------------|----------------------|-----------------|-----------------------------|------------------|-------------------|--------------------|------------------------|------------------------|----------------|--------------|----------------------|------------------|-----------------------------|---|
| M | For finishing | EF | MF | HA | SF | NF4, FM5 | MF1 | SH, LM | SU, EF | FP, LF* | | MP, AB BH | SS | MQ GU | F1, F2(2B), F5(5C) |
| | For semi-finishing | EM | MM, QM XM, K | HS | ML, EM MM, VF | MM5 RM5 NM4 | MF4 | MS, ES GM, MM MA | EX, EG UP, GU HM | MP | SF, SG SZ | DE PV SE AH | SF, SA, SM, S | MS, MU SU, HU, ST, TK | F3, F4(8A), M2(2C), M3 M4, M5(5B), M6, M7, 55, M8 |
| | For roughing | ER | MR | GS, HM | MT | NR4 NR5 | M5, MR7 RR6 | GH, HZ RM, HL | EM, MU MP | UP RP | | AE | TH, SH | | R3, R4, R6(9A) R7(9B), R9(9C) |
| K | For finishing | PM | KF | | | MK5 | MF2, M3 MF5, M4 | VA AH | | FN | | VA, AH | CF | KQ | F2(2B) |
| | For Semi-Finishing | PM | KM | Through chip-breaker, HM | MC | RK5 NM5 | M5 | V AE | UZ, GZ UX | RP, UN | PG | V, AE | CM | KG, C | M5(5B), M6, M8 |
| S | For roughing | Without chip-breaker | KR KRR | GR, HR GH | KT | RK7 | | RE | | | GG | RE | | KH, GC | R3, R4, R7(9B) |
| | For finishing | NF/NGF | SF SGF* | | EA | NF4, NFT MS3 | MF5, MF1 MF4 | FJ*, LS MJ, MJ* | EF, SU* | FS, LF*, MS | | | HRF | MQ | F5(5C), M2(2C) |
| | For semi-finishing | NM | NGP*, SM | | | NMT, NMS | M1 | MS | EG, EX SU*, UP | NGP*, UP, P | | VI | HRM, SA HMM | SQ, MS MU, TK | M4, M5(5B), M7, 55 |
| For roughing | SNR | SR SMR | | ET | NRS NRT | MR3 MR4 | GJ RS | MU | RP | | | | SG SX | | |

* Periphery grinding type



Comparison table for turning inserts chipbreaker

| Comparison table for turning insert chipbreaker | | | | | | | | | | | | | | | |
|---|--------------------------------------|-----------------------------|------------------------|------------|--------------|-------------------|---------------|--------------------------------|----------------------------|----------------------|-------------------|---------|----------------------------|--------------------------------|---------------|
| Positive inserts | | | | | | | | | | | | | | | |
| ISO | Machining range | ZCCCT | SANDVIK | KORLOY | TaeguTec | WALTER | SECO | MITSUBISHI | SUMITOMO | KENAMETAL | DIJET | HITACHI | TUNGALOY | KYOCERA | VALANTTE |
| P | For finishing | SF, HF | PF, UF XF | HFP | FA, FG FX | PF4 FP4 | FF1 F1 | FV, SV FP, LP | FP, LU SU, SK | 11, UF LF, FP | | JQ | PF, PSF PS, PSS | GP, XP VF, PP | PF4 JQ, JZ |
| | For finishing (Wiper) | | WF | | | PF2* PF, PF5* | W-F1 | SW | LUW SDW | FW | | | | WP | |
| M | For semi-finishing | HM | UM, XM PM, PR XR | HMP C25 | MT, PC | PS5 PM5 FP6 | F2 MF2, M5 | MV, MP | MU | MF, MP | FT | JE | PM 23, 24 | HQ, XQ GK MF* | PM2 PM4 |
| | For semi-finishing (Wiper) | | WM | | WT | PM | W-F2 W-M3 | MW | | MW | | | | | |
| K | For finishing | EF | MF | HFP | | FM4 | F1, F2 | FM, LM | FC*, SI* LU, SU | MF | | MP | PF, PSF PS, PSS | CF*, CK* GQ*, GF* MQ, SK | 1A, 2A |
| | For semi-finishing | EM | MM | HMP C25 | | MM4 RM4 | | MM | MU | MP | | | PM | HQ GK | PM2 PM4 |
| S | For semi-finishing | HM, HR without chip-breaker | KF KM KR | HMP C25 | | FK6 | F1 M3, M5 | MK Without chip-breaker | MU Without chip-breaker | Without chip-breaker | | | CM Without chip-breaker | Without chip-breaker* | PM2 PM4 |
| | For finishing/ For semi-finishing | NGF | | | | | | FS*, LS* FJ*, FSP* LS-P* | SL* | LF* HP* | | | | MQ | PM2, 1A 2A |
| N | For general turning | LH | AL | TAAK MA | FL | PM2, FN2 MN2 | AL* | AZ* | AG | HP* | ALU ACB ASF | | AL* | AH* | 1L, 1A 2A |

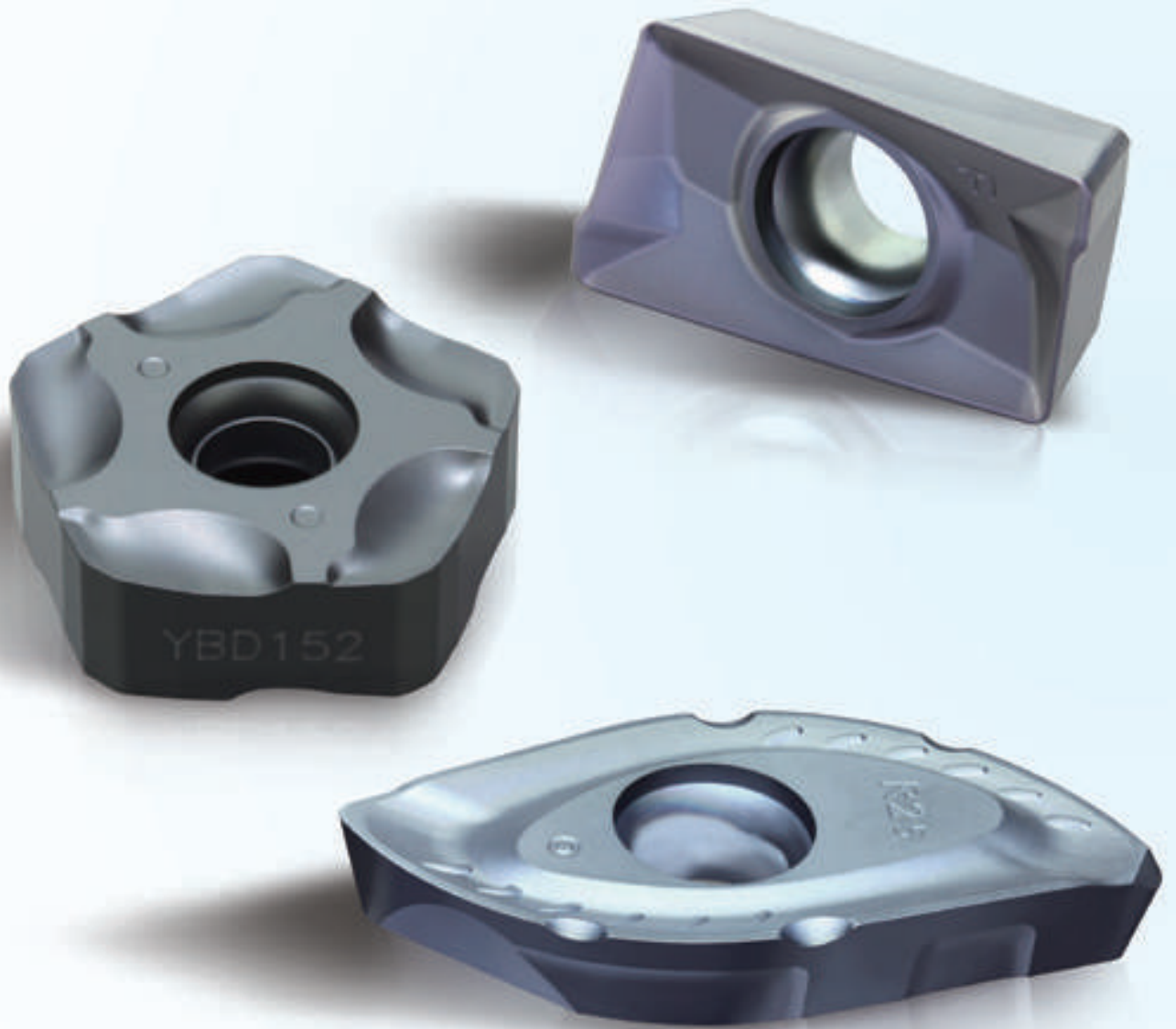
* Periphery grinding type

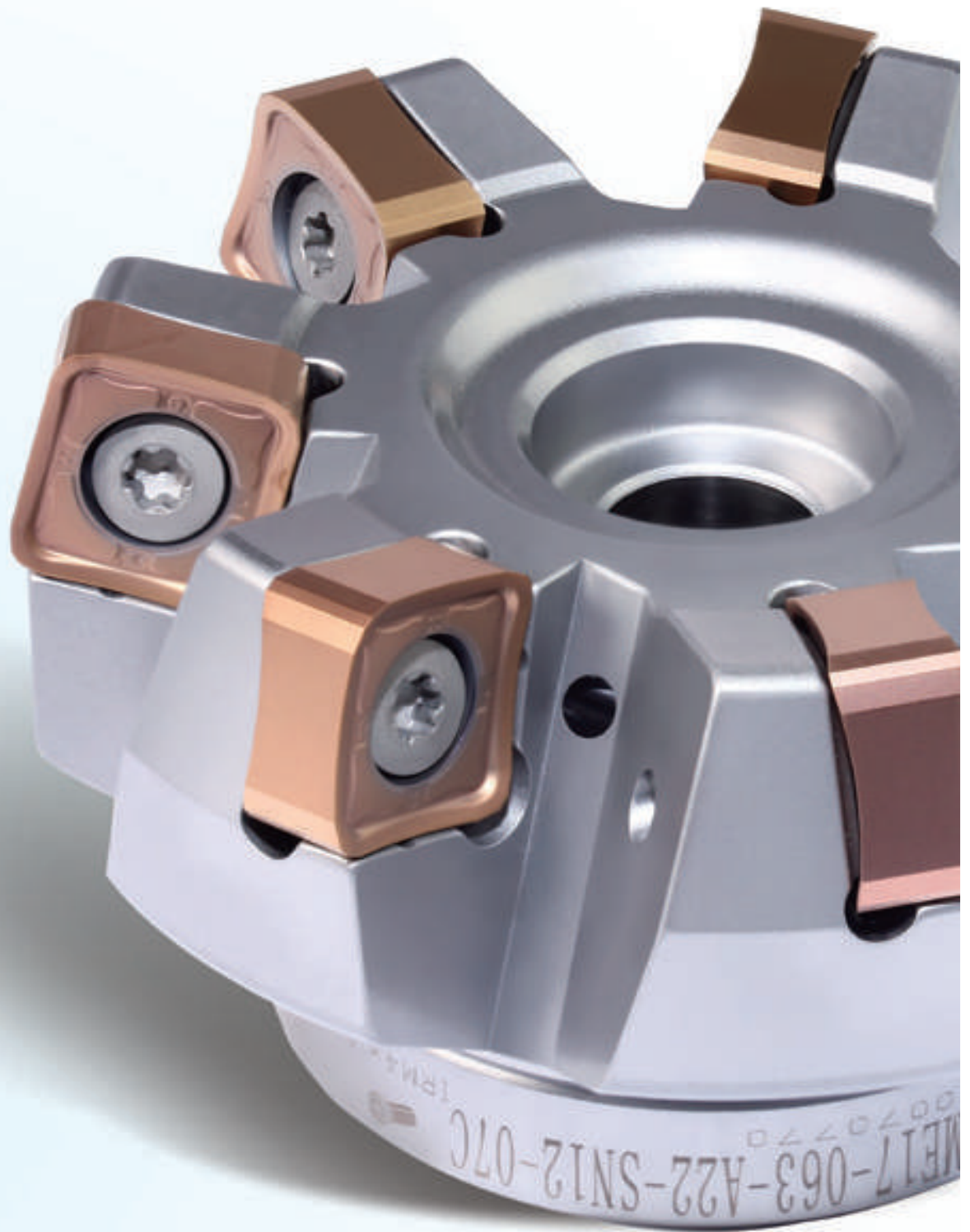
Comparison table for turning inserts chipbreaker

Threading

Parting and grooving

General turning





Milling Tools

Indexable milling tools

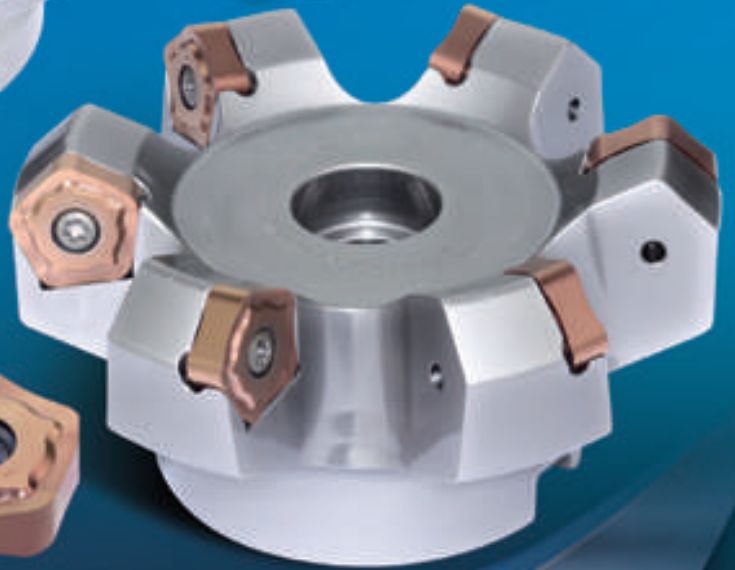
FMA 11 series

With outstanding economy and high performance



FMA12 series

High Performance Face Milling
with 16 edges for outstanding
economy Milling



FMA14 series





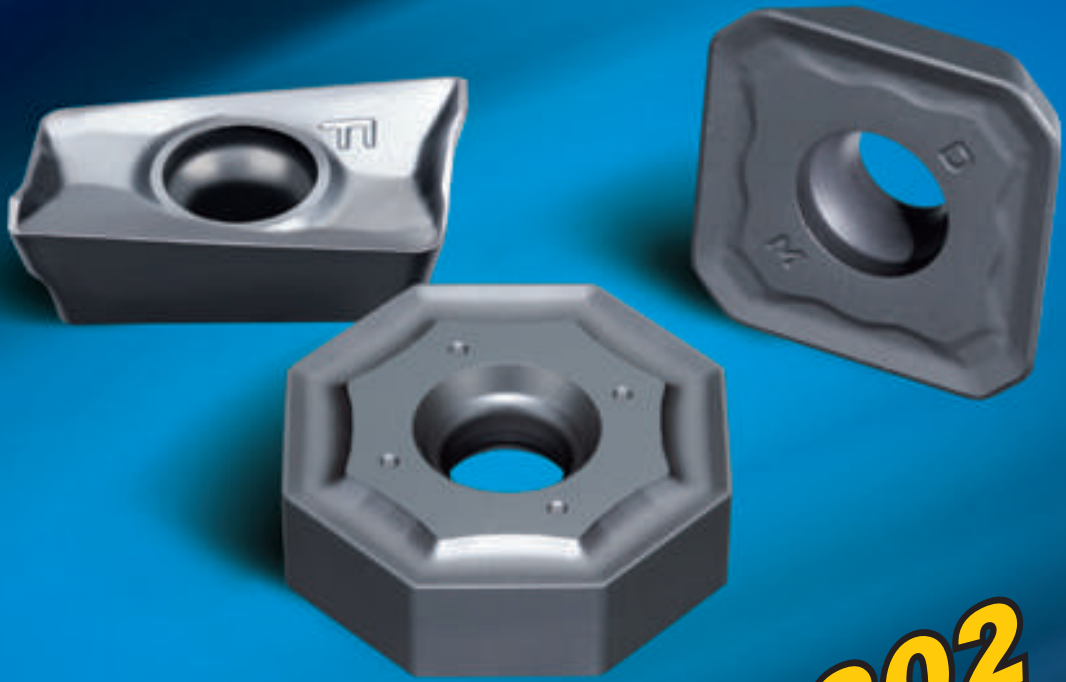
*New generation of the
tangential milling cutter*

EMP09 series

Milling



| | |
|----------------------------------|-------------|
| Indexable Milling Tools | • B1-B240 |
| Indexable milling tools | B3-B201 |
| Indexable milling inserts | B202-B233 |
| Technical information | • B234-B240 |
| Solid Carbide End Mills | • B241-B569 |
| Solid carbide end mills | B241-B562 |
| Technical information | B563-B569 |
| Interchangeable modular endmills | • B570-B590 |



New Champion in Milling **YBC302**
Black Diamond Series grade



How to choose the right indexable milling tools

How to choose the right indexable milling tools

Classification of milling tools

According to types of machining operation

Applicable machining operations
For face milling, chamfering, shoulder milling etc.

Product series
Type of machining

Workpiece materials
Approach angle

Structure and coupling size

Inserts specification
Insert shape, type, dimensions, grade, stock, etc.

Face milling tools

FMA01 P M K N S

Kr45°

Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|------------------------|-------|---|----------------------|-----------------|----|----|-------------------|----|-------------------|------------------|-------------|
| | R | L | ØD | ØD _i | ed | L | S _{pmax} | | | | |
| FMA01 -050-A22-SE12-04 | ▲ | △ | 50 | 61 | 22 | 40 | 6 | 4 | A | 0.3 | |
| -063-A22-SE12-05 | ▲ | △ | 63 | 74 | 22 | 40 | 6 | 5 | A | 0.5 | |
| -080-A27-SE12-06 | ▲ | △ | 80 | 91 | 27 | 50 | 6 | 6 | A | 1.2 | |
| -100-B32-SE12-07 | ▲ | △ | 100 | 107 | 32 | 50 | 6 | 7 | B | 1.52 | |
| -125-B40-SE12-08 | ▲ | △ | 125 | 136 | 40 | 63 | 6 | 8 | B | 2.6 | |
| -160-B40-SE12-07 | ▲ | △ | 160 | 174 | 40 | 63 | 6 | 7 | B | 4.548 | |
| -160-B40-SE12-10 | ▲ | △ | 160 | 170 | 40 | 63 | 6 | 10 | B | 4.92 | |
| -200-C40-SE12-08 | ▲ | △ | 200 | 214 | 60 | 63 | 6 | 8 | C | 6.175 | |
| -200-C40-SE12-12 | ▲ | △ | 200 | 210 | 60 | 63 | 6 | 12 | C | 7.6 | |
| -250-C60-SE12-10 | ▲ | △ | 250 | 254 | 60 | 63 | 6 | 10 | C | 12.598 | |
| -250-C60-SE12-14 | ▲ | △ | 250 | 250 | 60 | 63 | 6 | 14 | C | 13.4 | |
| -315-D60-SE12-18 | ▲ | △ | 315 | 325 | 60 | 70 | 6 | 18 | D | 20.8 | |
| -100-B32-SE18-04 | ▲ | △ | 100 | 120 | 32 | 63 | 10.4 | 4 | B | 2.22 | |
| -125-B40-SE18-05 | ▲ | △ | 125 | 145 | 40 | 63 | 10.4 | 5 | B | 3.15 | |
| -160-B40-SE18-06 | ▲ | △ | 160 | 180 | 40 | 63 | 10.4 | 6 | B | 5.01 | |
| -200-C60-SE18-08 | ▲ | △ | 200 | 220 | 60 | 63 | 10.4 | 8 | C | 6.9 | |
| -250-C60-SE18-10 | ▲ | △ | 250 | 270 | 60 | 63 | 10.4 | 10 | C | 13.1 | |
| -315-D60-SE18-12 | ▲ | △ | 315 | 335 | 60 | 80 | 10.4 | 12 | D | 24.5 | |

▲ Stock available △ Make-to-order

Spare parts

| Diameter ØD | Insert | Insert screw | Shim | Shim screw | Wrench | Wrench |
|-------------|------------|--------------|-------|------------|--------|--------|
| Ø50-Ø100 | SEET12□□□□ | I60M3.5-10 | - | - | W155S | - |
| Ø50-Ø315 | SEET12□□□□ | I60M3.5-12 | S138S | SMS+TXA | W155S | WH35L |
| Ø100-Ø315 | SEET18□□□□ | I60M5-17 | S18BS | SMB+9XA | WT20T | WH50L |



Spare parts
Tools specification
Tool shape, dimensions, stock, etc
Tool shape

Assembly of tools and spare parts

Tools code key, reference to grade selection, technical data

Selection of inserts

| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | PVD Coating | Ceram. | Cemented carbide |
|--------------|-------------|----------------------|------|------|-----|------|-----|-------------|-------------|--------|------------------|
| | | L | ØI.C | S | gd | bs | R | | | | |
| □ | SEET12T3-DF | 13.4 | 13.4 | 3.97 | 4.1 | 2.55 | — | ● ● ● ● | ★ ○ | | |
| | SEET12T3-CF | 13.4 | 13.4 | 3.97 | 4.1 | 2.55 | — | ○ | ★ ★ ○ | | |
| | SEET12T3-EF | 13.4 | 13.4 | 3.97 | 4.1 | 2.55 | — | — | ★ ○ | ● | |
| □ | SEET12T3-DM | 13.4 | 13.4 | 3.97 | 4.1 | 2.55 | — | ● ● ● ● | ★ ★ | | |
| | SEET12T3-EM | 13.4 | 13.4 | 3.97 | 4.1 | 2.55 | — | ○ ○ | ★ ★ | | |
| | SEET18T6-EM | 18.0 | 18.0 | 6.1 | 5.5 | 1.5 | — | — | ○ | ● | |
| □ | SEET12T3-DR | 13.4 | 13.4 | 3.97 | 4.1 | 2.55 | — | ● ● ● ● | ★ ★ | | |
| | SEET12T3-CR | 13.4 | 13.4 | 3.97 | 4.1 | 2.55 | — | ● | ★ ★ | | |
| □ | SEET12T3-LH | 13.4 | 13.4 | 3.97 | 4.1 | 2.55 | — | — | ○ | | ○ ★ |
| | SEET12T3-W | 17.82 | 13.4 | 3.97 | 4.1 | 9.45 | 500 | ● ● ● ● | ★ | | ★ |
| □ | SEET18T6-W | 24.70 | 18.0 | 6.1 | 5.5 | 11.0 | 500 | — | ○ | | |

● Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Chipbreaker selection for FMA01 milling inserts

| Classification | Function | For finishing | For semi-finishing | For roughing |
|----------------|----------|---------------|--------------------|--------------|
| P | | -DF | -DM | -DR |
| M, S | | -EF | -EM | |
| K | | -CF | -CM | -CR |
| N | | | -LH | |

Chipbreaker selection



MILLING

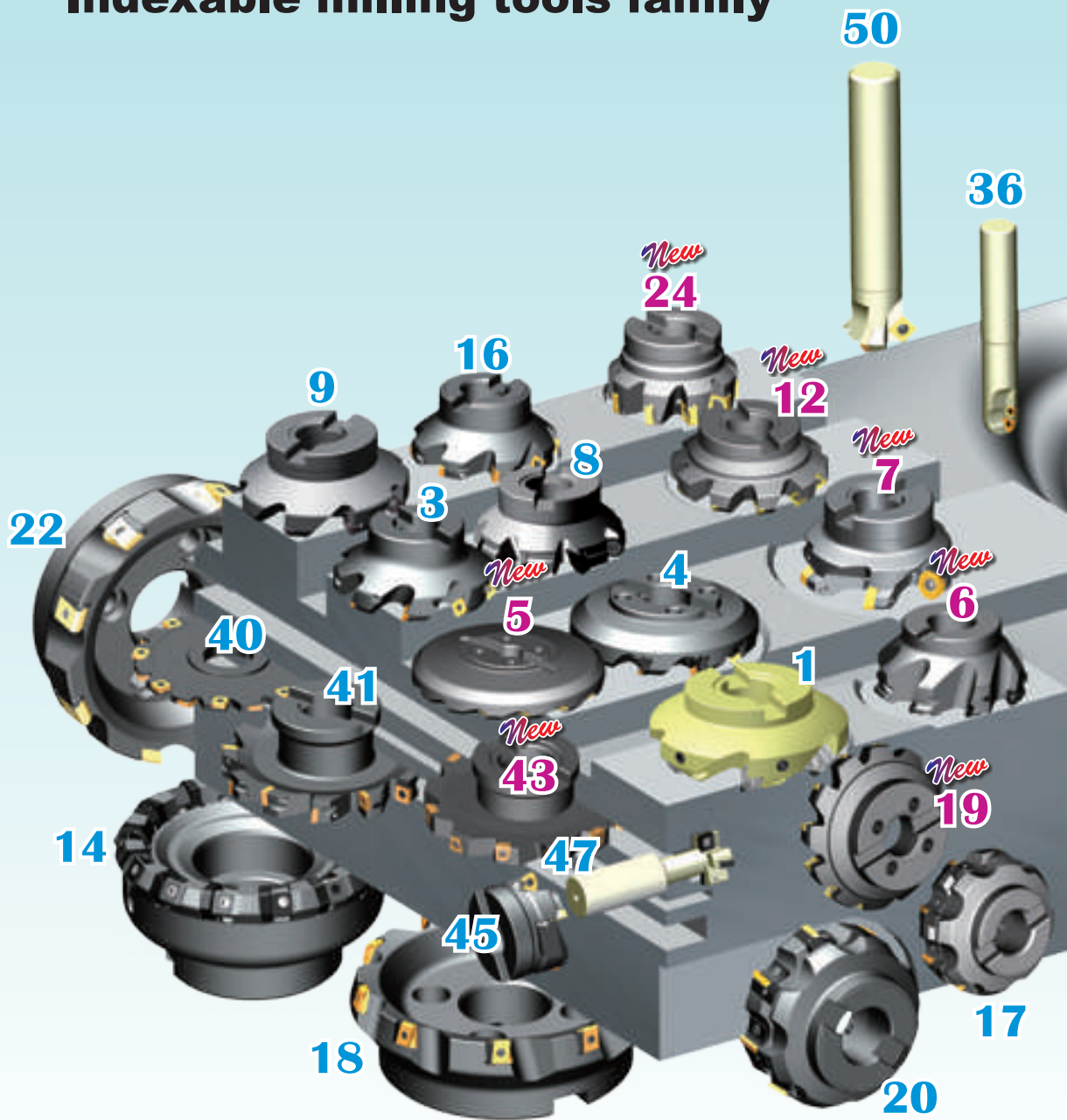


Indexable Milling Tools

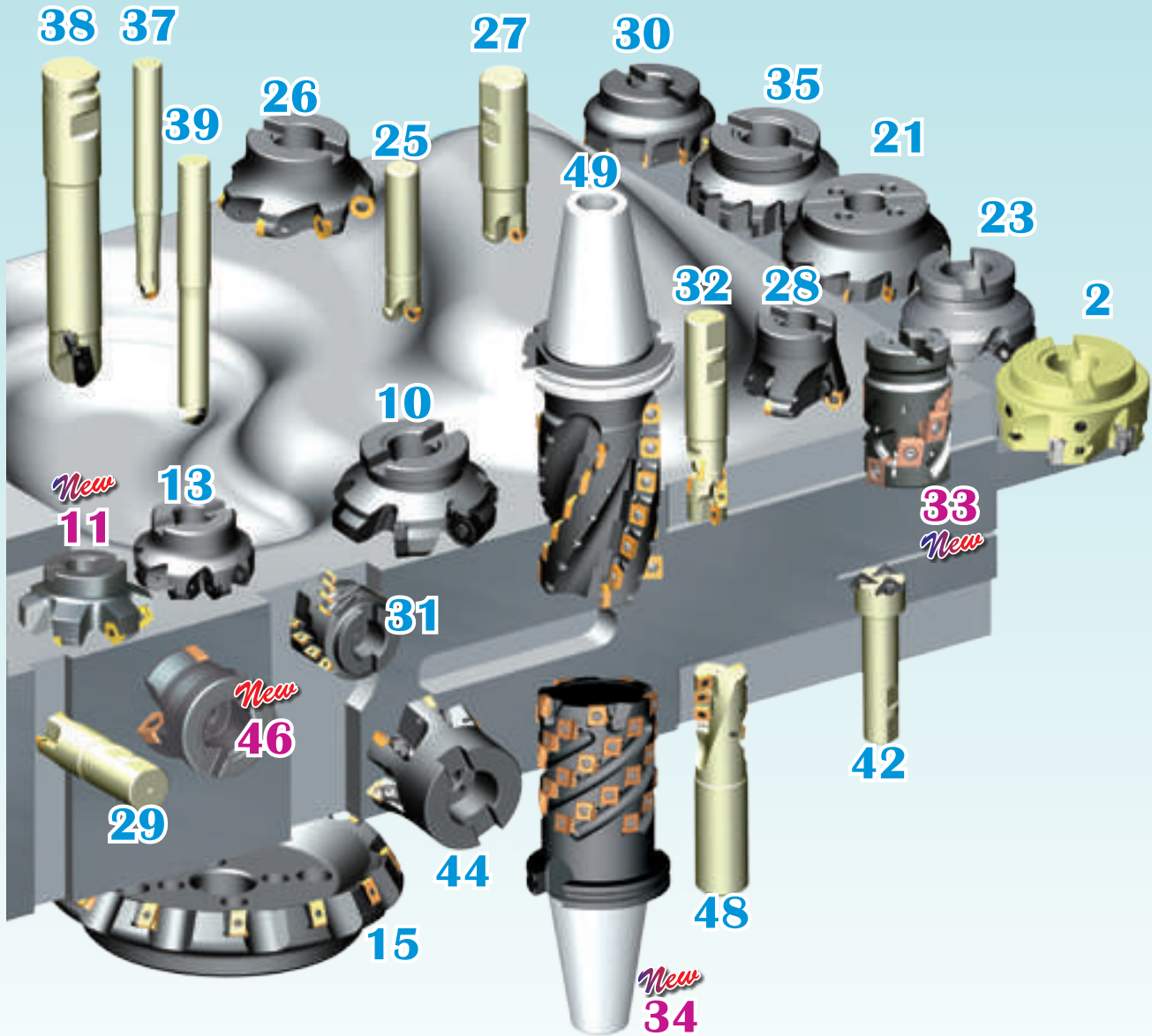
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| High-speed High-precision milling tools series | | B26-B30 |
| Face milling tool series | | B31-B111 |
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| Helical end mill series | | B193-B197 |
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Indexable milling tools family



| Number | Tool category | Page | Number | Tool category | Page | Number | Tool category | Page |
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| 2 | AMP01 | B29 | 11 | FMA14 | B59 | 20 | FMP01 | B83 |
| 3 | FMA01 | B31 | 12 | FMA17 | B61 | 21 | FMP02 | B85 |
| 4 | FMA03 | B36 | 13 | FMD02(PN11) | B64 | 22 | FMP03 | B90 |
| 5 | FMA03A | B37 | 14 | FMD02(HN09) | B69 | 23 | FMP12 | B93 |
| 6 | FMA04(OFKT05□□) | B40 | 15 | FMD03 | B71 | 24 | FMP17 | B96 |
| 7 | FMA04(ODH/MT06□□) | B42 | 16 | FME02 | B73 | 25 | FMR01 | B99 |
| 8 | FMA07 | B46 | 17 | FME03 | B75 | 26 | FMR02 | B102 |
| 9 | FMA11 | B51 | 18 | FME04 | B79 | 27 | FMR03 | B106 |



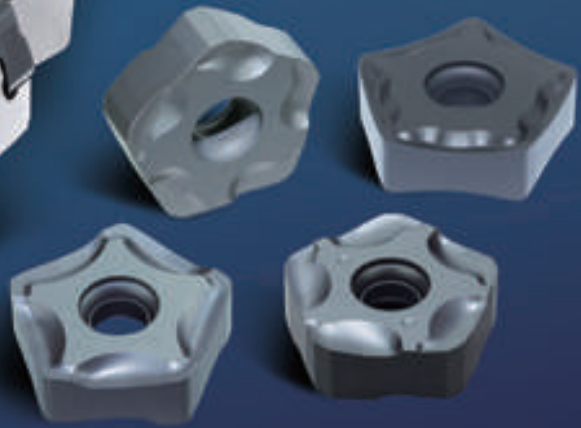
| Number | Tool category | Page | Number | Tool category | Page | Number | Tool category | Page |
|--------|---------------|------|--------|---------------|------|--------|-------------------|------|
| 28 | FMR04 | B109 | 36 | BMR01 | B141 | 45 | XMR01(WPGT□□) | B181 |
| 29 | EMP01 | B112 | 37 | BMR02 | B143 | 46 | XMR03 | B189 |
| 30 | EMP02 | B118 | 38 | BMR03 | B145 | 47 | TMP01 | B191 |
| 31 | EMP03 | B121 | 39 | BMR04 | B157 | 48 | HMP01(Ø40-Ø50) | B193 |
| 32 | EMP04 | B122 | 40 | SMP01 | B164 | 49 | HMP01(Ø50-Ø80) | B194 |
| 33 | EMP09 | B126 | 41 | SMP03 | B167 | | HMP01 EC(Ø50-Ø80) | B195 |
| 34 | EMP09 BT | B131 | 42 | SMP05 | B171 | 50 | CM□01 | B198 |
| | EMP09 JT | B132 | 43 | SMP09 | B173 | | | |
| 35 | EMP13 | B136 | 44 | XMR01(SDMT□□) | B178 | | | |









WHIRLWIND

FMD02

milling cutter series










Indexable milling tools overview

| Operating pattern | Series/Shape | Approach angle / Max. cutting depth. | Applicable insert | Application overview | Features | | |
|--|--|---|---|--|--|--|--|
| High-speed high-precision milling tools | AMA01  B27 | Kr=45° apmax=6.6 | SEHT12T3AFFN-AL | High-speed high-precision milling of Aluminum alloy, cast iron. | <ul style="list-style-type: none"> • Diameter range Ø50-Ø500 • Aluminum alloy body with high strength, light weight • Unique tool clamping design • Elastic runout adjustment structure, high pressure internal cooling, and high-precision cutting inserts enable high-quality, high-precision, high-efficiency, and high-stability machining of various materials. | | |
| | | Kr=45° apmax=2.0 | SEHT12T308AFFN-CBN | | | | |
| | | Kr=45° apmax=2.5 | SEHT12T308AFFN-PCD | | | | |
| | AMP01  B29 | Kr=90° apmax=12 | APHT12T304PPFR-AL | | | | |
| | | Kr=90° apmax=1.0 | APHT12T304-W | | | | |
| | | Kr=90° apmax=2.0 | APHT12T304PPFR-CBN | | | | |
| | | Kr=90° apmax=3.0 | APHT12T304PPFR-PCD | | | | |
| | Face milling | FMA01  B31-32 | Kr=45° apmax=6.0 | | | SEET12T3-DF/DM/DR SEET12T3-CF/CM/CR SEET12T3-EF/EM SEET12T3-LH/W | General face milling of the following materials: steel, alloy steel, stainless steel, cast iron, aluminum alloy, high-temperature alloy |
| Kr=45° apmax=10.4 | | | SEET18T6-DM/EM/W | | | | |
| FMA03  B36 | | Kr=45° apmax=5.5 | SE□□1203A□□□□ | General face milling of steel, stainless steel, cast iron | | | |
| | | Kr=45° apmax=7.5 | SE□□1504A□□□□ | | | | |
| FMA03A <i>New</i>  B37 | | Kr=45° apmax=5.5 | SE□□1203A□□□□ | | <ul style="list-style-type: none"> • Diameter range Ø80-Ø350. • Large rake angle makes cutting easier and faster. • Top clamping makes it easy to assemble and better vibration resistance. • Good rigidity of the tool system. The first choice for mold surface milling to achieve high surface quality. | | |
| | | Kr=45° apmax=7.5 | SE□□1504A□□□□ | | | | |
| FMA04  B40 <i>New</i> | | Kr=45° apmax=3.5 | OFKT05T3-DF/DM OFKT05T3-LH | Face milling of steel, alloy steel, cast iron, aluminum alloy | | <ul style="list-style-type: none"> • Diameter range Ø50-Ø160. • High-economy milling tool with 8 cutting edges. • Screw clamping, high precision. | |
| | | Kr=45° apmax=4.0 | ODHT060508-GL/GM/ GH/LH ODMT060512-GM | Face milling of steel, alloy steel, cast iron, aluminum alloy and high-temperature alloy | | | <ul style="list-style-type: none"> • Diameter range Ø50-Ø160. • High-economy milling tool with 8 cutting edges. • Top clamping makes it easy to assemble and disassemble. |

Indexable milling tools

Indexable milling tools overview









Indexable milling tools overview

| Operating pattern | Series/Shape | Approach angle / Max. cutting depth. | Applicable insert | Application overview | Features |
|----------------------------------|---|--------------------------------------|---|---|--|
| Face milling | FMA07  B47 | $K_r=45^\circ$ $a_{pmax}=4.0$ | ONHU060408-PF/PM | General face milling of steel and cast iron | <ul style="list-style-type: none"> Diameter range $\varnothing 25$-$\varnothing 50$. High-economy milling tool with 16 cutting edges. |
| | | $K_r=45^\circ$ $a_{pmax}=5.0$ | ONHU08T508-PF/PM/W | General face milling of steel and cast iron | <ul style="list-style-type: none"> Diameter range $\varnothing 50$-$\varnothing 315$. High-economy milling tool with 16 cutting edges. |
| | FMA11  B51-52 | $K_r=45^\circ$ $a_{pmax}=5.5$ | SNEG1205ANR-GM/HGR/W | General face milling of steel, cast iron and high-temperature alloy | <ul style="list-style-type: none"> Diameter range $\varnothing 63$- $\varnothing 315$. Double-sided chipbreaker milling insert has eight cutting edges and high economy. Large rake angle design and unique chip breaker structure of insert lead to low power consumption. Double negative rake angle structure and super thick insert has higher safety and outstanding toughness, which can realize great depth cutting. Insert has excellent machining performance with wiper edge. |
| | | $K_r=45^\circ$ $a_{pmax}=7.0$ | SNEG1506ANR-GM/HGR/W | | |
| | | $K_r=45^\circ$ $a_{pmax}=9.0$ | SNEG1907ANR-HGR | | |
| | FMA12 <i>New</i>  B55-56 | $K_r=45^\circ$ $a_{pmax}=4.0$ | ONHU0604□□ANN-GL/GM/GH ONMU0604□□-GH/GM | General face milling of steel, cast iron and high-temperature alloy | <ul style="list-style-type: none"> Diameter range $\varnothing 50$-$\varnothing 400$. High Performance Face Mill with 16 edges for outstanding economy. Double negative rake angle, in combination with helical insert structure, achieves double positive axial angle, which will help reduce cutting resistance and improve chip evacuation. Unique 3-dimensional edge. |
| | | $K_r=45^\circ$ $a_{pmax}=5.5$ | ONMU09□□□□-GM/GH ONHU09□□□□ANN-GM/GH/GL | | |
| | FMA14 <i>New</i>  B59 | $K_r=45^\circ$ $a_{pmax}=5.5$ | PNEG110512-GL PNEG110530-GM PNEG110530-GH | General face milling of steel, stainless steel, cast iron | <ul style="list-style-type: none"> Diameter range $\varnothing 50$-$\varnothing 315$. High economy effect milling cutter with 10 cutting edges. The balanced design with 45 clearance angle. High anti-vibration ability which ensure the good surface quantity. |
| | FMA17 <i>New</i>  B61 | $K_r=45^\circ$ $a_{pmax}=6.5$ | SNGX1205ANN-GL/GM/GH SNMX1205ANN-GM SNMX120512-GL/GM/GH | General face milling of steel, cast iron and high-temperature alloy | <ul style="list-style-type: none"> Diameter range $\varnothing 50$-$\varnothing 400$. Double-sided chipbreaker milling insert has eight cutting edges and high economy; Same inserts for right and left cutters. Coarse pitch and close pitch are available. Diversified chipbreaker matching different coating for a wide range of application. |
| | FMD02  B64-65  B69 | $K_r=67^\circ$ $a_{pmax}=5.0$ | PNEG110512R/L-CF/CM/CR | General face milling of steel and cast iron | <ul style="list-style-type: none"> Diameter range $\varnothing 50$-$\varnothing 315$. High-economy milling tool with 10 cutting edges. |
| | | $K_r=67^\circ$ $a_{pmax}=7.5$ | PNEG110512R/L-PF/PM/PR | | |
| | | $K_r=67^\circ$ $a_{pmax}=6.5$ | PNEG110512-KH/KM/KL | | |
| $K_r=55^\circ$ $a_{pmax}=6.0$ | | HNEX090512-DF/DM HNEX090512-DR | Face milling of cast iron | <ul style="list-style-type: none"> Diameter range $\varnothing 80$-$\varnothing 315$. High-economy milling tool with 12 cutting edges. Top clamping makes it easy to assemble and disassemble. | |

Indexable milling tools

Indexable milling tools overview









Indexable milling tools overview

| Operating pattern | Series/Shape | Approach angle / Max. cutting depth. | Applicable insert | Application overview | Features |
|--|---|--------------------------------------|--|---|---|
| Face milling | FMD03  B71 | Kr=60° a _{pmax} =12.0 | LNKT2007DN-ZR | Heavy-duty face milling of steel and alloy steel | <ul style="list-style-type: none"> • Diameter range Ø125-Ø400. • Double positive rake angles can reduce cutting forces. • Inserts are mounted upright, suitable for heavy machining with high cutting depth. • Easy to assemble and clamp inserts. |
| | | Kr=60° a _{pmax} =17.0 | LNKT2510-ZR | | |
| | FME02  B73 | Kr=75° a _{pmax} =6.0 | SPKW1204EDFR SPKW1204EDSR SPKT1204EDR | Face milling of steel, alloy steel and cast iron | <ul style="list-style-type: none"> • Diameter range Ø50-Ø125. • Kr 75°, general face milling. • Wide applications can be achieved by using inserts with different chipbreakers. |
| | FME03  B75 | Kr=75° a _{pmax} =6.0 | SP□N1203(1504)ED□□ SP□R1203(1504)ED□□ | Face milling of steel, alloy steel and cast iron | <ul style="list-style-type: none"> • Diameter range Ø80-Ø315. • Kr 75°, general face milling. • Top clamping makes it easy to assemble and disassemble. |
| | | Kr=75° a _{pmax} =8.0 | SP□N1504ED□□ SP□R1504ED□□ | | |
| | FME04  B79 | Kr=75° a _{pmax} =12.0 | LNKT1506EN-ZR | Heavy-duty face milling of steel and alloy steel | <ul style="list-style-type: none"> • Diameter range Ø125-Ø315. • Double positive rake angles can reduce the cutting force. • Inserts are mounted upright, suitable for heavy machining at high cutting depth. • Easy to assemble and clamp inserts. |
| | FME17 <i>New</i>  B81 | Kr=75° a _{pmax} =8.0 | SNGX1205ENN-GL/GM/GH SNMX120512-GL/GM/GH | General face milling of steel, cast iron and high-temperature alloy | <ul style="list-style-type: none"> • Diameter range Ø50-Ø400. • Double-sided chipbreaker milling insert has eight cutting edges and high economy; • Same inserts for right and left cutters. Coarse pitch and close pitch are available. • Diversified chipbreaker matching different coating for a wide range of application. |
| | FMP01  B83 | Kr=90° a _{pmax} =18.0 | TPKN2204PD□ TPKN2204PDF□ TPKN2204PDT□ | Face milling of steel, alloy steel and cast iron | <ul style="list-style-type: none"> • Diameter range Ø80-Ø315. • Kr 90°, for square shoulder milling. • Top clamping makes it easy to assemble and disassemble. |
| | FMP02  B85 | Kr=90° a _{pmax} =6.7 | SEET09T308PER-APF/ APM/APR | Face milling of steel, alloy steel, stainless steel, cast iron and high-temperature alloy | <ul style="list-style-type: none"> • Diameter range Ø40-Ø315. • Kr 90°, for square shoulder milling. • Different pitches: coarse pitch, close pitch and extra close pitch. • High precision insert, high work-piece surface quality. • Optimized chipbreaker and grade, suitable for finishing, semi-finishing and roughing. |
| | | Kr=90° a _{pmax} =10.8 | SEET120308PER-APF/ APM/APR | | |
| FMP03  B90 | Kr=90° a _{pmax} =13.0 | LNKT1506EN-ZR | Heavy-duty face milling of steel and alloy steel | <ul style="list-style-type: none"> • Diameter range Ø125-Ø315. • Double positive rake angles can reduce the cutting force. • Inserts are mounted upright, suitable for heavy machining at high cutting depth. • Easy to assemble and clamp inserts. | |
| | Kr=90° a _{pmax} =17.0 | LNKT2007DN-ZR | | | |
| | Kr=90° a _{pmax} =22.0 | LNKT2510-ZR | | | |

Indexable milling tools

Indexable milling tools overview









Indexable milling tools overview

| Operating pattern | Series/Shape | Approach angle / Max. cutting depth. | Applicable insert | Application overview | Features |
|---|--|--------------------------------------|--|--|--|
| Face milling | FMP12  B93 | $K_r=90^\circ$ $a_{pmax}=5.7$ | WNHU0604□□PNR-GM WNMU060408PNN-GM | Steel, alloy steel, cast iron and aluminum alloy | <ul style="list-style-type: none"> Diameter range Ø50-Ø315 90° approach angle can be used for shoulder milling, face milling, groove milling, etc.; -Six-flute double-sided groove milling inserts with wiper for large feed machining; double negative angle of the tool body combined with unique insert structure to achieve double positive tool angle, reducing cutting forces. |
| | | $K_r=90^\circ$ $a_{pmax}=7.7$ | WNHU0806□□PNR-GM WNMU080608PNN-GM WNHU080616PNR-LH | | |
| | FMP12  B94 | $K_r=90^\circ$ $a_{pmax}=5.7$ | WNHU0604□□PNR-GM | <ul style="list-style-type: none"> Diameter range Ø25-Ø50 90° approach angle can be used for shoulder milling, face milling, groove milling, etc.; -six-flute double-sided groove milling inserts with wiper for large feed machining; Double negative angle of cutter body combined with unique insert structure to achieve double positive tool angle, reducing cutting forces. | |
| | FMP17 <i>New</i>  B96-97 | $K_r=88^\circ$ $a_{pmax}=10.5$ | SNGX1205PNN-GL/GM/GH SNMX120512-GL/GM/GH SNCU120420-W4 | General face milling of steel, cast iron and high-temperature alloy | <ul style="list-style-type: none"> Diameter range Ø50-Ø400. Double-sided chipbreaker milling insert has eight cutting edges and high economy; Same inserts for right and left cutters. Coarse pitch and close pitch are available. Diversified chipbreaker matching different coating for a wide range of application. |
| | FMR01  B99 | $a_{pmax}=5.0$ | RCKT10T3MO-DM | Cavity profile milling of steel, alloy steel, stainless steel and cast iron | <ul style="list-style-type: none"> Diameter range Ø25-Ø50. R-type inserts have extra-strong cutting edges. Suitable for machining of curved surface of die. Economical milling tools with screw clamping. |
| | | $a_{pmax}=6.0$ | RCKT1204MO-DM/DR/ER/NM | | |
| | FMR02  B102 | $a_{pmax}=6.0$ | RCKT1204MO-DM/DR/ER/NM RCMW1204MOBS01225 RCMW1204MOAS01225 | Face milling and cavity profile milling of steel, alloy steel, stainless steel and cast iron | <ul style="list-style-type: none"> Diameter range Ø50-Ø160. R-type inserts have extra-strong cutting edges. Suitable for machining of curved surface of die. Economical milling tools with screw clamping. |
| | | $a_{pmax}=8.0$ | RCKT1606MO-DM/DR/ER/NM | | |
| | | $a_{pmax}=10.0$ | RCKT2006MO-DR/ER | | |
| | FMR03  B106 | $a_{pmax}=4.0$ | RDKW0803MO | Cavity profile milling of steel, alloy steel, stainless steel and cast iron | <ul style="list-style-type: none"> Diameter range Ø16-Ø50. R-type inserts have extra-strong cutting edges. Suitable for machining of curved surface of die. Economical milling tools with screw clamping. |
| $a_{pmax}=5.0$ | | RDKW10T3MO RDKT10T3MO-NM | | | |
| $a_{pmax}=6.0$ | | RDKW1204MO | | | |
| FMR04  B109 | $a_{pmax}=6.0$ | RDKW1204MO | Face milling and cavity profile milling of steel, alloy steel, stainless steel and cast iron | <ul style="list-style-type: none"> Diameter range Ø50-Ø160. R-type inserts have extra-strong cutting edges. Suitable for machining of curved surface of die. | |
| | $a_{pmax}=8.0$ | RDKW1605MO | | | |
| | $a_{pmax}=10.0$ | RDKW2006MO | | | |
| Square shoulder milling | EMP01  B112-114 | $K_r=90^\circ$ $a_{pmax}=6.0$ | APKT070204-APF/APM | Multi-function milling of steel, alloy steel, stainless steel, cast iron, aluminum alloy and high-temperature alloy | <ul style="list-style-type: none"> Two mounting styles: Straight shank and Weldon shank, diameter range Ø10-Ø63. $K_r 90^\circ$, for square shoulder milling, slot milling, ramp milling, etc. Inserts with wiper, also suitable for face milling. Inserts with 3D helical cutting edge, less cutting force. |
| | | $K_r=90^\circ$ $a_{pmax}=10.5$ | APKT11T3□□-APF/APM APKT11T3□□-ALH | | |
| | | $K_r=90^\circ$ $a_{pmax}=15.5$ | APKT160408-APF/APM APKT160408-ALH | | |

Indexable milling tools

Indexable milling tools overview











Indexable milling tools overview

| Operating pattern | Series/Shape | Approach angle / Max. cutting depth. | Applicable insert | Application overview | Features |
|---|---|--|--|--|---|
| Square shoulder milling | EMP02  B118 | Kr=90° a _{pmax} =11.5 | APKT11T3□□-APF/APM APKT11T3□□-ALH | Face milling of steel, alloy steel, stainless steel, cast iron, aluminum alloy and high-temperature alloy | <ul style="list-style-type: none"> • Diameter range Ø50-Ø160. • Kr 90° , for square shoulder milling, slot milling, ramp milling, etc. • Inserts with wiper, also suitable for face milling. • Inserts with 3D helical cutting edge, less cutting force. |
| | | Kr=90° a _{pmax} =15.5 | APKT160408-APF/APM APKT160408-ALH | | |
| | EMP03  B121 | Kr=90° a _{pmax} =39.0 | APKT11T3□□-APF/APM APKT11T3□□-ALH | Milling of steel, alloy steel, stainless steel, cast iron, aluminum alloy and high-temperature alloy at high cutting depth | <ul style="list-style-type: none"> • Diameter range Ø50-Ø100. • End mills with positive helical angle, good chip removal. • For side face milling and slot machining. • Close pitch, high machining efficiency. |
| | EMP04  B122 | Kr=90° a _{pmax} =29.4~58.0 | APKT11T3□□-APF/APM APKT11T3□□-ALH | Multi-function drilling and milling of steel alloy steel, stainless steel, cast iron and high-temperature alloy | <ul style="list-style-type: none"> • Diameter range Ø20-Ø40. • End mills with positive helical angle, good chip removal. • For side face milling and slot machining. • Close pitch, high machining efficiency. |
| | EMP09 <i>New</i>  B126 | Kr=90° a _{pmax} =8.0 | LNKT0804□□PNR-GM/GL LNMT080404PNR-GM | Multiple functional milling of steel, alloy steel, stainless steel, cast iron and high-temperature alloy | <ul style="list-style-type: none"> • Diameter range Ø20-Ø40. • straight shank and tapered shank types. • The tangential inserts with 90-degree clearance angel can be used in square shoulder milling and slotting which can stand more cutting forces. |
| | | Kr=90° a _{pmax} =11.5 | LNKT1206□□PNR-GM/GL LNMT120608PNR-GM | | |
| | | Kr=90° a _{pmax} =8.0 | LNKT0804□□PNR-GM/GL LNMT080404PNR-GM | | |
| | | Kr=90° a _{pmax} =11.5 | LNKT1206□□PNR-GM/GL LNMT120608PNR-GM | | |
| | | Kr=90° a _{pmax} =15 | LNKT1607□□PNR-GM/GL LNMT160708PNR-GM | | |
| |  B127-128 | Kr=90° a _{pmax} =11.5 | LNKT1206□□PNR-GM/GL LNMT120608PNR-GM | face milling of steel, alloy steel, stainless steel, cast iron and high-temperature alloy | <ul style="list-style-type: none"> • Diameter range Ø40-Ø160. • The tangential inserts with 90-degree clearance angel can be used in square shoulder milling and face milling with good rigidity.. |
| | | Kr=90° a _{pmax} =33~63 | LNKT1206□□PNR-GM/GL LNMT120608PNR-GM | | |
| | | Kr=90° a _{pmax} =30~53 | LNKT0804□□PNR-GM/GL LNMT080404PNR-GM LNKT1206□□PNR-GM/GL LNMT120608PNR-GM | | |
| |  B130 | Kr=90° a _{pmax} =30~53 | LNKT0804□□PNR-GM/GL LNMT080404PNR-GM LNKT1206□□PNR-GM/GL LNMT120608PNR-GM | large cutting depth milling of steel, alloy steel, stainless steel, cast iron and high-temperature alloy | <ul style="list-style-type: none"> • Diameter range Ø32-Ø100. • Used in side milling and slotting.. • The helical cutting edge design lead to light cut. • Diameter range Ø25-Ø50. • High strength on the cutting edge with sharp cutting edge. • Used in side milling and slotting. • The tangential inserts could stand more cutting forces. |
| | EMP09 BT <i>New</i>  B131 | Kr=90° a _{pmax} =63~125 | LNKT1206□□PNR-GM/GL LNMT120608PNR-GM | | |
| EMP09 JT <i>New</i>  B132 | Kr=90° a _{pmax} =85~125 | | | | |

Indexable milling tools

Indexable milling tools overview

Indexable milling tools overview

| Operating pattern | Series/Shape | Approach angle / Max. cutting depth. | Applicable insert | Application overview | Features |
|---|---|---|--|---|---|
| Square shoulder milling | EMP13  B136 | $K_r=90^\circ$ $a_{pmax}=11.2$ | AN□X1105□□PNR-GM/LH | Multi-functional milling of steel, alloy steel, stainless steel, cast iron and aluminum alloy | <ul style="list-style-type: none"> • Diameter range Ø25-Ø160. • Designed with extra thick insert in combination with double negative tool body, achieving double positive cutting angle, reducing cutting force, as well as greatly improving impact resistance. • Properly designed cutting edge with high precision control can achieve high quality 90°square shoulder milling. |
| |  B137 | $K_r=90^\circ$ $a_{pmax}=14.5$ | AN□X1506□□PNR-GM/LH | | |
| |  B138 | $K_r=90^\circ$ $a_{pmax}=43-64$ | AN□X1105□□PNR-GM/LH AN□X1506□□PNR-GM/LH | | |
| |  B139 | $K_r=90^\circ$ $a_{pmax}=43-53$ | AN□X1506□□PNR-GM/LH | | |
| Profile milling | BMR01  B141 | Cutting depth: see the detailed information about tool specifications | ZDET□□CYR□□ ZPNT2204CYR□□ SPMT060304 SDMT□□ | Profile machining of steel, stainless steel and cast iron | <ul style="list-style-type: none"> • Diameter range Ø20-Ø63. • Very suitable for rough machining large mold. • Ball nose cutter with 3-cutting-edge inserts, perfect economical efficiency. |
| | BMR02  B143 | | ROHX□□ | Profile machining of steel, stainless steel and cast iron | <ul style="list-style-type: none"> • Diameter range Ø12-Ø20. • For profile finish machining. • Stable assembly. • Insert with two cutting edges, perfect economical efficiency. |
| |  B145 | | XPHT□□R□□- GM | Profile machining of steel, stainless steel and cast iron | <ul style="list-style-type: none"> • Diameter range Ø16-Ø50. • For profile finish machining. • Stable assembly. • Insert with two cutting edges, perfect economical efficiency. |
| |  B146 | | | | |
|  B147 | | | | | |
|  B148 | | | | | |

Indexable milling tools

Indexable milling tools overview










Indexable milling tools overview

| Operating pattern | Series/Shape | Approach angle / Max. cutting depth. | Applicable insert | Application overview | Features |
|---|----------------------------------|---|--|--|--|
| Profile milling | BMR04 B157 B158 | cutting depth: see the detailed information about tool specifications | ZOHX□□ | Profile machining of steel, stainless steel and cast iron | <ul style="list-style-type: none"> • Diameter range Ø12-Ø32. • High precision, for finish profile machining • Two types of chipbreaker, used in different machining conditions. • High assembling precision, good stability. |
| | SMP01 B164 B165 | | XSEQ12□□ | Slot milling of steel, stainless steel and cast iron | <ul style="list-style-type: none"> • Diameter range Ø63-Ø250. • Two mounting styles: mounting by keyway and arbor mounting. • Groove width range : 8, 10, 12, 16, 18, 20mm. |
| SMP03 B167 B168 | MPHT□□ | | Slot milling of steel, stainless steel and cast iron | <ul style="list-style-type: none"> • Diameter range Ø80-Ø200. • Two mounting styles: mounting by keyway and arbor mounting. • Groove width range : 8, 10, 12, 16, 18, 20mm. | |
| SMP05 B171 | QC16L□□ QC22L□□ | | Slot milling of steel, stainless steel and cast iron | <ul style="list-style-type: none"> • Diameter range Ø25-Ø44 | |
| SMP09 <i>New</i> B173-174 B175-176 | LNGX1005□□-GM LNGX1407□□-GM | | Slot milling of steel, stainless steel and cast iron | <ul style="list-style-type: none"> • Diameter range Ø80-Ø250. • Optimized positioning structure of the cutter for reliable positioning. • Tangential milling cutter for excellent impact resistance. • Large rank angle makes cutting easier and faster. Tailor-made cutters and inserts are available for grooving of different width and nose radius. • Diameter range Ø80-Ø315. • Optimized positioning structure of the cutter for reliable positioning. • Tangential milling cutter for excellent impact resistance. • Large rank angle makes cutting easier and faster. Tailor-made cutters and inserts are available for grooving of different width and nose radius. | |




Indexable milling tools

Indexable milling tools overview

Indexable milling tools overview

| Operating pattern | Series/Shape | Approach angle / Max. cutting depth. | Applicable insert | Application overview | Features |
|-----------------------------|--|---|--------------------------------------|--|---|
| Special milling (high feed) | XMR01  B178  B179 | cutting depth: see the detailed information about tool specifications | SDMT□□-DM/PM/NM | Slot milling of steel, stainless steel and cast iron | <ul style="list-style-type: none"> • Diameter range Ø20-Ø160. • Two mounting types: straight shank and arbor mounting. • Cutting forces are resolved effectively, achieving cutting with high feed rate. • For plunge milling. • Double clamping, firm and reliable. |
| |  B181  B182 | | WPGT□□ZSR WPGT□□ZSR-PM | Face and cavity profile milling of steel, stainless steel and cast iron in cavity applications | <ul style="list-style-type: none"> • Diameter range Ø20-Ø160. • Two mounting types: straight shank and arbor mounting. • Cutting forces are resolved effectively, achieving cutting with high feed rate. • Double clamping, firm and reliable. |
| | XMR03 <i>New</i>  B189 | | SNGU□□-GM | cavity milling, face milling of steel, alloy steel, stainless steel, and cast iron | <ul style="list-style-type: none"> • Diameter range Ø50-Ø125 • double-sided inserts with 8 cutting edges and great economical effect. • Large rake angle design leads to low cutting resistance with high generality. • The overall impact resistance of the tool is outstanding. • Great anti-vibration ability and stable machining. |
| | | | | | |
| T-slot milling | TMP01  B191 | Kr=90° apmax=9~28 | MPHT□□ | Machining T slot in cast iron | <ul style="list-style-type: none"> • Diameter range Ø21-Ø60. • Machining T-slot with nominal size 12, 14, 18, 22, 28, 36. • 86° rhombic inserts with positive angle. |
| Helical end mills |  B193 | Kr=90° apmax=55 | APKT150412-PM/KM SPMT120408-PM/KM | Milling of steel, alloy steel and cast iron at high cutting depth. | <ul style="list-style-type: none"> • Diameter range Ø40、Ø80. • Coarse and differential pitch, less vibration. • Holistic structure with good rigidity, interchangeable heads achieve high economical efficiency. |
| |  B194 | Kr=90° apmax=74~144 | | | |
| | HMP01 EC  B195 | Kr=90° apmax=74~144 | | | |

Indexable milling tools overview

| Operating pattern | Series/Shape | Approach angle / Max. cutting depth. | Applicable insert | Application overview | Features |
|-------------------|--|--------------------------------------|-------------------|--|---|
| Chamfering | CMZ01  B198 | Kr=30° | SPMT120408 | Chamfer machining of steel, alloy steel, stainless steel and cast iron | <ul style="list-style-type: none"> • Diameter range Ø12, Ø25, Ø32, Ø36. • With the function of milling small surface. |
| | CMA01  B199 | Kr=45° | | Chamfer machining of steel, alloy steel, stainless steel and cast iron | <ul style="list-style-type: none"> • Diameter range Ø12, Ø25, Ø32, Ø36. • With the function of milling small surface. |
| | CMD01  B200 | Kr=60° | | | |

Indexable milling tools

Indexable milling tools overview



Profile milling tools series

Milling insert grades overview

| Workpiece material | ISO code | Coating | | Cermet | Cemented carbide | PCBN and PCD material |
|---|----------|--------------------------------------|--------------------------------------|-------------------|------------------|-----------------------|
| | | CVD | PVD | | | |
| P Steel | P01 | | | | | |
| | P10 | | YBG202 YBG205 YB9320 YBG252 | YNG151 YNG151C | | |
| | P20 | YBC301 YBC302 YBM251 | | | | |
| | P30 | YBM351 | | | YC30S | |
| | P40 | | YBG302 | | | |
| M Stainless steel | M01 | | | | | |
| | M10 | YBM251 YBC302 YBM351 YBM253 | YBG202 YBG205 YB9320 YBG252 | YNG151 YNG151C | | |
| | M20 | | | | | |
| | M30 | | YBG302 | | YC30S | |
| | M40 | | | | | |
| K Cast iron | K01 | | | | | BK1021 BK1041 |
| | K10 | YBD152 | YBG102 | YNG151 YNG151C | YD051 | |
| | K20 | YBD252 | | | | |
| | K30 | | YBG152 | | YD201 | BK2531 |
| | K40 | | | | | |
| N Non ferrous metal | N01 | | | | | |
| | N10 | | | | | DN1021 |
| | N20 | | | | YD101 YD201 | |
| | N30 | | | | | |
| S Heat resistant alloy & Ti alloy | S01 | | | | | |
| | S10 | | YBG202 YBS203 | | | |
| | S20 | | | | | |
| | S30 | | YBS303 | | | |
| H Super hard material | H01 | | | | | |
| | H10 | | | | | |
| | H20 | | | | | |
| | H30 | | | | | |

Indexable milling tools

Indexable milling tools overview

Grade classification for milling inserts

Coated Cemented Carbide



| Grade | Coating structure | Micro-structure | ISO applied range | Application field |
|---------------|--|-----------------|--------------------------------|---|
| YBC301 | Combination of high-toughness, high-strength substrate and coating composed of TiCN, thin Al ₂ O ₃ and TiN | | P15~35 | Suitable for semi-finish and rough milling of P-type material |
| YBC302 | Combination of high toughness, high strength substrate and coating composed of TiCN, thin Al ₂ O ₃ and TiN | | P15~35 M10~30 | Suitable for rough and semi-finish milling of P-type, M-type, whose hardness is below HRC45 and under |
| YBM251 | Combination of high-toughness, high-strength substrate and coating composed of TiCN, thin Al ₂ O ₃ and TiN | | P15~40 M10~30 | Suitable for semi-finish and rough milling of P- and M-type material |
| YBM253 | Combination of high-toughness gradient substrate and coating composed of TiCN and ultra fine Al ₂ O ₃ | | M10~30 | Suitable for rough milling of M-type material |
| YBM351 | Combination of high-toughness substrate and coating composed of TiCN, thin Al ₂ O ₃ and TiN | | P25~40 M20~35 | Suitable for rough milling of P- and M-type material |
| YBD152 | Good combination of substrate with high wear-resistance and coating composed of TiCN and thick Al ₂ O ₃ | | K05~25 | Suitable for finish and semi-finish milling of K-type material |
| YBD252 | Good combination of substrate with high wear-resistance and coating composed of TiCN and thick Al ₂ O ₃ | | K15~35 | Suitable for rough and semi-finish milling of K-type material |

Indexable milling tools

Grade classification for milling inserts

Application case

Component shape



Machine and cooling

Vertical machining center, dry machining

Horizontal machining center, dry machining

Workpiece material and hardness

45# Forged steel HB240-270

HT250 HB220

Type of machining

Milling surface

Milling surface

Applicable tool

FMA01-125-B40-SE12-08

FMP02-100-B32-SE12-07

Applicable insert

YBM351/SEET12T3-DR

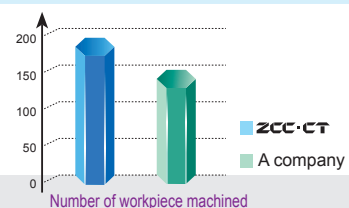
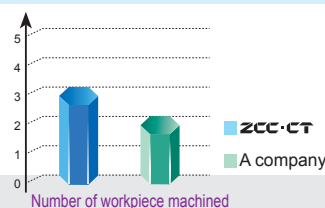
YBD252/SEET120308PER-APM

Cutting parameters

Vc=212m/min, fz=0.2mm/z, ap=3mm

Vc=160m/min, fz=0.2mm/z, ap=1.5mm

Application results



Grade classification for milling inserts

Coated Cemented Carbide PVD

| Grade | Coating structure | ISO applied range | Application field |
|---------------|---|-------------------|--|
| YBG102 | fine carbide substrate + Nano coating | K05~K20 | Suitable for finish and semi-finish milling of K-type material |
| YBG202 | Substrate with excellent deformation resistance + Nano coating | P10~30 | PVD grade with wide application, widely applied in semi-finish milling of P-, M- and S-type material |
| | | M10~30 | |
| | | S05~20 | |
| YBG205 | Ultra fine carbide substrate + Nano coating | P10~30 | Suitable for finishing and semi-finish milling of P- and M- material |
| | | M10~30 | |
| YBG302 | Substrate with good toughness and strength + Nano coating | P25~40 | Suitable for rough milling of P- and M-type material |
| | | M25~40 | |
| YBG152 | Substrate with moderate hardness and strength + Nano coating | K20~35 | Suitable for rough and semi-finish milling of K-type material |
| YB9320 | Substrate with high toughness + TiAlN based multi Nano coating | P10~30 | PVD grade with wide application, widely applied in finishing and semi-finish milling of P-, M- and S- material |
| | | M10~30 | |
| YBS203 | The excellent resistance to deformation substrate+ Nano coating | S10~20 | The general grade for S type machining, suitable for the milling of S type hard-to-cut materials. |
| YBS303 | The great rigidity and strength substrate + Nano coating | S20~30 | Suitable for milling of titanium alloy materials |

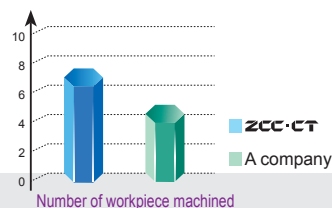
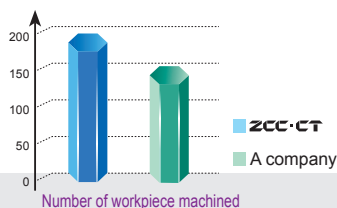
Indexable milling tools

Grade classification for milling inserts

Application case

| | | |
|---------------------------------|---|---|
| Component shape |  |  |
| Machine and cooling | Machining center, dry cutting | Plane milling machine, dry cutting |
| Workpiece material and hardness | Nodular cast iron HB 220 | 7CrSiMoV HRC25 |
| Type of machining | Milling surface | Cavity milling |
| Applicable tool | EMP02-050-A22-AP11-06 | BMR03-050-MT5-M |
| Applicable insert | YB9320/APKT11T308-APM | YBG302/XPHT50R2507- GM |
| Cutting parameters | $V_c=235\text{m/min}$, $f_z=0.15\text{mm/z}$, $a_p=1\sim3\text{mm}$ | $V_c=120\text{m/min}$, $f_z=0.25\text{mm/z}$, $a_p=8\text{mm}$ |

Application results





B

MILLING / Indexable Milling Tools

Grade classification for milling inserts

Germet

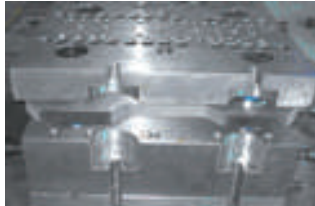
| Grade | Coating structure | ISO applied range | Application field |
|---------|---|-------------------|---|
| YNG151 |  | P05~20 | Wide application in finish milling of P-, M-, and K-type material |
| | | M05~20 | |
| | | K05~20 | |
| YNG151C |  | P01~20 | Wide application in finish milling of P-, M-, and K-type material |
| | | M01~20 | |
| | | K01~20 | |

Indexable milling tools

Grade classification for milling inserts

Application case

Component shape



Machine and cooling

Machining center, dry cutting

Machining center, dry cutting

Workpiece material and hardness

45# HB 170~220

NAK80 HRC42~48

Type of machining

Finish milling surface

Finish milling surface

Applicable tool

FMA03-160-B40-SE12-08

FME03-160-B40-SP12-10

Applicable insert

YNG151/SEEN1203AFTN

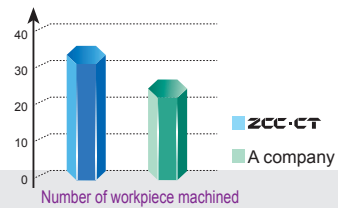
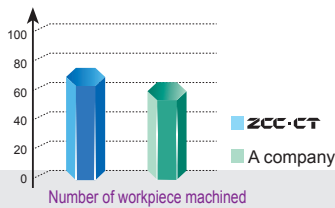
YNG151C/SPEN1203EDER

Cutting parameters

Vc=400m/min, fz=0.1mm/z, ap=0.3mm





Vc=420m/min, fz=0.12mm/z, ap=0.35mm

Application results



Grade classification for milling inserts

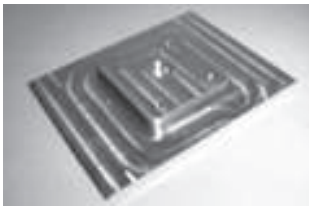


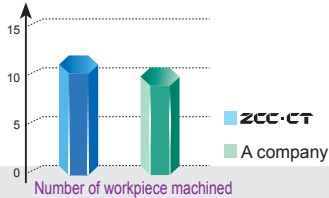
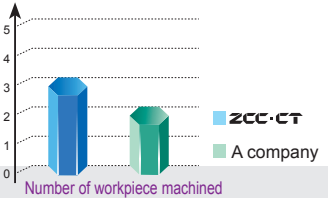
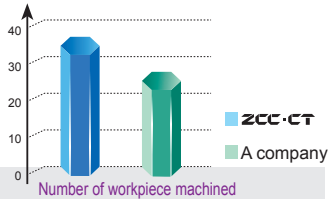
Cemented Carbide

| Grade | Coating structure | ISO applied range | Application field |
|-------|---|-------------------|---|
| YC30S |  | P25~40 | Suitable for rough milling of P- and M-type material |
| | | M25~40 | |
| YD051 |  | K05~20 | Suitable for finish milling of K-type material |
| YD101 |  | N05~25 | Suitable for rough milling of N-type material |
| YD201 |  | K15~35 | Suitable for rough and semi-finish milling of K-type material, and for rough milling of N-type material |
| | | N15~30 | |

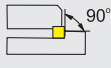
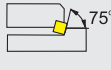
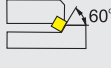
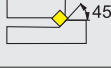
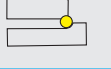
Indexable milling tools

Grade classification for milling inserts

Application case

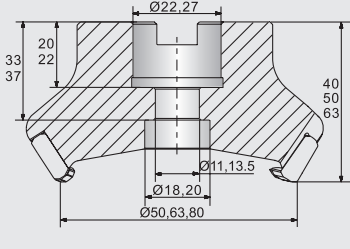
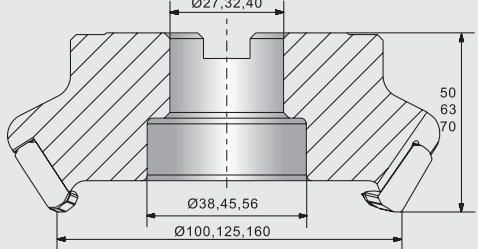
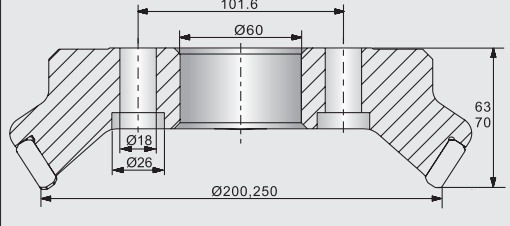
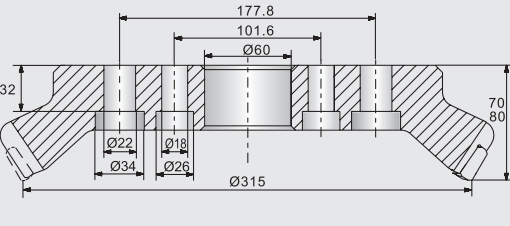
| | | | |
|---------------------------------|---|--|---|
| Component shape |  |  |  |
| Machine and cooling | Vertical machining center, wet machining | Plane milling machine, wet machining | plane milling machine, dry cutting |
| Workpiece material and hardness | Aluminum alloy HB100 | 40CrMnMo HB240 | HT250 HB220 |
| Type of machining | Milling surface | Milling surface | Milling surface |
| Applicable tool | FMA01-100-B32-SE12-07 | FMP01-100-B32-TP22-06 | FME03-160-B40-SP15-10 |
| Applicable insert | YD101/SEET12T3-LH | YC30S/TPKN2204PDR | YD201/SPKN1504EDTR |
| Cutting parameters | $V_c=300-350\text{m/min}$, $a_p=1\sim 2\text{mm}$, $f_z=0.2\text{mm/z}$ | $V_c=170\text{m/min}$, $a_p=5\sim 7\text{mm}$, $f_z=0.3\text{mm/z}$ | $V_c=100-130\text{m/min}$, $a_p=7\text{mm}$, $f_z=0.35\text{mm/z}$ |
| Application results |  |  |  |

Indexable milling tools code key

| Cutter type | | Approach angle | | Series code | | | |
|-------------|-----------------------------------|----------------|---|--|--|---|---|
| FM | Face milling | P | 90°  | Cutting diameter ØD Side and face milling tool : diameter X cutting edge width | | | |
| EM | Square shoulder milling | | E | | | 75°  | |
| HM | Helical end milling | D | | 60°  | Coupling structure (see below) | | |
| SM | Side and face milling | | A | 45°  | | | |
| BM | Profile milling | R | |  | A | A-type coupling | XP |
| CM | Chamfer milling | | | | B | B-type coupling | G |
| XM | Special milling | | | C | C-type coupling | MW | Morse adapter with a conical hole and without a flat tail |
| TM | T-slot milling | | | D | D-type coupling | | |
| AM | Aluminum alloy high speed milling | | | Coupling size(mm) (see below) | | | |

FM
E
03
-
100
-
B
32









Coupling structure of arbor

| | | | |
|-----------------|---|-----------------|--|
| A-type coupling |  | B-type coupling |  |
| | Ø50- Ø80 arbor face milling cutter as per GB5342-96 | | Ø100- Ø160 arbor face milling cutter as per GB5342-96 |
| C-type coupling |  | D-type coupling |  |
| | Ø200- Ø250 arbor face milling cutter as per GB5342-96 | | D≥Ø315 arbor face milling cutter as per GB5342-96 |

For coupling methods of Weldon shank, straight shank and Morse taper shank, etc., see technical information of tooling systems.

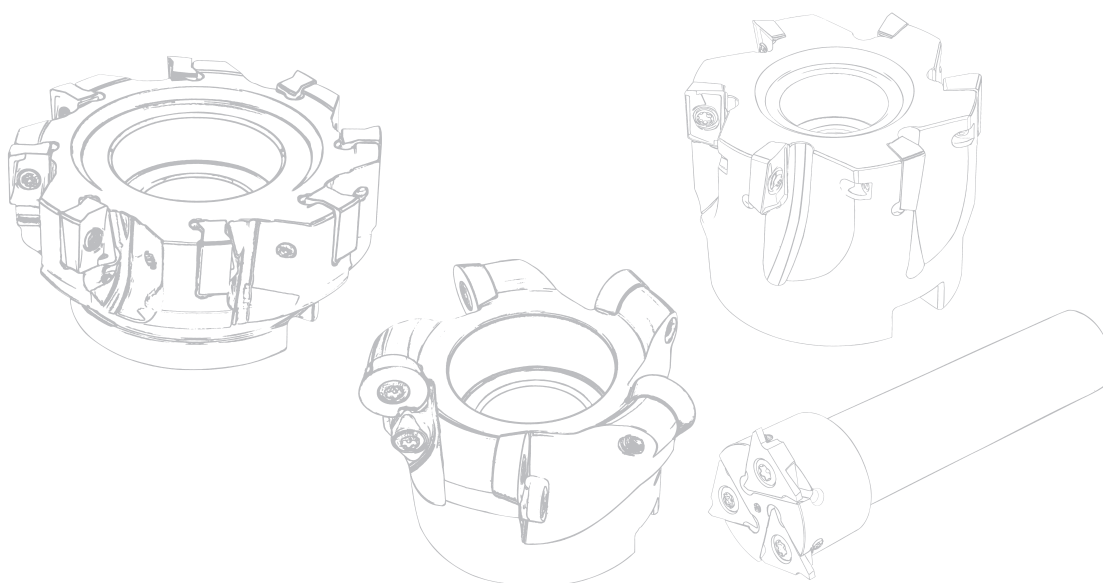
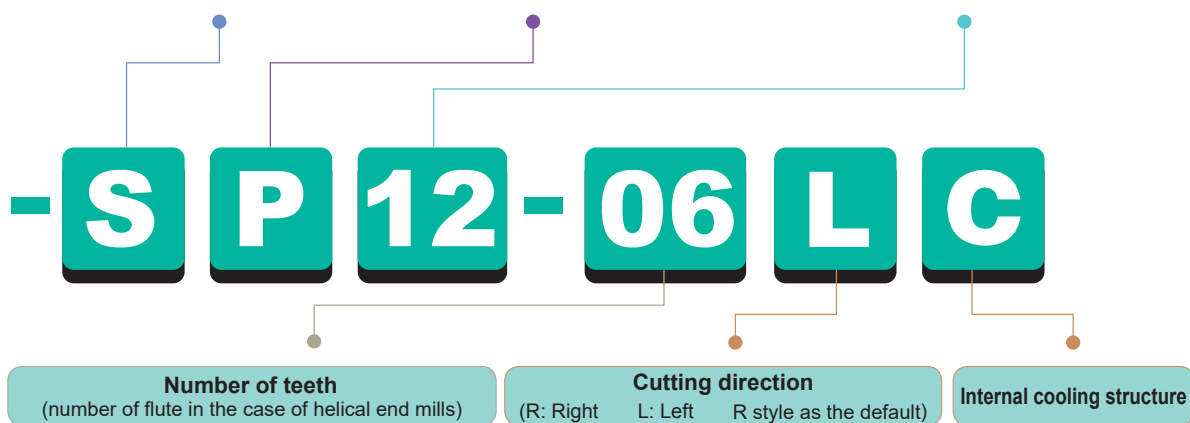
Indexable milling tools

Indexable milling tools code key

| Insert shape | |
|--|--|
|  80° C |  55° D |
|  R |  S |
|  60° T |  L |
|  H |  O |

| Insert clearance angle | |
|------------------------|-----|
| N | 0° |
| B | 5° |
| C | 7° |
| P | 11° |
| D | 15° |
| E | 20° |
| F | 25° |

| Diameter of insert's inscribed circle | Length of cutting edge | | | | | |
|---------------------------------------|------------------------|----|----|----|----|---|
| | C | D | R | S | T | L |
| 5.556 | — | — | — | — | 09 | — |
| 6.350 | 06 | 07 | — | — | 11 | — |
| 9.525 | 09 | 11 | 09 | 09 | 16 | — |
| 12.700 | 12 | 15 | 12 | 12 | 22 | — |
| 15.875 | 16 | 19 | 15 | 15 | 27 | — |
| 19.050 | 19 | — | 19 | 19 | 33 | — |
| 25.400 | 25 | — | 25 | 25 | 44 | 2 |



Indexable milling tools code key

AMA01 AMP01 Series

High-speed High-precision
milling tools

Machining case of AMP01 series high-speed high-precision milling tools

Area of machining: Bottom surface of cylinder
housing

Machine: Machining center

Coolant: Internal

Workpiece material: Aluminum alloy (HB 110)

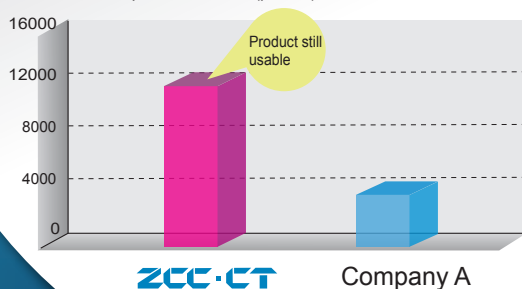
Operation: Face milling

Cutting data: $n=11141\text{r/min}$ $f_z=0.1\text{mm/z}$



● Comparison of tool life

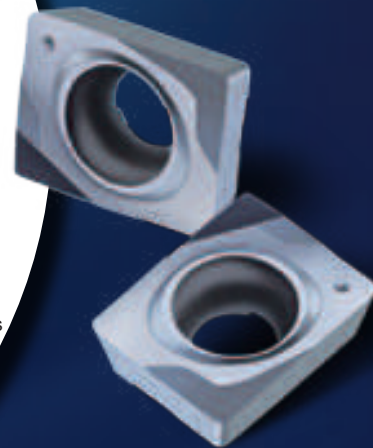
Number of workpiece machined(pieces)



Results:

ZCC-CT: 12000 pcs
(Still usable)

Product of company A: 3500 pcs



AMA01 Series High-speed High-precision milling tools

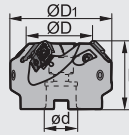
Kr:45°



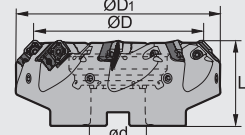
AMA01 N K



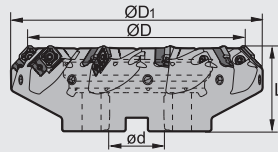
A-type coupling



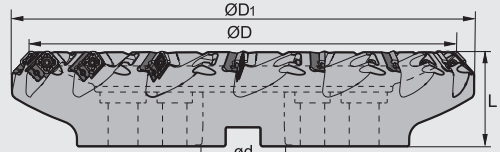
B-type coupling



C-type coupling



D-type coupling



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|-------------------------|-------|---|----------------------|-----------------|----|----|-------------------|------------------|-------------|
| | R | L | ØD | ØD ₁ | ød | L | | | |
| AMA01 -050-A22-SE12-03C | ▲ | △ | 50 | 64 | 22 | 40 | 3 | A | 0.17 |
| -063-A27-SE12-04C | ▲ | △ | 63 | 77 | 27 | 40 | 4 | A | 0.27 |
| -080-A27-SE12-05C | ▲ | △ | 80 | 94 | 27 | 50 | 5 | A | 0.49 |
| -100-A32-SE12-06C | ▲ | △ | 100 | 114 | 32 | 50 | 6 | A | 0.84 |
| -125-B40-SE12-08C | ▲ | △ | 125 | 139 | 40 | 63 | 8 | B | 1.20 |
| -160-B40-SE12-10C | ▲ | △ | 160 | 173 | 40 | 63 | 10 | B | 2.11 |
| -160-C40-SE12-10C | ▲ | △ | 160 | 173 | 40 | 63 | 10 | C | 2.15 |
| -200-C60-SE12-12C | ▲ | △ | 200 | 213 | 60 | 63 | 12 | C | 3.36 |
| -250-C60-SE12-14C | ▲ | △ | 250 | 263 | 60 | 63 | 14 | C | 4.96 |
| -315-D60-SE12-16 | ▲ | △ | 315 | 328 | 60 | 80 | 16 | D | 8.68 |
| -400-D60-SE12-18 | ▲ | △ | 400 | 413 | 60 | 80 | 18 | D | 10.1 |
| -500-D60-SE12-20 | ▲ | △ | 500 | 513 | 60 | 80 | 20 | D | 14.3 |

▲Stock available △Make-to-order

Cutter with a diameter of 250mm or more have no internal cooling, and cutter with a diameter of 200mm or more have no dynamic balance. Type A and Type B connectors are equipped with internal cooling screws.

Spare parts

| Diameter ØD | Locator screw | Balancing screw | Adjusting screw | Insert screw | Locator | Wrench | Wrench | | |
|-------------|---------------|-----------------|-----------------|--------------|-----------|-----------|--------|---------|-------|
| Ø50 | | M8×8(GB77-85) | | | AMA0101 | WT15IP | | | |
| Ø63 | | | | | AMA0102 | | | | |
| Ø80 | | M8×12(GB77-85) | | | I20M3×10X | I60M4×8.4 | | AMA0103 | WT09P |
| Ø100-Ø160 | | | | | | | | | |
| Ø200 | | -- | | | -- | -- | | -- | -- |
| Ø250-Ø500 | | -- | | | -- | -- | | -- | -- |

Tools code key
B24-B25

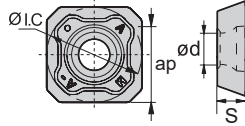
Grade selection guide
B19-B23

Technical data
B234-B240

Indexable milling tools

High-speed High-precision milling tools

Selection of inserts



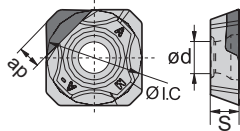
😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| | | | | |
|--------------------|----------------------------|---|---|---|
| Workpiece material | K Cast iron | | 😊 | 😞 |
| | N Non-ferrous metal | 😊 | | 😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | PCD | PCBN | Cemented carbide |
|--------------|------------------------|----------------------|------|-----|-------|--------|--------|------------------|
| | | ØI.C | S | ød | apmax | | | |
| | | | | | | DN1021 | BK1021 | YD201 |
| | SEHT12T3AFFN-AL | 12.7 | 3.97 | 4.4 | 6.6 | | | ★ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| | | | | |
|--------------------|----------------------------|---|---|---|
| Workpiece material | K Cast iron | | 😊 | 😞 |
| | N Non-ferrous metal | 😊 | | 😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | PCD | PCBN | Cemented carbide |
|--------------|---------------------------|----------------------|------|-----|-------|--------|--------|------------------|
| | | ØI.C | S | ød | apmax | | | |
| | | | | | | DN1021 | BK1021 | YD201 |
| | SEHT12T308AFFN-PCD | 12.7 | 3.97 | 4.4 | 2.5 | ★ | | |
| | SEHT12T308AFFN-CBN | 12.7 | 3.97 | 4.4 | 2 | | ○ | |

CBN insert edge can be treated as per machining requirements ★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Recommended cutting parameters

| Workpiece material | Insert material | Cutting parameters | |
|--|-----------------|------------------------|-----------------------|
| | | V _c (m/min) | f _z (mm/z) |
| K Cast iron | BK1021 | 800(500-1200) | 0.2(0.1-0.5) |
| N Aluminum alloy (Si content≤12%) | DN1021 | 1500(800-3000) | 0.1(0.08-0.3) |
| | YD201 | 600(300-1000) | 0.15(0.05-0.3) |

Indexable milling tools

High-speed High-precision milling tools

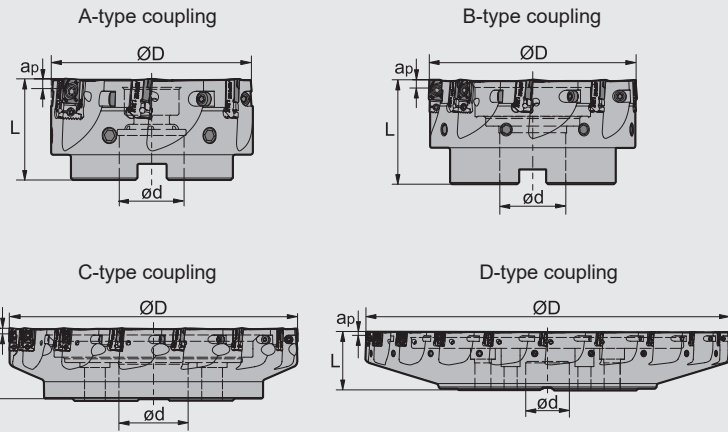
AMA01 Series High-speed High-precision milling tools



AMP01 N K



Close even pitch



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | Number of teeth Z | Type of coupling | Weight (kg) |
|--------------------------------|-------|---|----------------------|----|----|-------------------|------------------|-------------|
| | R | L | ØD | ød | L | | | |
| AMP01 -050-A22-AP12-03C | ▲ | △ | 50 | 22 | 40 | 3 | A | 0.17 |
| -063-A27-AP12-05C | ▲ | △ | 63 | 27 | 40 | 5 | A | 0.27 |
| -080-A27-AP12-06C | ▲ | △ | 80 | 27 | 50 | 6 | A | 0.49 |
| -100-A32-AP12-06C | ▲ | △ | 100 | 32 | 50 | 6 | A | 0.84 |
| -125-B40-AP12-08C | ▲ | △ | 125 | 40 | 63 | 8 | B | 1.20 |
| -160-B40-AP12-10C | ▲ | △ | 160 | 40 | 63 | 10 | B | 2.11 |
| -160-C40-AP12-10C | ▲ | △ | 160 | 40 | 63 | 10 | C | 2.15 |
| -200-C40-AP12-12C | ▲ | △ | 200 | 60 | 63 | 12 | C | 3.36 |
| -250-C60-AP12-14C | ▲ | △ | 250 | 60 | 63 | 14 | C | 4.96 |
| -315-D60-AP12-16 | ▲ | △ | 315 | 60 | 80 | 16 | D | 8.68 |
| -400-D60-AP12-18 | ▲ | △ | 400 | 60 | 80 | 18 | D | 10.1 |
| -500-D60-AP12-20 | ▲ | △ | 500 | 60 | 80 | 20 | D | 14.3 |

▲Stock available △Make-to-order

Cutter with a diameter of 250mm or more have no internal cooling, and cutter with a diameter of 200mm or more have no dynamic balance. Type A and Type B connectors are equipped with internal cooling screws.

Spare parts

| Diameter ØD | Locator screw | Balancing screw | Adjusting screw | Insert screw | Locator | Wrench | Wrench |
|-------------|---------------|-----------------|-----------------|--------------|---------|--------|--------|
| Ø50-Ø63 | M4×12-TP | M8×8(GB77-85) | I20M3×10X | I60M4×8.4 | AMP0101 | WT15IP | |
| Ø80-Ø160 | | M8×12(GB77-85) | | | AMP0102 | WT15IS | |
| Ø200 | | -- | | | AMP0103 | | |
| Ø250-Ø500 | | -- | | | | | |

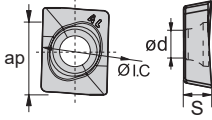
Tools code key B24-B25

Grade selection guide B19-B23


Technical data B234-B240

Indexable milling tools
High-speed High-precision milling tools

Selection of inserts



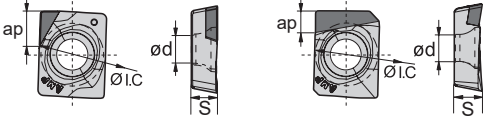
😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Insert shape | Type | Basic dimensions(mm) | | | | PCD | PCBN | Cemented carbide |
|---|--------------------------|----------------------|------|-----|-------|--------|--------|------------------|
| | | ØI.C | S | ød | apmax | | | |
|  | APHT12T304PPFR-AL | 12.7 | 3.97 | 4.4 | 12 | DN1021 | BK1021 | YD201 |
| | | | | | | | | ★ |




Workpiece material: **K** Cast iron (Good working condition for BK1021, Bad for YD201); **N** Non-ferrous metal (Normal for BK1021, Good for YD201).

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Insert shape | Type | Basic dimensions(mm) | | | | PCD | PCBN | Cemented carbide |
|---|---------------------------|----------------------|------|-----|-------|-----|--------|------------------|
| | | ØI.C | S | ød | apmax | | | |
|  | APHT12T304PPFR-PCD | 12.7 | 3.97 | 4.4 | 3 | ★ | BK1021 | YD201 |
|  | APHT12T304PPFR-CBN | 12.7 | 3.97 | 4.4 | 2 | | ○ | |
|  | APHT12T304-W | 12.7 | 3.97 | 4.4 | 1 | ★ | ★ | |

Workpiece material: **K** Cast iron (Good working condition for BK1021, Bad for YD201); **N** Non-ferrous metal (Normal for BK1021, Good for YD201).

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Recommended cutting parameters

| Workpiece material | Insert material | Cutting parameters | |
|--|-----------------|------------------------|-----------------------|
| | | V _c (m/min) | f _z (mm/z) |
| K Cast iron | BK1021 | 800(500-1200) | 0.2(0.1-0.5) |
| N Aluminum alloy (Si content≤12%) | DN1021 | 1500(800-3000) | 0.1(0.08-0.3) |
| | YD201 | 600(300-1000) | 0.15(0.05-0.3) |

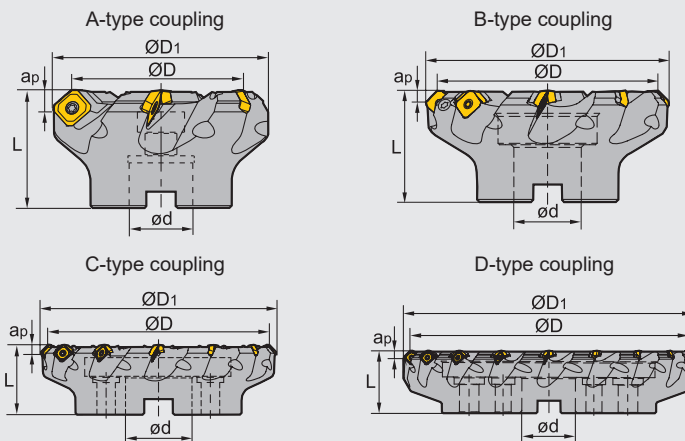
Indexable milling tools
High-speed High-precision milling tools

Face milling tools

Kr:45°



FMA01 P M K N S



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|-------------------------------|-------|---|----------------------|-----------------|----|----|-------------------|-------------------|------------------|-------------|
| | R | L | ØD | ØD ₁ | ød | L | ap _{max} | | | |
| FMA01 -050-A22-SE12-04 | ▲ | △ | 50 | 61 | 22 | 40 | 6 | 4 | A | 0.3 |
| Coarse pitch -063-A22-SE12-05 | ▲ | △ | 63 | 74 | 22 | 40 | 6 | 5 | A | 0.5 |
| -080-A27-SE12-06 | ▲ | △ | 80 | 91 | 27 | 50 | 6 | 6 | A | 1.2 |
| -100-B32-SE12-07 | ▲ | △ | 100 | 107 | 32 | 50 | 6 | 7 | B | 1.52 |
| -125-B40-SE12-08 | ▲ | △ | 125 | 136 | 40 | 63 | 6 | 8 | B | 2.6 |
| -160-B40-SE12-07 | ▲ | △ | 160 | 174 | 40 | 63 | 6 | 7 | B | 4.548 |
| -160-B40-SE12-10 | ▲ | △ | 160 | 170 | 40 | 63 | 6 | 10 | B | 4.92 |
| -200-C60-SE12-08 | ▲ | △ | 200 | 214 | 60 | 63 | 6 | 8 | C | 6.175 |
| -200-C60-SE12-12 | ▲ | △ | 200 | 210 | 60 | 63 | 6 | 12 | C | 7.6 |
| -250-C60-SE12-10 | ▲ | △ | 250 | 264 | 60 | 63 | 6 | 10 | C | 12.596 |
| -250-C60-SE12-14 | ▲ | △ | 250 | 260 | 60 | 63 | 6 | 14 | C | 13.5 |
| -315-D60-SE12-18 | ▲ | △ | 315 | 325 | 60 | 70 | 6 | 18 | D | 20.8 |
| -100-B32-SE18-04 | ▲ | △ | 100 | 120 | 32 | 63 | 10.4 | 4 | B | 2.22 |
| -125-B40-SE18-05 | ▲ | △ | 125 | 145 | 40 | 63 | 10.4 | 5 | B | 3.15 |
| -160-B40-SE18-06 | ▲ | △ | 160 | 180 | 40 | 63 | 10.4 | 6 | B | 5.01 |
| -200-C60-SE18-08 | ▲ | △ | 200 | 220 | 60 | 63 | 10.4 | 8 | C | 6.9 |
| -250-C60-SE18-10 | ▲ | △ | 250 | 270 | 60 | 63 | 10.4 | 10 | C | 13.1 |
| -315-D60-SE18-12 | ▲ | △ | 315 | 335 | 60 | 80 | 10.4 | 12 | D | 24.5 |

▲Stock available △Make-to-order

Spare parts

| Diameter ØD | Insert | Insert screw | Shim | Shim screw | Wrench | Wrench |
|-------------|-------------|--------------|-------|------------|--------|--------|
| Ø50-Ø100 | SEET12□□-□□ | I60M3.5×10 | -- | -- | WT15IS | -- |
| Ø50-Ø315 | SEET12□□-□□ | I60M3.5×12 | S13BS | SM5×7XA | WT15IS | WH35L |
| Ø100-Ø315 | SEET18□□-□□ | I60M5×17 | S18BS | SM8×9XA | WT20IT | WH50L |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Indexable milling tools

Face milling tools

Face milling tools

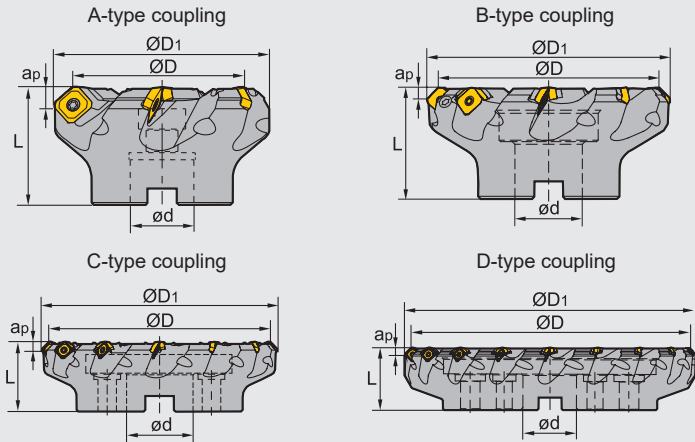
Kr:45°



FMA01 P M K N S



Close and equal pitch



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|-----------------------------|-------|---|----------------------|-----------------|----|----|-------------------|----|-------------------|------------------|-------------|
| | R | L | ØD | ØD ₁ | ød | L | a _{pmax} | | | | |
| FMA01 Close pitch | ▲ | △ | 50 | 63 | 22 | 40 | 6 | 5 | A | 0.427 | |
| -050-A22-SE12-05 | ▲ | △ | 50 | 63 | 22 | 40 | 6 | 5 | A | 0.427 | |
| -063-A22-SE12-06 | ▲ | △ | 63 | 74 | 22 | 40 | 6 | 6 | A | 0.53 | |
| -080-A27-SE12-08 | ▲ | △ | 80 | 93 | 27 | 50 | 6 | 8 | A | 1.37 | |
| -100-B32-SE12-10 | ▲ | △ | 100 | 114 | 32 | 50 | 6 | 10 | B | 1.755 | |
| -125-B40-SE12-12 | ▲ | △ | 125 | 136 | 40 | 63 | 6 | 12 | B | 3.06 | |
| -160-B40-SE12-16 | ▲ | △ | 160 | 174 | 40 | 63 | 6 | 16 | B | 5.21 | |
| -200-C60-SE12-20 | ▲ | △ | 200 | 214 | 60 | 63 | 6 | 20 | C | 9.32 | |
| -250-C60-SE12-24 | ▲ | △ | 250 | 264 | 60 | 63 | 6 | 24 | C | 15.892 | |
| -100-B32-SE18-06 | ▲ | △ | 100 | 114 | 32 | 63 | 10.4 | 6 | B | 2.98 | |
| -125-B40-SE18-07 | ▲ | △ | 125 | 144 | 40 | 63 | 10.4 | 7 | B | 3.803 | |
| -200-C60-SE18-12 | ▲ | △ | 200 | 220 | 60 | 63 | 10.4 | 12 | C | 7.191 | |
| -250-C60-SE18-14 | ▲ | △ | 250 | 265 | 60 | 63 | 10.4 | 14 | C | 14.9 | |

▲Stock available △Make-to-order

Spare parts

| Diameter ØD | Insert | Insert screw | Shim | Shim screw | Wrench | Wrench | Image |
|-------------|-------------|--------------|-------|------------|--------|--------|-------|
| | | | | | | | |
| Ø50-Ø100 | SEET12□□-□□ | I60M3.5×10 | -- | -- | WT15IS | -- | |
| Ø50-Ø315 | SEET12□□-□□ | I60M3.5×12 | S13BS | SM5×7XA | WT15IS | WH35L | |
| Ø100-Ø315 | SEET18□□-□□ | I60M5×17 | S18BS | SM8×9XA | WT20IT | WH50L | |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

▶▶ Chipbreaker selection for FMA01 milling inserts

| Classification \ Function | For finishing | For semi-finishing | For roughing |
|---------------------------|---------------|--------------------|--------------|
| P | -DF | -DM | -DR |
| M, S | -EF | -EM | |
| K | -CF | -CM | -CR |
| N | -LH | | |

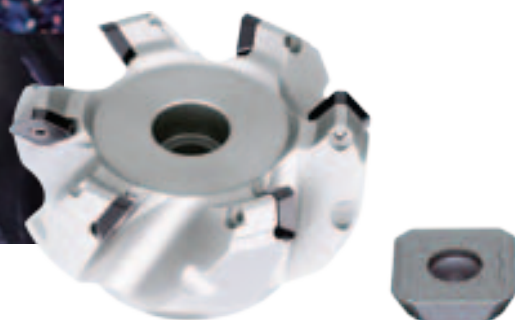
▶▶ Recommended cutting parameters

| Workpiece material | Hardness HB | Insert grade | Cutting parameters | | | | |
|--------------------|-----------------------------------|------------------|----------------------------|-----------------------|-----------------------|-----------------|--------------|
| | | | V _c (m/min) | f _z (mm/z) | | | |
| | | | | -DF | -DM | -DR | |
| P | Low-carbon steel, Soft steel | YBM251 YBC301 | 270(220-350) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3(0.2-0.4) | |
| | | YBG205 YB9320 | 270(200-360) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3(0.2-0.4) | |
| | | YBG302 YBM253 | 230(170-350) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3(0.2-0.4) | |
| | High-carbon steel, Alloy steel | 180-280 | YBM251 YBC302 YBC301 | 240 (200-320) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3(0.2-0.4) |
| | | | YBG205 YB9320 | 240 (180-350) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3(0.2-0.4) |
| | | | YBG302 YBM253 | 220 (150-330) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3(0.2-0.4) |
| | Alloy tool steel | 280-350 | YBM251 YBM351 YBC301 | 220 (180-300) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3(0.2-0.4) |
| | | | YBG205 YB9320 | 220 (170-340) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3(0.2-0.4) |
| | | | YBG302 YBM253 | 190 (130-300) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3(0.2-0.4) |
| M | Stainless steel | ≤270 | YBM251 | 150 (120-240) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | |
| | | | YBG205 YB9320 | 160 (110-270) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | |
| | | | YBG302 | 140 (100-250) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | |
| K | Cast iron | 180-250 | YBG102 | 210 (120-300) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3(0.2-0.4) |
| | | | YBD152 | 240 (180-300) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3(0.2-0.4) |
| N | Al alloy steel | -- | YD101 | 300- | -LH 0.25 (0.1-0.4) | | |
| | | | YD201 | 300- | | | |
| S | High-temperature alloy | ≤400 | YBG102 | 50(20-60) | 0.1 (0.1-0.2) | 0.15 (0.1-0.3) | |
| | | | YBS303 | 100(60-120) | 0.1 (0.1-0.2) | 0.15 (0.1-0.25) | |

Indexable milling tools

Face milling tools

Case for FMA01



Workpiece material: 1Cr18Ni9Ti (HB180)
 Cooling system: Dry cutting
 Machine: Vertical machining center
 Cutting parameters:
 $V_c=160\text{m/min}$
 $a_p=1\text{mm}$
 $f_z=0.2\text{mm/z}$
 $a_e=60\text{mm}$

Tool type: FMA01-080-A27-SE12-06

Insert type/grade: SEET12T3-EM/YBG302

Surface roughness of workpiece:

ZCC·CT: Ra1.2

Similar overseas products:
 Ra1.6

Comparison of insert abrasion

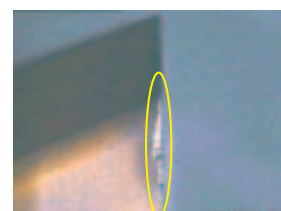
ZCC·CT

Similar overseas products

17'30"



29'30"



33'30"



Indexable
milling tools

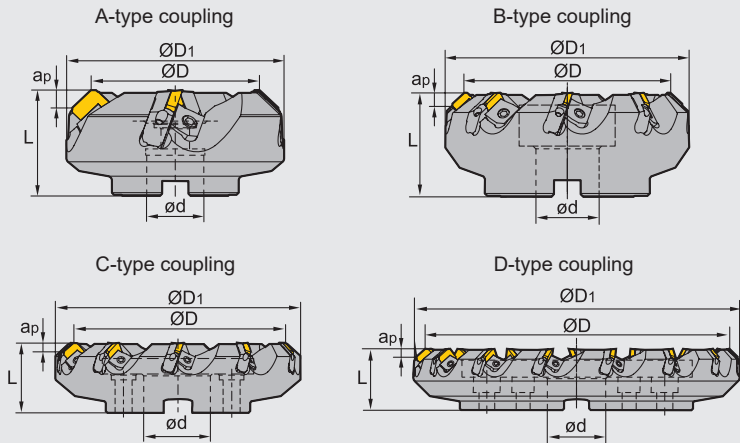
Face milling tools

Face milling tools

Kr:45°



FMA03 P M K



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|-------------------------------|-------|---|----------------------|-----|----|----|-------|-------------------|------------------|-------------|
| | R | L | ØD | ØD1 | ød | L | apmax | | | |
| FMA03 -080-A27-SE12-04 | ▲ | △ | 80 | 103 | 27 | 50 | 5.5 | 4 | A | 1.8 |
| -100-B32-SE12-05 | ▲ | △ | 100 | 122 | 32 | 50 | 5.5 | 5 | B | 2.4 |
| -125-B40-SE12-06 | ▲ | △ | 125 | 147 | 40 | 63 | 5.5 | 6 | B | 4.4 |
| -160-B40-SE12-08 | ▲ | △ | 160 | 181 | 40 | 63 | 5.5 | 8 | B | 6.4 |
| -200-C60-SE12-10 | ▲ | △ | 200 | 221 | 60 | 63 | 5.5 | 10 | C | 8.5 |
| -250-C60-SE12-12 | ▲ | △ | 250 | 270 | 60 | 63 | 5.5 | 12 | C | 14.1 |
| -315-D60-SE12-15 | ▲ | △ | 315 | 353 | 60 | 63 | 5.5 | 15 | D | 22.2 |
| -080-A27-SE15-04 | ▲ | △ | 80 | 103 | 27 | 50 | 7.5 | 4 | A | 1.7 |
| -100-B32-SE15-05 | ▲ | △ | 100 | 122 | 32 | 50 | 7.5 | 5 | B | 2.3 |
| -125-B40-SE15-06 | ▲ | △ | 125 | 147 | 40 | 63 | 7.5 | 6 | B | 4.2 |
| -160-B40-SE15-08 | ▲ | △ | 160 | 181 | 40 | 63 | 7.5 | 8 | B | 6.1 |
| -200-C60-SE15-10 | ▲ | △ | 200 | 221 | 60 | 63 | 7.5 | 10 | C | 8.3 |
| -250-C60-SE15-12 | ▲ | △ | 250 | 270 | 60 | 63 | 7.5 | 12 | C | 13.6 |
| -315-D60-SE15-15 | ▲ | △ | 315 | 353 | 60 | 63 | 7.5 | 15 | D | 21.8 |

▲Stock available △Make-to-order

Spare parts

| Diameter ØD | Inserts | Locator | Wedge | Wedge screw | Locator screw | Wrench |
|-------------|---------|----------|--------|-------------|---------------|----------------|
| | | | | | | |
| Ø80-Ø315 | SE12 | LSE12R/L | W05R/L | DM8×21X | LOM5×15.1 | WT20T WH40T |
| Ø80-Ø315 | SE15 | LSE15R/L | W01R/L | | | |

Tools code key
B24-B25

Grade selection guide
B19-B23

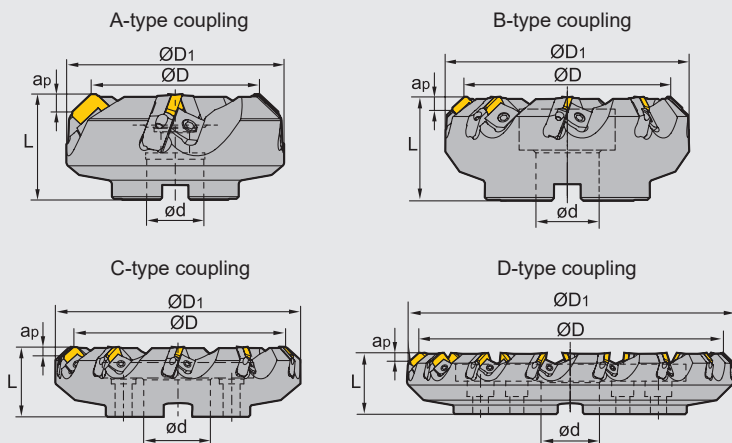
Technical data
B234-B240

Face milling tools

Kr:45°



FMA03A P M K



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|--------------------------------------|-------|---|----------------------|-----------------|--------|----|-------------------|-------------------|------------------|-------------|
| | R | L | ØD | ØD ₁ | ød | L | ap _{max} | | | |
| FMA03A -160-B2.00"-SE12-08R/L | ▲ | △ | 160 | 177 | 2.00" | 63 | 5.5 | 8 | B | 6.9 |
| -200-C1.875"-SE12-10R/L | ▲ | △ | 200 | 217 | 1.875" | 63 | 5.5 | 10 | C | 9.1 |
| -250-C1.875"-SE12-12R/L | ▲ | △ | 250 | 267 | 1.875" | 63 | 5.5 | 12 | C | 14.6 |
| -315-C1.875"-SE12-14R/L | ▲ | △ | 315 | 332 | 1.875" | 63 | 5.5 | 14 | C | 22.7 |
| -350-C1.875"-SE12-16R/L | ▲ | △ | 350 | 367 | 1.875" | 63 | 5.5 | 16 | C | 28.9 |
| -250-C1.875"-SE15-12R/L | ▲ | △ | 250 | 267 | 1.875" | 63 | 7.5 | 12 | C | 7.3 |
| -315-C1.875"-SE15-14R/L | ▲ | △ | 315 | 340 | 1.875" | 63 | 7.5 | 14 | C | 9.5 |
| -350-C1.875"-SE15-16R/L | ▲ | △ | 350 | 370 | 1.875" | 63 | 7.5 | 16 | C | 15.1 |

▲Stock available △Make-to-order

1.875"=47.625mm 2.00"=50.8mm

Cutter diameter Insert type Left cutter
FMA03A - 160 - B2.00" - SE12 - 08R/L
 Cutter type Coupling type Right cutter

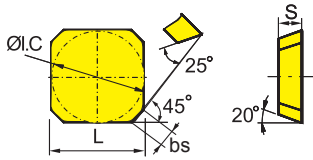
Indexable milling tools
Face milling tools

Spare parts

| Diameter ØD | Inserts | Shim | Wedge | Wedge screw | Insert screw | Wrench |
|-------------|--------------------------|--------|--------|-------------|--------------|--------|
| Ø160-Ø350 | SE□□12□□□□ SE□□15□□□□ | S15BSX | W27R/L | DM10X21X | M4X10-S12B | WH50T |

Tools code key Grade selection guide Technical data
 B24-B25 B19-B23 B234-B240

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | P | M | K | N | S | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
|----------------------------------|---|---|---|---|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | | | | |
|--------------|--------------|----------------------|--------|------|-----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|---------|-------|-------|-------|-------|--|
| | | L | ØI.C | S | bs | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
| | SEEN1203AFTN | 12.7 | 12.7 | 3.18 | 1.8 | | | | | | | | | ○ | | | | | | | | ● | | | | | | |
| | SEKN1203AFFN | 12.7 | 12.7 | 3.18 | 1.8 | | | | | | | | ★ | | | | | | | | | | | | | | | |
| | SEKN1203AFN | 12.7 | 12.7 | 3.18 | 1.8 | ● | | | | | | | | ○ | | | | | | | | | | ● | | | ○ | |
| | SEKN1203AFTN | 12.7 | 12.7 | 3.18 | 1.8 | ● | ● | ● | | | | | | ★ | | ○ | | | | | | | | ● | | | ● | |
| | SEKR1203AFN | 12.7 | 12.7 | 3.18 | 1.8 | ● | | | | | | | ○ | | ○ | | | | | | | | | | | | | |
| | SEMR1203AN-M | 12.7 | 12.7 | 3.3 | - | | | | | | | | | ● | | | | | | | | | | | | | | |
| | SEKR1203AN-M | 12.7 | 12.7 | 3.3 | - | | | | | | | | | ● | | | | | | | | | | | | | | |
| | SEKN1504AFN | 15.875 | 15.875 | 4.76 | 1.6 | ● | ● | | | | | | | | | | | | | | | | | | | | ● | |
| | SEKN1504AFTN | 15.875 | 15.875 | 4.76 | 1.6 | ○ | ● | ● | | | | | | | | | ○ | | | | | | | ● | | ● | | |
| | SEKR1504AFN | 15.875 | 15.875 | 4.76 | 1.6 | | | | | | | ★ | | | | | ★ | | | | | | ● | | | | | |
| | SEMR1504AN-M | 15.875 | 15.875 | 4.9 | - | | | | | | | | | ● | | | | | | | | | | | | | | |
| | SEKR1504AN-M | 15.875 | 15.875 | 4.9 | - | | | | | | | | | ● | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools

Face milling tools

➤ Recommended cutting parameters

| Workpiece material | Hardness HB | Insert grade | Cutting parameters | | |
|--------------------|-----------------------------------|----------------------------|----------------------------|-----------------------|-----------------|
| | | | V _c (m/min) | f _z (mm/z) | |
| P | Low-carbon steel, Soft steel | YNG151 | 430 (340-500) | 0.2 (0.1-0.4) | |
| | | YBM251 YBC301 YBG205 | 270 (220-350) | 0.2 (0.1-0.4) | |
| | | YBM351 | 220 (180-300) | 0.25 (0.15-0.3) | |
| | | YBG202 YBG302 | 270 (200-360) | 0.2 (0.1-0.3) | |
| | | YC30S | 140 (100-220) | 0.27 (0.1-0.4) | |
| | High-carbon steel, Alloy steel | 180-280 | YNG151 | 400 (320-480) | 0.2 (0.1-0.4) |
| | | | YBM251 YBC301 YBG205 | 240 (200-320) | 0.2 (0.1-0.4) |
| | | | YBM351 | 200 (160-280) | 0.25 (0.15-0.3) |
| | | | YBG202 YBG302 | 240 (180-350) | 0.2 (0.1-0.3) |
| | | | YC30S | 120 (80-200) | 0.27 (0.1-0.4) |
| | Alloy tool steel | 280-350 | YNG151 | 350 (300-450) | 0.2 (0.1-0.4) |
| | | | YBM251 YBC301 YBG205 | 220 (180-300) | 0.2 (0.1-0.4) |
| | | | YBM351 | 180 (150-250) | 0.25 (0.15-0.3) |
| | | | YBG202 YBG302 | 220 (170-340) | 0.2 (0.1-0.3) |
| | | | YC30S | 100 (60-180) | 0.27 (0.1-0.4) |
| M | Stainless steel | YNG151 | 220 (160-280) | 0.2 (0.1-0.4) | |
| | | YBM251 YBG205 | 130 (100-220) | 0.2 (0.1-0.4) | |
| | | YBM351 | 140 (100-240) | 0.25 (0.15-0.3) | |
| | | YBG202 YBG302 | 140 (100-250) | 0.2 (0.1-0.3) | |
| K | Cast iron | YBG102 | 210 (120-300) | 0.2 (0.1-0.3) | |
| | | YBD252 | 200 (150-250) | 0.2 (0.1-0.4) | |
| | | YD201 | 100 (80-160) | 0.25 (0.1-0.4) | |

Indexable
milling tools

Face milling tools

Face milling tools

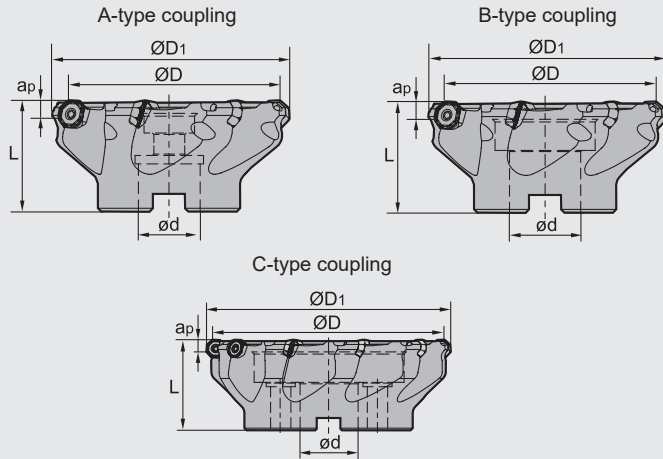
Kr:45°



FMA04 P M K N



Screw clamping



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|-------------------------------|-------|---|----------------------|-----|----|----|-------|-------------------|------------------|-------------|
| | R | L | ØD | ØD1 | ød | L | apmax | | | |
| FMA04 -050-A22-OF05-04 | ▲ | △ | 50 | 56 | 22 | 40 | 3.5 | 4 | A | 0.3 |
| -050-A22-OF05-05 | △ | △ | 50 | 56 | 22 | 40 | 3.5 | 5 | A | 0.4 |
| -063-A22-OF05-05 | ▲ | △ | 63 | 69 | 22 | 40 | 3.5 | 5 | A | 0.5 |
| -080-A27-OF05-06 | ▲ | △ | 80 | 86 | 27 | 50 | 3.5 | 6 | A | 0.8 |
| -100-B32-OF05-07 | ▲ | △ | 100 | 106 | 32 | 50 | 3.5 | 7 | B | 1.2 |
| -125-B40-OF05-08 | ▲ | △ | 125 | 130 | 40 | 63 | 3.5 | 8 | B | 2.7 |
| -160-B40-OF05-10 | ▲ | △ | 160 | 165 | 40 | 63 | 3.5 | 10 | B | 5.1 |
| -160-C40-OF05-10 | △ | △ | 160 | 165 | 40 | 63 | 3.5 | 10 | C | 4.1 |

▲Stock available △Make-to-order

Spare parts

| Diameter ØD | Insert screw | Wrench |
|-------------|--------------|-----------|
| | Ø50- Ø63 | I60M4×8.4 |
| Ø80 -Ø160 | I60M4×10 | |

Tools code key **B24-B25**

Grade selection guide **B19-B23**

Technical data **B234-B240**

Face milling tools

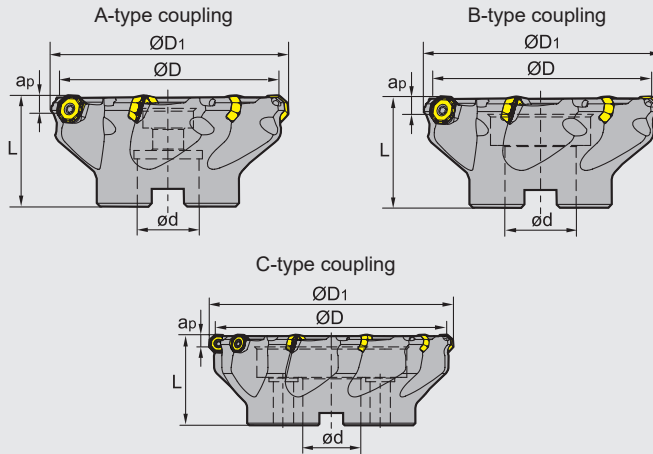
Kr:45°



FMA04 P M K N S



Screw clamping



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | | Number of teeth Z | Type of coupling | Weight (kg) | |
|------------------------------|-------------------|---|----------------------|-----------------|-----|----|-------------------|-------------------|------------------|-------------|-------|
| | R | L | ØD | ØD ₁ | ød | L | a _{pmax} | | | | |
| FMA04 Coarse pitch | -050-A22-OD06-04C | ▲ | △ | 50 | 60 | 22 | 40 | 4 | 4 | A | 0.284 |
| | -063-A22-OD06-05C | ▲ | △ | 63 | 73 | 22 | 40 | 4 | 5 | A | 0.409 |
| | -080-A27-OD06-06C | ▲ | △ | 80 | 90 | 27 | 50 | 4 | 6 | A | 1.017 |
| | -100-A32-OD06-07C | ▲ | △ | 100 | 110 | 32 | 50 | 4 | 7 | A | 1.536 |
| | -125-B40-OD06-08 | ▲ | △ | 125 | 135 | 40 | 63 | 4 | 8 | B | 2.931 |
| | -160-C40-OD06-10 | ▲ | △ | 160 | 170 | 40 | 63 | 4 | 10 | C | 3.838 |
| Close pitch | -050-A22-OD06-05C | ▲ | △ | 50 | 60 | 22 | 40 | 4 | 5 | A | 0.298 |
| | -063-A22-OD06-06C | ▲ | △ | 63 | 73 | 22 | 40 | 4 | 6 | A | 0.425 |
| | -080-A27-OD06-07C | ▲ | △ | 80 | 90 | 27 | 50 | 4 | 7 | A | 1.025 |
| | -100-A32-OD06-09C | ▲ | △ | 100 | 110 | 32 | 50 | 4 | 9 | A | 1.521 |
| | -125-B40-OD6-10 | ▲ | △ | 125 | 135 | 40 | 63 | 4 | 10 | B | 2.919 |
| | -160-C40-OD6-12 | ▲ | △ | 160 | 170 | 40 | 63 | 4 | 12 | C | 3.825 |

▲Stock available △Make-to-order

Spare parts

| Diameter ØD | Insert screw | Wrench | |
|-------------|--------------|--------------|--|
| | Ø50-Ø160 | I60M5×13 | |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

▶ Recommended cutting parameters

| Workpiece material | Hardness HB | Insert grade | Cutting parameters | | | | |
|---|-----------------------------------|--------------|------------------------|-----------------------|------------------|-----------------|-----------------|
| | | | V _c (m/min) | f _z (mm/z) | | | |
| | | | | -GL | -GM | -GH | |
| P Low-carbon steel, Soft steel | ≤ 180 | YBM253 | 270(220-350) | 0.15 (0.1-0.2) | 0.25 (0.15-0.35) | 0.3 (0.15-0.4) | |
| | | YBG205 | 270(200-360) | | | | |
| | | YB9320 | 270(200-360) | | | | |
| | High-carbon steel, Alloy steel | 180-280 | YBM253 | 240(200-320) | 0.15 (0.1-0.2) | 0.15 (0.1-0.3) | 0.25 (0.15-0.4) |
| | | | YBG205 | 240(180-350) | | | |
| | | | YB9320 | 240(180-350) | | | |
| | Alloy tool steel | 280-350 | YBM253 | 220(180-200) | 0.15 (0.1-0.2) | 0.15 (0.1-0.3) | 0.25 (0.15-0.4) |
| | | | YBG205 | 220(170-340) | | | |
| | | | YB9320 | 220(170-340) | | | |
| M Stainless steel | ≤ 270 | YBM253 | 230(180-300) | 0.15 (0.1-0.2) | 0.15 (0.1-0.3) | 0.25 (0.15-0.4) | |
| | | YBG205 | 150(120-250) | | | | |
| | | YB9320 | 150(120-250) | | | | |
| K Cast iron | 180-250 | YBD152 | 200(150-250) | 0.15 (0.1-0.2) | 0.25 (0.15-0.35) | 0.3 (0.15-0.4) | |
| S High-temperature alloy | ≤ 400 | YBS303 | 100(60-120) | -- | 0.15 (0.1-0.25) | -- | |
| N Aluminium alloy | -- | YD101 | 300- | -LH | | | |
| | | YD201 | | 0.15 (0.05-0.3) | | | |

Indexable milling tools

Face milling tools

HURRICANE

FMA07

milling cutter series

New generation of high economy
milling cutters

16 cutting edges
high economy

8×2=16 edges



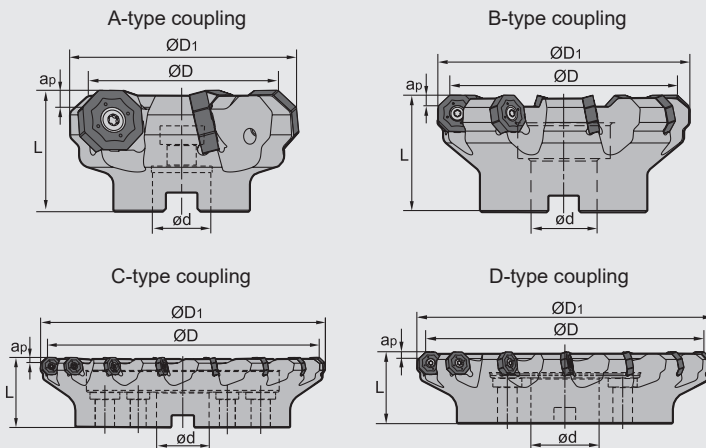
- Double negative rake angle structure, both axial and radial direction, super thick insert with outstanding toughness.
- Has good wiper capability, especially under the high feed rate, the wiper effect is better in comparison with similar tools.
- The unique hole design makes the insert clamp more secured.
- Tool diameters from 25 to 315mm and 3 geometries available, -PF, -PM and -W (wiper).

Face milling tools

Kr:45°



FMA07 **P** **M** **K**



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | | Number of teeth Z | Style of coupling | Weight (kg) |
|-------------------------------|-------|---|----------------------|-----------------|----|----|-------------------|-------------------|-------------------|-------------|
| | R | L | ØD | ØD ₁ | ød | L | ap _{max} | | | |
| FMA07 -050-A22-ON06-05 | ▲ | △ | 50 | 62 | 22 | 40 | 4 | 5 | A | 0.3 |
| -063-A22-ON06-06 | ▲ | △ | 63 | 75 | 22 | 40 | 4 | 6 | A | 0.5 |
| -080-B27-ON06-07 | ▲ | △ | 80 | 92 | 27 | 50 | 4 | 7 | B | 1.0 |
| -100-B32-ON06-08 | ▲ | △ | 100 | 112 | 32 | 63 | 4 | 8 | B | 1.9 |
| -125-B40-ON06-09 | ▲ | △ | 125 | 137 | 40 | 63 | 4 | 9 | B | 3.5 |
| -160-C40-ON06-11 | ▲ | △ | 160 | 172 | 40 | 63 | 4 | 11 | C | 4.3 |
| -200-C60-ON06-13 | ▲ | △ | 200 | 212 | 60 | 63 | 4 | 13 | C | 6.4 |
| -250-C60-ON06-15 | ▲ | △ | 250 | 262 | 60 | 63 | 4 | 15 | C | 13.4 |
| -315-D60-ON06-17 | ▲ | △ | 315 | 327 | 60 | 80 | 4 | 17 | D | 21.9 |
| -063-A22-ON08-05 | ▲ | △ | 63 | 78 | 22 | 40 | 5 | 5 | A | 0.5 |
| -080-B27-ON08-06 | ▲ | △ | 80 | 95 | 27 | 50 | 5 | 6 | B | 0.9 |
| -100-B32-ON08-07 | ▲ | △ | 100 | 115 | 32 | 63 | 5 | 7 | B | 1.8 |
| -125-B40-ON08-08 | ▲ | △ | 125 | 140 | 40 | 63 | 5 | 8 | B | 3.1 |
| -160-C40-ON08-10 | ▲ | △ | 160 | 175 | 40 | 63 | 5 | 10 | C | 4.1 |
| -200-C60-ON08-12 | ▲ | △ | 200 | 215 | 60 | 63 | 5 | 12 | C | 6.1 |
| -250-C60-ON08-14 | ▲ | △ | 250 | 265 | 60 | 63 | 5 | 14 | C | 12.0 |
| -315-D60-ON08-16 | ▲ | △ | 315 | 330 | 60 | 80 | 5 | 16 | D | 21.0 |

▲ Stock available △ Make-to-order

Spare parts

| Diameter ØD | Inserts | Insert screw | Wrench | |
|-------------|--------------------|--------------|--------|--------|
| | | | | |
| Ø50 -Ø315 | ONHU06□□□□-PF/PM | I60M4×10 | -- | WT15IS |
| Ø63 -Ø315 | ONHU08□□□□-PF/PM/W | I60M5×13 | WT20IT | -- |

Tools code key **B24-B25**

Grade selection guide **B19-B23**

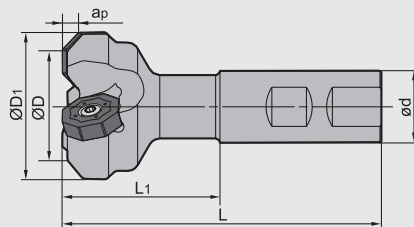
Technical data **B234-B240**

Face milling tools

Kr:45°



FMA07 P M K



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | | | Number of teeth Z | Weight (kg) |
|--------------------------------|-------|---|----------------------|-----------------|----|-----|----------------|--------------------|-------------------|-------------|
| | R | L | ØD | ØD ₁ | ød | L | L ₁ | a _p max | | |
| FMA07 -025-XP20-ON06-02 | ▲ | △ | 25 | 37 | 20 | 95 | 45 | 4 | 2 | 0.2 |
| -040-XP25-ON06-03 | ▲ | △ | 40 | 52 | 25 | 106 | 50 | 4 | 3 | 0.4 |
| -032-XP25-ON08-02 | ▲ | △ | 32 | 47 | 25 | 111 | 55 | 5 | 2 | 0.4 |
| -040-XP25-ON08-03 | ▲ | △ | 40 | 55 | 25 | 111 | 55 | 5 | 3 | 0.5 |
| -050-XP25-ON08-04 | ▲ | △ | 50 | 65 | 25 | 111 | 55 | 5 | 4 | 0.6 |

▲Stock available △Make-to-order

Indexable milling tools

Face milling tools

Spare parts

| Diameter ØD | Inserts | Wrench | | |
|-------------|--------------------|--------------|--------|--------|
| | | Insert screw | | |
| Ø25 -Ø40 | ONHU06□□□□-PF/PM | I60M4×10 | -- | WT15IS |
| Ø32 -Ø50 | ONHU08□□□□-PF/PM/W | I60M5×13 | WT20IT | -- |



Tools code key
B24-B25

Grade selection guide
B19-B23

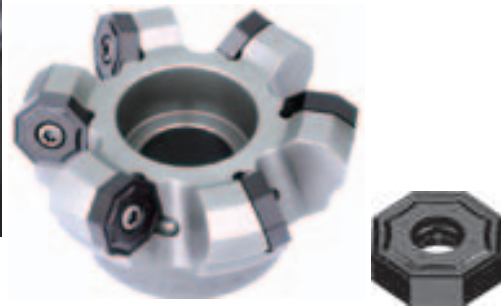
Technical data
B234-B240

B

MILLING

Indexable Milling Tools

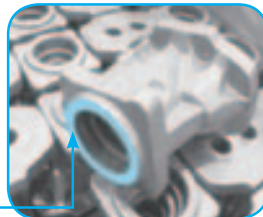
Case for FMA07



Tool type: FMA07-100-B32-ON08-07

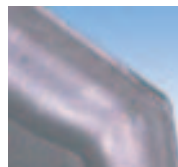
Insert type/grade: ONHU08T508-PM/YBD152

Part: Gear pump body
Workpiece material: HT400
Hardness: HRC22
Cooling system: Dry cutting
Machine: Vertical machining center
Cutting parameters: $V_c=267\text{m/min}$
 $a_p=1.5\text{mm}$
 $f_z=0.42\text{mm/z}$
 $a_e=80\text{mm}$
Milling style: Down milling
Area of machining: End surface



● Comparison of insert abrasion

Abrasion on rake face

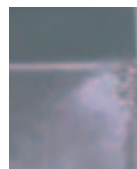


ZCC-CT



similar product of company A

Abrasion on clearance face



ZCC-CT



similar product of company A

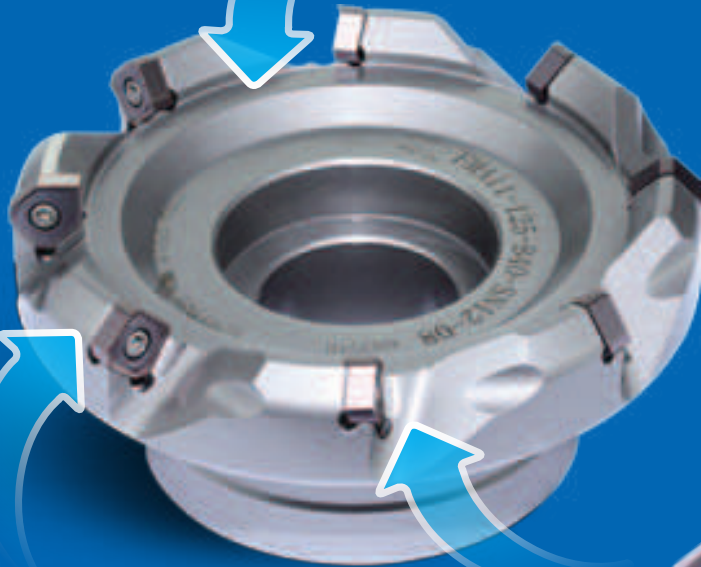
Indexable
milling tools

Face milling tools

FMA11 Kr:45° Series

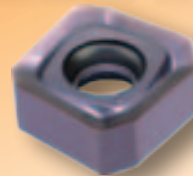
With outstanding economy and high performance

Cutter body with PVD coating for superior corrosion and heat resistance resulting in longer service life.



Double negative structure, excellent impact resistance.

Optimized design of pitch and chip pocket, for unobstructed chip flow, and higher cutting efficiency.



4 × 2=8 edge



Comprehensive upgrading of -GM geometry, good chip breaking performance, large rake angle, reduced cutting force.

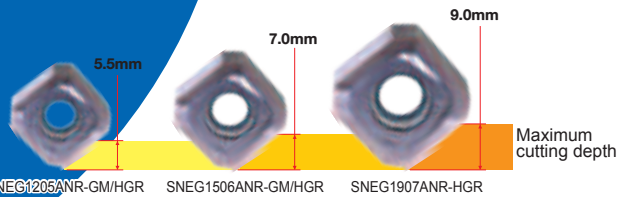


New -HGR geometry, high edge strength, excellent breakage resistance.



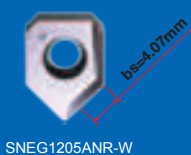
Insert with wiper, smoother surface roughness.

Complete range of insert specifications and geometries, for different cutting depths and different machining demands.



-W special wiper geometry, wiper designed with large arc to improve surface quality the workpiece;

Large effective wiper length, more suitable for semi-finishing/finishing of large-diameter cutter heads.

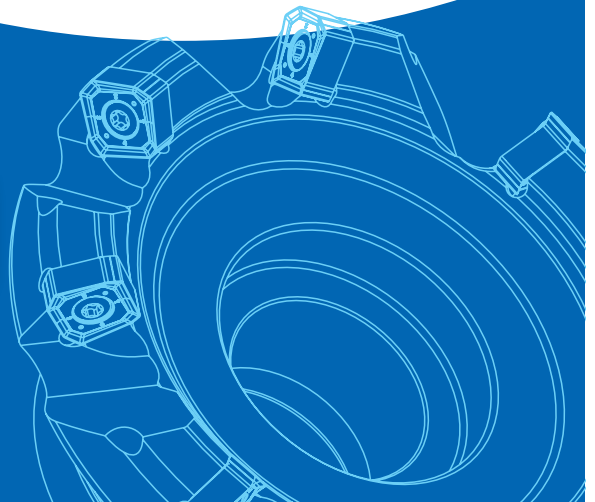
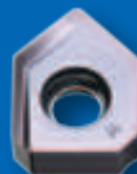


SNEG1205ANR-W



SNEG1506ANR-W

Wiper length

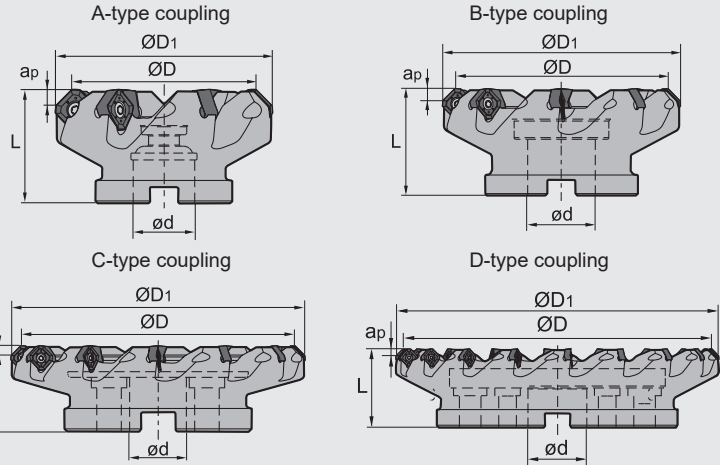


Face milling tools

Kr:45°



FMA11 P K M S



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Style of coupling | Weight (kg) |
|-----------------------|-------|----------------------|-------|-----|-----|-----|-------------------|-------------------|-------------|
| | | R | ØD | ØD1 | ød | L | | | |
| FMA11 Coarse pitch | ▲ | 63 | 75.2 | 22 | 40 | 5.5 | 5 | A | 0.55 |
| | ▲ | 80 | 92.2 | 27 | 50 | 5.5 | 6 | A | 1.14 |
| | ▲ | 100 | 112.2 | 32 | 50 | 5.5 | 7 | B | 1.42 |
| | ▲ | 125 | 137.2 | 40 | 63 | 5.5 | 8 | B | 2.86 |
| | ▲ | 160 | 172.2 | 40 | 63 | 5.5 | 10 | C | 4.06 |
| | ▲ | 63 | 78.4 | 22 | 40 | 7.0 | 5 | A | 0.56 |
| | ▲ | 80 | 95.4 | 27 | 50 | 7.0 | 6 | A | 1.06 |
| | ▲ | 100 | 115.4 | 32 | 50 | 7.0 | 7 | B | 1.47 |
| | ▲ | 125 | 140.4 | 40 | 63 | 7.0 | 8 | B | 2.70 |
| | ▲ | 160 | 175.4 | 40 | 63 | 7.0 | 10 | C | 3.92 |
| | ▲ | 200 | 215.4 | 60 | 63 | 7.0 | 12 | C | 5.46 |
| | ▲ | 250 | 265.4 | 60 | 63 | 7.0 | 14 | C | 11.26 |
| | ▲ | 315 | 330.4 | 60 | 80 | 7.0 | 18 | D | 20.00 |
| | ▲ | 125 | 144.4 | 40 | 63 | 9.0 | 7 | B | 3.00 |
| | ▲ | 160 | 179.4 | 40 | 63 | 9.0 | 9 | C | 4.25 |
| | ▲ | 200 | 219.4 | 60 | 63 | 9.0 | 11 | C | 6.18 |
| ▲ | 250 | 269.4 | 60 | 63 | 9.0 | 13 | C | 11.55 | |
| ▲ | 315 | 334.4 | 60 | 80 | 9.0 | 16 | D | 20.90 | |

▲ Stock available △ Make-to-order

Spare parts

| Diameter ØD | Inserts | Insert screw | Wrench | |
|-------------|----------------------|--------------|--------|--------|
| | | | | |
| Ø63 - Ø160 | SNEG1205ANR-GM/HGR/W | I60M3.5×10 | -- | WT15IS |
| Ø63 - Ø315 | SNEG1506ANR-GM/HGR/W | I60M5×13 | WT20IT | -- |
| Ø125 - Ø315 | SNEG1907ANR-HGR | I43M6×16 | WT25IT | -- |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

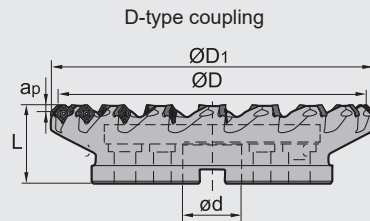
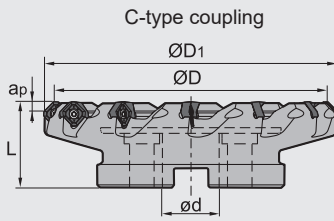
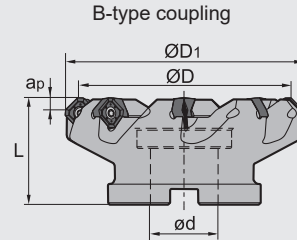
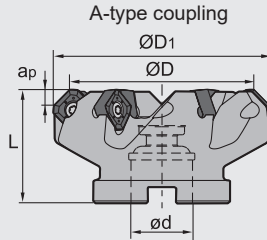
Indexable milling tools
Face milling tools

Face milling tools

Kr:45°



FMA11 P K M S



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | | Number of teeth Z | Style of coupling | Weight (kg) |
|-------------------|-------|----------------------|-----|-----------------|----|----|-------------------|-------------------|-------------------|-------------|
| | | R | ØD | ØD ₁ | ød | L | ap _{max} | | | |
| FMA11 | | | | | | | | | | |
| Close pitch | | | | | | | | | | |
| -063-A22-SN12-06C | ▲ | | 63 | 74.2 | 22 | 40 | 5.5 | 6 | A | 0.58 |
| -080-A27-SN12-08C | ▲ | | 80 | 91.9 | 27 | 50 | 5.5 | 8 | A | 1.16 |
| -100-B32-SN12-10C | ▲ | | 100 | 111.2 | 32 | 50 | 5.5 | 10 | B | 1.71 |
| -125-B40-SN12-12C | ▲ | | 125 | 136.2 | 40 | 63 | 5.5 | 12 | B | 3.29 |
| -160-C40-SN12-15 | ▲ | | 160 | 171.6 | 40 | 63 | 5.5 | 15 | C | 4.40 |
| -063-A22-SN15-06C | ▲ | | 63 | 78.3 | 22 | 40 | 7.0 | 6 | A | 0.56 |
| -080-A27-SN15-07C | ▲ | | 80 | 95.3 | 27 | 50 | 7.0 | 7 | A | 1.05 |
| -100-B32-SN15-08C | ▲ | | 100 | 115.3 | 32 | 50 | 7.0 | 8 | B | 1.67 |
| -100-B32-SN15-09C | ▲ | | 100 | 115.3 | 32 | 50 | 7.0 | 9 | B | 1.67 |
| -125-B40-SN15-10C | ▲ | | 125 | 140.3 | 40 | 63 | 7.0 | 10 | B | 3.10 |
| -160-C40-SN15-12 | ▲ | | 160 | 175.3 | 40 | 63 | 7.0 | 12 | C | 4.20 |
| -160-C40-SN15-13 | ▲ | | 160 | 175.3 | 40 | 63 | 7.0 | 13 | C | 4.14 |
| -200-C60-SN15-15 | ▲ | | 200 | 215.3 | 60 | 63 | 7.0 | 15 | C | 5.84 |
| -250-C60-SN15-18 | ▲ | | 250 | 265.3 | 60 | 63 | 7.0 | 18 | C | 11.68 |
| -315-D60-SN15-22 | ▲ | | 315 | 330.3 | 60 | 80 | 7.0 | 22 | D | 20.59 |

▲Stock available

△Make-to-order

Spare parts

| Diameter ØD | Inserts | Insert screw | Wrench | | |
|-------------|----------------------|--------------|--------|--------|--|
| | | | | | |
| Ø63 - Ø160 | SNEG1205ANR-GM/HGR/W | I60M3.5×10 | -- | WT15IS | |
| Ø63 - Ø315 | SNEG1506ANR-GM/HGR/W | I60M5×13 | WT20IT | -- | |
| Ø125 - Ø315 | SNEG1907ANR-HGR | I43M6×16 | WT25IT | -- | |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

FMA 12 ^{Kr:45°} Series

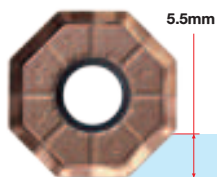
High Performance Face Mill with 16 edges for outstanding economy



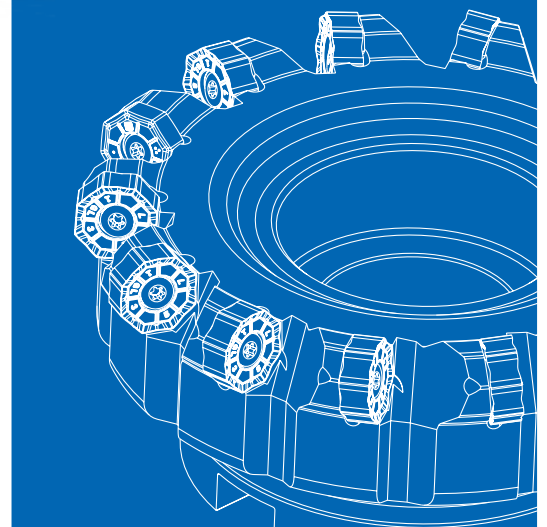
Double negative rake angle, in combination with helical insert structure, achieves double positive axial angle, which will help reduce cutting resistance and improve chip evacuation.



8 × 2 = 16 edges



ONHU09T508ANN-GM

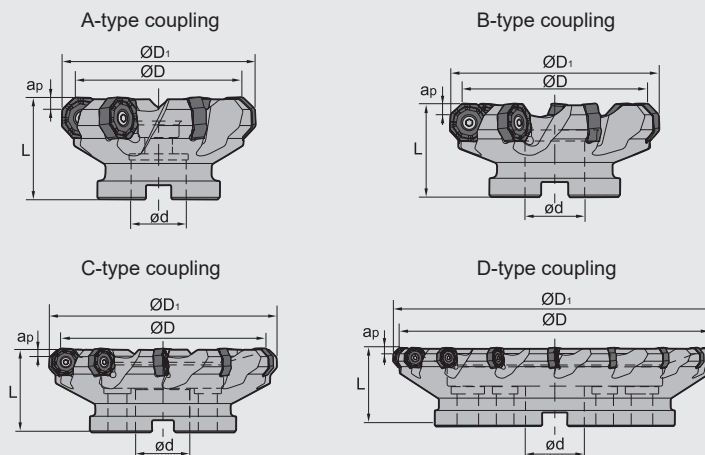


Face milling tools

Kr:45°



FMA12 P M K S



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Style of coupling | Weight (kg) |
|------------------------------|-------|----------------------|-----------------|----|----|-------------------|-------------------|-------------------|-------------|
| | | ØD | ØD ₁ | ød | L | ap _{max} | | | |
| FMA12 Coarse pitch | △ | 50 | 59 | 22 | 40 | 4 | A | 0.309 | |
| | △ | 63 | 72 | 27 | 50 | 4 | A | 0.645 | |
| | △ | 80 | 90 | 27 | 50 | 4 | A | 1.071 | |
| | △ | 100 | 110 | 32 | 50 | 4 | A | 1.599 | |
| | △ | 125 | 135 | 40 | 63 | 4 | B | 3.114 | |
| | △ | 160 | 170 | 40 | 63 | 4 | C | 4.504 | |
| | ▲ | 200 | 210 | 60 | 63 | 4 | C | 6.35 | |
| | ▲ | 250 | 260 | 60 | 63 | 4 | C | 12.47 | |
| | ▲ | 315 | 325 | 60 | 80 | 4 | D | 21.25 | |
| | ▲ | 400 | 410 | 60 | 80 | 4 | D | 39.78 | |
| | ▲ | 63 | 76 | 22 | 50 | 5.5 | A | 0.7 | |
| | ▲ | 80 | 93 | 27 | 50 | 5.5 | A | 1.1 | |
| | ▲ | 100 | 113 | 32 | 50 | 5.5 | A | 1.6 | |
| | △ | 125 | 138 | 40 | 63 | 5.5 | B | 3.1 | |
| | △ | 160 | 173 | 40 | 63 | 5.5 | C | 3.982 | |
| | △ | 200 | 303 | 60 | 63 | 5.5 | C | 4.987 | |
| | △ | 250 | 260 | 60 | 63 | 5.5 | C | 11.89 | |
| | △ | 315 | 325 | 60 | 80 | 5.5 | D | 20.97 | |
| | △ | 400 | 410 | 60 | 80 | 5.5 | D | 38.69 | |

▲Stock available △Make-to-order

Indexable milling tools

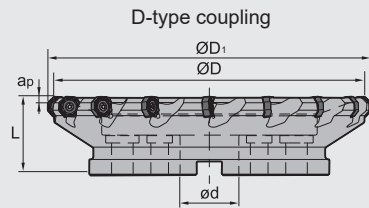
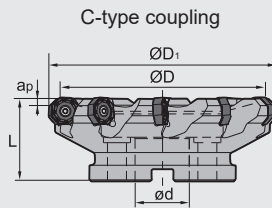
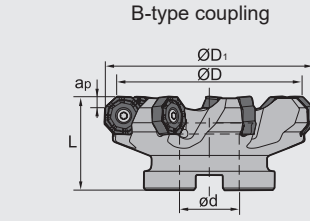
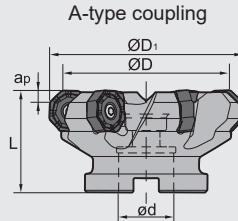
Face milling tools

Face milling tools

Kr:45°



FMA12 P M K S



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Style of coupling | Weight (kg) | |
|------------------------------|--------------------|----------------------|-----------------|-----|----|-------------------|-------------------|-------------------|-------------|-------|
| | | ØD | ØD ₁ | ød | L | ap _{max} | | | | |
| FMA12 Coarse pitch | -050-A22-ON06-05C | △ | 50 | 59 | 22 | 40 | 4 | 5 | A | 0.352 |
| | -063-A27-ON06-07C | △ | 63 | 72 | 27 | 50 | 4 | 7 | A | 0.695 |
| | -080-A27-ON06-09C | △ | 80 | 90 | 27 | 50 | 4 | 9 | A | 1.098 |
| | -100-A32-ON06-11C | △ | 100 | 110 | 32 | 50 | 4 | 11 | A | 1.616 |
| | -125-B40-ON06-14 | △ | 125 | 135 | 40 | 63 | 4 | 14 | B | 3.151 |
| | -160-C40-ON06-18 | △ | 160 | 170 | 40 | 63 | 4 | 18 | C | 4.568 |
| | -063-A22-ON09-06C | ▲ | 63 | 76 | 22 | 50 | 5.5 | 6 | A | 0.84 |
| | -080-A27-ON09-07C | ▲ | 80 | 93 | 27 | 50 | 5.5 | 7 | A | 1.24 |
| | -100-A32-ON09-10C | ▲ | 100 | 113 | 32 | 50 | 5.5 | 10 | A | 1.809 |
| | -125-B40-ON09-12C | ▲ | 125 | 138 | 40 | 63 | 5.5 | 12 | B | 3.648 |
| | -160-C40-ON09-15 | ▲ | 160 | 173 | 40 | 63 | 5.5 | 15 | C | 4.303 |
| | -200-C60-ON09-18 | ▲ | 200 | 303 | 60 | 63 | 5.5 | 18 | C | 5.754 |
| | -125-B40-ON06-14W2 | ▲ | 125 | 138 | 40 | 63 | 4 | 12+2 | B | 3.626 |
| | -160-B40-ON06-18W3 | △ | 160 | 173 | 40 | 63 | 4 | 15+3 | B | 4.787 |
| | -200-C60-ON06-24W4 | △ | 200 | 303 | 60 | 63 | 4 | 20+4 | C | 6.231 |

▲Stock available △Make-to-order

Spare parts

| Diameter ØD | Inserts | Insert screw | | Wrench | |
|-----------------------------|--|--------------|------------------|----------------------------|------------------|
| | | | | | |
| Ø50-Ø63 Ø80-Ø125 Ø160 | ONMU06□□□□-GM/GH ONHU06□□□□ANN-GM/GH/GL | IRM4X10 | | WT15IP WT15IS WT15IT | |
| Ø63-Ø125 Ø160-Ø400 | ONMU09□□□□-GM/GH ONHU09□□□□ANN-GM/GH/GL | I60M5X13 | | WT20IS WT20IT | |
| Diameter ØD | Inserts | Insert screw | Adjustment block | Insert screw | Wrench |
| Ø125 Ø160-Ø200 | ONMU06□□□□-GM/GH ONHU06□□□□ANN-GM/GH/GL ONHU0604AN-W | DM6X20A | ADJ-M6X1.0A | IRM4X10 | WT15IS WT15IT |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

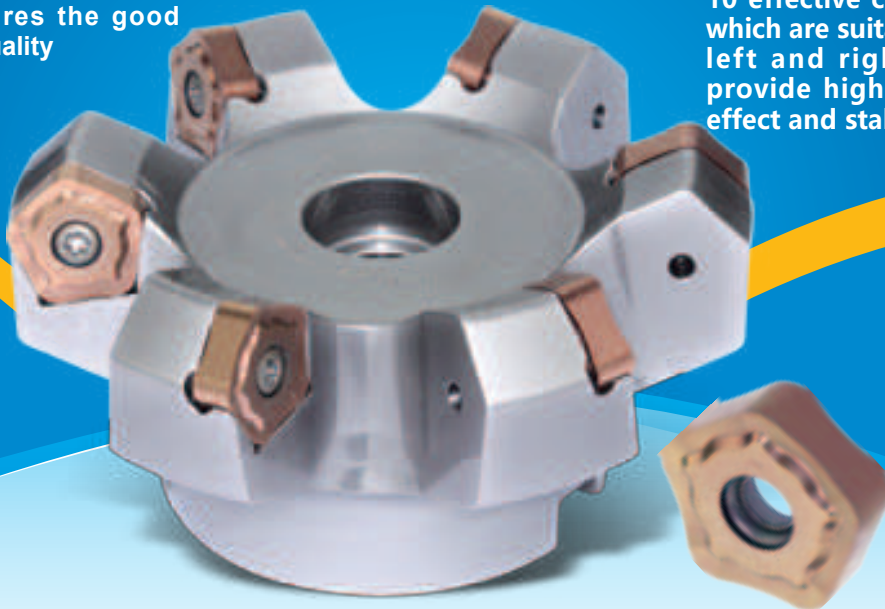
Indexable milling tools

Face milling tools

FMA 14

The general milling cutter with high-effective multiple cutting edges

- > The balanced design with 45 clearance angle to achieve low cutting resistance for high-effective machining
- > The upgraded new design of the chipbreaker which is suitable for different machining of steel and nodular cast iron
- > The great anti-vibration tool ensures the good surface quality
- > The pentagon design with 10 effective cutting edges which are suitable for both left and right cut, also provide high economical effect and stability



The helical cutting edge design could reduce cutting resistance to achieve light cut

The optimized chipbreaker design ensures the strength which significantly reduces the cutting edge breakage risk.

The abundant chipbreaker series could deal with different machining condition

-GL: Emphasis on stable machining

Suitable for low cutting forces and the insufficient machine load situation

-GM: First choice for P material machining

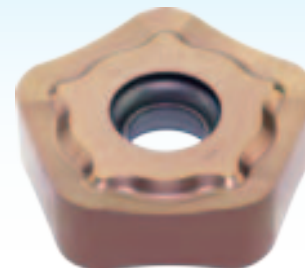
The large radius cutting edge with optimized cutting edge design

-GH: Emphasis on anti-breakage machining

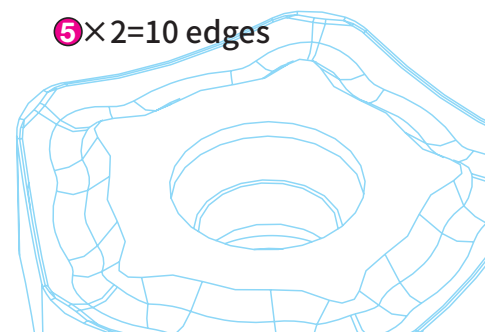
The high strength of the cutting edge significantly control the breakage risks

To combine with new grade YB9320 to achieve long tool life and stable machining

-GLI-GMI-GH



5 × 2 = 10 edges

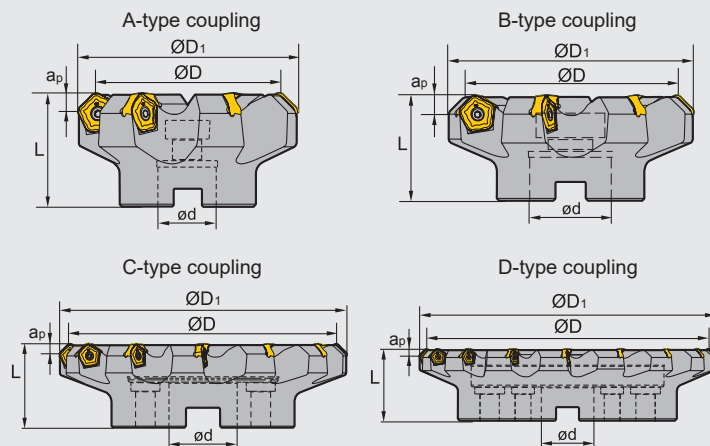


Face milling tools

Kr:45°



FMA14 P M K



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Style of coupling | Weight (kg) | |
|------------------------------|-------|----------------------|-----------------|-------|----|-------------------|-------------------|-------------------|-------------|-------|
| | | ØD | ØD ₁ | L | ød | a _{pmax} | | | | |
| FMA14 Coarse pitch | ▲ | -050-A22-PN11-04 | 50 | 66.7 | 50 | 22 | 5.5 | 4 | A | 0.571 |
| | ▲ | -063-A22-PN11-05 | 63 | 79.7 | 50 | 22 | 5.5 | 5 | A | 0.77 |
| | ▲ | -080-A27-PN11-06 | 80 | 96.7 | 50 | 27 | 5.5 | 6 | A | 1.09 |
| | ▲ | -100-B32-PN11-07 | 100 | 116.7 | 50 | 32 | 5.5 | 7 | B | 1.48 |
| | ▲ | -125-B40-PN11-08 | 125 | 141.7 | 63 | 40 | 5.5 | 8 | B | 3.39 |
| | ▲ | -160-B40-PN11-10 | 160 | 176.7 | 63 | 40 | 5.5 | 10 | B | 5.93 |
| | ▲ | -200-C60-PN11-12 | 200 | 216.7 | 63 | 60 | 5.5 | 12 | C | 6.28 |
| | ▲ | -250-C60-PN11-14 | 250 | 266.7 | 63 | 60 | 5.5 | 14 | C | 11.84 |
| | ▲ | -315-D60-PN11-16 | 315 | 331.7 | 80 | 60 | 5.5 | 16 | D | 19.8 |
| Close pitch | ▲ | -050-A22-PN11-05 | 50 | 66.7 | 50 | 22 | 5.5 | 5 | A | 0.6 |
| | ▲ | -063-A22-PN11-06 | 63 | 79.7 | 50 | 22 | 5.5 | 6 | A | 0.9 |
| | ▲ | -080-A27-PN11-08 | 80 | 96.7 | 50 | 27 | 5.5 | 8 | A | 1.2 |
| | ▲ | -100-B32-PN11-10 | 100 | 116.7 | 50 | 32 | 5.5 | 10 | B | 1.9 |
| | ▲ | -125-B40-PN11-12 | 125 | 141.7 | 63 | 40 | 5.5 | 12 | B | 3.5 |
| | ▲ | -160-B40-PN11-14 | 160 | 176.7 | 63 | 40 | 5.5 | 14 | B | 6.4 |
| | ▲ | -200-C60-PN11-16 | 200 | 216.7 | 63 | 60 | 5.5 | 16 | C | 8.5 |
| | ▲ | -250-C60-PN11-18 | 250 | 266.7 | 63 | 60 | 5.5 | 18 | C | 18.0 |
| | ▲ | -315-D60-PN11-26 | 315 | 331.7 | 80 | 60 | 5.5 | 26 | D | 24.5 |

▲Stock available △Make-to-order

Spare parts

| Inserts | Insert screw | Wrench | |
|---------|---------------------|----------|--|
| | PNEG11□□□□-GL/GM/GH | I60M4×10 | |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Indexable milling tools

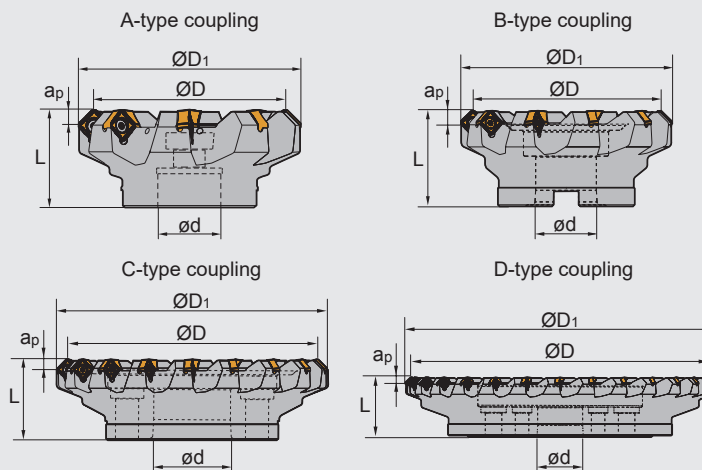
Face milling tools

Face milling tools

Kr:45°



FMA17 P M K S



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Style of coupling | Weight (kg) |
|-----------------------|-------------------|----------------------|-----------------|-----|----|-------------------|-------------------|-------------------|-------------|
| | | ØD | ØD ₁ | ød | L | a _{pmax} | | | |
| FMA17 Coarse pitch | -050-A22-SN12-04C | ▲ | 50 | 65 | 22 | 40 | 6.5 | A | 0.384 |
| | -063-A22-SN12-06C | ▲ | 63 | 78 | 22 | 40 | 6.5 | A | 0.717 |
| | -080-A27-SN12-07C | ▲ | 80 | 95 | 27 | 50 | 6.5 | A | 1.085 |
| | -100-A32-SN12-08 | ▲ | 100 | 115 | 32 | 50 | 6.5 | A | 1.558 |
| | -125-B40-SN12-10 | ▲ | 125 | 140 | 40 | 63 | 6.5 | B | 3.012 |
| | -160-C40-SN12-12 | ▲ | 160 | 175 | 40 | 63 | 6.5 | C | 4.358 |
| | -200-C60-SN12-18 | ▲ | 200 | 215 | 60 | 63 | 6.5 | C | 6.337 |
| | -250-C60-SN12-20 | ▲ | 250 | 265 | 60 | 63 | 6.5 | C | 12.360 |
| | -315-D60-SN12-22 | ▲ | 315 | 330 | 60 | 80 | 6.5 | D | 21.224 |
| -400-D60-SN12-28 | ▲ | 400 | 415 | 60 | 80 | 6.5 | D | 39.535 | |
| Close pitch | -050-A22-SN12-06C | ▲ | 50 | 65 | 22 | 40 | 6.5 | A | 0.381 |
| | -063-A22-SN12-08C | ▲ | 63 | 78 | 22 | 40 | 6.5 | A | 0.717 |
| | -080-A27-SN12-10C | ▲ | 80 | 95 | 27 | 50 | 6.5 | A | 1.105 |
| | -100-A32-SN12-12C | ▲ | 100 | 115 | 32 | 50 | 6.5 | A | 1.656 |
| | -125-B40-SN12-16 | ▲ | 125 | 140 | 40 | 63 | 6.5 | B | 3.103 |
| | -160-C40-SN12-20 | ▲ | 160 | 175 | 40 | 63 | 6.5 | C | 4.600 |
| | -200-C60-SN12-24 | ▲ | 200 | 215 | 60 | 63 | 6.5 | C | 6.569 |

▲ Stock available △ Make-to-order

Spare parts

| Diameter ØD | Insert screw | Wrench |
|-------------|--------------|--------|
| Ø50-Ø63 | IRM4×10 | WT15IP |
| Ø80-Ø160 | | WT15IS |
| Ø200-Ø400 | | WT15IT |

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Grade selection guide B19-B23

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Indexable milling tools

Face milling tools

WHIRLWIND

FMD02

milling cutter series

The optimized design of the acute angle clamping method has good self-locking performance and high clamping precision which provides enough resisting power to ensure the stability of the machining.

The open flute and large rake angle design could satisfy the machining requirement of different machine load.

The inserts with wiper design which helps to achieve the stable surface quality under different feed rate.

The good economical effect and abundant chipbreaker selections could satisfy multiple working conditions.

High strength screw clamping

67° approach angle

Wiper

Each insert has 10 cutting edges

New

New chipbreaker for cast iron
-KH -KM -KL

-KH

The optimized cutting edge design emphasis on anti-breakage machining

-KM

general machining chipbreaker. The first choice for cast iron machining

-KL

Emphasizing low cutting force machining to prevent vibration and control burrs to ensure the surface quality.

General face milling for steel and cast iron.

-GF -GM -GR

5×2=10 edges

General face milling for cast iron

-PF -PM -PR

5×2=10 edges

The helical cutting design with chamfered double-rake angle which can perfectly match different cutting depth requirement.

The high economical inserts with 10 cutting edges could be suitable for both left and right cuts with a high performance-to-cost ratio.

The optimized cutting edge design with high strength of cutting edges and outstanding wear resistance performance greatly increases the tool life.

The low cutting forces design could effectively control the vibration. The combination of the FMD02 could achieve high-performance cast iron machining.

Face milling tools

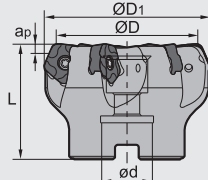
Kr:67°



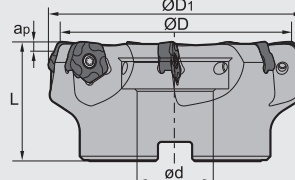
FMD02 P K



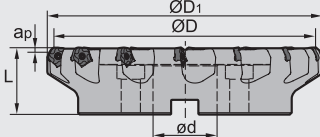
A-type coupling



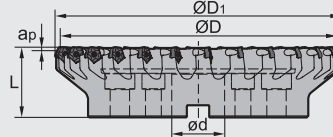
B-type coupling



C-type coupling



D-type coupling



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | | Number of teeth Z | Style of coupling | Weight (kg) |
|--|-------|---|----------------------|-----------------|----|----|-------------------|-------------------|-------------------|-------------|
| | R | L | ØD | ØD ₁ | ød | L | ap _{max} | | | |
| FMD02 Coarse pitch (unequal pitch) | ▲ | △ | 50 | 60.1 | 22 | 50 | 5/6.5/7.5 | 4 | A | 0.6 |
| | ▲ | △ | 63 | 73.1 | 22 | 50 | 5/6.5/7.5 | 5 | A | 0.8 |
| | ▲ | △ | 80 | 90.1 | 27 | 50 | 5/6.5/7.5 | 6 | A | 1.1 |
| | ▲ | △ | 100 | 110.1 | 32 | 50 | 5/6.5/7.5 | 7 | B | 1.8 |
| | ▲ | △ | 125 | 135.1 | 40 | 63 | 5/6.5/7.5 | 8 | B | 2.9 |
| | ▲ | △ | 160 | 170.1 | 40 | 63 | 5/6.5/7.5 | 10 | B | 5.6 |
| | ▲ | △ | 200 | 210.1 | 60 | 63 | 5/6.5/7.5 | 12 | C | 7.9 |
| Close pitch | ▲ | △ | 250 | 260.1 | 60 | 63 | 5/6.5/7.5 | 14 | C | 13.4 |
| | ▲ | △ | 50 | 60.1 | 22 | 50 | 5/6.5/7.5 | 5 | A | 0.6 |
| | ▲ | △ | 63 | 73.1 | 22 | 50 | 5/6.5/7.5 | 6 | A | 0.9 |
| | ▲ | △ | 80 | 90.1 | 27 | 50 | 5/6.5/7.5 | 8 | A | 1.2 |
| | ▲ | △ | 100 | 110.1 | 32 | 50 | 5/6.5/7.5 | 10 | B | 1.9 |
| | ▲ | △ | 125 | 135.1 | 40 | 63 | 5/6.5/7.5 | 12 | B | 3.2 |
| | ▲ | △ | 160 | 170.1 | 40 | 63 | 5/6.5/7.5 | 14 | B | 6.4 |
| | ▲ | △ | 200 | 210.1 | 60 | 63 | 5/6.5/7.5 | 16 | C | 8.5 |
| | ▲ | △ | 250 | 260.1 | 60 | 63 | 5/6.5/7.5 | 18 | C | 18.0 |
| | ▲ | △ | 315 | 325.1 | 60 | 80 | 5/6.5/7.5 | 26 | D | 24.5 |

▲ Stock available △ Make-to-order

Spare parts

| Diameter ØD | Insert screw | Wrench |
|----------------|--------------|--------|
| Ø50 - Ø315 | I60M4×10 | WT15IS |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

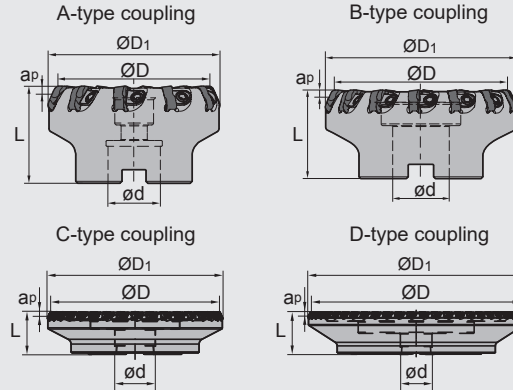
Face milling tools

Kr:67°



Face milling

FMD02 P K



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | | Number of teeth Z | Style of coupling | Weight (kg) |
|-------------------|-------|---|----------------------|-----------------|----|----|-------------------|-------------------|-------------------|-------------|
| | R | L | ØD | ØD ₁ | ød | L | ap _{max} | | | |
| FMD02 | | | | | | | | | | |
| Extra close pitch | | | | | | | | | | |
| -080-A27-PN11-10 | ▲ | △ | 80 | 90.1 | 27 | 50 | 5/6.5/7.5 | 10 | A | 1.3 |
| -100-B32-PN11-14 | ▲ | △ | 100 | 110.1 | 32 | 50 | 5/6.5/7.5 | 14 | B | 1.6 |
| -125-B40-PN11-18 | ▲ | △ | 125 | 135.1 | 40 | 63 | 5/6.5/7.5 | 18 | B | 3.2 |
| -160-B40-PN11-22 | ▲ | △ | 160 | 170.1 | 40 | 63 | 5/6.5/7.5 | 22 | B | 5.8 |
| -200-C60-PN11-28 | ▲ | △ | 200 | 210.1 | 60 | 63 | 5/6.5/7.5 | 28 | C | 9.7 |
| -250-C60-PN11-36 | ▲ | △ | 250 | 260.1 | 60 | 63 | 5/6.5/7.5 | 36 | C | 19.8 |
| -315-D60-PN11-44 | ▲ | △ | 315 | 325.1 | 60 | 80 | 5/6.5/7.5 | 44 | D | 32.5 |

▲Stock available △Make-to-order

Indexable milling tools

Face milling tools



Spare parts

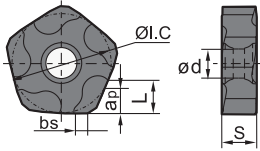
| Diameter ØD | Wedge | Screw | Wrench |
|-------------|-------|---------|------------------|
| Ø80 -Ø125 | | | |
| Ø160 -Ø315 | W18N | DM6×20A | WT15IS WT15IT |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working Condition | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|---|
| | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | | | | | | | | | | | | | | | | | | | | | | | |
| S Heat resistant alloy, Ti alloy | | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

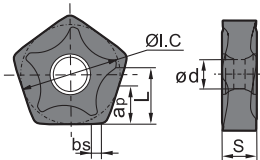
| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | | | |
|--------------|----------------|----------------------|--------|------|------|-----|-------|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|---------|-------|-------|-------|
| | | L | ØI.C | S | ød | bs | apmax | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 |
| | PNEG110512R-CF | 5.4 | 15.875 | 5.56 | 4.64 | 1.6 | 5 | | | | | | ● | | | | | | | | | | | | | | | | |
| | PNEG110512L-CF | 5.4 | 15.875 | 5.56 | 4.64 | 1.6 | 5 | | | | | | ● | | | | | | | | | | | | | | | | |
| | PNEG110512R-CM | 5.4 | 15.875 | 5.56 | 4.64 | 1.6 | 5 | | | | | | ● | | | | | | | | | | | | | | | | |
| | PNEG110512L-CM | 5.4 | 15.875 | 5.56 | 4.64 | 1.6 | 5 | | | | | | ● | | | | | | | | | | | | | | | | |
| | PNEG110512R-CR | 5.4 | 15.875 | 5.56 | 4.64 | 1.6 | 5 | | | | | | ● | ● | | | | | | | | | | | | | | | |
| | PNEG110512L-CR | 5.4 | 15.875 | 5.56 | 4.64 | 1.6 | 5 | | | | | | ● | ● | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools

Face milling tools

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working Condition | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|---|
| | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | | | | | | | | | | | | | | | | | | | | | | | |
| S Heat resistant alloy, Ti alloy | | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | | | |
|--------------|----------------|----------------------|--------|------|------|-----|-------|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|---------|-------|-------|-------|
| | | L | ØI.C | S | ød | bs | apmax | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 |
| | PNEG110512R-PF | 7.5 | 15.875 | 5.56 | 4.64 | 1.4 | 7.5 | ★ | | ● | | | | | | | | | | | | | | | | | | | |
| | PNEG110512L-PF | 7.5 | 15.875 | 5.56 | 4.64 | 1.4 | 7.5 | ★ | | ● | | | | | | | | | | | | | | | | | | | |
| | PNEG110512R-PM | 7.5 | 15.875 | 5.56 | 4.64 | 1.4 | 7.5 | ★ | | ● | | | | | | | | | | | | | | | | | | | |
| | PNEG110512L-PM | 7.5 | 15.875 | 5.56 | 4.64 | 1.4 | 7.5 | ★ | | ● | | | | | | | | | | | | | | | | | | | |
| | PNEG110512R-PR | 7.5 | 15.875 | 5.56 | 4.64 | 1.4 | 7.5 | ★ | | ● | | | | | | | | | | | | | | | | | | | |
| | PNEG110512L-PR | 7.5 | 15.875 | 5.56 | 4.64 | 1.4 | 7.5 | ★ | | ● | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Case for FMD02

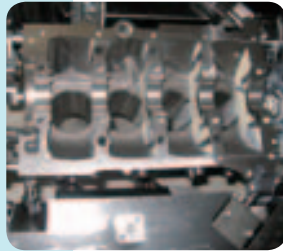
Application case

ZCC-CT

Cutting parameters:
 D=100mm, $a_p=3\sim 5\text{mm}$,
 $V_c=243\text{m/min}$, $f_z=0.15\text{mm/z}$,
 T=145~155 piece

similar product of company A

Cutting parameters:
 D=100mm, $a_p=3\sim 5\text{mm}$,
 $V_c=243\text{m/min}$, $f_z=0.12\text{mm/z}$,
 T=120~133 piece



Tool type: FMD02-100-B32-PN11-10

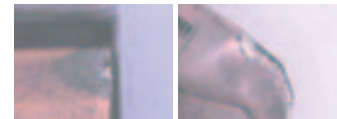
Insert type/grade: PNEG110512R-CR/YBD152

(The inserts without clearance angle to have a total of 10 cutting edges)

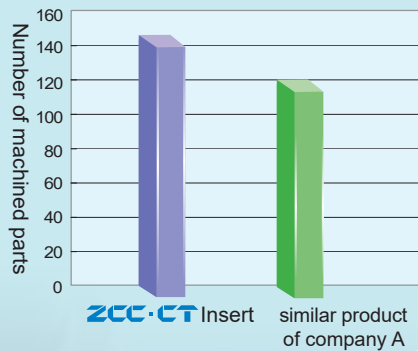
● Comparison of insert abrasion



ZCC-CT insert after 80 minutes machining



Insert of company A after 48 minutes machining

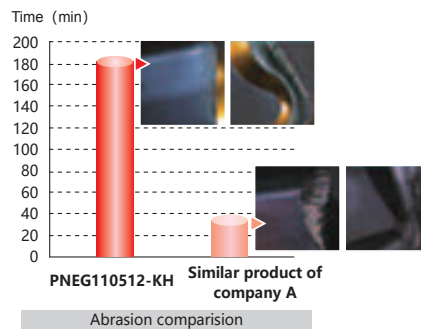


Indexable milling tools

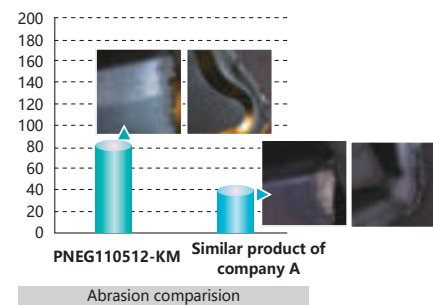
Face milling tools

Application case

| | | | |
|--------------------|-----------------------|----------------|--|
| Workpiece material | Grey cast iron 250 | Insert | PNEG110512-KM/YBD152 PNEG110512-KH/YBD252 |
| Tool type | FMD02-125-B40-PN11-08 | Cutting method | single pitch dry cut |



Cutting parameters: $V_c=240\text{m/min}$,
 $f_z=0.3\text{mm/z}$, $A_p=3\text{mm}$, $A_e=70\text{mm}$



Cutting parameters: $V_c=300\text{m/min}$,
 $f_z=0.2\text{mm/z}$, $A_p=2\text{mm}$, $A_e=70\text{mm}$

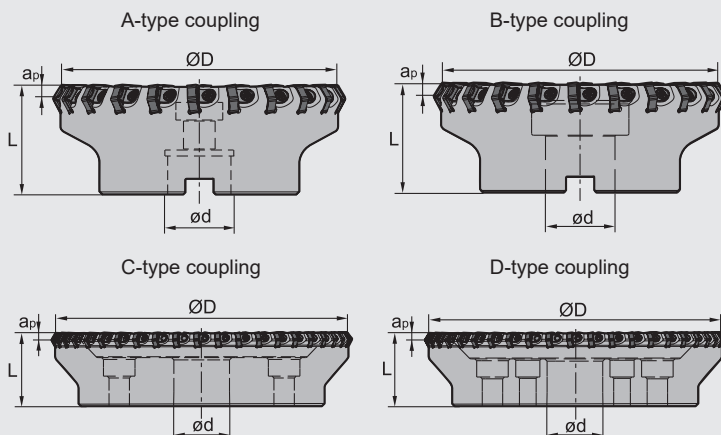
Face milling tools

Kr:55°



Face milling

FMD02 **K**



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|-------------------------------|-------|---|----------------------|----|----|-------|-------------------|------------------|-------------|
| | R | L | ØD | d | L | apmax | | | |
| FMD02 -080-A27-HN09-10 | ▲ | △ | 80 | 27 | 50 | 6 | 10 | A | 1.1 |
| -100-B32-HN09-14 | ▲ | △ | 100 | 32 | 63 | 6 | 14 | B | 2.6 |
| -125-B40-HN09-18 | ▲ | △ | 125 | 40 | 70 | 6 | 18 | B | 3.7 |
| -160-B40-HN09-22 | ▲ | △ | 160 | 40 | 63 | 6 | 22 | B | 5.6 |
| -200-C60-HN09-28 | ▲ | △ | 200 | 60 | 63 | 6 | 28 | C | 6.3 |
| -250-C60-HN09-36 | ▲ | △ | 250 | 60 | 63 | 6 | 36 | C | 10.3 |
| -315-D60-HN09-44 | ▲ | △ | 315 | 60 | 63 | 6 | 44 | D | 21.7 |

▲Stock available △Make-to-order

Indexable milling tools

Face milling tools

Spare parts

| Diameter ØD | Wedge | Wedge screw | Wrench |
|-------------|-------|-------------|--------|
| Ø80-Ø315 | W18N | DM6×20A | WT15IT |
| | | | |
| | | | |



Tools code key
B24-B25

Grade selection guide
B19-B23

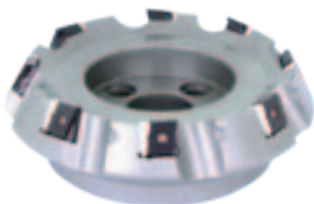
Technical data
B234-B240

Face milling tools

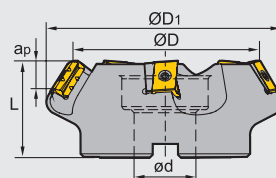
Kr:60°



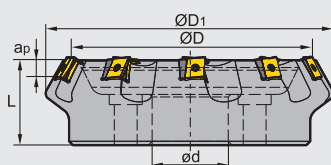
FMD03 P M K



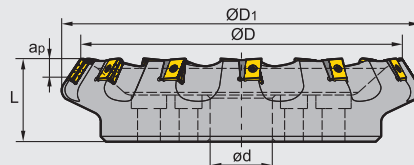
B-type coupling



C-type coupling



D-type coupling



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | | Number of teeth Z | Style of coupling | Weight (kg) |
|-------------------------------|-------|---|----------------------|-----|----|----|-------|-------------------|-------------------|-------------|
| | R | L | ØD | ØD1 | ød | L | apmax | | | |
| FMD03 -125-B40-LN20-06 | ▲ | △ | 125 | 153 | 40 | 63 | 12 | 6 | B | 4.5 |
| -160-C40-LN20-08 | ▲ | △ | 160 | 187 | 40 | 63 | 12 | 8 | C | 6.9 |
| -200-C60-LN20-10 | ▲ | △ | 200 | 227 | 60 | 70 | 12 | 10 | C | 10.5 |
| -250-C60-LN20-12 | ▲ | △ | 250 | 276 | 60 | 70 | 12 | 12 | C | 13.4 |
| -315-D60-LN20-15 | ▲ | △ | 315 | 339 | 60 | 80 | 12 | 15 | D | 26.2 |
| -125-B40-LN25-05 | ▲ | △ | 125 | 154 | 40 | 63 | 17 | 5 | B | 4.5 |
| -160-C40-LN25-06 | ▲ | △ | 160 | 189 | 40 | 63 | 17 | 6 | C | 6.9 |
| -200-C60-LN25-08 | ▲ | △ | 200 | 229 | 60 | 70 | 17 | 8 | C | 10.5 |
| -250-C60-LN25-10 | ▲ | △ | 250 | 278 | 60 | 70 | 17 | 10 | C | 16.7 |
| -315-D60-LN25-12 | ▲ | △ | 315 | 346 | 60 | 80 | 17 | 12 | D | 27.3 |
| -400-D60-LN25-16 | ▲ | △ | 400 | 427 | 60 | 80 | 17 | 16 | D | 47.1 |

▲Stock available △Make-to-order

Indexable milling tools

Face milling tools

Spare parts

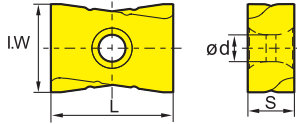
| Inserts | Shim | Shim screw | Insert screw | Wrench | |
|-------------|---------------|--------------|--------------|----------|--------|
| | LNKT2007DN-ZR | LLN20R-ZR | I60M3×7 | I60M4×15 | WT15IS |
| LNKT2510-ZR | LLN25R-ZR | I60M3.5×10.4 | I60M5×17 | WT20IT | WT15IS |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | P | M | K | N | S | YBG302 | YBG152 | YBG205 | YBG202 | YBG102 | YBD252 | YBD152 | YBM351 | YBM253 | YBM251 | YBC302 | YBC301 |
|--------------------------------|---|---|---|---|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| Non-ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | CVD Coating | | | | PVD Coating | | | | Cermet | Cemented carbide | | | | | | | | | | | | | |
|--------------|---------------|----------------------|-----|-------|-----|-------------|--------|--------|--------|-------------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|--|--|
| | | L | I.W | S | ød | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | | |
| | LNKT2007DN-ZR | 20 | 17 | 7.94 | 4.6 | | | | | ○ | ○ | | | | | ★ | | | | | | | | | | | | |
| | LNKT2510-ZR | 25 | 18 | 9.525 | 5.5 | | | | | | | | ○ | ○ | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Recommended cutting parameters

| Workpiece material | Hardness HB | Insert grade | Cutting parameters | |
|--------------------------------------|-------------|--------------|------------------------|-----------------------|
| | | | V _c (m/min) | f _z (mm/z) |
| P Low-carbon steel, Soft steel | ≤ 180 | YBG302 | 180 (150-300) | 0.5 (0.2-0.8) |
| | | YBM351 | 180 (150-300) | 0.5 (0.2-0.8) |
| | 180-280 | YBG302 | 150 (120-280) | 0.5 (0.2-0.8) |
| | | YBM351 | 140 (120-280) | 0.5 (0.2-0.8) |
| Alloy tool steel | 280-350 | YBG302 | 120 (80-250) | 0.45 (0.2-0.6) |
| | | YBM351 | 100 (80-250) | 0.45 (0.2-0.6) |
| M Stainless steel | ≤ 270 | YBG302 | 120 (80-200) | 0.45 (0.2-0.6) |
| | | YBM351 | 100 (80-200) | 0.45 (0.2-0.6) |
| K Cast iron | 180-250 | YBD152 | 220 (150-300) | 0.5 (0.2-0.8) |
| | | YBD252 | 210 (150-300) | 0.5 (0.2-0.8) |
| | | YBG302 | 200 (150-300) | 0.5 (0.2-0.8) |

Note: Cutting parameters can be adjusted according to the Max. power of machine.

Case for FMD03

Workpiece material: ASTM A743 CA-6NM(HB200)

Cooling system: Dry cutting

Machine: NC floor type boring and milling machine,
spindle power ≥ 30KW

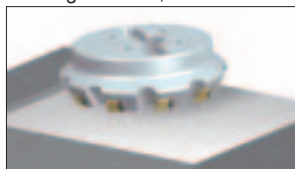
Cutting parameters:

V_c=120m/min

a_p=12mm

f_z=0.55mm/z

a_e=230mm



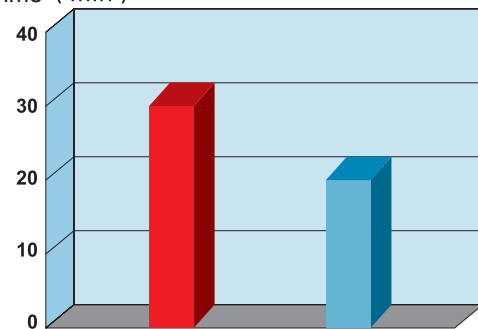
Tool type: FMD03-315-D60-LN25-12

Insert type/grade: LNKT2510-ZR/YBG302



Comparison of machining time

Time (min)



FMD03

Similar product of company A

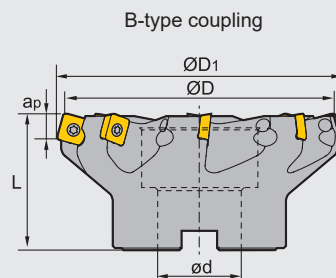
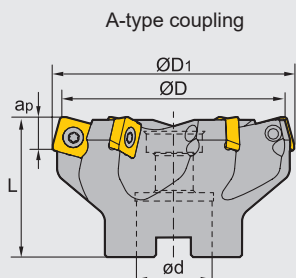
Face milling tools

Kr:75°



Face milling

FME02 P M K



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|-------------------------------|-------|----------------------|-----|----|----|-------|-------------------|------------------|-------------|
| | | ØD | ØD1 | ød | L | apmax | | | |
| FME02 -050-A22-SP12-04 | △ | 50 | 54 | 22 | 40 | 6 | 4 | A | 0.3 |
| -063-A22-SP12-05 | △ | 63 | 66 | 22 | 50 | 6 | 5 | A | 0.6 |
| -080-A27-SP12-06 | △ | 80 | 83 | 27 | 50 | 6 | 6 | A | 0.9 |
| -100-B32-SP12-07 | △ | 100 | 103 | 32 | 50 | 6 | 7 | B | 1.4 |
| -125-B40-SP12-08 | △ | 125 | 128 | 40 | 63 | 6 | 8 | B | 2.5 |

▲Stock available △Make-to-order

Indexable milling tools

Face milling tools



Spare parts

| Diameter ØD | Insert screw | Wrench |
|-------------|--------------|--------|
| Ø50-Ø125 | I60M5×13.2 | WT20IS |
| | | |
| | | |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

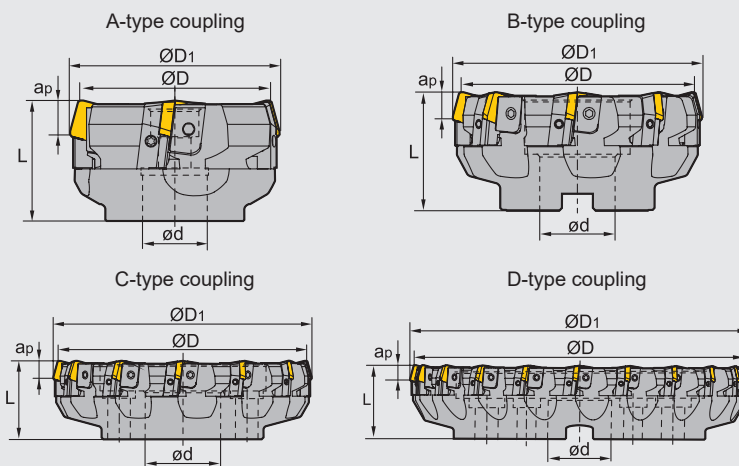
Face milling tools

Kr:75°



Face milling

FME03 P M K



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|-------------------------------|-------|---|----------------------|-----|----|----|-------|-------------------|------------------|-------------|
| | R | L | ØD | ØD1 | ød | L | apmax | | | |
| FME03 -080-A27-SP12-04 | ▲ | △ | 80 | 84 | 27 | 50 | 6 | 4 | A | 1.1 |
| -100-B32-SP12-06 | ▲ | △ | 100 | 104 | 32 | 50 | 6 | 6 | B | 1.9 |
| -125-B40-SP12-08 | ▲ | △ | 125 | 129 | 40 | 63 | 6 | 8 | B | 3.5 |
| -160-B40-SP12-10 | ▲ | △ | 160 | 164 | 40 | 63 | 6 | 10 | B | 5.7 |
| -200-C60-SP12-12 | ▲ | △ | 200 | 203 | 60 | 63 | 6 | 12 | C | 8.2 |
| -250-C60-SP12-16 | ▲ | △ | 250 | 253 | 60 | 63 | 6 | 16 | C | 13.8 |
| -315-D60-SP12-20 | ▲ | △ | 315 | 318 | 60 | 70 | 6 | 20 | D | 23.5 |
| -080-A27-SP15-04 | ▲ | △ | 80 | 84 | 27 | 50 | 8 | 4 | A | 1.0 |
| -100-B27-SP15-06 | ▲ | △ | 100 | 104 | 27 | 50 | 8 | 6 | B | 1.8 |
| -125-B40-SP15-08 | ▲ | ▲ | 125 | 129 | 40 | 63 | 8 | 8 | B | 3.3 |
| -160-B40-SP15-10 | ▲ | ▲ | 160 | 164 | 40 | 63 | 8 | 10 | B | 5.4 |
| -200-C60-SP15-12 | ▲ | ▲ | 200 | 204 | 60 | 63 | 8 | 12 | C | 7.9 |
| -250-C60-SP15-16 | ▲ | ▲ | 250 | 253 | 60 | 63 | 8 | 16 | C | 13.6 |
| -315-D60-SP15-20 | ▲ | ▲ | 315 | 318 | 60 | 70 | 8 | 20 | D | 23.1 |

▲Stock available △Make-to-order

Spare parts

| Diameter ØD | Inserts | Locator | Wedge | Wedge Screw | Locator screw | Wrench | |
|-------------|---------|----------|--------|-------------|---------------|----------------|--|
| | | | | | | | |
| Ø80-Ø100 | SP12 | LSP12R/L | W04R/L | WM8×17 | LOM5×15.1 | WT20T WT25T | |
| Ø125-Ø315 | | | | WM8×22 | | | |
| Ø80-Ø315 | SP15 | LSP15R/L | W04R/L | WM8×22 | | | |

Tools code key
B24-B25

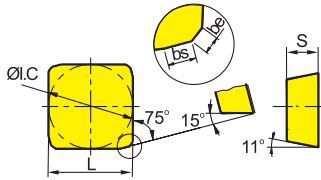
Grade selection guide
B19-B23

Technical data
B234-B240

Indexable milling tools

Face milling tools

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|--------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| YBC301 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YBC302 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YBM251 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YBM253 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YBM351 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YBD152 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YBD252 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YBG102 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YBG202 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YBG205 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YB9320 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YBG302 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YBG152 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YBG252 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YBS203 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YBS303 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YNG151 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YNG151C | 😊 | 😊 | 😊 | 😊 | 😊 |
| YC30S | 😊 | 😊 | 😊 | 😊 | 😊 |
| YD051 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YD101 | 😊 | 😊 | 😊 | 😊 | 😊 |
| YD201 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | CVD Coating | | | | | PVD Coating | | | | | Cermet | Cemented carbide | | | | | | | | | | | | | | | |
|--------------|----------------|----------------------|--------|------|----|-----|-------------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|--|---|---|--|
| | | L | ØI.C | S | be | bs | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | | | | |
| | SPKN1203EDER | 12.7 | 12.7 | 3.18 | 1 | 1.4 | | | | | | | | | ○ | | | | | | | | | | | | | | | | | | |
| | SPKN1203EDEL | 12.7 | 12.7 | 3.18 | 1 | 1.4 | | | | | | | | | ○ | | | | | | | | | | | | | | | | | | |
| | SPKN1203EDFR | 12.7 | 12.7 | 3.18 | 1 | 1.4 | | | | | | | | ★ | ○ | | | | | | | | | | | | | | | | | ● | |
| | SPKN1203EDFL | 12.7 | 12.7 | 3.18 | 1 | 1.4 | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | ○ | |
| | SPKN1203EDSKR | 12.7 | 12.7 | 3.18 | 1 | 1.4 | | | | | | | | | | | | | | ○ | | | | | | | ○ | | | | | | |
| | SPKN1203EDSKL | 12.7 | 12.7 | 3.18 | 1 | 1.4 | | | | | | | | | | | | | | ○ | | | | | | | ○ | | | | | | |
| | SPKN1203EDTKR | 12.7 | 12.7 | 3.18 | 1 | 1.4 | ● | | | | ● | | | | ○ | | | | ★ | | | | | | | | ● | | | | | ○ | |
| | SPKN1203EDTKL | 12.7 | 12.7 | 3.18 | 1 | 1.4 | | | | | | | | | ○ | | | | ○ | | | | | | | | ○ | | | | | ○ | |
| | SPKN1203EDS31R | 12.7 | 12.7 | 3.18 | 1 | 1.4 | | | | | | | | | | | | | ○ | | | | | | | | ○ | | | | | | |
| | SPKN1203EDS31L | 12.7 | 12.7 | 3.18 | 1 | 1.4 | | | | | | | | | | | | | ○ | | | | | | | | ○ | | | | | | |
| | SPKN1203EDT31R | 12.7 | 12.7 | 3.18 | 1 | 1.4 | ● | | | | ● | | | | ○ | | | | ★ | | | | | | | | ● | | | | | ○ | |
| | SPKN1203EDT31L | 12.7 | 12.7 | 3.18 | 1 | 1.4 | | | | | | | | | ○ | | | | ○ | | | | | | | | ○ | | | | | ○ | |
| | SPKR1203EDR-GM | 12.7 | 12.7 | 3.18 | 1 | 1.4 | | | | ● | | | | | | | | ★ | | ★ | | | | | | ● | | | | | ● | | |
| | SPKR1203EDL-GM | 12.7 | 12.7 | 3.18 | 1 | 1.4 | | | | ● | | | | | | | | ★ | | ★ | | | | | | ● | | | | | ● | | |
| | SPKN1504EDER | 15.875 | 15.875 | 4.76 | 1 | 1.4 | | | | | | | | | ○ | | | | | | | | | | | | | | | | | | |
| | SPKN1504EDEL | 15.875 | 15.875 | 4.76 | 1 | 1.4 | | | | | | | | | ○ | | | | | | | | | | | | | | | | | | |
| | SPKN1504EDFR | 15.875 | 15.875 | 4.76 | 1 | 1.4 | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | ○ | |
| | SPKN1504EDFL | 15.875 | 15.875 | 4.76 | 1 | 1.4 | | | | | | | | | ○ | ○ | | | | | | | | | | | | | | | | ○ | |
| | SPKN1504EDSKR | 15.875 | 15.875 | 4.76 | 1 | 1.4 | | | | | | | | | | | | | | ○ | | | | | | | ○ | | | | | | |
| | SPKN1504EDSKL | 15.875 | 15.875 | 4.76 | 1 | 1.4 | | | | | | | | | | | | | | ○ | | | | | | | ○ | | | | | | |
| | SPKN1504EDTKR | 15.875 | 15.875 | 4.76 | 1 | 1.4 | ● | | | | | | | | | | | | ★ | | ○ | | | | | | ● | | | | | ● | |
| | SPKN1504EDTKL | 15.875 | 15.875 | 4.76 | 1 | 1.4 | | | | | | | | | ○ | | | | ○ | | | | | | | | ○ | | | | | ● | |
| | SPKN1504EDS32R | 15.875 | 15.875 | 4.76 | 1 | 1.4 | | | | | | | | | | | | | | ○ | | | | | | | ○ | | | | | | |
| | SPKN1504EDS32L | 15.875 | 15.875 | 4.76 | 1 | 1.4 | | | | | | | | | | | | | | ○ | | | | | | | ○ | | | | | | |
| | SPKN1504EDT32R | 15.875 | 15.875 | 4.76 | 1 | 1.4 | ● | | | | | | | | | | | | ★ | | ○ | | | | | | ● | | | | | ● | |
| | SPKN1504EDT32L | 15.875 | 15.875 | 4.76 | 1 | 1.4 | | | | | | | | | ○ | | | | ○ | | | | | | | | ○ | | | | | ● | |
| | SPKR1504EDR-GM | 15.875 | 15.875 | 4.76 | 1 | 1.4 | | | | | | | | | | | | ★ | | ★ | | | | | | ● | | | | | ● | | |
| | SPKR1504EDL-GM | 15.875 | 15.875 | 4.76 | 1 | 1.4 | | | | | | | | | | | | ★ | | ★ | | | | | | ● | | | | | ● | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Ordering guide: **SPKN1203EDT3 1 R** chamfering angle 20° , chamfering width 0.15mm. For other edge shapes, see inserts code key standard.



MILLING

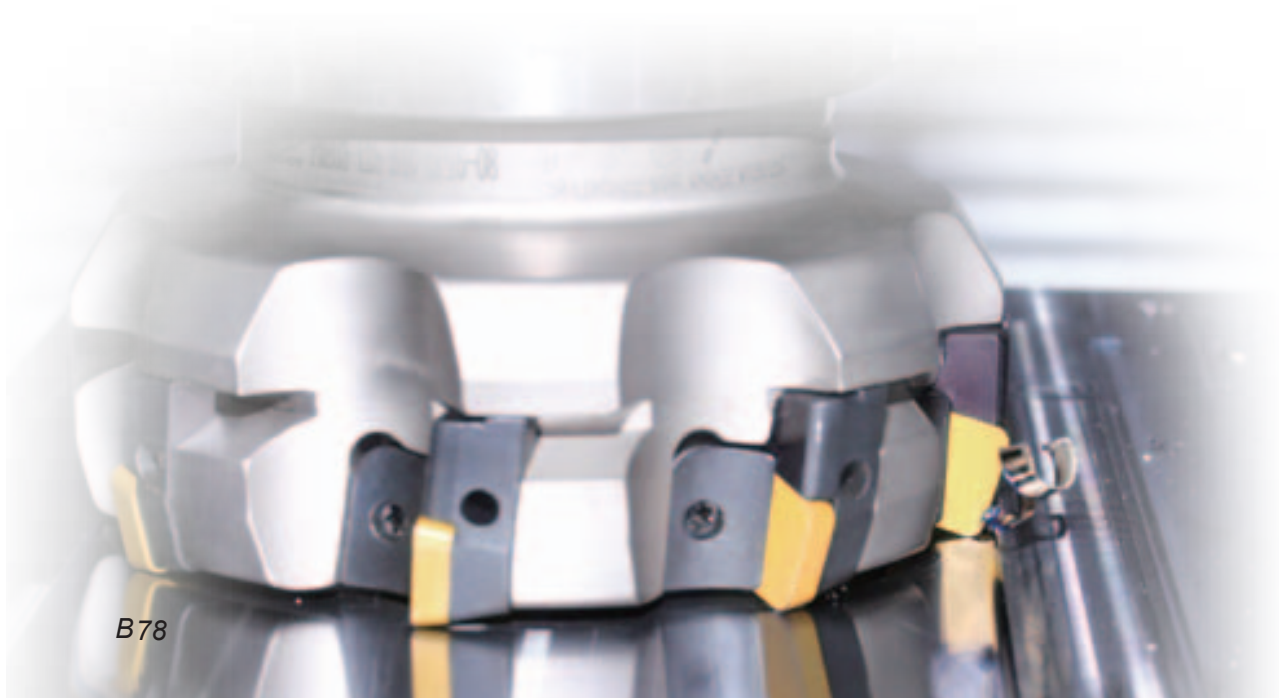
Indexable Milling Tools

➤ Recommended cutting parameters

| Workpiece material | Hardness HB | Insert grade | Cutting parameters | |
|--------------------|-----------------------------------|------------------|------------------------|-----------------------|
| | | | V _c (m/min) | f _z (mm/z) |
| P | Low-carbon steel, Soft steel | YBG202 | 270 (200-360) | 0.2 (0.1-0.4) |
| | | YBG302 | 230 (170-350) | 0.24 (0.1-0.3) |
| | | YBM251 YBC301 | 270(220-350) | 0.2 (0.1-0.4) |
| | | YBM351 | 220 (180-300) | 0.25 (0.15-0.3) |
| | | YC30S | 140 (100-220) | 0.22 (0.1-0.3) |
| | High-carbon steel, Alloy steel | YBG202 | 240 (180-350) | 0.2 (0.1-0.3) |
| | | YBG302 | 220 (150-330) | 0.24 (0.1-0.3) |
| | | YBM251 YBC301 | 240 (200-320) | 0.2 (0.1-0.4) |
| | | YBM351 | 200 (160-280) | 0.25 (0.15-0.3) |
| | | YC30S | 120 (80-200) | 0.22 (0.1-0.3) |
| | Alloy tool steel | YBG202 | 220 (170-340) | 0.2 (0.1-0.3) |
| | | YBG302 | 190 (130-300) | 0.24 (0.1-0.3) |
| | | YBM251 YBC301 | 220 (180-300) | 0.2 (0.1-0.4) |
| | | YBM351 | 180 (150-250) | 0.25 (0.15-0.3) |
| | | YC30S | 100 (60-180) | 0.22 (0.1-0.3) |
| M | Stainless steel | YBG202 | 160 (110-270) | 0.2 (0.1-0.3) |
| | | YBG302 | 140 (100-250) | 0.24 (0.1-0.3) |
| | | YBM251 | 150 (120-240) | 0.2 (0.1-0.4) |
| | | YBM351 | 140 (100-240) | 0.25 (0.15-0.3) |
| K | Cast iron | YBG102 | 210 (120-300) | 0.12 (0.08-0.3) |
| | | YBG302 | 160 (120-200) | 0.2 (0.1-0.3) |
| | | YD201 | 100 (80-160) | 0.24 (0.15-0.4) |

Indexable
milling tools

Face milling tools

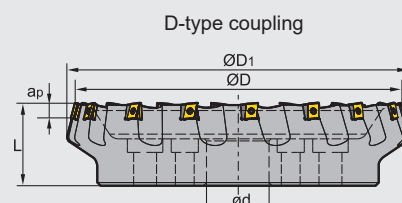
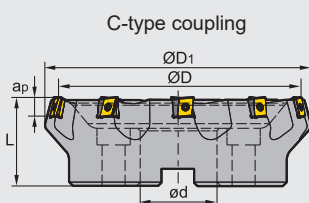
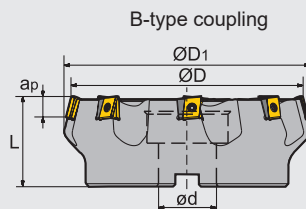


Face milling tools

Kr:75°



FME04 P M K



Specification of tools





| Type | Stock | | Basic dimensions(mm) | | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|-------------------------------|-------|---|----------------------|-------------------|-----------------|----|------------|-------------------|------------------|-------------|
| | R | L | $\varnothing D$ | $\varnothing D_1$ | $\varnothing d$ | L | a_{pmax} | | | |
| FME04 -125-B40-LN15-06 | ▲ | △ | 125 | 137 | 40 | 63 | 12 | 6 | B | 3.8 |
| -160-B40-LN15-08 | ▲ | △ | 160 | 170 | 40 | 63 | 12 | 8 | B | 6.6 |
| -200-C60-LN15-10 | ▲ | △ | 200 | 208 | 60 | 70 | 12 | 10 | C | 9.6 |
| -250-C60-LN15-12 | ▲ | △ | 250 | 257 | 60 | 70 | 12 | 12 | C | 13.4 |
| -315-D60-LN15-16 | ▲ | △ | 315 | 328 | 60 | 80 | 12 | 16 | D | 25.2 |

▲Stock available △Make-to-order

Indexable milling tools

Face milling tools

Spare parts

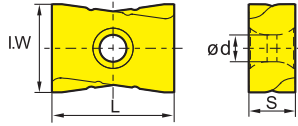
| Diameter $\varnothing D$ | Shim | Shim screw | Insert screw | Wrench |
|---|--|---|--|---|
| $\varnothing 125\text{--}\varnothing 315$ |  LLN15-ZR |  I60M3×7 |  I60M4×12 |  WT15IS, WT09IS |
| | | | | |
| | | | | |

Tools code key
B24–B25

Grade selection guide
B19–B23

Technical data
B234–B240

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | P | M | K | N | S | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|--------|--------|--------|--------|--------|
| P Steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | CVD Coating | | | | | | PVD Coating | | | | Cermet | Cemented carbide | | | | | | | | | | |
|--------------|----------------------|----------------------|-----|------|-----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|
| | | L | I.W | S | ød | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
| | LNKT1506EN-ZR | 15.875 | 14 | 6.35 | 4.6 | | | | | ○ | ○ | | | | | | ★ | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

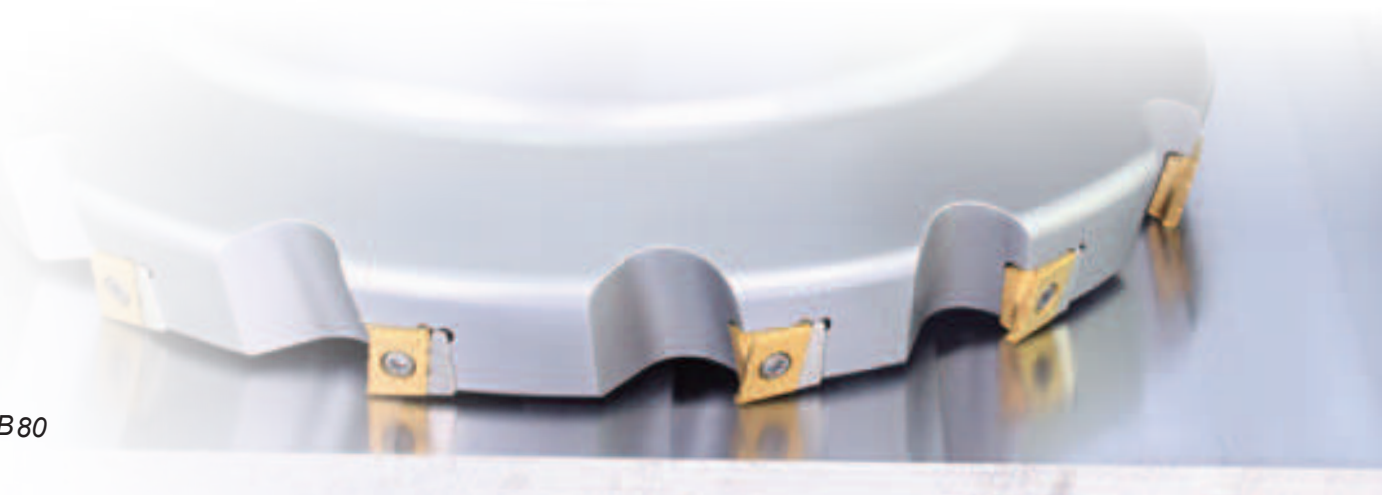
Indexable milling tools

Face milling tools

Recommended cutting parameters

| Workpiece material | Hardness HB | Insert grade | Cutting parameters | |
|---------------------------------------|-------------|--------------|------------------------|-----------------------|
| | | | V _c (m/min) | f _z (mm/z) |
| P Low-carbon steel, Soft steel | ≤ 180 | YBG302 | 180 (150-300) | 0.5 (0.2-0.8) |
| | | YBM351 | 180 (150-300) | 0.5 (0.2-0.8) |
| | 180-280 | YBG302 | 150 (120-280) | 0.5 (0.2-0.8) |
| | | YBM351 | 140 (120-280) | 0.5 (0.2-0.8) |
| Alloy tool steel | 280-350 | YBG302 | 120 (80-250) | 0.45 (0.2-0.6) |
| | | YBM351 | 100 (80-250) | 0.45 (0.2-0.6) |
| M Stainless steel | ≤ 270 | YBG302 | 120 (80-200) | 0.45 (0.2-0.6) |
| | | YBM351 | 100 (80-200) | 0.45 (0.2-0.6) |
| K Cast iron | 180-250 | YBD152 | 220 (150-300) | 0.5 (0.2-0.8) |
| | | YBG302 | 200 (150-300) | 0.5 (0.2-0.8) |

Note: Cutting parameters can be adjusted according to the Max. power of machine.



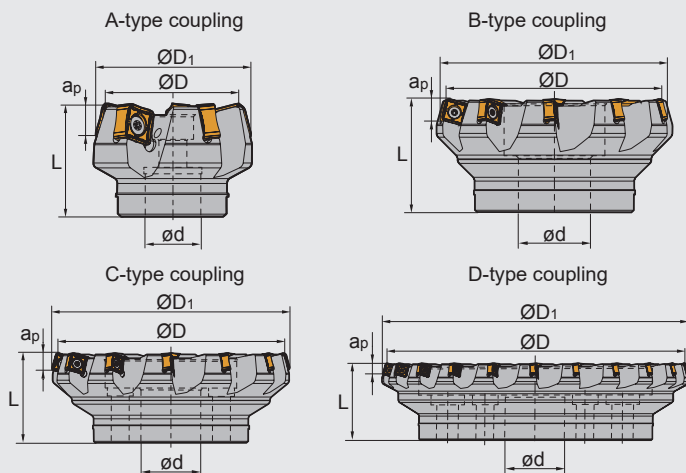
Face milling tools

Kr:75°



Face milling

FME17 P M K S



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|-----------------------|-------------------|----------------------|-------------------|-----------------|----|------------|-------------------|------------------|-------------|
| | | $\varnothing D$ | $\varnothing D_1$ | $\varnothing d$ | L | a_{pmax} | | | |
| FME17 Coarse pitch | -050-A22-SN12-04C | ▲ | 50 | 60 | 22 | 40 | 8.0 | A | 0.361 |
| | -063-A22-SN12-05C | ▲ | 63 | 73 | 22 | 40 | 8.0 | A | 0.520 |
| | -080-A27-SN12-06C | ▲ | 80 | 90 | 27 | 50 | 8.0 | A | 1.101 |
| | -100-A32-SN12-08C | ▲ | 100 | 110 | 32 | 50 | 8.0 | A | 1.663 |
| | -125-B40-SN12-10 | ▲ | 125 | 135 | 40 | 63 | 8.0 | B | 3.099 |
| | -160-C40-SN12-12 | ▲ | 160 | 170 | 40 | 63 | 8.0 | C | 4.535 |
| | -200-C60-SN12-14 | ▲ | 200 | 210 | 60 | 63 | 8.0 | C | 6.450 |
| | -250-C60-SN12-18 | ▲ | 250 | 260 | 60 | 63 | 8.0 | C | 12.980 |
| | -315-D60-SN12-22 | ▲ | 315 | 325 | 60 | 80 | 8.0 | D | 21.932 |
| -400-D60-SN12-28 | ▲ | 400 | 410 | 60 | 80 | 8.0 | D | 41.555 | |
| Close pitch | -050-A22-SN12-05C | ▲ | 50 | 60 | 22 | 40 | 8.0 | A | 0.337 |
| | -063-A22-SN12-07C | ▲ | 63 | 73 | 22 | 40 | 8.0 | A | 0.530 |
| | -080-A27-SN12-09C | ▲ | 80 | 90 | 27 | 50 | 8.0 | A | 1.112 |
| | -100-A32-SN12-11C | ▲ | 100 | 110 | 32 | 50 | 8.0 | A | 1.577 |
| | -125-B40-SN12-14 | ▲ | 125 | 135 | 40 | 63 | 8.0 | B | 3.145 |
| | -160-C40-SN12-18 | ▲ | 160 | 170 | 40 | 63 | 8.0 | C | 4.647 |
| | -200-C60-SN12-22 | ▲ | 200 | 210 | 60 | 63 | 8.0 | C | 6.552 |

▲ Stock available △ Make-to-order

Indexable milling tools

Face milling tools

Spare parts

| Diameter $\varnothing D$ | Insert screw | Wrench |
|--|--------------|--------|
| $\varnothing 50\text{-}\varnothing 63$ | IRM4×10 | WT15IP |
| $\varnothing 80 \sim \varnothing 125$ | | WT15IS |
| $\varnothing 160 \sim \varnothing 400$ | | WT15IT |

Tools code key
B24-B25

Grade selection guide
B19-B23

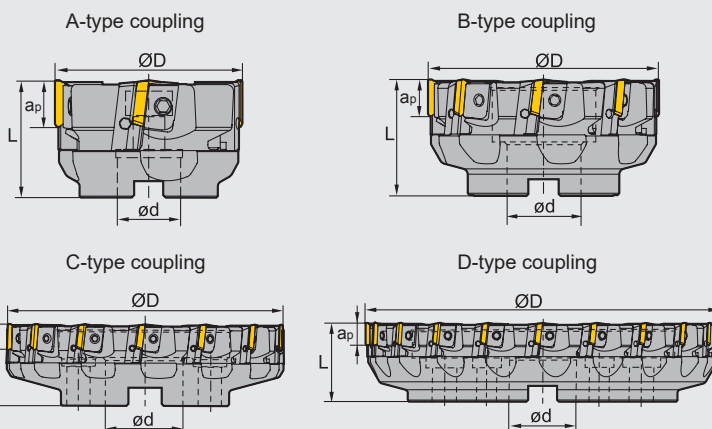
Technical data
B234-B240

Face milling tools

Kr:90°



FMP01 P M K



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|-------------------------------|-------|---|----------------------|----|----|-------|-------------------|------------------|-------------|
| | R | L | ØD | ød | L | apmax | | | |
| FMP01 -080-A27-TP22-04 | ▲ | △ | 80 | 27 | 50 | 18 | 4 | A | 1.2 |
| -100-B32-TP22-06 | ▲ | △ | 100 | 32 | 50 | 18 | 6 | B | 1.7 |
| -125-B40-TP22-08 | ▲ | △ | 125 | 40 | 63 | 18 | 8 | B | 3.2 |
| -160-B40-TP22-10 | ▲ | △ | 160 | 40 | 63 | 18 | 10 | B | 5.1 |
| -200-C60-TP22-12 | ▲ | △ | 200 | 60 | 63 | 18 | 12 | C | 7.4 |
| -250-C60-TP22-16 | ▲ | △ | 250 | 60 | 63 | 18 | 16 | C | 12.3 |
| -315-D60-TP22-20 | ▲ | △ | 315 | 60 | 70 | 18 | 20 | D | 21.9 |

▲Stock available △Make-to-order

Indexable milling tools

Face milling tools

Spare parts

| Diameter ØD | Locator | Wedge | Wedge Screw | Locator screw | Wrench |
|-------------|-----------|--------|-------------|---------------|----------------|
| Ø80 Ø100 | LTP4R1/L1 | W04R/L | WM8×17 | LOM5×15.1 | WT20T WT25T |
| Ø125 ~ Ø315 | LTP4R/L | | WM8×22 | | |

Tools code key
B24-B25

Grade selection guide
B19-B23

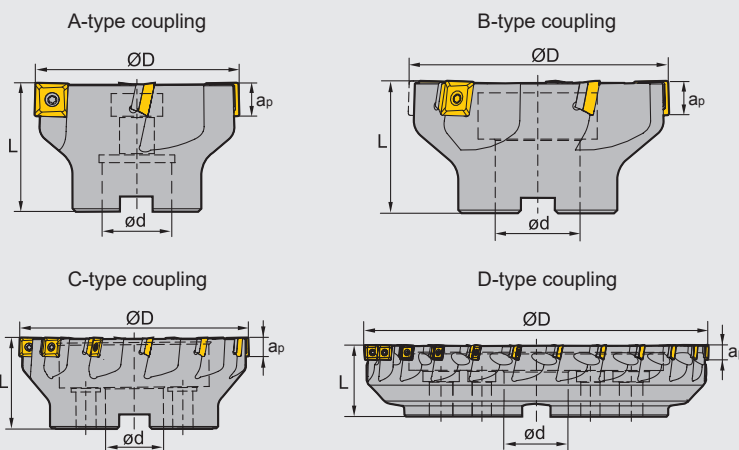
Technical data
B234-B240

Face milling tools

Kr:90°



FMP02 P M K S



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|-------------------------------|-------|----------------------|----|----|-------|-------------------|------------------|-------------|
| | | ØD | ød | L | apmax | | | |
| FMP02 -040-A16-SE09-04 | △ | 40 | 16 | 40 | 6.7 | 4 | A | 0.2 |
| -040-A16-SE09-06 | △ | 40 | 16 | 40 | 6.7 | 6 | A | 0.22 |
| -050-A22-SE09-05 | ▲ | 50 | 22 | 40 | 6.7 | 5 | A | 0.3 |
| -050-A22-SE09-07 | △ | 50 | 22 | 40 | 6.7 | 7 | A | 0.313 |
| -063-A22-SE09-06 | ▲ | 63 | 22 | 40 | 6.7 | 6 | A | 0.5 |
| -063-A22-SE09-08 | △ | 63 | 22 | 40 | 6.7 | 8 | A | 0.479 |
| -080-A27-SE09-08 | ▲ | 80 | 27 | 50 | 6.7 | 8 | A | 0.9 |
| -080-A27-SE09-10 | △ | 80 | 27 | 50 | 6.7 | 10 | A | 1.079 |
| -100-B32-SE09-08 | ▲ | 100 | 32 | 50 | 6.7 | 8 | B | 1.7 |
| -100-B32-SE09-10 | △ | 100 | 32 | 50 | 6.7 | 10 | B | 1.7 |
| -125-B40-SE09-12 | △ | 125 | 40 | 63 | 6.7 | 12 | B | 2.6 |

▲ Stock available △ Make-to-order

Indexable milling tools

Face milling tools

Specification of tools






| Type | Stock | Basic dimensions(mm) | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|-------------------------------|-------|----------------------|----|----|-------|-------------------|------------------|-------------|
| | | ØD | ød | L | apmax | | | |
| FMP02 -050-A22-SE12-03 | ▲ | 50 | 22 | 40 | 10.8 | 3 | A | 0.3 |
| -063-A22-SE12-04 | ▲ | 63 | 22 | 40 | 10.8 | 4 | A | 0.4 |
| -080-A27-SE12-04 | ▲ | 80 | 27 | 50 | 10.8 | 4 | A | 0.9 |
| -100-B32-SE12-05 | ▲ | 100 | 32 | 50 | 10.8 | 5 | B | 1.2 |
| -125-B40-SE12-06 | ▲ | 125 | 40 | 63 | 10.8 | 6 | B | 3.1 |
| -160-C40-SE12-08 | ▲ | 160 | 40 | 63 | 10.8 | 8 | C | 4.1 |
| -200-C60-SE12-10 | △ | 200 | 60 | 63 | 10.8 | 10 | C | 5.718 |
| -250-C60-SE12-12 | ▲ | 250 | 60 | 63 | 10.8 | 12 | C | 11.1 |
| -050-A22-SE12-04 | ▲ | 50 | 22 | 40 | 10.8 | 4 | A | 0.3 |
| -063-A22-SE12-05 | ▲ | 63 | 22 | 40 | 10.8 | 5 | A | 0.4 |
| -080-A27-SE12-06 | ▲ | 80 | 27 | 50 | 10.8 | 6 | A | 0.8 |
| -100-B32-SE12-07 | ▲ | 100 | 32 | 50 | 10.8 | 7 | B | 1.2 |
| -125-B40-SE12-08 | ▲ | 125 | 40 | 63 | 10.8 | 8 | B | 3.0 |
| -160-C40-SE12-12 | ▲ | 160 | 40 | 63 | 10.8 | 12 | C | 3.9 |
| -050-A22-SE12-05 | ▲ | 50 | 22 | 40 | 10.8 | 5 | A | 0.2 |
| -063-A22-SE12-06 | ▲ | 63 | 22 | 40 | 10.8 | 6 | A | 0.4 |
| -080-A27-SE12-08 | ▲ | 80 | 27 | 50 | 10.8 | 8 | A | 0.8 |
| -100-B32-SE12-10 | ▲ | 100 | 32 | 50 | 10.8 | 10 | B | 1.2 |
| -125-B40-SE12-12 | ▲ | 125 | 40 | 63 | 10.8 | 12 | B | 2.9 |
| -160-C40-SE12-15 | △ | 160 | 40 | 63 | 10.8 | 15 | C | 4.061 |
| -200-C60-SE12-16 | ▲ | 200 | 60 | 63 | 10.8 | 16 | C | 6.1 |
| -250-C60-SE12-18 | ▲ | 250 | 60 | 63 | 10.8 | 18 | C | 10.9 |
| -315-D60-SE12-24 | ▲ | 315 | 60 | 63 | 10.8 | 24 | D | 21.6 |

▲Stock available △Make-to-order

Indexable milling tools

Face milling tools

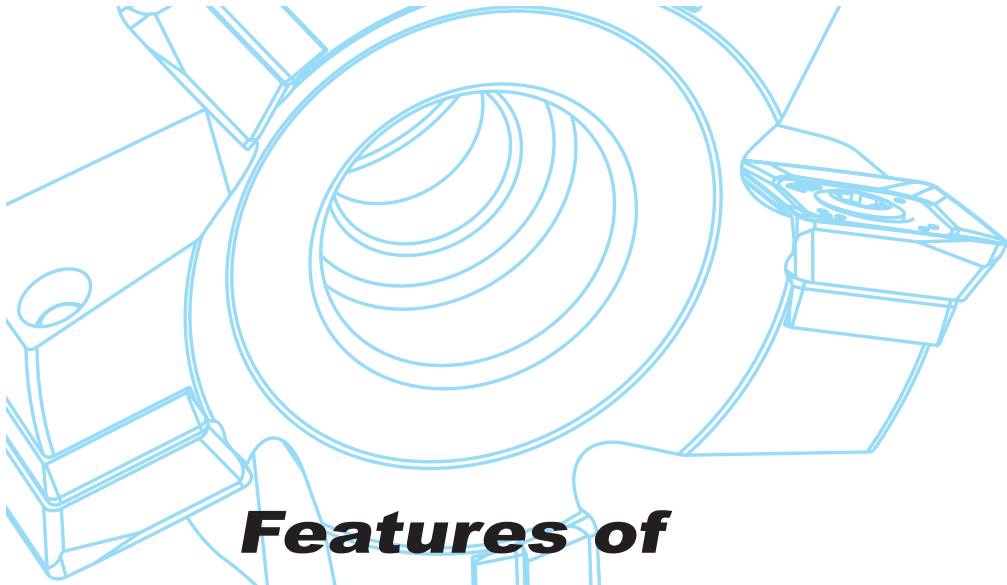
Spare parts

| Diameter ØD | Inserts | Shim | Insert screw | Shim screw | Wrench | Wrench |
|-------------|---------|---|---|---|---|---|
| | |  |  |  |  |  |
| Ø50 ~ Ø125 | SE09 | -- | I60M3×7 | -- | WT09IS | -- |
| Ø50 | SE12 | -- | I60M3.5×10 | -- | WT15IS | -- |
| Ø63 ~ Ø315 | | S12BSX | I60M3.5×12 | SM5×7×A | | WH35L |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240



Features of

FMP02

Series Milling Tools



Inserts designed with new geometries and coated grades for optimized high efficiency machining in different working conditions.



Unique geometric design resulting in true 90° square shoulder cutting.



Upgraded insert structure, greatly improves tool life.



Large positive rake angle resulting in easier cutting with less tool pressure.



Screw down clamping resulting in better chip evacuation.

▶▶ Recommended cutting parameters

| | Workpiece material | Hardness HB | Insert grade | Cutting parameters | | | |
|----------|-----------------------------------|-------------|---------------|--------------------|---------------|-----------------|---------------|
| | | | | Vc(m/min) | fz(mm/z) | | |
| | | | | | -APF | -APM | -APR |
| P | Low-carbon steel, Soft steel | ≤ 180 | YBG202 | 270(200-360) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3 (0.2-0.4) |
| | | | YB9320 | 270(200-360) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3 (0.2-0.4) |
| | High-carbon steel, Alloy steel | 180-280 | YBM351 | 240 (200-320) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3 (0.2-0.4) |
| | | | YBG202 | 240 (180-350) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3 (0.2-0.4) |
| | | | YB9320 | 240 (180-350) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3 (0.2-0.4) |
| | Alloy tool steel | 280-350 | YBM351 | 220 (180-300) | 0.1(0.1-0.2) | 0.2 (0.1-0.3) | 0.3 (0.2-0.4) |
| YBG202 | | | 220 (170-340) | 0.1(0.1-0.2) | 0.2 (0.1-0.3) | 0.3 (0.2-0.4) | |
| YB9320 | | | 220 (170-340) | 0.1(0.1-0.2) | 0.2 (0.1-0.3) | 0.3 (0.2-0.4) | |
| M | Stainless steel | ≤ 270 | YBM351 | 150 (120-240) | 0.1(0.1-0.2) | 0.2 (0.1-0.3) | 0.3 (0.2-0.4) |
| | | | YBG202 | 160 (110-270) | 0.1(0.1-0.2) | 0.2 (0.1-0.3) | 0.3 (0.2-0.4) |
| | | | YB9320 | 160 (110-270) | 0.1(0.1-0.2) | 0.2 (0.1-0.3) | 0.3 (0.2-0.4) |
| K | Cast iron | 180-250 | YBG202 | 160 (120-200) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3 (0.2-0.4) |
| | | | YBD152 | 270 (150-300) | 0.15(0.1-0.2) | 0.2 (0.1-0.3) | 0.3 (0.2-0.4) |
| S | Difficult-to-machine materials | ≤ 400 | YBS303 | 100 (60-120) | 0.1(0.08-0.2) | 0.15 (0.1-0.25) | -- |

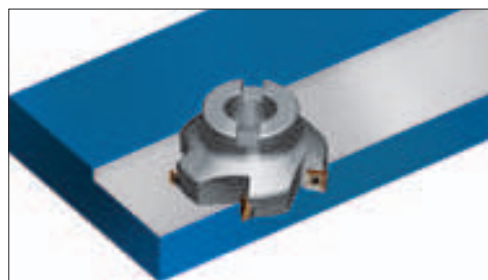
Indexable milling tools

Face milling tools

Case for FMP02

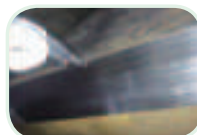
Workpiece material: 45#
 Hardness: 175-190 (HB)
 Cooling: Air cooling
 Tool: FMP02-100-B32-SE12-10
 Insert: SEET120308PER-APM (YB9320)
 Data:

Data 1: Vc=200m/min, fz=0.15mm/z,
 Ap=7mm, Ae=5mm
 Data 2: Vc=200m/min, fz=0.25mm/z,
 Ap=7mm, Ae=5mm

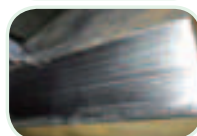


● SEET120308PER-APM inserts tests

| Chipbreaker | Data 1: Vc=200m/min, fz=0.15mm/z Ap=7mm, Ae=5mm | | Data 2: Vc=200m/min, fz=0.25mm/z Ap=7mm, Ae=5mm | |
|-----------------------|---|------------------|---|------------------|
| | Runout value | Surface machined | Runout value | Surface machined |
| -APM | 0.006 | | 0.006 | |
| Products of company A | 0.012 | | 0.012 | |
| Products of company B | 0.013 | | 0.015 | |



-APM



Product of company B

Results:

Comparing with competitors, SEET120308PER-APM inserts can get better surface quality and longer tool life.

Face milling tools

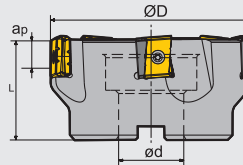
Kr:90°



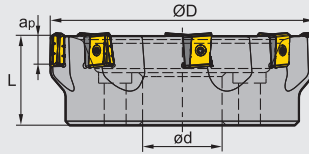
FMP03 P M K



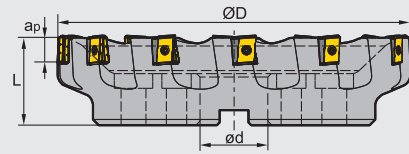
B-type coupling



C-type coupling



D-type coupling



Specification of tools

| Type | Stock | | ØD | ød | L | apmax | Number of teeth Z | Style of coupling | Weight (kg) |
|-------------------------------|-------|---|-----|----|----|-------|-------------------|-------------------|-------------|
| | R | L | | | | | | | |
| FMP03 -125-B40-LN15-06 | ▲ | △ | 125 | 40 | 63 | 13 | 6 | B | 3.2 |
| -160-C40-LN15-08 | ▲ | △ | 160 | 40 | 63 | 13 | 8 | C | 5.1 |
| -200-C60-LN15-10 | ▲ | △ | 200 | 60 | 70 | 13 | 10 | C | 7.5 |
| -250-C60-LN15-12 | ▲ | △ | 250 | 60 | 70 | 13 | 12 | C | 12.2 |
| -315-D60-LN15-16 | ▲ | △ | 315 | 60 | 80 | 13 | 16 | D | 23.7 |
| -125-B40-LN20-06 | ▲ | △ | 125 | 40 | 63 | 17 | 6 | B | 3.3 |
| -160-C40-LN20-08 | ▲ | △ | 160 | 40 | 63 | 17 | 8 | C | 5.3 |
| -200-C60-LN20-10 | ▲ | △ | 200 | 60 | 70 | 17 | 10 | C | 8.8 |
| -250-C60-LN20-12 | ▲ | △ | 250 | 60 | 70 | 17 | 12 | C | 14.0 |
| -315-D60-LN20-15 | ▲ | △ | 315 | 60 | 80 | 17 | 15 | D | 23.9 |
| -125-B40-LN25-05 | ▲ | △ | 125 | 40 | 63 | 22 | 5 | B | 3.3 |
| -160-C40-LN25-06 | ▲ | △ | 160 | 40 | 63 | 22 | 6 | C | 5.1 |
| -200-C60-LN25-08 | ▲ | △ | 200 | 60 | 70 | 22 | 8 | C | 8.9 |
| -250-C60-LN25-10 | ▲ | △ | 250 | 60 | 70 | 22 | 10 | C | 12.0 |
| -315-D60-LN25-12 | ▲ | △ | 315 | 60 | 80 | 22 | 12 | D | 21.9 |

▲Stock available △Make-to-order

Spare parts

| Inserts | Shim | Shim screw | Insert screw | Wrench | |
|---------------|-----------|--------------|--------------|--------|--------|
| | | | | | |
| LNKT1506EN-ZR | LLN15-ZR | I60M3×7 | I60M4×12 | WT15IS | WT09IS |
| LNKT2007DN-ZR | LLN20R-ZR | I60M3×7 | I60M4×15 | WT15IS | WT09IS |
| LNKT2510-ZR | LLN25R-ZR | I60M3.5×10.4 | I60M5×17 | WT20IT | WT15IS |



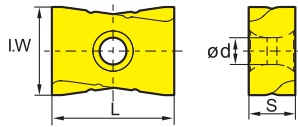
Tools code key
B26–B27

Grade selection guide
B19–B23

Technical data
B245–B250

Technical information
B234–B240

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Working condition | | | | | | | | | | | | | | | |
|---|-------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | CVD Coating | | | | | | PVD Coating | | | | Cermet | Cemented carbide | | | | | | | | | |
|--------------|---------------|----------------------|-----|-------|-----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|---------|-------|-------|-------|-------|
| | | L | I.W | S | ød | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
| | LNKT1506EN-ZR | 15.875 | 14 | 6.35 | 4.6 | | | | | ○ | ○ | | | | | ★ | | | | | | | | | | |
| | LNKT2007DN-ZR | 20 | 17 | 7.94 | 4.6 | | | | | ○ | ○ | | | | | ★ | | | | | | | | | | |
| | LNKT2510-ZR | 25 | 18 | 9.525 | 5.5 | | | | | ○ | ○ | | | | | ★ | | | | | | | | | | |

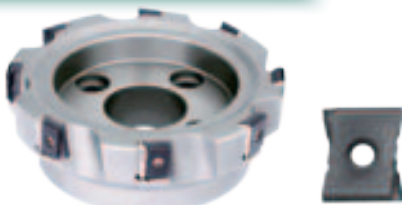
★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Recommended cutting parameters

| Workpiece material | Hardness HB | Insert grade | Cutting parameters | |
|---------------------------------------|-------------|--------------|--------------------|----------------|
| | | | Vc(m/min) | fz(mm/z) |
| P Low-carbon steel, Soft steel | ≤180 | YBG302 | 180 (150-300) | 0.5 (0.2-0.8) |
| | | YBM351 | 180 (150-300) | 0.5 (0.2-0.8) |
| | 180-280 | YBG302 | 150 (120-280) | 0.5 (0.2-0.8) |
| | | YBM351 | 140 (120-280) | 0.5 (0.2-0.8) |
| | 280-350 | YBG302 | 120 (80-250) | 0.45 (0.2-0.6) |
| | | YBM351 | 100 (80-250) | 0.45 (0.2-0.6) |
| M Stainless steel | ≤270 | YBG302 | 120 (80-200) | 0.45 (0.2-0.6) |
| | | YBM351 | 100 (80-200) | 0.45 (0.2-0.6) |
| K Cast iron | 180-250 | YBD152 | 220 (150-300) | 0.5 (0.2-0.8) |
| | | YBD252 | 210 (150-300) | 0.5 (0.2-0.8) |
| | | YBG302 | 200 (150-300) | 0.5 (0.2-0.8) |

Note: Cutting parameters can be adjusted according to the Max. power of machine.

Case for FMP03



Tool type: FMP03-200-C60-LN25-08

Insert type/grade: LNKT2510-ZR/YBG302

The tool operates easily and fast at high cutting depth with good chip breaking performance. Cutting efficiency is doubled, and tool life increases to 1-2 times that of the original.

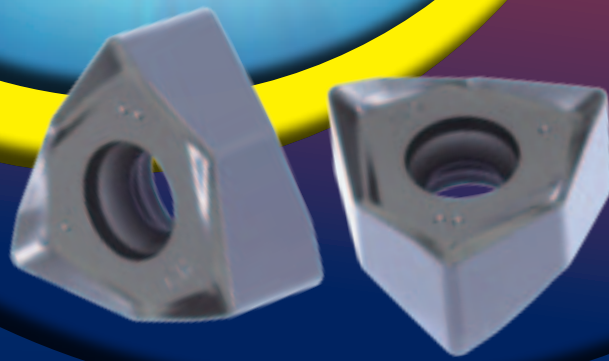
Workpiece material: 45#
 Hardness(HB): 190
 Cooling system: Dry cutting
 Cutting parameters: Vc=130m/min, ap=12mm, fz=0.5mm/z
 ae=140mm



FMP12

Series Milling Tools

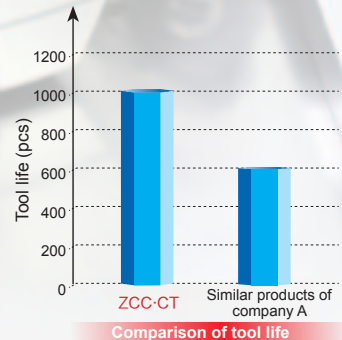
Kr:90°



- Double negative angle of the cutter, combined with unique insert structure, to achieve double positive tool angle, which is beneficial to reducing cutting force;
- 6-flute cutting double-sided slot milling inserts, enabling high-quality 90° square shoulder milling, face milling and slot milling;
- Insert with wiper enables large feed and better surface finish.

Application case

Tool specification: FMP12-080-A27-WN08-05C
 Insert specification/grade: WNHU080608PNR-GM/YBD152
 Part Name: Turbine Housing
 Workpiece material: QT450
 Hardness: HB230-280
 Cooling :Dry cutting
 Machine: Vertical machining center
 Cutting data: Vc=260m/min, ap=1.0mm, z=0.1mm/z, ae=30mm
 Milling style: Down milling Area of machining: End surface

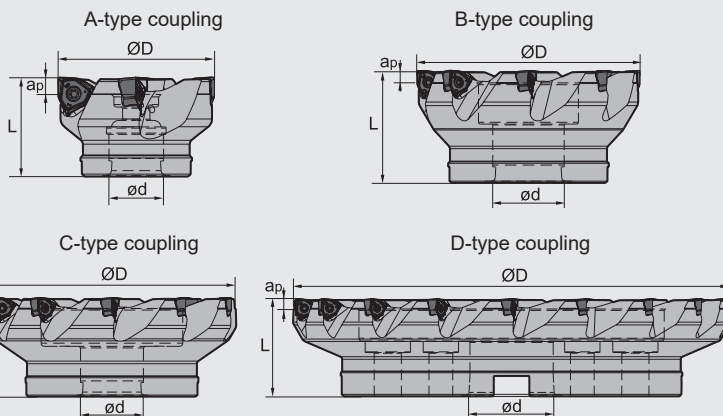


Face milling tools

Kr:90°



FMP12 P K N



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | Number of teeth Z | Type of coupling |
|--------------------------------|-------|----------------------|----|----|-------|-------------------|------------------|
| | | ØD | ød | L | apmax | | |
| FMP12 -050-A22-WN06-05C | △ | 50 | 22 | 40 | 5.7 | 5 | A |
| -063-A22-WN06-06C | △ | 63 | 22 | 40 | 5.7 | 6 | A |
| -080-A27-WN06-07C | △ | 80 | 27 | 50 | 5.7 | 7 | A |
| -100-B32-WN06-09 | △ | 100 | 32 | 50 | 5.7 | 9 | B |
| -125-B40-WN06-11 | △ | 125 | 40 | 63 | 5.7 | 11 | B |
| -160-C40-WN06-14 | △ | 160 | 40 | 63 | 5.7 | 14 | C |
| -063-A22-WN08-04C | △ | 63 | 22 | 40 | 7.7 | 4 | A |
| -080-A27-WN08-05C | △ | 80 | 27 | 50 | 7.7 | 5 | A |
| -100-B32-WN08-06 | △ | 100 | 32 | 50 | 7.7 | 6 | B |
| -125-B40-WN08-08 | △ | 125 | 40 | 63 | 7.7 | 8 | B |
| -160-C40-WN08-10 | △ | 160 | 40 | 63 | 7.7 | 10 | C |
| -200-C60-WN08-12 | △ | 200 | 60 | 63 | 7.7 | 12 | C |
| -250-C60-WN08-14 | △ | 250 | 60 | 63 | 7.7 | 14 | C |
| -315-D60-WN08-18 | △ | 315 | 60 | 70 | 7.7 | 18 | D |

▲Stock available △Make-to-order

Indexable milling tools

Face milling tools

Spare parts

| Inserts | Insert screw | Wrench |
|---------|--------------|---------|
| | WNHU06 | I60M3×9 |
| WNHU08 | I60M4×10 | WT15IS |

Tools code key
B24-B25

Grade selection guide
B19-B23

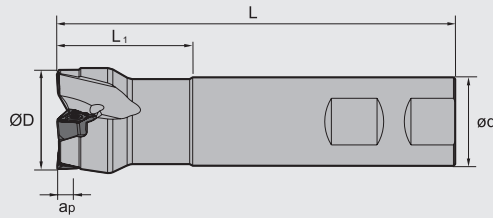
Technical data
B234-B240

Face milling tools

Kr:90°



FMP12 P K



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Type of coupling |
|---------------------------------|-------|----------------------|----|-----|----------------|-------------------|-------------------|------------------|
| | | ØD | ød | L | L ₁ | a _{pmax} | | |
| FMP12 -025-XP25-WN06-02C | △ | 25 | 25 | 100 | 30 | 5.7 | 2 | XP |
| -032-XP25-WN06-03C | △ | 32 | 25 | 120 | 40 | 5.7 | 3 | XP |
| -040-XP32-WN06-04C | △ | 40 | 32 | 140 | 40 | 5.7 | 4 | XP |
| -050-XP40-WN06-05C | △ | 50 | 40 | 169 | 40 | 5.7 | 5 | XP |

▲ Stock available △ Make-to-order

Indexable milling tools

Face milling tools

Spare parts

| Inserts | Insert screw | Wrench | |
|---------|--------------|--------|--|
| | | | |
| WNHU06 | I60M3×9 | WT09IS | |
| WNHU08 | I60M4×10 | WT15IS | |

Tools code key

B24-B25

Grade selection guide

B19-B23

Technical data

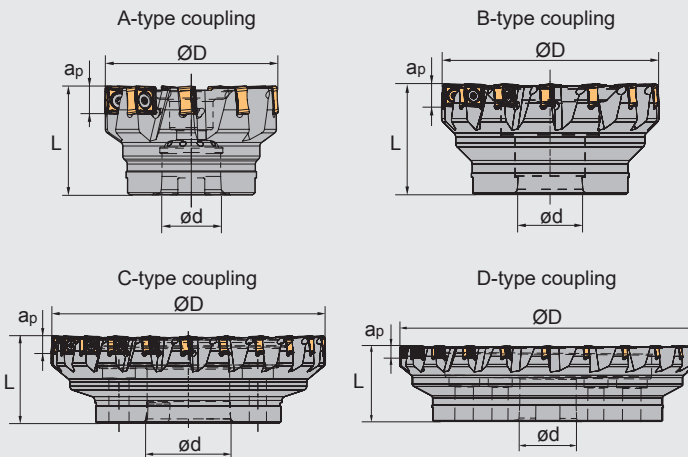
B234-B240

Face milling tools

Kr:88°



FMP17 P M K S



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|------------------------------|-------|----------------------|----|----|-------|-------------------|------------------|-------------|
| | | ØD | ød | L | apmax | | | |
| FMP17 Coarse pitch | ▲ | 50 | 22 | 40 | 10.5 | 4 | A | 0.296 |
| -050-A22-SN12-04C | ▲ | 50 | 22 | 40 | 10.5 | 4 | A | 0.296 |
| -063-A22-SN12-05C | ▲ | 63 | 22 | 40 | 10.5 | 5 | A | 0.462 |
| -080-A27-SN12-07C | ▲ | 80 | 27 | 50 | 10.5 | 7 | A | 1.000 |
| -100-A32-SN12-08 | ▲ | 100 | 32 | 50 | 10.5 | 8 | A | 1.577 |
| -125-B40-SN12-10 | ▲ | 125 | 40 | 63 | 10.5 | 10 | B | 3.043 |
| -160-C40-SN12-12 | ▲ | 160 | 40 | 63 | 10.5 | 12 | C | 4.344 |
| -200-C60-SN12-14 | ▲ | 200 | 60 | 63 | 10.5 | 14 | C | 6.552 |
| -200-C60-SN12-14 | ▲ | 250 | 60 | 63 | 10.5 | 18 | C | 13.025 |
| -315-D60-SN12-22 | ▲ | 315 | 60 | 80 | 10.5 | 22 | D | 21.935 |
| -400-D60-SN12-28 | ▲ | 400 | 60 | 80 | 10.5 | 28 | D | 41.661 |

▲Stock available △Make-to-order

Indexable milling tools

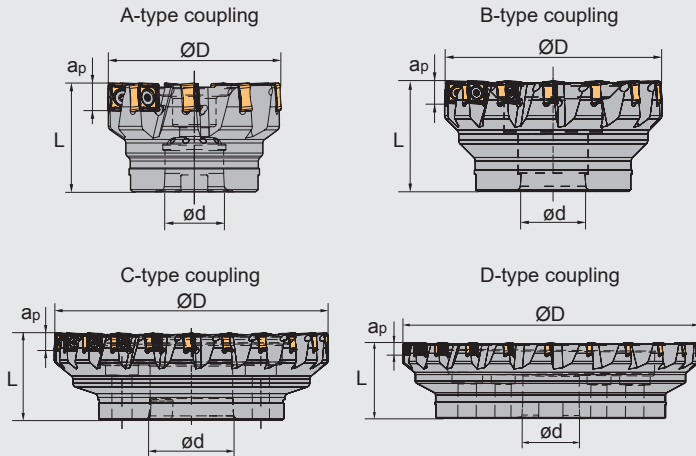
Face milling tools

Face milling tools

Kr:88°



FMP17 P M K S



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|-----------------------------|-------|----------------------|----|----|-------|-------------------|------------------|-------------|
| | | ØD | ød | L | apmax | | | |
| FME17 Close pitch | ▲ | 50 | 22 | 40 | 10.5 | 5 | A | 0.288 |
| | ▲ | 63 | 22 | 40 | 10.5 | 7 | A | 0.466 |
| | ▲ | 80 | 27 | 50 | 10.5 | 9 | A | 1.02 |
| | ▲ | 100 | 32 | 50 | 10.5 | 11 | A | 1.592 |
| | ▲ | 125 | 40 | 63 | 10.5 | 14 | B | 3.033 |
| | ▲ | 160 | 40 | 63 | 10.5 | 18 | C | 4.431 |
| | ▲ | 200 | 60 | 63 | 10.5 | 22 | C | 6.711 |
| | ▲ | 125 | 40 | 63 | 10.5 | 12+2 | B | 2.996 |
| | ▲ | 160 | 40 | 63 | 10.5 | 15+3 | C | 4.667 |
| | ▲ | 200 | 60 | 63 | 10.5 | 20+4 | C | 8.949 |

▲Stock available △Make-to-order

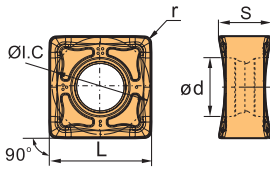
Spare parts

| Diameter ØD | Insert | Insert screw | Wrench | | |
|---|--------|--------------|---------------------------------------|------------------|--------|
| | | IRM4×10 | SNG□□PNN-GH/GL/GM SNMX□□□-GH/GL/GM | IRM4×10 | WT15IP |
| WT15JS | | | | | |
| WT15IT | | | | | |
| Diameter ØD | Insert | Insert screw | Wedge screw | Adjustment block | Wrench |
| | | IRM4×10 | DM6X20A | ADJ-M6X1.0A | WT15IT |
| SNG□□XPNN-GH/GL/GM SNMX□□□-GH/GL/GM SNCU120420-W4 | | | | | |



Indexable milling tools
Face milling tools

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | P | M | K | N | S | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG105 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
|------------------------------------|---|---|---|---|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|
| Steel (P) | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| Stainless steel (M) | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| Cast iron (K) | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| Non-ferrous metal (N) | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| Heat resistant alloy, Ti alloy (S) | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | PVD Coating | | | | Cermet | Cemented carbide | | | | | | | | | | | | | |
|--------------|----------------|----------------------|------|-----|-----|-----|-------|-------------|--------|--------|--------|-------------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|
| | | L | ØI.C | S | ød | r | apmax | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | | YBG105 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 |
| | SNGX1205PNN-GL | 12.7 | 12.7 | 6.5 | 5.9 | 0.8 | 10.5 | | | ● | ● | | | | | | | ★ | | | | | | | | | | | | |
| | SNMX120512-GL | 12.7 | 12.7 | 6.5 | 5.9 | 1.2 | 10.5 | | | ● | ● | | | | | | | ★ | | | | | | | | | | | | |
| | SNGX1205PNN-GM | 12.7 | 12.7 | 6.5 | 5.9 | 0.8 | 10.5 | | | ● | ● | | | | | | | ★ | | | | ● | | | | | | | | |
| | SNMX120512-GM | 12.7 | 12.7 | 6.5 | 5.9 | 1.2 | 10.5 | | | ● | ● | | | | | | | ★ | | | | ● | | | | | | | | |
| | SNGX1205PNN-GH | 12.7 | 12.7 | 6.5 | 5.9 | 0.8 | 10.5 | | | ● | ● | | | | | | | ★ | | | | | | | | | | | | |
| | SNMX120512-GH | 12.7 | 12.7 | 6.5 | 5.9 | 1.2 | 10.5 | | | ● | ● | | | | | | | ★ | | | | | | | | | | | | |
| | SNCU120420-W4 | 12.7 | 12.7 | 4.8 | 5.9 | 2 | 10.5 | | | | | | | ● | | | | | | | | | | | | | | | | |

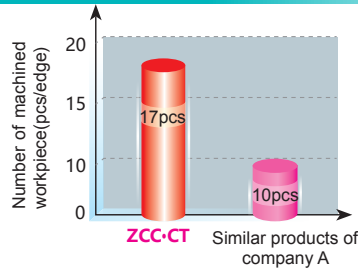
● Inserts are suitable for both left and right cuts ★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Recommended cutting parameters

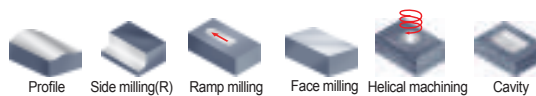
| Workpiece material | Hardness HB | Insert grade | Cutting parameters | | | | |
|---|-------------|------------------|--------------------|---------------|----------------|--------------|--|
| | | | Vc(m/min) | fz(mm/z) | | | |
| | | | | -GL | -GM | -GH | |
| P Low-carbon steel, Soft steel | ≤ 180 | YBM253 YB9320 | 270(220-350) | 0.15(0.1-0.3) | 0.2(0.1-0.4) | 0.3(0.2-0.5) | |
| | 180-280 | YBM253 YB9320 | 260(220-320) | 0.15(0.1-0.3) | 0.2(0.1-0.4) | 0.3(0.2-0.5) | |
| | 280-350 | YBM253 YB9320 | 240(180-300) | 0.15(0.1-0.3) | 0.2(0.1-0.4) | 0.3(0.2-0.5) | |
| M Stainless steel | ≤ 270 | YBM253 YB9320 | 160(110-270) | 0.1(0.08-0.2) | 0.15(0.1-0.3) | 0.2(0.1-0.3) | |
| K Cast iron, Ductile iron, High nickel cast iron | 180-250 | YBD152 | 270(150-300) | 0.2(0.1-0.3) | 0.3(0.1-0.4) | 0.4(0.2-0.5) | |
| S hard-to-cut material | ≤ 400 | YBS303 | 100(60-120) | -- | 0.15(0.1-0.25) | -- | |

Case for FMP17

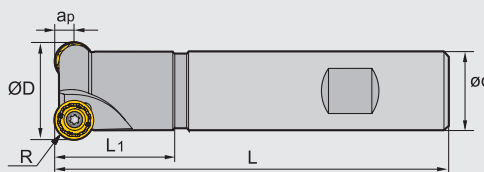
Workpiece: Truck axle housing
 Workpiece material: QT600(HB250)
 Tool type: FMP17-100-A32-SN12-08C
 Insert: SNGX1205PNN-GM/YB9320
 Cutting parameters: Vc=267m/min, fz=0.18mm/z, ap=1.5mm, ae=90mm
 Cooling: External coolant



Face milling tools



FMR01 P M K S



Specification of tools


| Type | Stock | Basic dimensions(mm) | | | | | | Number of teeth Z | Weight (kg) |
|--------------------------------|-------|----------------------|----|-----|----|---|-------|-------------------|-------------|
| | | ØD | ød | L | L1 | R | apmax | | |
| FMR01 -025-XP20-RC10-02 | ▲ | 25 | 20 | 100 | 30 | 5 | 5 | 2 | 0.2 |
| -032-XP25-RC10-02 | ▲ | 32 | 25 | 120 | 35 | 5 | 5 | 2 | 0.5 |
| -040-XP32-RC12-03 | ▲ | 40 | 32 | 120 | 40 | 6 | 6 | 3 | 0.7 |
| -050-XP32-RC12-03 | ▲ | 50 | 32 | 120 | 40 | 6 | 6 | 3 | 0.8 |

▲ Stock available △ Make-to-order

Indexable milling tools

Face milling tools

Spare parts

| Diameter ØD | Insert screw | Wrench |  |
|-------------|--------------|--------|---|
| | | | |
| Ø25 -Ø32 | I60M4×8.4 | WT15S | |
| Ø40 -Ø50 | I60M3.5×10 | | |

Tools code key **B24-B25**

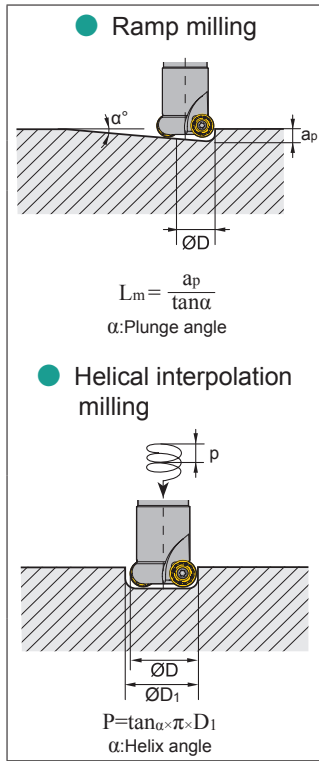
Grade selection guide **B19-B23**

Technical data **B234-B240**

➤ Ramp milling, helical interpolation milling

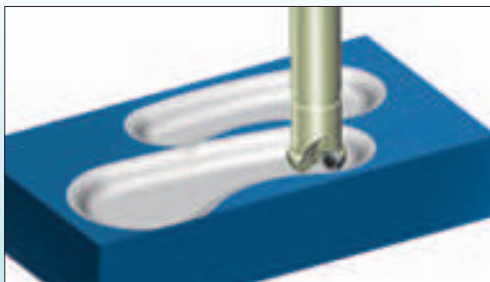
| Insert | Diameter ØD(mm) | Ramp milling | | | Helical interpolation milling | |
|----------|-----------------|--------------------|--------------------|-------------|-------------------------------|---------------|
| | | Max. cutting depth | Max. cutting depth | Min. length | Min. diameter | Max. diameter |
| | | ap(mm) | α° | Lm(mm) | ØD1(mm) | (mm) |
| RCKT10** | 25 | 5 | 14.4 | 19.5 | 40 | 5 |
| | 32 | 5 | 8.4 | 34 | 54 | 5 |
| RCKT12** | 40 | 6 | 10.3 | 33.2 | 68 | 6 |
| | 50 | 6 | 7.1 | 48 | 88 | 6 |

Reduce the feed rate when plunging and circular milling.
Attention-drilling lead to long chips.



Indexable milling tools
Face milling tools

Case for FMR01



Workpiece material: 42CrMo (HRC35)
Cooling system: Dry cutting
Machine: Vertical machining center
Cutting parameters:
Vc=200m/min
ap=3mm
fz=0.2mm/z



Tool type: FMR01-025-XP20-RC10-02

Insert type/grade: RCKT10T3MO-DM/YBG202

● Comparison of insert abrasion

ZCC-CT

Similar overseas products



22minutes later

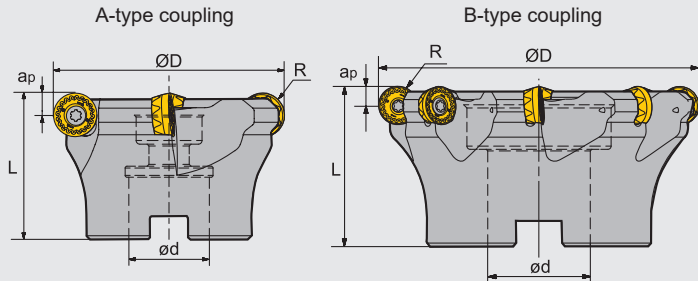


22minutes later

Face milling tools



FMR02 P M K S



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Type of coupling | Weight (kg) | |
|--------------|-------------------------------|----------------------|-----|----|----|-------|-------------------|------------------|-------------|------|
| | | ØD | ød | L | R | apmax | | | | |
| Coarse pitch | FMR02 -050-A22-RC12-03 | △ | 50 | 22 | 40 | 6 | 6 | 3 | A | 0.29 |
| | -063-A22-RC12-04 | ▲ | 63 | 27 | 50 | 6 | 6 | 4 | A | 0.41 |
| | -080-B27-RC12-05 | ▲ | 80 | 27 | 50 | 6 | 6 | 5 | B | 0.81 |
| | -100-B32-RC12-06 | △ | 100 | 32 | 50 | 6 | 6 | 6 | B | 1.25 |
| | -063-A22-RC16-04 | △ | 63 | 22 | 40 | 8 | 8 | 4 | A | 0.35 |
| | -080-B27-RC16-05 | △ | 80 | 27 | 50 | 8 | 8 | 5 | B | 0.74 |
| | -100-B32-RC16-06 | ▲ | 100 | 32 | 50 | 8 | 8 | 6 | B | 1.18 |
| | -125-B40-RC16-07 | △ | 125 | 40 | 63 | 8 | 8 | 7 | B | 2.49 |
| | -080-A27-RC20-04 | △ | 80 | 27 | 50 | 10 | 10 | 4 | A | 0.77 |
| | -100-B32-RC20-05 | △ | 100 | 32 | 50 | 10 | 10 | 5 | B | 1.07 |
| | -125-B40-RC20-06 | △ | 125 | 40 | 63 | 10 | 10 | 6 | B | 2.42 |
| | -160-B40-RC20-06 | △ | 160 | 40 | 63 | 10 | 10 | 6 | B | 4.17 |
| Close pitch | -050-A22-RC12-05 | △ | 50 | 22 | 40 | 6 | 6 | 5 | A | 0.27 |
| | -063-A22-RC12-06 | △ | 63 | 27 | 50 | 6 | 6 | 6 | A | 0.38 |
| | -080-B27-RC12-07 | △ | 80 | 27 | 50 | 6 | 6 | 7 | B | 0.79 |
| | -100-B32-RC12-08 | △ | 100 | 32 | 50 | 6 | 6 | 8 | B | 1.23 |
| | -063-A22-RC16-05 | △ | 63 | 22 | 40 | 8 | 8 | 5 | A | 0.34 |
| | -080-B27-RC16-07 | △ | 80 | 27 | 50 | 8 | 8 | 7 | B | 0.72 |
| | -100-B32-RC16-08 | △ | 100 | 32 | 50 | 8 | 8 | 8 | B | 1.17 |
| | -125-B40-RC16-09 | △ | 125 | 40 | 63 | 8 | 8 | 9 | B | 2.47 |
| | -080-A27-RC20-05 | △ | 80 | 27 | 50 | 10 | 10 | 5 | A | 0.74 |
| | -100-B32-RC20-06 | △ | 100 | 32 | 50 | 10 | 10 | 6 | B | 1.07 |
| | -125-B40-RC20-07 | △ | 125 | 40 | 63 | 10 | 10 | 7 | B | 2.39 |
| | -160-B40-RC20-08 | △ | 160 | 40 | 63 | 10 | 10 | 8 | B | 4.06 |

▲Stock available △Make-to-order

Spare parts

| Diameter ØD | Insert | Insert screw | Wrench | |
|-------------|---------------|--------------|--------|--------|
| | | | | |
| Ø50 -Ø100 | RC□□1204MO-□□ | I60M3.5×10 | WT15IS | -- |
| Ø63 -Ø125 | RC□□1606MO-□□ | I60M5×13 | -- | WT20IT |
| Ø125 -Ø160 | RC□□2006MO-□□ | I43M6×16 | -- | WT25IT |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

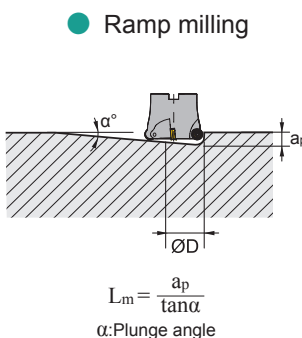
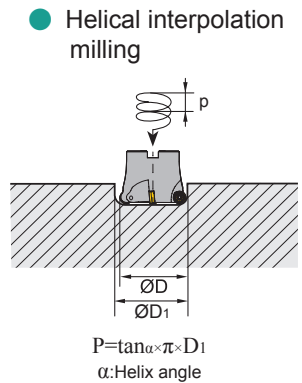
► Recommended cutting parameters

| Workpiece material | Hardness HB | Insert grade | Cutting parameters | | | | | | |
|--|--------------------------------|----------------------------|----------------------------|-----------------------|---------------|---------------|----------------|----------------|----------------|
| | | | V _c (m/min) | f _z (mm/z) | | | | | |
| | | | | -DM | -DR | -ER | -PCBN | -NM | |
| P Low-carbon steel, Soft steel | ≤ HB180 | YBM251 YBC301 | 270 (220-350) | 0.2(0.1-0.5) | 0.3 (0.2-0.8) | | | | |
| | | YBM351 YBG302 | 220 (180-300) | 0.25(0.1-0.5) | 0.3 (0.2-0.8) | | | 0.25 (0.1-0.5) | |
| | | YBG202 YBG205 YB9320 | 270 (200-360) | 0.2(0.1-0.5) | 0.3 (0.2-0.8) | | | 0.2 (0.1-0.5) | |
| | High-carbon steel, Alloy steel | HB180-280 | YBM251 YBC301 | 240 (200-320) | 0.2(0.1-0.5) | 0.3 (0.2-0.8) | | | |
| | | | YBM351 YBG302 | 200 (160-280) | 0.25(0.1-0.5) | 0.3 (0.2-0.8) | | | 0.25 (0.1-0.5) |
| | | | YBG202 YBG205 YB9320 | 240 (180-350) | 0.2(0.1-0.5) | 0.3 (0.2-0.8) | | | 0.2 (0.1-0.5) |
| | Alloy tool steel | HB280-350 | YBM251 YBC301 | 220 (180-300) | 0.2(0.1-0.4) | 0.3 (0.2-0.6) | | | |
| | | | YBM351 YBG302 | 180 (150-250) | 0.2(0.1-0.5) | 0.3 (0.2-0.8) | | | 0.2 (0.1-0.5) |
| | | | YBG202 YBG205 YB9320 | 220 (170-340) | 0.2(0.1-0.4) | 0.3 (0.2-0.6) | | | 0.2 (0.1-0.4) |
| M Stainless steel | ≤ HB270 | YBM251 | 150 (120-240) | 0.2(0.1-0.4) | 0.3 (0.2-0.6) | | | | |
| | | YBM253 | 150 (100-220) | 0.2(0.1-0.4) | 0.3 (0.2-0.6) | 0.3(0.2-0.6) | | 0.2 (0.1-0.4) | |
| | | YBM351 | 150 (100-220) | 0.2(0.1-0.4) | 0.3 (0.2-0.6) | | | | |
| | | YBG202 YBG205 YB9320 | 160 (110-270) | 0.2(0.1-0.4) | 0.3 (0.2-0.6) | | | 0.2 (0.1-0.4) | |
| K Quenching steel, Cast iron | HB180-250 | YBG302 | 210 (120-300) | 0.2(0.1-0.5) | 0.3 (0.2-0.8) | | | 0.2 (0.1-0.5) | |
| | | BK2531 | 150 (100-500) | | | | 0.15 (0.1-0.5) | | |
| | | BK1041 | 800 (500-1200) | | | | 0.2 (0.1-0.5) | | |
| | | YBD152 | 240 (180-300) | 0.2(0.1-0.3) | | | | | |
| | | YBD252 | 220 (180-300) | | 0.2 (0.1-0.3) | | | | |
| S Difficult-to-machine materials | ≤ 400 | YBS203 YBS303 | 100 (60-120) | | | | | 0.15 (0.1-0.3) | |

Indexable milling tools

Face milling tools

➤ Ramp milling, helical interpolation milling

|  <p>● Ramp milling</p> | Insert | Diameter ØD(mm) | Ramp milling | | | Helical interpolation milling | |
|--|----------|--------------------|-----------------------|-----------------------|-------------|-------------------------------|---------------|
| | | | Max. cutting depth | Max. cutting depth | Min. length | Min. diameter | Max. diameter |
| | | | ap(mm) | α° | Lm(mm) | ØD1(mm) | (mm) |
|  <p>● Helical interpolation milling</p> | RCKT12** | 50 | 6 | 7 | 48.9 | 88 | 6 |
| | | 63 | 6 | 5.1 | 67.5 | 114 | 6 |
| | | 80 | 6 | 3.7 | 94.1 | 148 | 6 |
| | | 100 | 6 | 2.7 | 127.2 | 188 | 6 |
| RCKT16** | 63 | 8 | 8 | 56.9 | 110 | 8 | |
| | 80 | 8 | 5.6 | 81.6 | 144 | 8 | |
| | 100 | 8 | 4.1 | 110.8 | 184 | 8 | |
| | 125 | 8 | 3.4 | 136.7 | 234 | 8 | |
| RCKT20** | 80 | 10 | 8 | 71.2 | 140 | 10 | |
| | 100 | 10 | 5.7 | 100.2 | 180 | 10 | |
| | 125 | 10 | 4.2 | 136.2 | 230 | 10 | |
| | 160 | 10 | 3 | 190.8 | 300 | 10 | |

Reduce the feed rate when plunging and circular milling.
Attention-drilling lead to long chips.

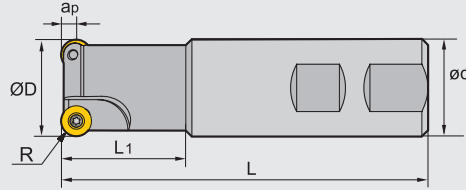
Indexable
milling tools

Face milling tools

Face milling tools



FMR03 P M K S



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | | Number of teeth Z | Weight (kg) |
|--------------------------------|-------|----------------------|----|-----|----|---|-------|-------------------|-------------|
| | | ØD | ød | L | L1 | R | apmax | | |
| FMR03 -016-XP16-RD08-02 | ▲ | 16 | 16 | 100 | 25 | 4 | 4 | 2 | 0.1 |
| -025-XP25-RD08-02 | ▲ | 25 | 25 | 100 | 30 | 4 | 4 | 2 | 0.3 |
| -032-XP32-RD10-02 | ▲ | 32 | 32 | 120 | 40 | 5 | 5 | 2 | 0.7 |
| -040-XP32-RD12-03 | ▲ | 40 | 32 | 120 | 40 | 6 | 6 | 3 | 0.7 |
| -050-XP32-RD12-04 | ▲ | 50 | 32 | 120 | 40 | 6 | 6 | 4 | 0.8 |


▲ Stock available △ Make-to-order

Indexable milling tools

Face milling tools

Spare parts

| Diameter ØD | Insert screw | Wrench |
|-------------|--------------|--------|
| Ø16-Ø25 | I60M3×7 | WT09IP |
| Ø32-Ø50 | I60M4×10 | WT15IP |

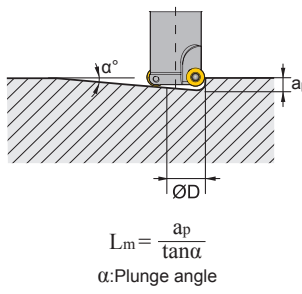
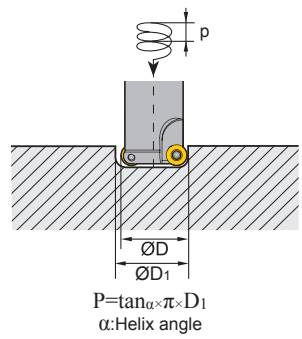


Tools code key **B24-B25**

Grade selection guide **B19-B23**

Technical data **B234-B240**

➤ Ramp milling, helical interpolation milling

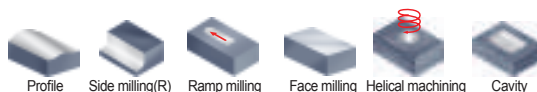
|  <p>● Ramp milling</p> | Insert | Diameter ØD(mm) | Ramp milling | | | Helical interpolation milling | |
|---|---------|--------------------|--------------------|--------------------|-------------|-------------------------------|---------------|
| | | | Max. cutting depth | Max. cutting depth | Min. length | Min. diameter | Max. diameter |
| | | | ap(mm) | α° | Lm(mm) | ØD1(mm) | (mm) |
|  <p>● Helical interpolation milling</p> | RD*08** | 16 | 4 | 12.2 | 18.5 | 24 | 4 |
| | RD*10** | 25 | 4 | 8.8 | 25.8 | 42 | 4 |
| | RD*10** | 32 | 5 | 8.4 | 34 | 54 | 5 |
| | RD*12** | 40 | 6 | 10.3 | 33 | 68 | 6 |
| | RD*12** | 50 | 6 | 7.1 | 48 | 88 | 6 |

Reduce the feed rate when plunging and circular milling.
Attention-drilling lead to long chips.

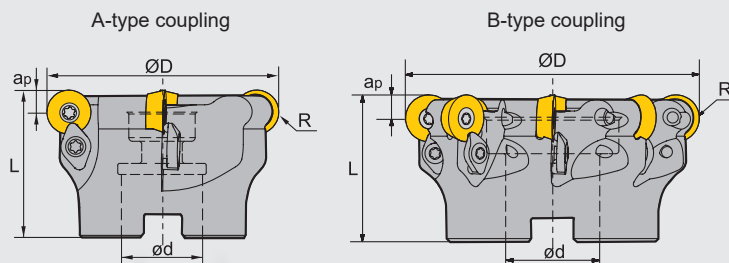
Indexable
milling tools

Face milling tools

Face milling tools



FMR04 P M K



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Type of coupling | Weight (kg) | |
|------------------------------|--------------------|----------------------|-----|----|----|-------|-------------------|------------------|-------------|------|
| | | ØD | ød | L | R | apmax | | | | |
| FMR04 Coarse pitch | ▲ -050-A22-RD12-03 | ▲ | 50 | 22 | 40 | 6 | 6 | 3 | A | 0.25 |
| | ▲ -063-A22-RD12-04 | ▲ | 63 | 22 | 40 | 6 | 6 | 4 | A | 0.37 |
| | ▲ -080-B27-RD12-05 | ▲ | 80 | 27 | 50 | 6 | 6 | 5 | B | 0.77 |
| | △ -063-A22-RD16-04 | △ | 63 | 22 | 40 | 8 | 8 | 4 | A | 0.32 |
| | △ -080-B27-RD16-05 | △ | 80 | 27 | 50 | 8 | 8 | 5 | B | 0.67 |
| | ▲ -100-B32-RD16-06 | ▲ | 100 | 32 | 50 | 8 | 8 | 6 | B | 1.18 |
| | △ -125-B40-RD16-08 | △ | 125 | 40 | 63 | 8 | 8 | 8 | B | 2.55 |
| | ▲ -125-B40-RD20-06 | ▲ | 125 | 40 | 63 | 10 | 10 | 6 | B | 2.33 |
| | ▲ -160-B40-RD20-07 | ▲ | 160 | 40 | 63 | 10 | 10 | 7 | B | 3.83 |
| Close pitch | △ -050-A22-RD12-05 | △ | 50 | 22 | 40 | 6 | 6 | 5 | A | 0.23 |
| | △ -063-A22-RD12-06 | △ | 63 | 22 | 40 | 6 | 6 | 6 | A | 0.48 |
| | △ -080-B27-RD12-07 | △ | 80 | 27 | 50 | 6 | 6 | 7 | B | 0.78 |
| | △ -063-A22-RD16-05 | △ | 63 | 22 | 40 | 8 | 8 | 5 | A | 0.3 |
| | △ -080-B27-RD16-07 | △ | 80 | 27 | 50 | 8 | 8 | 7 | B | 0.66 |
| | △ -100-B32-RD16-08 | △ | 100 | 32 | 50 | 8 | 8 | 8 | B | 1.18 |
| | △ -125-B40-RD16-10 | △ | 125 | 40 | 63 | 8 | 8 | 10 | B | 2.51 |
| | △ -125-B40-RD20-08 | △ | 125 | 40 | 63 | 10 | 10 | 8 | B | 2.45 |
| | △ -160-B40-RD20-10 | △ | 160 | 40 | 63 | 10 | 10 | 10 | B | 3.98 |

▲ Stock available △ Make-to-order

Indexable milling tools
Face milling tools

Spare parts

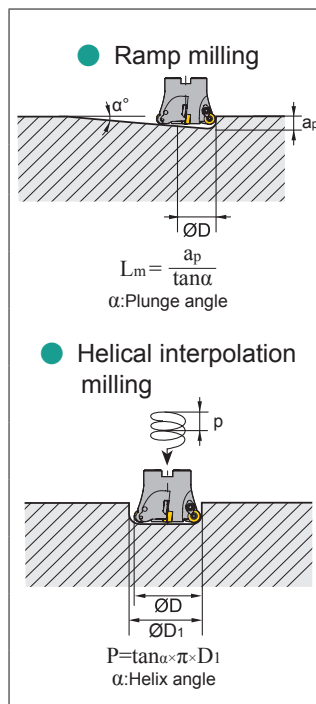
| Diameter ØD | Insert | Insert screw | Clamp | Clamp screw | Wrench | | |
|-------------|------------|--------------|--------|-------------|--------|--------|--|
| | | | | | | | |
| Ø50-Ø80 | RDKW1204MO | I60M3.5×10 | WD-204 | I60M4×10 | WT15IP | -- | |
| Ø63-Ø125 | RDKW1605MO | I60M5×13 | WD-207 | I60M5×13 | -- | WT20IT | |
| Ø125-Ø160 | RDKW2006MO | I43M6×16 | -- | -- | -- | WT25IT | |

Tools code key: B24-B25
 Grade selection guide: B19-B23
 Technical data: B234-B240

➤ Ramp milling, helical interpolation milling

| Insert | Diameter ØD(mm) | Ramp milling | | | Helical interpolation milling | |
|----------|-----------------|--------------------|--------------------|-------------|-------------------------------|---------------|
| | | Max. cutting depth | Max. cutting depth | Min. length | Min. diameter | Max. diameter |
| | | a_p (mm) | α° | L_m (mm) | $\text{Ø}D_1$ (mm) | (mm) |
| RD*12** | 50 | 6 | 7.1 | 48 | 88 | 6 |
| | 63 | 6 | 5.1 | 67 | 114 | 6 |
| | 80 | 6 | 3.6 | 93 | 148 | 6 |
| RD*16** | 63 | 8 | 8 | 56.5 | 110 | 8 |
| | 80 | 8 | 5.6 | 81.5 | 144 | 8 |
| | 100 | 8 | 4.1 | 110.5 | 184 | 8 |
| | 125 | 8 | 3.4 | 136.5 | 234 | 8 |
| RD*120** | 125 | 10 | 4.2 | 136.2 | 230 | 10 |
| | 160 | 10 | 3 | 190.5 | 300 | 10 |

Reduce the feed rate when plunging and circular milling.
Attention-drilling lead to long chips.



Indexable milling tools

Face milling tools

Case for FMR04



Workpiece material: 42CrMo (HRC35)
 Cooling system: Dry cutting
 Machine: Vertical machining center
 Cutting parameters:
 $V_c=200\text{m/min}$
 $a_p=3\text{mm}$
 $f_z=0.3\text{mm/z}$



Tool type: FMR04-063-A22-RD12-04

Insert type/grade: RDKW1204MO/YBG202

● Abrasion comparison after 90 minutes cavity milling

ZCC-CT

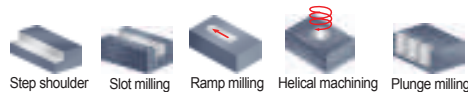


Similar overseas products



Square shoulder milling tools

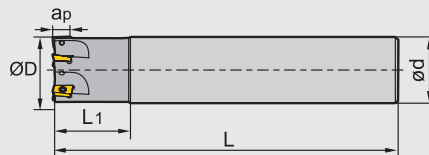
Kr:90°



EMP01 P M K S N



Straight shank



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Weight (kg) |
|-----------------------------|-------|----------------------|----|-----|----------------|--------------------|-------------------|-------------|
| | | ØD | ød | L | L ₁ | a _p max | | |
| EMP01 Straight shank | | | | | | | | |
| -010-G10-AP07-02C(25/85) | △ | 10 | 10 | 85 | 25 | 6.0 | 2 | 0.043 |
| -010-G10-AP07-02C(25/120) | △ | 10 | 10 | 120 | 25 | 6.0 | 2 | 0.063 |
| -012-G12-AP07-02C(25/85) | △ | 12 | 12 | 85 | 25 | 6.0 | 2 | 0.061 |
| -012-G12-AP07-02C(25/120) | △ | 12 | 12 | 120 | 25 | 6.0 | 2 | 0.089 |
| -014-G16-AP07-03C(25/85) | △ | 14 | 16 | 85 | 25 | 6.0 | 3 | 0.104 |
| -014-G16-AP07-03C(25/120) | △ | 14 | 16 | 120 | 25 | 6.0 | 3 | 0.153 |
| -016-G16-AP07-03C(25/85) | △ | 16 | 16 | 85 | 25 | 6.0 | 3 | 0.112 |
| -016-G16-AP07-03C(25/120) | △ | 16 | 16 | 120 | 25 | 6.0 | 3 | 0.162 |
| -012-G16-AP11-01 | ▲ | 12 | 16 | 85 | 25 | 10.5 | 1 | 0.1 |
| -016-G16-AP11-02 | ▲ | 16 | 16 | 90 | 25 | 10.5 | 2 | 0.1 |
| -016-G16-AP11-02C(25/85) | △ | 16 | 16 | 85 | 25 | 10.5 | 2 | 0.108 |
| -016-G16-AP11-02C(25/120) | △ | 16 | 16 | 120 | 25 | 10.5 | 2 | 0.16 |
| -016-G16-AP11-02C(25/180) | △ | 16 | 16 | 180 | 25 | 10.5 | 2 | 0.248 |
| -020-G16-AP11-03C(25/85) | △ | 20 | 16 | 85 | 25 | 10.5 | 3 | 0.121 |
| -020-G20-AP11-02 | ▲ | 20 | 20 | 100 | 30 | 10.5 | 2 | 0.2 |
| -020-G20-AP11-02C(30/100) | △ | 20 | 20 | 100 | 30 | 10.5 | 2 | 0.18 |
| -020-G20-AP11-02C(30/150) | △ | 20 | 20 | 150 | 30 | 10.5 | 2 | 0.312 |
| -020-G20-AP11-02C(30/200) | △ | 20 | 20 | 200 | 30 | 10.5 | 2 | 0.401 |
| -020-G20-AP11-03C(30/100) | △ | 20 | 20 | 100 | 30 | 10.5 | 3 | 0.2 |
| -020-G20-AP11-03C(30/150) | △ | 20 | 20 | 150 | 30 | 10.5 | 3 | 0.357 |
| -020-G20-AP11-03C(30/200) | △ | 20 | 20 | 200 | 30 | 10.5 | 3 | 0.424 |
| -025-G25-AP11-03 | ▲ | 25 | 25 | 115 | 35 | 10.5 | 3 | 0.4 |
| -025-G25-AP11-03C(35/115) | △ | 25 | 25 | 115 | 35 | 10.5 | 3 | 0.357 |
| -025-G25-AP11-03C(35/170) | △ | 25 | 25 | 170 | 35 | 10.5 | 3 | 0.577 |
| -025-G25-AP11-03C(35/220) | △ | 25 | 25 | 220 | 35 | 10.5 | 3 | 0.758 |
| -025-G25-AP11-04C(35/115) | △ | 25 | 25 | 115 | 35 | 10.5 | 4 | 0.376 |
| -025-G25-AP11-04C(35/170) | △ | 25 | 25 | 170 | 35 | 10.5 | 4 | 0.575 |
| -025-G25-AP11-04C(35/220) | △ | 25 | 25 | 220 | 35 | 10.5 | 4 | 0.686 |

▲ Stock available △ Make-to-order

EMP01-010-G10-AP07-02C(25/85)

Effective cutting depth/Overall length

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Weight (kg) |
|-----------------------------|-------|----------------------|----|-----|----------------|-------|-------------------|-------------|
| | | ØD | ød | L | L ₁ | apmax | | |
| EMP01 Straight shank | △ | 30 | 25 | 115 | 35 | 10.5 | 4 | 0.411 |
| -030-G25-AP11-04C(35/170) | △ | 30 | 25 | 170 | 35 | 10.5 | 4 | 0.61 |
| -030-G25-AP11-04C(35/220) | △ | 30 | 25 | 220 | 35 | 10.5 | 4 | 0.791 |
| -032-G32-AP11-04 | ▲ | 32 | 32 | 125 | 40 | 10.5 | 4 | 0.7 |
| -032-G32-AP11-04C(45/125) | △ | 32 | 32 | 125 | 45 | 10.5 | 4 | 0.673 |
| -032-G32-AP11-04C(45/190) | △ | 32 | 32 | 190 | 45 | 10.5 | 4 | 1.057 |
| -032-G32-AP11-04C(45/260) | △ | 32 | 32 | 260 | 45 | 10.5 | 4 | 1.47 |
| -032-G32-AP11-05C(45/125) | △ | 32 | 32 | 125 | 45 | 10.5 | 5 | 0.71 |
| -032-G32-AP11-05C(45/190) | △ | 32 | 32 | 190 | 45 | 10.5 | 5 | 1.054 |
| -032-G32-AP11-05C(45/260) | △ | 32 | 32 | 260 | 45 | 10.5 | 5 | 1.53 |
| -025-G25-AP16-02 | ▲ | 25 | 25 | 115 | 35 | 15.5 | 2 | 0.4 |
| -025-G25-AP16-02C(35/115) | △ | 25 | 25 | 115 | 35 | 15.5 | 2 | 0.374 |
| -025-G25-AP16-02C(35/170) | △ | 25 | 25 | 170 | 35 | 15.5 | 2 | 0.496 |
| -025-G25-AP16-02C(35/220) | △ | 25 | 25 | 220 | 35 | 15.5 | 2 | 0.658 |
| -030-G25-AP16-02C(35/115) | △ | 30 | 25 | 115 | 35 | 15.5 | 2 | 0.521 |
| -030-G25-AP16-02C(35/170) | △ | 30 | 25 | 170 | 35 | 15.5 | 2 | 0.632 |
| -030-G25-AP16-02C(35/220) | △ | 30 | 25 | 220 | 35 | 15.5 | 2 | 0.78 |
| -032-G32-AP16-03 | ▲ | 32 | 32 | 125 | 40 | 15.5 | 3 | 0.7 |
| -032-G32-AP16-03C(45/125) | △ | 32 | 32 | 125 | 45 | 15.5 | 3 | 0.607 |
| -032-G32-AP16-03C(45/190) | △ | 32 | 32 | 190 | 45 | 15.5 | 3 | 0.976 |
| -032-G32-AP16-03C(45/260) | △ | 32 | 32 | 260 | 45 | 15.5 | 3 | 1.374 |
| -040-G32-AP16-04 | ▲ | 40 | 32 | 130 | 42 | 15.5 | 4 | 0.8 |
| -040-G32-AP16-04C(45/125) | △ | 40 | 32 | 125 | 45 | 15.5 | 4 | 0.716 |
| -040-G32-AP16-04C(45/190) | △ | 40 | 32 | 190 | 45 | 15.5 | 4 | 1.085 |
| -040-G32-AP16-04C(45/260) | △ | 40 | 32 | 260 | 45 | 15.5 | 4 | 1.483 |
| -050-G32-AP16-05 | ▲ | 50 | 32 | 135 | 45 | 15.5 | 5 | 1.0 |
| -050-G32-AP16-05C(45/125) | △ | 50 | 32 | 125 | 45 | 15.5 | 5 | 0.825 |
| -050-G32-AP16-05C(45/190) | △ | 50 | 32 | 190 | 45 | 15.5 | 5 | 1.195 |
| -050-G32-AP16-05C(45/260) | △ | 50 | 32 | 260 | 45 | 15.5 | 5 | 1.592 |
| -063-G32-AP16-06 | ▲ | 63 | 32 | 135 | 45 | 15.5 | 6 | 1.4 |

▲ Stock available △ Make-to-order

EMP01-010-G10-AP07-02C(25/85)

Effective cutting depth/Overall length

Spare parts

| Diameter ØD | Inserts | Screw | | | Wrench | |
|-------------|---------|--------------|--------|--------|--------|--|
| | | | | | | |
| Ø10-Ø16 | AP07 | I60M1.8×4 | WT05IP | -- | | |
| Ø12-Ø32 | AP11 | I60M2.5×6.5T | WT08IP | -- | | |
| Ø25-Ø63 | AP16 | I60M4×8.4 | -- | WT15IS | | |

Tools code key **B24-B25**

Grade selection guide **B19-B23**

Technical data **B234-B240**

Indexable milling tools

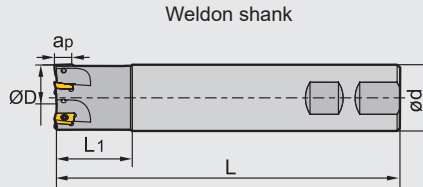
Square shoulder milling tools

Square shoulder milling tools

Kr:90°



EMP01 P M K S N



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Weight (kg) |
|------------------------------|-------|----------------------|----|-----|----------------|-------------------|-------------------|-------------|
| | | ØD | ød | L | L ₁ | a _{pmax} | | |
| EMP01 Weldon shank | ▲ | 12 | 16 | 85 | 25 | 10.5 | 1 | 0.1 |
| | ▲ | 16 | 16 | 90 | 25 | 10.5 | 2 | 0.1 |
| | ▲ | 20 | 20 | 100 | 30 | 10.5 | 2 | 0.2 |
| | ▲ | 25 | 25 | 115 | 35 | 10.5 | 3 | 0.4 |
| | ▲ | 32 | 32 | 125 | 40 | 10.5 | 4 | 0.7 |
| | ▲ | 25 | 25 | 115 | 35 | 15.5 | 2 | 0.4 |
| | ▲ | 32 | 32 | 125 | 40 | 15.5 | 3 | 0.7 |
| | ▲ | 40 | 32 | 130 | 42 | 15.5 | 4 | 0.8 |
| | ▲ | 50 | 32 | 135 | 45 | 15.5 | 5 | 1.0 |
| | ▲ | 63 | 32 | 135 | 45 | 15.5 | 6 | 1.4 |

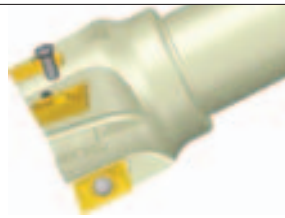
▲ Stock available △ Make-to-order

Indexable milling tools

Square shoulder milling tools

Spare parts

| Diameter ØD | Inserts | Screw | Wrench | |
|-------------|---------|--------------|--------|--------|
| | | | | |
| Ø12-Ø32 | AP11 | I60M2.5×6.5T | WT08IP | -- |
| Ø25-Ø63 | AP16 | I60M4×8.4 | -- | WT15IS |

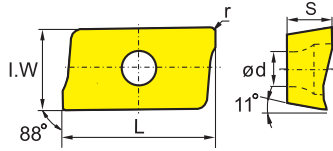


Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Selection of inserts



😊 Good working condition 🙄 Normal working condition 😞 Bad working condition

| Workpiece material | P | M | K | N | S | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
|---|---|---|---|---|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | | | |
|----------------|----------------|----------------------|------|------|-----|-----|---|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|---------|-------|-------|-------|
| | | L | I.W | S | ød | r | | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 |
| | APKT070204-APF | 7.32 | 4.34 | 2.38 | 2 | 0.4 | ● | ● | | | | | | | | | ★ | | | | | | | | | | | | |
| | APKT11T304-APF | 12.24 | 6.6 | 3.6 | 2.8 | 0.4 | ● | ● | | | | | | | | | ★ | | | | | | | | | | | | |
| | APKT11T308-APF | 12.24 | 6.6 | 3.6 | 2.8 | 0.8 | ● | ● | | | | | | | | | ★ | | | | | ● | ● | | | | | | |
| | APKT160408-APF | 17.877 | 9.33 | 5.76 | 4.4 | 0.8 | ● | | | | | | | | | | ★ | | | | | ● | ● | | | | | | |
| | APKT070204-APM | 7.32 | 4.34 | 2.38 | 2 | 0.4 | | | ● | ● | | | | | | | ★ | | | | | | | | | | | | |
| | APKT11T304-APM | 12.24 | 6.6 | 3.6 | 2.8 | 0.4 | | | ● | | | | | | | | ★ | | | | | | | | | | | | |
| | APKT11T308-APM | 12.24 | 6.6 | 3.6 | 2.8 | 0.8 | | | | ● | ● | | | | | | ★ | | | | | ● | ● | | | | | | |
| | APKT11T312-APM | 12.24 | 6.6 | 3.6 | 2.8 | 1.2 | | | | | | ● | | | | | ★ | | | | | | | | | | | | |
| | APKT11T316-APM | 12.24 | 6.6 | 3.6 | 2.8 | 1.6 | | | | | | | | | | | ★ | | | | | | | | | | | | |
| | APKT11T320-APM | 12.24 | 6.6 | 3.6 | 2.8 | 2.0 | | | | ● | | | | | | | ★ | | | | | | | | | | | | |
| | APKT160408-APM | 17.877 | 9.33 | 5.76 | 4.4 | 0.8 | | | | ● | ● | | | | | | ★ | | | | | ● | ● | | | | | | |
| | APKT160416-APM | 17.877 | 9.33 | 5.76 | 4.4 | 1.6 | | | | ● | ● | | | | | | ★ | | | | | ● | | | | | | | |
| | APKT160420-APM | 17.877 | 9.33 | 5.76 | 4.4 | 2.0 | | | | | | ● | | | | | ★ | | | | | | | | | | | | |
| | APKT160424-APM | 17.877 | 9.33 | 5.76 | 4.4 | 2.4 | | | | | | | | | | | ★ | | | | | | | | | | | | |
| APKT160430-APM | 17.877 | 9.33 | 5.76 | 4.4 | 3.0 | | | | | | | | | | | ★ | | | | | | | | | | | | | |
| | APKT11T304-ALH | 12.24 | 6.6 | 3.6 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | ★ | ★ | | |
| | APKT11T308-ALH | 12.24 | 6.6 | 3.6 | 2.8 | 0.8 | | | | | | | | | | | | | | | | | | | | | ★ | ○ | |
| | APKT160408-ALH | 17.877 | 9.33 | 5.76 | 4.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | ★ | ★ | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

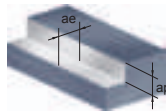
Indexable milling tools

Square shoulder milling tools

Chipbreaker selection

| Classification | Application | For finishing | For semi-finishing |
|----------------|-------------|---------------|--------------------|
| P | | -APF | -APM |
| M | | -APF | -APM |
| S | | -APF | -APM |
| K | | -APF | -APM |
| N | | -ALH | |

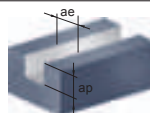
1 Square shoulder milling



Recommended cutting parameters (D: Diameter)

| Workpiece material | Hardness HB | Insert grade | Cutting parameters | | | |
|--|-------------|--------------|--------------------|----------------|---------------|--------|
| | | | Vc(m/min) | fz(mm/z) | | ae(mm) |
| | | | | -APF | -APM | |
| P Low-carbon steel, Soft steel High-carbon steel, Alloy steel Alloy tool steel | ≤ 180 | YBC302 | 320 (240-400) | 0.1 (0.08-0.2) | -- | ≤ 0.5D |
| | | YB9320 | 320 (200-400) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | |
| | | YBM253 | 300 (320-350) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | |
| | 180-280 | YBC302 | 280 (210-380) | 0.1 (0.08-0.2) | -- | ≤ 0.5D |
| | | YB9320 | 280 (180-350) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | |
| | | YBM253 | 260 (150-380) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | |
| | 280-350 | YBC302 | 260 (180-350) | 0.1 (0.08-0.2) | -- | ≤ 0.5D |
| | | YB9320 | 260 (160-330) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | |
| | | YBM253 | 220 (150-280) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | |
| M Stainless steel | ≤ 270 | YB9320 | 200 (110-300) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | ≤ 0.5D |
| | | YBM253 | 180 (150-300) | | | |
| K Cast iron | 180-250 | YB9320 | 180 (150-250) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | ≤ 0.5D |
| | | YBD152 | 200 (150-250) | -- | 0.2 (0.1-0.3) | |
| S Difficult-to-machine materials | ≤ 400 | YBS203 | 100 (60-120) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | ≤ 0.5D |
| | | YBS303 | 100 (60-120) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | ≤ 0.5D |
| N Aluminium alloy | -- | -ALH | | | | |
| | | YD101 | 300- | 0.2 (0.08-0.4) | | ≤ 0.5D |
| | | YD201 | 300- | 0.2 (0.08-0.4) | | ≤ 0.5D |

2 Slot milling

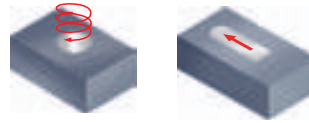


Recommended cutting parameters (D: Diameter)

| Workpiece material | Hardness HB | Insert grade | Cutting parameters | | | |
|--|-------------|--------------|--------------------|-----------------|-----------------|--------|
| | | | Vc(m/min) | fz(mm/z) | | ae(mm) |
| | | | | -APF | -APM | |
| P Low-carbon steel, Soft steel High-carbon steel, Alloy steel Alloy tool steel | ≤ 180 | YBC302 | 190 (170-250) | 0.1 (0.08-0.15) | -- | D |
| | | YB9320 | 190 (140-250) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) | |
| | | YBM253 | 150 (130-210) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) | |
| | 180-280 | YBC302 | 170 (150-220) | 0.1 (0.08-0.15) | -- | D |
| | | YB9320 | 170 (130-250) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) | |
| | | YBM253 | 140 (110-200) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) | |
| | 280-350 | YBC302 | 150 (130-210) | 0.1 (0.08-0.15) | -- | D |
| | | YB9320 | 150 (110-240) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) | |
| | | YBM253 | 130 (110-180) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) | |
| M Stainless steel | ≤ 270 | YB9320 | 120 (80-190) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) | D |
| | | YBM253 | 100 (80-170) | | | |
| K Cast iron | 180-250 | YB9320 | 120 (80-180) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) | D |
| | | YBD152 | 120 (80-210) | -- | 0.15 (0.1-0.25) | |
| S Difficult-to-machine materials | ≤ 400 | YBS203 | 60 (45-110) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) | D |
| | | YBS303 | 60 (45-110) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) | D |
| N Aluminium alloy | -- | -ALH | | | | |
| | | YD101 | 300- | 0.2 (0.08-0.3) | | D |
| | | YD201 | 300- | 0.2 (0.08-0.3) | | D |

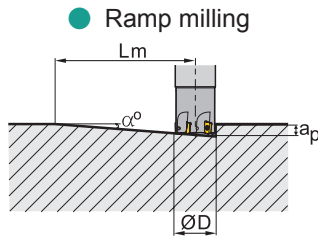
Indexable milling tools
Square shoulder milling tools

3 Ramp milling, helical interpolation milling

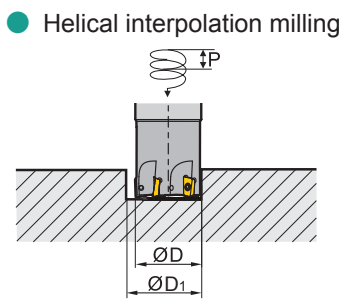


Recommended cutting parameters (D: Diameter)

| Diameter ØD(mm) | APKT Ramp milling, helical interpolation milling (Inserts-7) | | | | |
|-----------------|---|--------------------------------------|------------------------------|--|-----------------------|
| | Ramp milling | | | Helical interpolation milling | |
| | Maximum cutting depth a_p (mm) | Maximum ramp angle α° | Minimum length L_m (mm) | Minimum diameter $\text{Ø}D_1$ (mm) | Maximum pitch (mm) |
| 10 | 6 | 6 | 57 | 12 | 2.0 |
| 12 | 6 | 4 | 85 | 15 | 2.0 |
| 14 | 6 | 3 | 114 | 18 | 2.0 |
| 16 | 6 | 2.5 | 137 | 21 | 2.0 |
| Diameter ØD(mm) | APKT Ramp milling, helical interpolation milling (Inserts-11) | | | | |
| | Ramp milling | | | Helical interpolation milling | |
| | Maximum cutting depth a_p (mm) | Maximum ramp angle α° | Minimum length L_m (mm) | Minimum diameter $\text{Ø}D_1$ (mm) | Maximum pitch (mm) |
| 16 | 10.0 | 10.0 | 56.7 | 20.0 | 2.0 |
| 20 | 10.0 | 5.0 | 114.4 | 28.0 | 2.0 |
| 25 | 10.0 | 4.5 | 127.0 | 40.0 | 2.0 |
| 30 | 10.0 | 3.5 | 153.0 | 48.0 | 2.0 |
| 32 | 10.0 | 3.0 | 190.8 | 56.0 | 2.0 |
| 40 | 10.0 | 2.0 | 286.4 | 70.0 | 2.0 |
| Diameter ØD(mm) | APKT Ramp milling, helical interpolation milling (Inserts-16) | | | | |
| | Ramp milling | | | Helical interpolation milling | |
| | Maximum cutting depth a_p (mm) | Maximum ramp angle α° | Minimum length L_m (mm) | Minimum diameter $\text{Ø}D_1$ (mm) | Maximum pitch (mm) |
| 25 | 15 | 6 | 142 | 32 | 2.0 |
| 30 | 15 | 5 | 171 | 40 | 2.0 |
| 32 | 15 | 4.5 | 214 | 45 | 2.0 |
| 40 | 15 | 2.5 | 343 | 60 | 2.0 |
| 50 | 15 | 1.5 | 572 | 80 | 2.0 |
| 63 | 15 | 1 | 859 | 105 | 2.0 |



$$L_m = \frac{a_p}{\tan \alpha} \quad (\alpha: \text{Maximum ramp angle})$$



$$\tan \alpha = \frac{P}{\pi D_1} \quad (\alpha: \text{Helical angle})$$

Note: For cutting speed and feed rate per tooth, see square shoulder milling.

Case for EMP01



Machine: Vertical machining center
 Diameter: Ø40mm
 Operation: Interpolation milling
 Insert: APKT160408-APM/YB9320
 Workpiece material: P20(HRC 33-36)
 Cutting data:
 $V_c=150\text{m/min}$
 $f=0.2\text{mm/z}$

Insert specification/grade: APKT160408-APM/YB9320

Tools specification: EMP01-040-XP32-AP16-04

Comprehensively improve mould cavity machining efficiency



Optimized structure in combination with brand-new "golden drill" coating technique, ZCC-CT products with APM chipbreaker is more suitable for mould cavity machining, greatly improve machining efficiency when compare with competitors similar products.

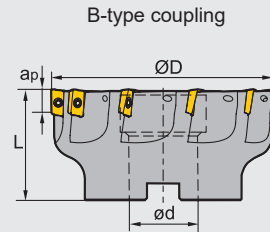
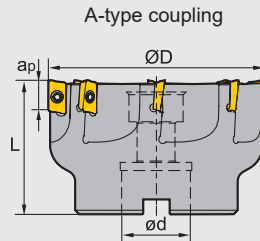
Indexable milling tools

Square shoulder milling tools

Square shoulder milling tools **Kr:90°**



EMP02 **P** **M** **K** **S** **N**



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|-------------------------------|-------|----------------------|----|----|-------|-------------------|------------------|-------------|
| | | ØD | ød | L | apmax | | | |
| EMP02 -050-A22-AP11-06 | ▲ | 50 | 22 | 40 | 10.5 | 6 | A | 0.3 |
| -063-A22-AP11-08 | ▲ | 63 | 22 | 40 | 10.5 | 8 | A | 0.6 |
| -080-A27-AP11-08 | ▲ | 80 | 27 | 50 | 10.5 | 8 | A | 1.2 |
| -100-B32-AP11-10 | ▲ | 100 | 32 | 50 | 10.5 | 10 | B | 1.7 |
| -050-A22-AP16-05 | ▲ | 50 | 22 | 40 | 15.5 | 5 | A | 0.3 |
| -063-A22-AP16-06 | ▲ | 63 | 22 | 40 | 15.5 | 6 | A | 0.5 |
| -080-A27-AP16-07 | ▲ | 80 | 27 | 50 | 15.5 | 7 | A | 1.1 |
| -100-B32-AP16-08 | ▲ | 100 | 32 | 50 | 15.5 | 8 | B | 1.6 |
| -125-B40-AP16-10 | ▲ | 125 | 40 | 63 | 15.5 | 10 | B | 3.2 |
| -160-B40-AP16-10 | ▲ | 160 | 40 | 63 | 15.5 | 10 | B | 6.3 |

▲ Stock available △ Make-to-order

Spare parts

| Diameter ØD | Inserts | Screw | Wrench |
|-------------|---------|--------------|--------|
| | | | |
| Ø50-Ø100 | AP11 | I60M2.5×6.5T | WT08IS |
| Ø50-Ø160 | AP16 | I60M4×10 | WT15IS |

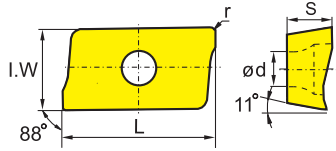


Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|--------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| Steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| Stainless steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| Cast iron | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| Non-ferrous metal | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | | | | | | | | | | | | | | |
|----------------|----------------|----------------------|------|------|-----|-----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|---------|-------|-------|-------|-------|--|--|--|--|---|---|--|--|--|--|
| | | L | I.W | S | ød | r | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | | | | | | | | | | |
| | APKT11T304-APF | 12.24 | 6.6 | 3.6 | 2.8 | 0.4 | ● | ● | | | | | | | | | ★ | | | | | | | | | | | | | | | | | | | | | | |
| | APKT11T308-APF | 12.24 | 6.6 | 3.6 | 2.8 | 0.8 | ● | ● | | | | | | | | | ★ | | | | ● | ● | | | | | | | | | | | | | | | | | |
| | APKT160408-APF | 17.877 | 9.33 | 5.76 | 4.4 | 0.8 | ● | ● | | | | | | | | | ★ | | | | ● | ● | | | | | | | | | | | | | | | | | |
| | APKT11T304-APM | 12.24 | 6.6 | 3.6 | 2.8 | 0.4 | | | ● | | | | | | | | ★ | | | | | | | | | | | | | | | | | | | | | | |
| | APKT11T308-APM | 12.24 | 6.6 | 3.6 | 2.8 | 0.8 | | | ● | ● | | | | | | | ★ | | | | ● | ● | | | | | | | | | | | | | | | | | |
| | APKT11T312-APM | 12.24 | 6.6 | 3.6 | 2.8 | 1.2 | | | | | ● | | | | | | ★ | | | | | | | | | | | | | | | | | | | | | | |
| | APKT11T316-APM | 12.24 | 6.6 | 3.6 | 2.8 | 1.6 | | | | | | | | | | | ★ | | | | | | | | | | | | | | | | | | | | | | |
| | APKT11T320-APM | 12.24 | 6.6 | 3.6 | 2.8 | 2.0 | | | ● | | | | | | | | ★ | | | | | | | | | | | | | | | | | | | | | | |
| | APKT160408-APM | 17.877 | 9.33 | 5.76 | 4.4 | 0.8 | | | ● | ● | | | | | | | ★ | | | | ● | ● | | | | | | | | | | | | | | | | | |
| | APKT160416-APM | 17.877 | 9.33 | 5.76 | 4.4 | 1.6 | | | ● | ● | | | | | | | ★ | | | | ● | | | | | | | | | | | | | | | | | | |
| | APKT160420-APM | 17.877 | 9.33 | 5.76 | 4.4 | 2.0 | | | | | ● | | | | | | ★ | | | | | | | | | | | | | | | | | | | | | | |
| | APKT160424-APM | 17.877 | 9.33 | 5.76 | 4.4 | 2.4 | | | | | | | | | | | ★ | | | | | | | | | | | | | | | | | | | | | | |
| APKT160430-APM | 17.877 | 9.33 | 5.76 | 4.4 | 3.0 | | | | | | ● | | | | | ★ | | | | | | | | | | | | | | | | | | | | | | | |
| | APKT11T304-ALH | 12.24 | 6.6 | 3.6 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | ★ | | | | |
| | APKT11T308-ALH | 12.24 | 6.6 | 3.6 | 2.8 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | ○ | | | | |
| | APKT160408-ALH | 17.877 | 9.33 | 5.76 | 4.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | ★ | ★ | | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

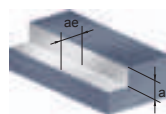
Indexable milling tools

Square shoulder milling tools

▶▶ Chipbreaker selection

| Classification | Function | For finishing | For semi-finishing |
|----------------|----------|---------------|--------------------|
| P | | -APF | -APM |
| M | | -APF | -APM |
| S | | -APF | -APM |
| K | | -APF | -APM |
| N | | -ALH | |

1 Square shoulder milling



▶▶ Recommended cutting parameters (D: Diameter)

| Workpiece material | Hardness HB | Insert grade | Cutting parameters | | | |
|-----------------------------|---|---------------|--------------------|----------------|----------------|--------|
| | | | Vc(m/min) | fz(mm/z) | | ae(mm) |
| | | | | -APF | -APM | |
| P | Low-carbon steel, Soft steel ≤ 180 | YBC302 | 320 (240-400) | 0.1 (0.08-0.2) | -- | ≤ 0.5D |
| | | YB9320 | 320 (200-400) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | |
| | | YBM253 | 300 (320-350) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | |
| | High-carbon steel, Alloy steel 180-280 | YBC302 | 280 (210-380) | 0.1 (0.08-0.2) | -- | ≤ 0.5D |
| | | YB9320 | 280 (180-350) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | |
| | | YBM253 | 260 (150-380) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | |
| Alloy tool steel 280-350 | YBC302 | 260 (180-350) | 0.1 (0.08-0.2) | -- | ≤ 0.5D | |
| | YB9320 | 260 (160-330) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | | |
| | YBM253 | 220 (150-280) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | | |
| M | Stainless steel ≤ 270 | YB9320 | 200 (110-300) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | ≤ 0.5D |
| | | YBM253 | 180 (150-300) | | | |
| K | Cast iron 180-250 | YB9320 | 180 (150-250) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | ≤ 0.5D |
| | | YBD152 | 200 (150-250) | -- | 0.2 (0.1-0.3) | |
| S | Difficult-to-machine materials ≤ 400 | YBS203 | 100 (60-120) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | ≤ 0.5D |
| | | YBS303 | 100 (60-120) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | ≤ 0.5D |
| N | | | | -ALH | | |
| | Aluminium alloy | -- | YD101 | 300- | 0.2 (0.08-0.4) | ≤ 0.5D |
| | | -- | YD201 | 300- | 0.2 (0.08-0.4) | ≤ 0.5D |

Indexable milling tools

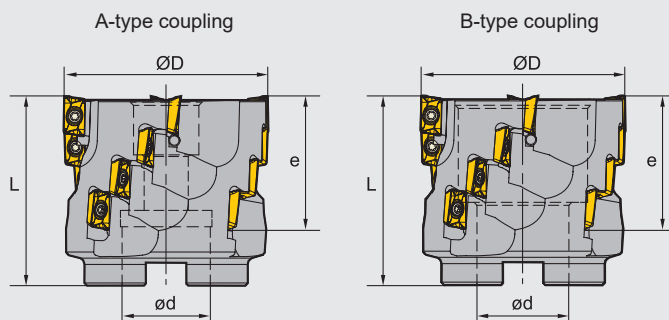
Square shoulder milling tools

Square shoulder milling tools

Kr:90°



EMP03 P M K S N



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | Number of teeth z | Number of inserts | Type of coupling | Weight (kg) |
|------------------------|-------|----------------------|----|----|----|----------------------|-------------------|------------------|-------------|
| | | ØD | ød | L | e | | | | |
| EMP03 -050-A22-AP11-04 | ▲ | 50 | 22 | 58 | 39 | 4 | 16 | A | 0.5 |
| -063-A27-AP11-04 | ▲ | 63 | 27 | 58 | 39 | 4 | 16 | A | 0.9 |
| -080-B32-AP11-05 | ▲ | 80 | 32 | 63 | 39 | 5 | 20 | B | 1.3 |
| -100-B40-AP11-06 | ▲ | 100 | 40 | 63 | 39 | 6 | 24 | B | 2.0 |

▲Stock available △Make-to-order

Indexable milling tools

Square shoulder milling tools

Spare parts

| Diameter ØD | Screw | Wrench |
|----------------|----------|------------------|
| | Ø50-Ø100 | I60M2.5×6.5T |
| | | |



Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Square shoulder milling tools

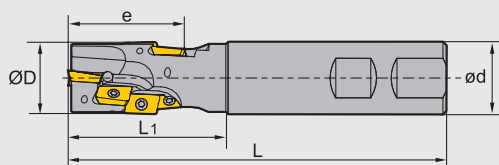
Kr:90°



EMP04 P M K S N



Weldon shank



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth z | Number of inserts | Weight (kg) |
|--------------------------------|-------|----------------------|----|-----|----|------|-------------------|-------------------|-------------|
| | | ØD | ød | L | L1 | e | | | |
| EMP04 -020-XP20-AP11-01 | ▲ | 20 | 20 | 120 | 45 | 29.4 | 1 | 3 | 0.3 |
| -025-XP25-AP11-02 | ▲ | 25 | 25 | 130 | 55 | 38.9 | 2 | 8 | 0.4 |
| -032-XP32-AP11-02 | ▲ | 32 | 32 | 140 | 65 | 48.5 | 2 | 10 | 0.7 |
| -040-XP40-AP11-02 | ▲ | 40 | 40 | 150 | 75 | 58.0 | 2 | 14 | 1.3 |

▲ Stock available △ Make-to-order

Spare parts

| Diameter ØD | Screw | Wrench |
|-------------|--------------|--------|
| Ø20-Ø40 | I60M2.5×6.5T | WT08IS |

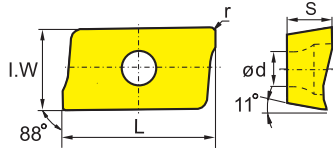


Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | P | M | K | N | S | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
|---|---|---|---|---|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|---|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cemet | Cemented carbide | | | | | | | | | |
|--------------|----------------|----------------------|-----|-----|-----|-----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|-------|------------------|--------|--------|--------|--------|---------|-------|-------|-------|-------|
| | | L | I.W | S | ød | r | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
| | APKT11T304-APF | 12.24 | 6.6 | 3.6 | 2.8 | 0.4 | ● | ● | | | | | | | | | ★ | | | | | | | | | | | | |
| | APKT11T308-APF | 12.24 | 6.6 | 3.6 | 2.8 | 0.8 | ● | ● | | | | | | | | | | ★ | | | ● | ● | | | | | | | |
| | APKT11T304-APM | 12.24 | 6.6 | 3.6 | 2.8 | 0.4 | | | ● | | | | | | | | ★ | | | | | | | | | | | | |
| | APKT11T308-APM | 12.24 | 6.6 | 3.6 | 2.8 | 0.8 | | | ● | ● | | | | | | | ★ | | | ● | ● | | | | | | | | |
| | APKT11T312-APM | 12.24 | 6.6 | 3.6 | 2.8 | 1.2 | | | | | ● | | | | | | ★ | | | | | | | | | | | | |
| | APKT11T316-APM | 12.24 | 6.6 | 3.6 | 2.8 | 1.6 | | | | | | | | | | | ★ | | | | | | | | | | | | |
| | APKT11T320-APM | 12.24 | 6.6 | 3.6 | 2.8 | 2.0 | | | ● | | | | | | | | ★ | | | | | | | | | | | | |
| | APKT11T304-ALH | 12.24 | 6.6 | 3.6 | 2.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | ★ | ★ | |
| | APKT11T308-ALH | 12.24 | 6.6 | 3.6 | 2.8 | 0.8 | | | | | | | | | | | | | | | | | | | | ★ | ○ | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

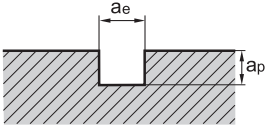
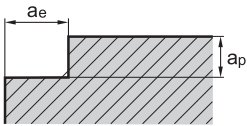
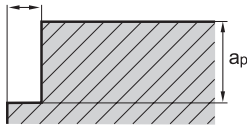
Indexable milling tools

Square shoulder milling tools

Chipbreaker selection

| Classification | Application | For finishing | For semi-finishing |
|----------------|-------------|---------------|--------------------|
| P | | -APF | -APM |
| M | | -APF | -APM |
| S | | -APF | -APM |
| K | | -APF | -APM |
| N | | -ALH | |

▶ Recommended cutting parameters

| Slot milling | Square shoulder milling | Deep square shoulder milling |
|---|---|---|
|  |  |  |
| $a_e = D, a_p \leq 0.5D$ | $a_e \leq 0.5D, a_p \leq 1.2D$ | $a_e \leq 0.2D, a_p < \text{Cutting length of insert}$ |

| Workpiece material | Hardness HB | Insert grade | Cutting parameters | | | |
|--------------------|-----------------------------------|--------------|--------------------|-------------------------|----------------|---------------|
| | | | Vc(m/min) | Square shoulder milling | | -APM |
| | | | | fz(mm/z) | | |
| | | | | -APF | | |
| P | Low-carbon steel, Soft steel | ≤ 180 | YBC302 | 270 (240-350) | 0.1 (0.08-0.2) | -- |
| | | | YB9320 | 220 (200-360) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) |
| | | | YBM253 | 270 (180-300) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) |
| | High-carbon steel, Alloy steel | 180-280 | YBC302 | 240 (210-320) | 0.1 (0.08-0.2) | -- |
| | | | YB9320 | 240 (180-360) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) |
| | | | YBM253 | 200 (160-280) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) |
| Alloy tool steel | 280-350 | YBC302 | 220 (180-300) | 0.1 (0.08-0.2) | -- | |
| | | YB9320 | 220 (160-340) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | |
| | | YBM253 | 180 (150-250) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) | |
| M | Stainless steel | ≤ 270 | YB9320 | 150 (110-270) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) |
| | | | YBM253 | 140 (100-250) | | |
| K | Cast iron | 180-250 | YB9320 | 150 (100-200) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) |
| | | | YBD152 | 180 (120-300) | -- | 0.2 (0.1-0.3) |
| S | Difficult-to-machine materials | ≤ 400 | YBS203 | 100 (60-120) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) |
| | | | YBS303 | 100 (60-120) | 0.1 (0.08-0.2) | 0.2 (0.1-0.3) |
| N | Aluminium alloy | -- | YD101 | 300- | -ALH | |
| | | | YD201 | 300- | 0.2 (0.08-0.4) | |

| Workpiece material | Hardness HB | Insert grade | Cutting parameters | | | |
|--------------------|-----------------------------------|--------------|--------------------|--|-----------------|-----------------|
| | | | Vc(m/min) | Slot milling, Deep square shoulder milling | | -APM |
| | | | | fz(mm/z) | | |
| | | | | -APF | | |
| P | Low-carbon steel, Soft steel | ≤ 180 | YBC302 | 270 (240-350) | 0.1 (0.08-0.15) | -- |
| | | | YB9320 | 270 (200-360) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) |
| | | | YBM253 | 220 (180-300) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) |
| | High-carbon steel, Alloy steel | 180-280 | YBC302 | 240 (210-320) | 0.1 (0.08-0.15) | -- |
| | | | YB9320 | 240 (180-360) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) |
| | | | YBM253 | 200 (160-280) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) |
| Alloy tool steel | 280-350 | YBC302 | 220 (180-300) | 0.1 (0.08-0.15) | -- | |
| | | YB9320 | 220 (160-340) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) | |
| | | YBM253 | 180 (150-250) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) | |
| M | Stainless steel | ≤ 270 | YB9320 | 150 (110-270) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) |
| | | | YBM253 | 140 (100-250) | | |
| K | Cast iron | 180-250 | YB9320 | 150 (100-200) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) |
| | | | YBD152 | 180 (120-300) | -- | 0.15 (0.1-0.25) |
| S | Difficult-to-machine materials | ≤ 400 | YBS203 | 60 (45-110) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) |
| | | | YBS303 | 60 (45-110) | 0.1 (0.08-0.15) | 0.15 (0.1-0.25) |
| N | Aluminium alloy | -- | YD101 | 300- | -ALH | |
| | | | YD201 | 300- | 0.2 (0.08-0.3) | |

Indexable milling tools

Square shoulder milling tools



▶ 4 available cutting edges and precise 90° square shoulder.

▶ Double rake angle can effectively reduce cutting force.

▶ High precision of cutting tool can achieve high quality and efficient roughing.

▶ The Tangential assembling can change the cutting force of main direction to be borne by the thickness direction to realize the high rigidity of the cutting tool.

▶ The optimized material of cutter body with high strength and special coating treatment achieves better wear-resistance and longer tool life.

Kr:90°

A New Generation of Tangential Milling Cutter **EMPO9** Series

*To meet the diverse processing
needs and achieve efficient
rough machining.*

- High strength of tool nose, sharp cutting and good wear resistance.
- The spiral cutting edge stands for a lighter chipbreaker.
- Excellent universal coating materials, super smooth coating technology, no sticky chip and longer life.
- The vertical design makes the carbide has large volume along the direction of the cutting force, so that the feed per tooth is 30% higher than the flat load insert.

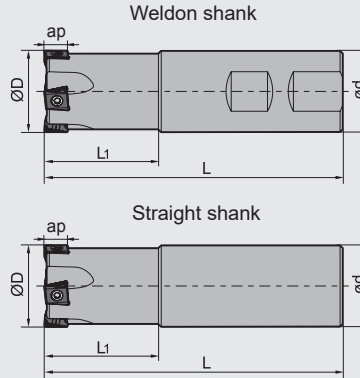


Square shoulder milling tools

Kr:90°



EMP09 P M K S



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth z | Weight (kg) | | |
|------------------------------|-------|----------------------|----|----|----------------|-------|-------------------|-------------|---|------|
| | | ØD | ød | L | L ₁ | apmax | | | | |
| EMP09 Weldon shank | ▲ | -020-XP20-LN08-02C | ▲ | 20 | 20 | 100 | 25 | 8.0 | 2 | 0.20 |
| | ▲ | -020-XP20-LN08-03C | ▲ | 20 | 32 | 100 | 25 | 8.0 | 3 | 0.20 |
| | ▲ | -025-XP25-LN08-03C | ▲ | 25 | 25 | 100 | 32 | 8.0 | 3 | 0.36 |
| | ▲ | -025-XP25-LN08-04C | ▲ | 25 | 25 | 100 | 32 | 8.0 | 4 | 0.35 |
| | ▲ | -032-XP32-LN08-04C | ▲ | 32 | 32 | 115 | 40 | 8.0 | 4 | 0.67 |
| | ▲ | -032-XP32-LN08-05C | ▲ | 32 | 32 | 115 | 40 | 8.0 | 5 | 0.67 |
| | ▲ | -040-XP40-LN08-05C | ▲ | 40 | 40 | 125 | 40 | 8.0 | 5 | 1.15 |
| | ▲ | -040-XP40-LN08-06C | ▲ | 40 | 40 | 125 | 40 | 8.0 | 6 | 1.14 |
| | ▲ | -040-XP40-LN12-03C | ▲ | 40 | 40 | 125 | 40 | 11.5 | 3 | 1.11 |
| | ▲ | -040-XP40-LN12-04C | ▲ | 40 | 40 | 125 | 40 | 11.5 | 4 | 1.10 |
| Straight shank | ▲ | -020-G20-LN08-02C | ▲ | 20 | 20 | 100 | 25 | 8.0 | 2 | 0.2 |
| | ▲ | -020-G20-LN08-03C | ▲ | 20 | 20 | 100 | 25 | 8.0 | 3 | 0.2 |
| | ▲ | -025-G25-LN08-03C | ▲ | 25 | 25 | 100 | 32 | 8.0 | 3 | 0.36 |
| | ▲ | -025-G25-LN08-04C | ▲ | 25 | 25 | 100 | 32 | 8.0 | 4 | 0.35 |
| | ▲ | -032-G32-LN08-04C | ▲ | 32 | 32 | 115 | 40 | 8.0 | 4 | 0.67 |
| | ▲ | -032-G32-LN08-05C | ▲ | 32 | 32 | 115 | 40 | 8.0 | 5 | 0.67 |
| | ▲ | -040-G40-LN12-03C | ▲ | 40 | 40 | 125 | 40 | 11.5 | 3 | 1.11 |
| | ▲ | -040-G40-LN12-04C | ▲ | 40 | 40 | 125 | 40 | 11.5 | 4 | 1.10 |

▲ Stock available △ Make-to-order

Spare parts

| Diameter ØD | Inserts | Screw | Wrench |
|-------------|------------------|----------|--------|
| | | | |
| Ø20~Ø40 | LN□T0804□□-GM/GL | I60M3×7 | WT09IS |
| Ø32~Ø40 | LN□T1206□□-GM/GL | I60M4×12 | WT15IS |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

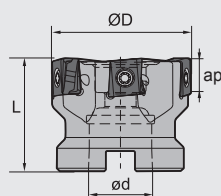
Square shoulder milling tools **Kr:90°**



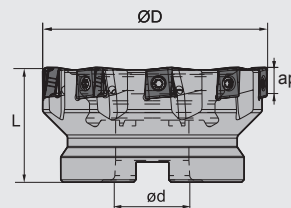
EMP09 P M K S



A-type coupling



B-type coupling



➤ Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | Number of teeth z | Type of coupling | Weight (kg) |
|--------------------------------|-------|----------------------|----|----|-------|----------------------|------------------|-------------|
| | | ØD | ød | L | apmax | | | |
| EMP09 -040-A16-LN08-05C | ▲ | 40 | 16 | 40 | 8 | 5 | A | 0.21 |
| -040-A16-LN08-06C | ▲ | 40 | 16 | 40 | 8 | 6 | A | 0.21 |
| -050-A22-LN08-06C | ▲ | 50 | 22 | 40 | 8 | 6 | A | 0.35 |
| -050-A22-LN08-07C | ▲ | 50 | 22 | 40 | 8 | 7 | A | 0.35 |
| -063-A22-LN08-08C | ▲ | 63 | 22 | 40 | 8 | 8 | A | 0.60 |
| -063-A22-LN08-10C | ▲ | 63 | 22 | 40 | 8 | 10 | A | 0.60 |
| -080-A27-LN08-10C | ▲ | 80 | 27 | 50 | 8 | 10 | A | 1.26 |
| -080-A27-LN08-12C | ▲ | 80 | 27 | 50 | 8 | 12 | A | 1.26 |
| -040-A16-LN12-03C | ▲ | 40 | 16 | 40 | 11.5 | 3 | A | 0.20 |
| -040-A16-LN12-04C | ▲ | 40 | 16 | 40 | 11.5 | 4 | A | 0.19 |
| -050-A22-LN12-05C | ▲ | 50 | 22 | 40 | 11.5 | 5 | A | 0.30 |
| -050-A22-LN12-06C | ▲ | 50 | 22 | 40 | 11.5 | 6 | A | 0.30 |
| -063-A22-LN12-06C | ▲ | 63 | 22 | 40 | 11.5 | 6 | A | 0.54 |
| -063-A22-LN12-08C | ▲ | 63 | 22 | 40 | 11.5 | 8 | A | 0.54 |
| -080-A27-LN12-07C | ▲ | 80 | 27 | 50 | 11.5 | 7 | A | 1.18 |
| -080-A27-LN12-10C | ▲ | 80 | 27 | 50 | 11.5 | 10 | A | 1.18 |
| -100-B32-LN12-09C | ▲ | 100 | 32 | 50 | 11.5 | 9 | B | 1.64 |
| -100-B32-LN12-13C | ▲ | 100 | 32 | 50 | 11.5 | 13 | B | 1.64 |
| -125-B40-LN12-11C | ▲ | 125 | 40 | 63 | 11.5 | 11 | B | 2.74 |
| -125-B40-LN12-16C | ▲ | 125 | 40 | 63 | 11.5 | 16 | B | 2.74 |

▲Stock available △Make-to-order

Indexable milling tools

Square shoulder milling tools

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

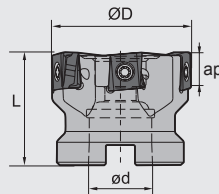
Square shoulder milling tools **Kr:90°**



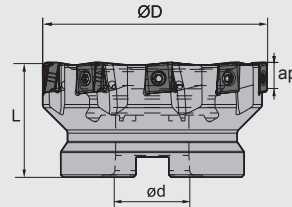
EMP09 **P** **M** **K** **S**



A-type coupling



B-type coupling



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | Number of teeth z | Type of coupling | Weight (kg) |
|--------------------------------|-------|----------------------|----|----|-------|----------------------|------------------|-------------|
| | | ØD | ød | L | apmax | | | |
| EMP09 -050-A22-LN16-04C | ▲ | 50 | 22 | 40 | 15 | 4 | A | 0.31 |
| -050-A22-LN16-05C | ▲ | 50 | 22 | 40 | 15 | 5 | A | 0.31 |
| -063-A22-LN16-05C | ▲ | 63 | 22 | 40 | 15 | 5 | A | 0.56 |
| -063-A22-LN16-06C | ▲ | 63 | 22 | 40 | 15 | 6 | A | 0.56 |
| -080-A27-LN16-06C | ▲ | 80 | 27 | 50 | 15 | 6 | A | 1.20 |
| -080-A27-LN16-07C | ▲ | 80 | 27 | 50 | 15 | 7 | A | 1.20 |
| -100-B32-LN16-08C | ▲ | 100 | 32 | 50 | 15 | 8 | B | 1.62 |
| -100-B32-LN16-10C | ▲ | 100 | 32 | 50 | 15 | 10 | B | 1.62 |
| -125-B40-LN16-10C | ▲ | 125 | 40 | 63 | 15 | 10 | B | 3.27 |
| -125-B40-LN16-13C | ▲ | 125 | 40 | 63 | 15 | 13 | B | 3.27 |
| -160-B40-LN16-12C | ▲ | 160 | 40 | 63 | 15 | 12 | B | 6.37 |
| -160-B40-LN16-16C | ▲ | 160 | 40 | 63 | 15 | 16 | B | 6.37 |

▲ Stock available △ Make-to-order

Indexable milling tools

Square shoulder milling tools

Spare parts

| Diameter ØD | Inserts | Screw | Wrench | |
|----------------|------------------|----------|--------|--|
| | | | | |
| Ø40~Ø80 | LN□T0804□□-GM/GL | I60M3×7 | WT09IS | |
| Ø40~Ø125 | LN□T1206□□-GM/GL | I60M4×12 | WT15IS | |
| Ø50~Ø160 | LN□T1607□□-GM/GL | I60M5×13 | WT20IS | |

Tools code key **B24-B25**

Grade selection guide **B19-B23**

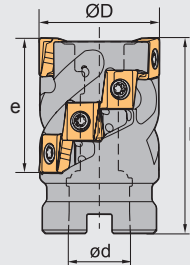
Technical data **B234-B240**

Square shoulder milling tools

Kr:90°



EMP09 P M K S



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | Number of teeth Z | Number of inserts | Weight (kg) |
|----------------------------|-------|----------------------|----|----|----|-------------------|-------------------|-------------|
| | | ØD | ød | L | e | | | |
| EMP09 -032×38-A16-LN08-03C | ▲ | 32 | 16 | 55 | 38 | 3 | 15 | 0.15 |
| -040×38-A16-LN08-04C | ▲ | 40 | 16 | 55 | 38 | 4 | 20 | 0.3 |
| -040×45-A16-LN08-04C | ▲ | 40 | 16 | 65 | 45 | 4 | 24 | 0.4 |
| -050×38-A22-LN08-05C | ▲ | 50 | 22 | 55 | 38 | 5 | 25 | 0.5 |
| -050×45-A22-LN08-05C | ▲ | 50 | 22 | 65 | 45 | 5 | 30 | 0.6 |
| -040×33-A16-LN12-02C | ▲ | 40 | 16 | 55 | 33 | 2 | 6 | 0.3 |
| -040×43-A16-LN12-02C | ▲ | 40 | 16 | 65 | 43 | 2 | 8 | 0.34 |
| -050×33-A16-LN12-03C | ▲ | 50 | 16 | 55 | 33 | 3 | 9 | 0.5 |
| -050×43-A22-LN12-03C | ▲ | 50 | 22 | 70 | 43 | 3 | 12 | 0.62 |
| -063×43-A27-LN12-04C | ▲ | 63 | 27 | 70 | 43 | 4 | 16 | 1.03 |
| -063×53-A27-LN12-04C | ▲ | 63 | 27 | 80 | 53 | 4 | 20 | 1.2 |
| -080×43-A27-LN12-05C | ▲ | 80 | 27 | 70 | 43 | 5 | 20 | 1.91 |
| -080×53-A27-LN12-05C | ▲ | 80 | 27 | 80 | 53 | 5 | 25 | 2.1 |
| -100×63-A27-LN12-06C | ▲ | 100 | 27 | 90 | 63 | 6 | 36 | 3.3 |

▲Stock available △Make-to-order

Indexable milling tools

Square shoulder milling tools

Spare parts

| Diameter ØD | Inserts | Screw | Wrench | |
|----------------|------------------|----------|--------|--|
| | | | | |
| Ø32×38-Ø50×45 | LN□T0804□□-GM/GL | I60M3×7 | WT09IP | |
| Ø40×33-Ø63×53 | LN□T1206□□-GM/GL | I60M4×12 | WT15IP | |
| Ø80×43-Ø100×63 | | | WT15IS | |

Tools code key
B24-B25

Grade selection guide
B19-B23

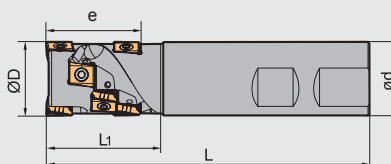
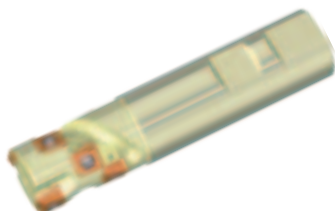
Technical data
B234-B240

Square shoulder milling tools

Kr:90°



EMP09 P M K S



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Number of inserts | Weight (kg) |
|------------------------------------|-------|----------------------|----|-----|----|----|-------------------|-------------------|-------------|
| | | ØD | ød | L | L1 | e | | | |
| EMP09 -025×30-XP25-LN08-02C | ▲ | 25 | 25 | 100 | 40 | 30 | 2 | 8 | 0.31 |
| -032×38-XP32-LN08-03C | ▲ | 32 | 32 | 115 | 45 | 38 | 3 | 15 | 0.62 |
| -040×45-XP32-LN08-04C | ▲ | 40 | 32 | 120 | 55 | 45 | 4 | 24 | 0.7 |
| -040×33-XP32-LN12-02C | ▲ | 40 | 32 | 115 | 45 | 33 | 2 | 6 | 0.7 |
| -040×43-XP32-LN12-02C | ▲ | 40 | 32 | 125 | 55 | 43 | 2 | 8 | 0.7 |
| -050×43-XP40-LN12-03C | ▲ | 50 | 40 | 135 | 55 | 43 | 3 | 12 | 1.4 |
| -050×53-XP40-LN12-03C | ▲ | 50 | 40 | 145 | 65 | 53 | 3 | 15 | 1.5 |

▲Stock available △Make-to-order

Indexable milling tools

Square shoulder milling tools

Spare parts

| Diameter ØD | Inserts | Screw | Wrench | |
|---------------|------------------|----------|--------|--|
| | | | | |
| Ø25×30-Ø32×38 | LN□T0804□□-GM/GL | I60M3×7 | WT09IS | |
| Ø40×33-Ø50×53 | LN□T1206□□-GM/GL | I60M4×12 | WT15IP | |

Tools code key
B24-B25

Grade selection guide
B19-B23

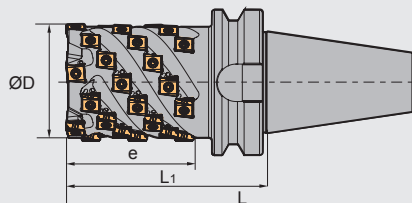
Technical data
B234-B240

Square shoulder milling tools

Kr:90°



EMP09 P M K S



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | Number of teeth Z | Shank type | Number of inserts | Weight (kg) |
|-----------------------------|-------|----------------------|-----|-----|-------|-------------------|------------|-------------------|-------------|
| | | ØD | e | L1 | L | | | | |
| EMP09 -050×63-BT50-LN12-03C | △ | 50 | 63 | 124 | 225.8 | 3 | BT | 18 | 4.34 |
| -050×85-BT50-LN12-03C | △ | 50 | 85 | 146 | 246.8 | 3 | BT | 24 | 4.57 |
| -050×103-BT50-LN12-03C | △ | 50 | 103 | 164 | 265.8 | 3 | BT | 30 | 4.89 |
| -063×85-BT50-LN12-04C | △ | 63 | 85 | 146 | 246.8 | 4 | BT | 32 | 5.35 |
| -063×115-BT50-LN12-04C | △ | 63 | 115 | 176 | 277.8 | 4 | BT | 44 | 6.07 |
| -080×125-BT50-LN12-05C | △ | 80 | 125 | 186 | 287.8 | 5 | BT | 60 | 8.25 |

▲Stock available △Make-to-order

Indexable milling tools

Square shoulder milling tools

Spare parts

| Diameter ØD | Inserts | Screw | Wrench |
|----------------|------------------|----------|--------|
| | | | |
| Ø50×63-Ø63×115 | LN□T1206□□-GM/GL | I60M4×12 | WT15IP |
| Ø80×125 | | | WT15IS |

Tools code key
B24-B25

Grade selection guide
B19-B23

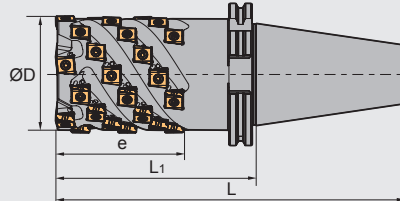
Technical data
B234-B240

Square shoulder milling tools

Kr:90°



EMP09 **P** **M** **K** **S**



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | Number of teeth Z | Shank type | Number of inserts | Weight (kg) |
|-------------------------------------|-------|----------------------|-----|----------------|--------|-------------------|------------|-------------------|-------------|
| | | ØD | e | L ₁ | L | | | | |
| EMP09 -050×103-JT50-LN12-03C | △ | 50 | 103 | 164 | 265.75 | 3 | JT | 30 | 5.11 |
| -063×85-JT50-LN12-04C | △ | 63 | 85 | 146 | 246.75 | 4 | JT | 32 | 4.34 |
| -063×115-JT50-LN12-04C | △ | 63 | 115 | 176 | 277.75 | 4 | JT | 44 | 5.46 |
| -080×125-JT50-LN12-05C | △ | 80 | 125 | 186 | 287.75 | 5 | JT | 60 | 7.82 |

▲ Stock available △ Make-to-order

Indexable milling tools

Square shoulder milling tools

Spare parts

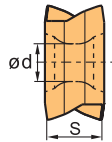
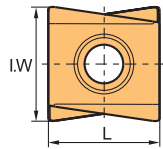
| Diameter ØD | Inserts | Screw | Wrench | |
|----------------|----------|------------------|------------------|--|
| | | Ø50×63-Ø63×115 | LN□T1206□□-GM/GL | |
| Ø80×125 | I60M4×12 | WT15IP WT15IS | | |

Tools code key **B24-B25**

Grade selection guide **B19-B23**

Technical data **B234-B240**

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | CVD Coating | | | | | | | | | | PVD Coating | | | | Cermet | Cemented carbide | | | | | | | |
|---|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|------------------|--------|--------|---------|-------|-------|-------|-------|
| | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | | | | | | 😊 | 😊 | 😊 | | | | | 😊 | 😊 | | | | | | | 😊 | 😊 | 😊 |
| N Non-ferrous metal | | | | | | | | | | | | | | | | | | | | | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | | PVD Coating | | | | Cermet | Cemented carbide | | | | | | | | | | |
|--------------|------------------|----------------------|-----|------|-----|-----|--------|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|
| | | L | I.W | S | ød | r | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
| | LNKT080404PNR-GM | 8.75 | 8.5 | 4.45 | 3.4 | 0.4 | | | ★ | ● | ● | | | | | ★ | | | | | | ● | | | | | | | |
| | LNKT080408PNR-GM | 8.75 | 8.5 | 4.45 | 3.4 | 0.8 | | | ★ | ● | ● | | | | | | ★ | | | | | | | | | | | | |
| | LNKT080412PNR-GM | 8.75 | 8.5 | 4.45 | 3.4 | 1.2 | | | ★ | ● | ● | | | | | | ★ | | | | | | | | | | | | |
| | LNKT120608PNR-GM | 12.7 | 13 | 6.75 | 4.4 | 0.8 | | | ★ | ● | ● | | | | | | ★ | | | | | | ● | | | | | | |
| | LNKT120612PNR-GM | 12.7 | 13 | 6.75 | 4.4 | 1.2 | | | ★ | ● | ● | | | | | | ★ | | | | | | | | | | | | |
| | LNKT120616PNR-GM | 12.7 | 13 | 6.75 | 4.4 | 1.6 | | | ★ | ● | ● | | | | | | ★ | | | | | | | | | | | | |
| | LNKT120620PNR-GM | 12.7 | 13 | 6.75 | 4.4 | 2.0 | | | ★ | ● | ● | | | | | | ★ | | | | | | | | | | | | |
| | LNKT120624PNR-GM | 12.7 | 13 | 6.75 | 4.4 | 2.4 | | | ★ | ● | ● | | | | | | ★ | | | | | | | | | | | | |
| | LNKT120632PNR-GM | 12.7 | 13 | 6.75 | 4.4 | 3.2 | | | ★ | ● | ● | | | | | | ★ | | | | | | | | | | | | |
| | LNKT160708PNR-GM | 16.05 | 15 | 7.35 | 5.5 | 0.8 | | | ★ | ● | ● | | | | | | ★ | | | | | | ● | | | | | | |
| | LNKT160712PNR-GM | 16.05 | 15 | 7.35 | 5.5 | 1.2 | | | ★ | ● | ● | | | | | | ★ | | | | | | | | | | | | |
| | LNKT160716PNR-GM | 16.05 | 15 | 7.35 | 5.5 | 1.6 | | | ★ | ● | ● | | | | | | ★ | | | | | | | | | | | | |
| | LNKT080404PNR-GL | 8.75 | 8.5 | 4.45 | 3.4 | 0.4 | | | ★ | ● | ● | | | | | ★ | | | | | | ● | | | | | | | |
| | LNKT120608PNR-GL | 12.7 | 13 | 6.75 | 4.4 | 0.8 | | | ★ | ● | ● | | | | | | ★ | | | | | | ● | | | | | | |
| | LNKT160708PNR-GL | 16.05 | 15 | 7.35 | 5.5 | 0.8 | | | ★ | ● | ● | | | | | | ★ | | | | | | ● | | | | | | |
| | LNMT080404PNR-GM | 8.75 | 8.5 | 4.45 | 3.4 | 0.4 | | | ★ | ● | ● | | | | | ★ | | | | | | | | | | | | | |
| | LNMT120608PNR-GM | 12.7 | 13 | 6.75 | 4.4 | 0.8 | | | ★ | ● | ● | | | | | | ★ | | | | | | | | | | | | |
| | LNMT160708PNR-GM | 16.05 | 15 | 7.35 | 5.5 | 0.8 | | | ★ | ● | ● | | | | | | ★ | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Recommended cutting parameters

| Workpiece material | Hardness HB | Insert grade | Cutting parameters | |
|---|--------------------------|------------------|--------------------|-----------------|
| | | | Vc(m/min) | fz(mm/z) |
| P Low-carbon steel, Soft steel | ≤ 180 | YBM253 | 260 (160-300) | 0.3 (0.1-0.35) |
| | | YB9320 | 260 (160-300) | 0.3 (0.1-0.35) |
| | 180-280 | YBM253 | 240 (160-240) | 0.25 (0.1-0.35) |
| | | YB9320 | 240 (160-240) | 0.25 (0.1-0.35) |
| | | YBM253 | 200 (120-240) | 0.2 (0.1-0.35) |
| 280-350 | YB9320 | 200 (120-240) | 0.2 (0.1-0.35) | |
| | M Stainless steel | YBM253 | 180 (100-230) | 0.15 (0.1-0.3) |
| YB9320 | | 160 (100-230) | 0.15 (0.1-0.3) | |
| K Cast iron | 180-250 | YBD152 YBD252 | 220 (140-250) | 0.2 (0.1-0.3) |
| | | | 220 (140-250) | 0.2 (0.1-0.3) |
| | | | 220 (140-250) | 0.2 (0.1-0.3) |
| S Difficult-to-machine materials | ≤ 400 | YBS303 | 100 (60-120) | 0.15 (0.1-0.25) |

Indexable milling tools

Square shoulder milling tools

Case for EMP09

Indexable
milling tools

Square shoulder milling tools

● Ultra-long working life

The material of workpiece: 45[#]

Hardness: 175-190 (HB)

Machine tool: Planer-type milling machine

Type of cooling: No cooling

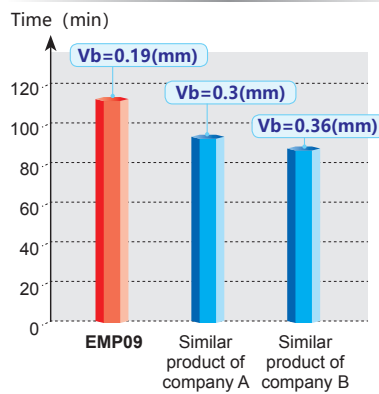
The machining type: Shoulder milling

Toolholder: EMP09-050-A22-LN12-05C

Insert: LNKT120608PNR-GM/YB9320

Cutting parameter: $V_c=260\text{m/min}$, $A_p=8\text{mm}$, $A_e=2\text{mm}$, $f_z=0.2\text{mm/z}$

Comparison of tool life



Result: The processing life of LNKT12 (YB9320) is approximately 1.3 times of the similar product of company A and 1.4 times of the similar product of company B, with excellent wear resistance and longer tool life.

● Better surface quality

The material of workpiece: NAK80

Hardness: HRC(33-37)

Machine tool: Planer-type milling machine

Type of cooling: No cooling

The machining type: Shoulder milling

Toolholder: EMP09-050-A22-LN12-05C

Insert: LNKT120608PNR-GM (YB9320)

Similar product of company A

Cutting parameter: $V_c=240\text{m/min}$, $A_p=8\text{mm}$

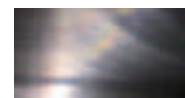
$A_e=2\text{mm}$, $f_z=0.2\text{mm/z}$

EMP09



No obvious gear mark

Similar product of company A



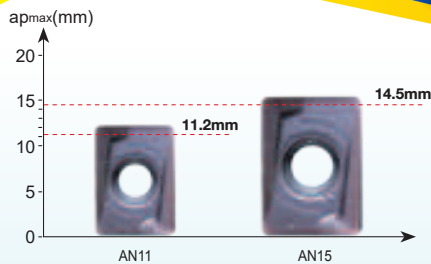
Slight step

Result: EMP09 series of tangential milling cutter has higher precision and better surface quality, no obvious gear mark, and runout value, which is better than the similar product of company A.

Kr:90°

Achieving high quality 90° square shoulding milling

EMP13 Series Square Shoulder Milling Tools



Cutting edge properly designed with high precision control for high quality 90° square shoulder milling.

Extra thick insert with double negative cutting angle, reduce cutting force and greatly improve impact resistance.

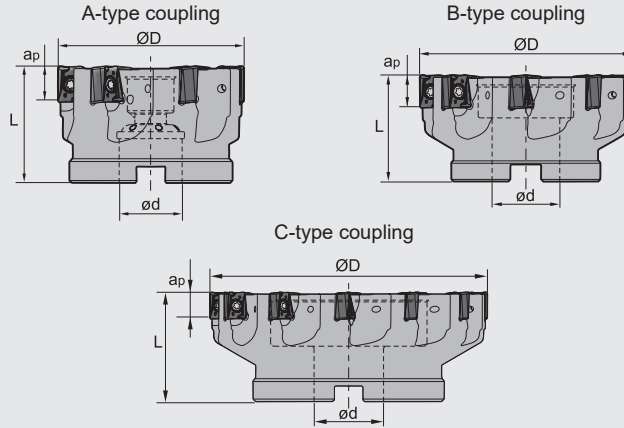
-LH geometry with excellent wear resistance, rake face specially treated with mirror effect, good adhesion resistance, ensuring high-efficiency high-stability Aluminium machining.

Square shoulder milling tools

Kr:90°



EMP13 P M K N S



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|--------------------------------|-------|----------------------|----|----|-------|-------------------|------------------|-------------|
| | | ØD | ød | L | apmax | | | |
| EMP13 -050-A22-AN11-06C | ▲ | 50 | 22 | 40 | 11.2 | 6 | A | 0.30 |
| -063-A22-AN11-07C | ▲ | 63 | 22 | 40 | 11.2 | 7 | A | 0.49 |
| -080-A27-AN11-09C | ▲ | 80 | 27 | 50 | 11.2 | 9 | A | 1.18 |
| -100-B32-AN11-12 | ▲ | 100 | 32 | 50 | 11.2 | 12 | B | 1.46 |
| -125-B40-AN11-14 | ▲ | 125 | 40 | 63 | 11.2 | 14 | B | 2.92 |
| -160-C40-AN11-16 | ▲ | 160 | 40 | 63 | 11.2 | 16 | C | 4.30 |
| -050-A22-AN15-04C | ▲ | 50 | 22 | 40 | 14.5 | 4 | A | 0.26 |
| -063-A22-AN15-05C | ▲ | 63 | 22 | 40 | 14.5 | 5 | A | 0.53 |
| -080-A27-AN15-06C | ▲ | 80 | 27 | 50 | 14.5 | 6 | A | 1.23 |
| -100-B32-AN15-08 | ▲ | 100 | 32 | 50 | 14.5 | 8 | B | 1.52 |
| -125-B40-AN15-10 | ▲ | 125 | 40 | 63 | 14.5 | 10 | B | 3.05 |
| -160-C40-AN15-12 | ▲ | 160 | 40 | 63 | 14.5 | 12 | C | 4.46 |

▲Stock available △Make-to-order

Indexable milling tools

Square shoulder milling tools

Spare parts

| Diameter ØD | Inserts | Screw | Wrench | |
|-------------|------------------|----------|--------|--|
| | | | | |
| Ø50-Ø160 | AN□X11□□□□-GM/LH | I60M3X9 | WT09IS | |
| Ø50-Ø160 | AN□X15□□□□-GM/LH | I60M4X12 | WT15IS | |

Tools code key
B24-B25

Grade selection guide
B19-B23

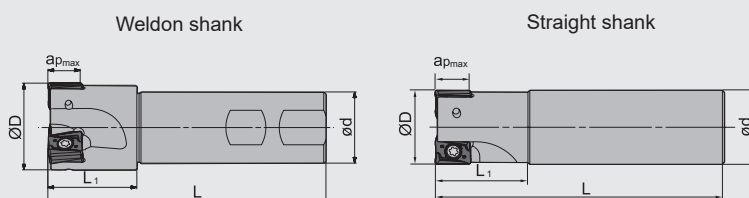
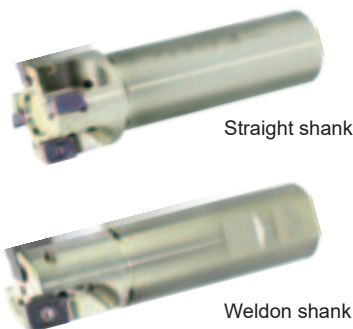
Technical data
B234-B240

Square shoulder milling tools

Kr:90°



EMP13 P M K N S






Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of flute Z | Weight (kg) |
|------------------------------|-------|----------------------|----|-----|----------------|-------------------|-------------------|-------------|
| | | ØD | ød | L | L ₁ | ap _{max} | | |
| EMP13 Weldon shank | ▲ | 25 | 25 | 100 | 32 | 11.2 | 2 | 0.31 |
| | ▲ | 32 | 32 | 115 | 40 | 11.2 | 3 | 0.61 |
| | ▲ | 40 | 32 | 125 | 40 | 11.2 | 4 | 0.75 |
| | ▲ | 32 | 32 | 125 | 40 | 14.5 | 2 | 0.66 |
| | ▲ | 40 | 32 | 125 | 40 | 14.5 | 3 | 0.76 |
| Straight shank | ▲ | 25 | 25 | 100 | 32 | 11.2 | 2 | 0.31 |
| | ▲ | 32 | 32 | 115 | 40 | 11.2 | 3 | 0.61 |
| | ▲ | 40 | 32 | 125 | 40 | 11.2 | 4 | 0.75 |
| | ▲ | 32 | 32 | 125 | 40 | 14.5 | 2 | 0.66 |
| | ▲ | 40 | 32 | 125 | 40 | 14.5 | 3 | 0.76 |

▲Stock available △Make-to-order

Spare parts

| Diameter ØD | Inserts | Screw | Wrench |  |
|-------------|------------------|---|--|---|
| | |  |  | |
| Ø25-Ø40 | AN□X11□□□□-GM/LH | I60M3X9 | WT09IS | |
| Ø32-Ø40 | AN□X15□□□□-GM/LH | I60M4X12 | WT15IS | |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Indexable milling tools
Square shoulder milling tools

Square shoulder milling tools

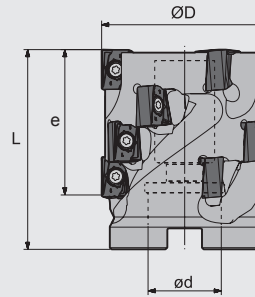
Kr:90°



EMP13 P M K N S



A-type coupling



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | Number of teeth Z | Number of inserts | Type of coupling | Weight (kg) |
|----------------------------------|-------|----------------------|----|----|----|-------------------|-------------------|------------------|-------------|
| | | ØD | ød | L | e | | | | |
| EMP13 -050×43-A22-AN11-03 | ▲ | 50 | 22 | 60 | 43 | 3 | 12 | A | 0.52 |
| -063×65-A27-AN11-04 | ▲ | 63 | 27 | 80 | 64 | 4 | 24 | A | 1.15 |
| -063×53-A27-AN15-03 | ▲ | 63 | 27 | 75 | 53 | 3 | 12 | A | 1.14 |
| -080×56-A32-AN15-04 | ▲ | 80 | 32 | 75 | 53 | 4 | 16 | A | 1.82 |

▲Stock available △Make-to-order

Indexable milling tools

Square shoulder milling tools

Spare parts

| Diameter ØD | Inserts | Screw | Wrench | |
|-------------|------------------|----------|--------|--|
| | | | | |
| Ø50-Ø63 | AN□X11□□□□-GM/LH | I60M3×9 | WT09IS | |
| Ø63-Ø80 | AN□X15□□□□-GM/LH | I60M4×12 | WT15IS | |

Tools code key
B24-B25

Grade selection guide
B19-B23

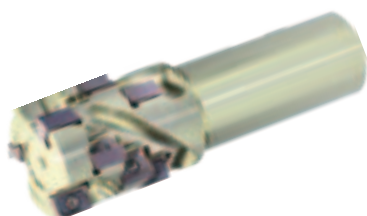
Technical data
B234-B240

Square shoulder milling tools

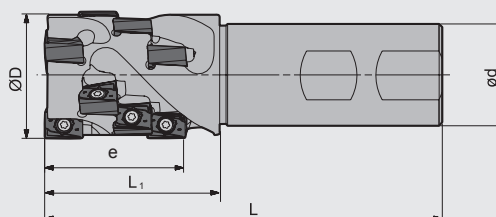
Kr:90°



EMP13 P M K N S



Weldon shank



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Number of inserts | Weight (kg) |
|-----------------------------------|-------|----------------------|----|-----|----------------|----|-------------------|-------------------|-------------|
| | | ØD | ød | L | L ₁ | e | | | |
| EMP13 -032×43-XP32-AN11-02 | ▲ | 32 | 32 | 115 | 48 | 43 | 2 | 8 | 0.61 |
| -040×43-XP32-AN11-03 | ▲ | 40 | 32 | 125 | 55 | 43 | 3 | 12 | 0.79 |
| -040×40-XP32-AN15-02 | ▲ | 40 | 32 | 115 | 55 | 40 | 2 | 6 | 0.79 |
| -050×53-XP40-AN15-02 | ▲ | 50 | 40 | 145 | 70 | 53 | 2 | 8 | 1.53 |

▲Stock available △Make-to-order

Indexable milling tools

Square shoulder milling tools

Spare parts

| Diameter ØD | Inserts | Screw | Wrench | |
|-------------|------------------|----------|--------|--|
| | | | | |
| Ø32-Ø40 | AN□X11□□□□-GM/LH | I60M3X9 | WT09IS | |
| Ø40-Ø50 | AN□X15□□□□-GM/LH | I60M4X12 | WT15IS | |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240



MILLING

Indexable Milling Tools

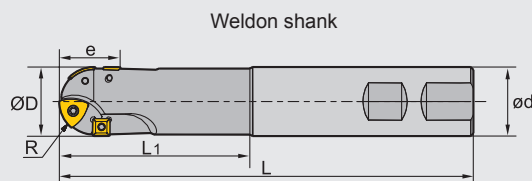
Indexable
milling tools

Profile milling tools

Profile milling tools



BMR01 P M K



Specification of tools




| Type | Stock | Basic dimensions(mm) | | | | | | Applicable inserts | | | | Weight (kg) |
|--------------------------|-------|----------------------|----|----|----|-----|-----|--------------------|----------|------------|----------|-------------|
| | | R | ØD | e | ød | L | L1 | Type | Quantity | Type | Quantity | |
| BMR01 -020-XP20-S | ▲ | 10 | 20 | 20 | 20 | 125 | 50 | ZDET08T2CYR10 | 2 | SPMT060304 | 2 | 0.3 |
| -020-XP20-M | ▲ | 10 | 20 | 20 | 20 | 150 | 75 | ZDET08T2CYR10 | 2 | SPMT060304 | 2 | 0.3 |
| -020-XP20-L | ▲ | 10 | 20 | 20 | 20 | 200 | 100 | ZDET08T2CYR10 | 2 | SPMT060304 | 2 | 0.4 |
| -025-XP25-S | ▲ | 12.5 | 25 | 23 | 25 | 150 | 70 | ZDET1103CYR12.5 | 2 | SPMT060304 | 2 | 0.5 |
| -025-XP25-M | ▲ | 12.5 | 25 | 23 | 25 | 175 | 95 | ZDET1103CYR12.5 | 2 | SPMT060304 | 2 | 0.6 |
| -025-XP25-L | ▲ | 12.5 | 25 | 23 | 25 | 200 | 100 | ZDET1103CYR12.5 | 2 | SPMT060304 | 2 | 0.7 |
| -032-XP32-S | ▲ | 16 | 32 | 31 | 32 | 175 | 85 | ZDET13T3CYR16 | 2 | SDMT090308 | 2 | 0.9 |
| -032-XP32-M | ▲ | 16 | 32 | 31 | 32 | 200 | 100 | ZDET13T3CYR16 | 2 | SDMT090308 | 2 | 1.1 |
| -032-XP32-L | ▲ | 16 | 32 | 31 | 32 | 250 | 150 | ZDET13T3CYR16 | 2 | SDMT090308 | 2 | 1.4 |
| -040-XP40-S | ▲ | 20 | 40 | 41 | 40 | 175 | 85 | ZPNT2204CY(R20) | 3 | SPMT120408 | 2 | 1.4 |
| -040-XP40-M | ▲ | 20 | 40 | 41 | 40 | 200 | 100 | ZPNT2204CY(R20) | 3 | SPMT120408 | 2 | 1.7 |
| -040-XP40-L | ▲ | 20 | 40 | 41 | 40 | 250 | 150 | ZPNT2204CY(R20) | 3 | SPMT120408 | 2 | 2.1 |
| -050-XP40-S | ▲ | 25 | 50 | 45 | 40 | 200 | 100 | ZPNT2204CY(R25) | 3 | SPMT120408 | 2 | 1.8 |
| -050-XP40-M | ▲ | 25 | 50 | 45 | 40 | 300 | 100 | ZPNT2204CY(R25) | 3 | SPMT120408 | 2 | 2.8 |
| -063-XP40-S | ▲ | 31.5 | 63 | 52 | 40 | 200 | 100 | ZPNT2204CY(R31) | 4 | SPMT120408 | 2 | 3.0 |
| -063-XP40-M | ▲ | 31.5 | 63 | 52 | 40 | 300 | 100 | ZPNT2204CY(R31) | 4 | SPMT120408 | 2 | 3.5 |

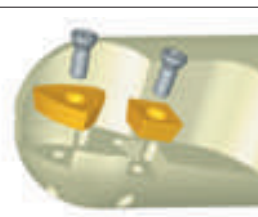
▲ Stock available △ Make-to-order

Indexable milling tools

Profile milling tools

Spare parts

| Diameter ØD | Screw | Wrench | |
|-------------|---|---|--|
| |  |  |  |
| Ø20-Ø25 | I43M2.5×5.7 | WT07IP | -- |
| Ø32 | I43M4×8 | -- | WT15IS |
| Ø40-Ø63 | I43M5×11 | -- | WT20IS |

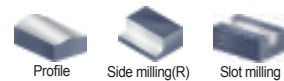


Tools code key
B24-B25

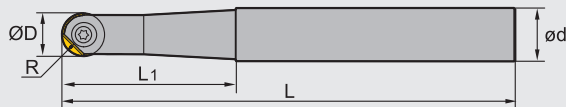
Grade selection guide
B19-B23

Technical data
B234-B240

Profile milling tools



BMR02 P M K



➤ Specification of tools




| Type | Stock | Basic dimensions(mm) | | | | | Weight (kg) |
|-------------------------|-------|----------------------|----|----|-----|----------------|-------------|
| | | R | ØD | ød | L | L ₁ | |
| BMR02 -012-G16-S | ▲ | 6 | 12 | 16 | 110 | 40 | 0.1 |
| -012-G16-M | ▲ | 6 | 12 | 16 | 130 | 50 | 0.2 |
| -012-G16-L | ▲ | 6 | 12 | 16 | 160 | 50 | 0.2 |
| -016-G20-S | ▲ | 8 | 16 | 20 | 140 | 45 | 0.3 |
| -016-G20-M | ▲ | 8 | 16 | 20 | 170 | 65 | 0.3 |
| -016-G20-L | ▲ | 8 | 16 | 20 | 200 | 65 | 0.4 |
| -020-G25-S | ▲ | 10 | 20 | 25 | 160 | 60 | 0.5 |
| -020-G25-M | ▲ | 10 | 20 | 25 | 200 | 80 | 0.6 |
| -020-G25-L | ▲ | 10 | 20 | 25 | 240 | 80 | 0.8 |

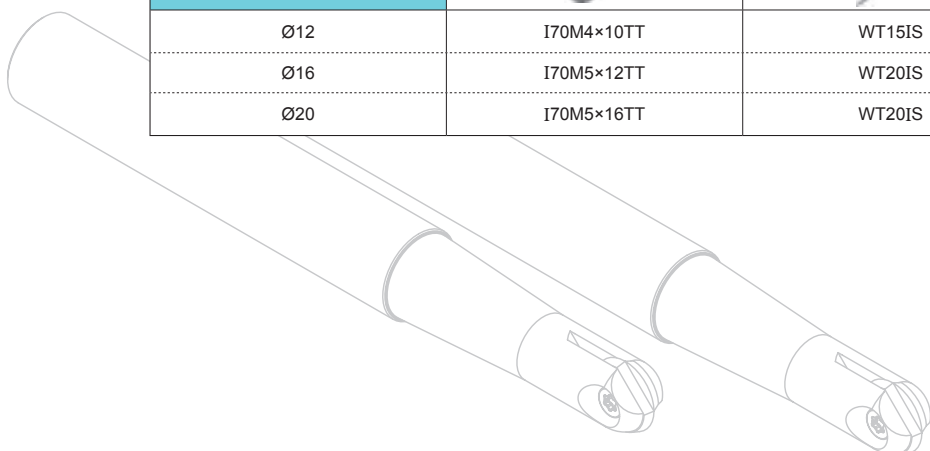
▲Stock available △Make-to-order

Indexable milling tools

Profile milling tools

➤ Spare parts

| Diameter ØD | Screw | Wrench |  |
|-------------|---|---|---|
| |  |  | |
| Ø12 | I70M4×10TT | WT15IS | |
| Ø16 | I70M5×12TT | WT20IS | |
| Ø20 | I70M5×16TT | WT20IS | |

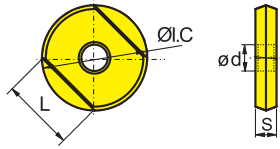


Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | | | | | | | | | | | | | | | | | | | | | | |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | | | | | | | | | | | | | |

| Insert shape | Type | Basic dimensions(mm) | | | | CVD Coating | | | | | | PVD Coating | | | | Cermet | | Cemented carbide | | | | | | | | | |
|--------------|-----------------|----------------------|------|---|----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|---------|-------|-------|-------|-------|
| | | ØI.C | L | S | ød | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
| | ROHX1203 | 12 | 8.5 | 3 | 4 | | | | | | | | | | | | | | | | | | | | | | |
| | ROHX1604 | 16 | 11.3 | 4 | 5 | | | | | | | | | | | | | | | | | | | | | | |
| | ROHX2005 | 20 | 14.1 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools

Profile milling tools

Recommended cutting parameters

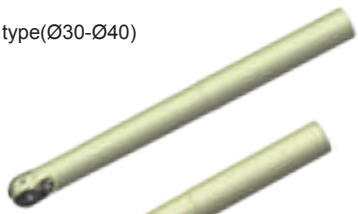
| Workpiece material | Hardness HB | Insert grade | Cutting parameters | Diameter | | | |
|--------------------|-----------------|--------------|--------------------|-----------|-----------|---------|--------|
| | | | | Ø12 | Ø16 | Ø20 | |
| P | Carbon steel | YBG252 | Vc(m/min) | 100~200 | 100~200 | 100~200 | |
| | | | fz(mm/z) | 0.15~0.25 | 0.2~0.3 | 0.2~0.3 | |
| | | | apmax(mm) | 0.8 | 1.0 | 1.25 | |
| | | | ae max(mm) | 0.8 | 1.0 | 1.25 | |
| | Alloy steel | | HB180~280 | Vc(m/min) | 80~180 | 80~180 | 80~180 |
| | | | fz(mm/z) | 0.15~0.25 | 0.2~0.3 | 0.2~0.3 | |
| | | | apmax(mm) | 0.8 | 1.0 | 1.25 | |
| | | | ae max(mm) | 0.8 | 1.0 | 1.25 | |
| | Hardened steel | | HRC55~65 | Vc(m/min) | 60~100 | 60~100 | 60~100 |
| | | | fz(mm/z) | 0.15~0.25 | 0.2~0.3 | 0.2~0.3 | |
| | | | apmax(mm) | 0.4 | 0.5 | 0.6 | |
| | | | ae max(mm) | 0.4 | 0.5 | 0.6 | |
| M | Stainless steel | Vc(m/min) | 70~150 | 70~150 | 70~150 | | |
| | | fz(mm/z) | 0.1~0.2 | 0.1~0.25 | 0.1~0.25 | | |
| | | apmax(mm) | 0.6 | 0.8 | 1.0 | | |
| | | ae max(mm) | 0.6 | 0.8 | 1.0 | | |
| K | Cast iron | Vc(m/min) | 160~300 | 160~300 | 160~300 | | |
| | | fz(mm/z) | 0.2~0.3 | 0.25~0.35 | 0.25~0.35 | | |
| | | apmax(mm) | 1.0 | 1.5 | 1.8 | | |
| | | ae max(mm) | 1.0 | 1.5 | 1.8 | | |

Profile milling tools

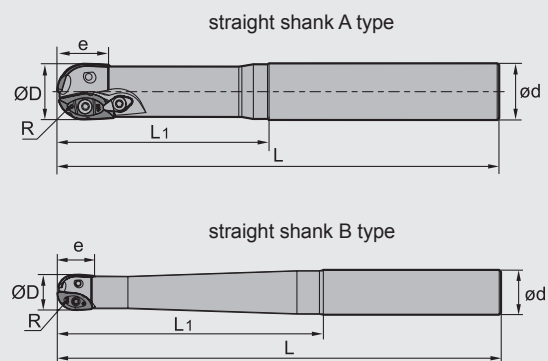


BMR03 P M K

A type(Ø30-Ø40)



B type(Ø16-Ø25)



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | | Number of teeth Z | Weight (kg) | Type | Clamp |
|-------------------------|-------|----------------------|----|----|-----|-----|----|-------------------|-------------|------|--------|
| | | R | ØD | ød | L | L1 | e | | | | |
| BMR03 -016-G20-S | ▲ | 8 | 16 | 20 | 150 | 70 | 16 | 2 | 0.3 | B | - |
| -016-G20-M | ▲ | 8 | 16 | 20 | 180 | 80 | 16 | 2 | 0.4 | B | |
| -020-G25-S | ▲ | 10 | 20 | 25 | 180 | 80 | 20 | 2 | 0.5 | B | |
| -020-G25-M | ▲ | 10 | 20 | 25 | 200 | 100 | 20 | 2 | 0.6 | B | |
| -020-G25-L | ▲ | 10 | 20 | 25 | 250 | 150 | 20 | 2 | 0.7 | B | |
| -020-G25-XL | ▲ | 10 | 20 | 25 | 300 | 110 | 20 | 2 | 1.0 | B | |
| -025-G25-S | ▲ | 12.5 | 25 | 25 | 180 | 80 | 25 | 2 | 0.6 | B | |
| -025-G25-M | ▲ | 12.5 | 25 | 25 | 200 | 100 | 25 | 2 | 0.7 | B | |
| -025-G25-L | ▲ | 12.5 | 25 | 25 | 250 | 110 | 25 | 2 | 0.8 | B | |
| -025-G25-XL | ▲ | 12.5 | 25 | 25 | 300 | 120 | 25 | 2 | 1.0 | B | |
| -030-G32-S | △ | 15 | 30 | 32 | 200 | 120 | 30 | 2 | 1.0 | A | WD-208 |
| -030-G32-M | ▲ | 15 | 30 | 32 | 250 | 150 | 30 | 2 | 1.3 | A | |
| -030-G32-L | ▲ | 15 | 30 | 32 | 300 | 200 | 30 | 2 | 1.6 | A | |
| -030-G32-XL | △ | 15 | 30 | 32 | 350 | 200 | 30 | 2 | 1.9 | A | |
| -032-G32-S | ▲ | 16 | 32 | 32 | 200 | 120 | 32 | 2 | 1.1 | A | |
| -032-G32-M | ▲ | 16 | 32 | 32 | 250 | 150 | 32 | 2 | 1.4 | A | |
| -032-G32-L | ▲ | 16 | 32 | 32 | 300 | 200 | 32 | 2 | 1.6 | A | CBH5R1 |
| -032-G32-XL | △ | 16 | 32 | 32 | 350 | 200 | 32 | 2 | 2.0 | A | |
| -040-G40-S | △ | 20 | 40 | 40 | 200 | 120 | 40 | 2 | 1.6 | A | |
| -040-G40-M | ▲ | 20 | 40 | 40 | 250 | 150 | 40 | 2 | 2.0 | A | |
| -040-G40-L | ▲ | 20 | 40 | 40 | 300 | 200 | 40 | 2 | 2.5 | A | CBH5R1 |
| -040-G40-XL | △ | 20 | 40 | 40 | 350 | 200 | 40 | 2 | 3.0 | A | |

▲Stock available △Make-to-order



Indexable milling tools

Profile milling tools

Profile milling tools

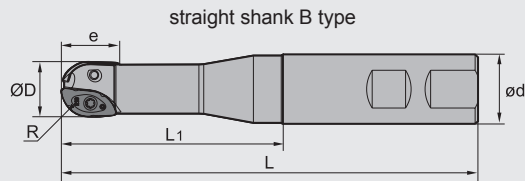
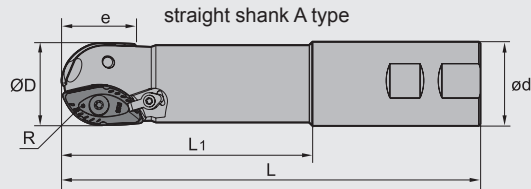


BMR03 P M K

A type(Ø30-Ø50)



B type(Ø16-Ø25)



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | | Number of teeth Z | Weight (kg) | Type | Clamp |
|--------------------------|-------|----------------------|----|----|-----|-----|----|-------------------|-------------|------|--------|
| | | R | ØD | ød | L | L1 | e | | | | |
| BMR03 -016-XP20-M | ▲ | 8 | 16 | 20 | 111 | 60 | 16 | 2 | 0.2 | B | -- |
| -020-XP25-M | ▲ | 10 | 20 | 25 | 127 | 70 | 20 | 2 | 0.3 | B | |
| -020-XP25-L | ▲ | 10 | 20 | 25 | 150 | 80 | 20 | 2 | 0.4 | B | |
| -025-XP25-M | ▲ | 12.5 | 25 | 25 | 137 | 80 | 25 | 2 | 0.4 | B | |
| -025-XP25-L | ▲ | 12.5 | 25 | 25 | 200 | 100 | 25 | 2 | 0.6 | B | |
| -030-XP32-M | ▲ | 15 | 30 | 32 | 161 | 100 | 30 | 2 | 0.8 | A | WD-208 |
| -030-XP32-L | ▲ | 15 | 30 | 32 | 250 | 150 | 30 | 2 | 1.3 | A | |
| -032-XP32-M | ▲ | 16 | 32 | 32 | 161 | 100 | 32 | 2 | 0.8 | A | |
| -032-XP32-L | ▲ | 16 | 32 | 32 | 250 | 120 | 32 | 2 | 1.3 | A | |
| -040-XP40-M | ▲ | 20 | 40 | 40 | 175 | 100 | 40 | 2 | 1.3 | A | CBH5R1 |
| -040-XP40-L | ▲ | 20 | 40 | 40 | 250 | 120 | 40 | 2 | 2.0 | A | |
| -050-XP50-M | ▲ | 25 | 50 | 50 | 200 | 100 | 50 | 2 | 2.5 | A | |
| -050-XP50-L | ▲ | 25 | 50 | 50 | 250 | 150 | 50 | 2 | 3.1 | A | |

▲Stock available △Make-to-order

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Profile milling tools

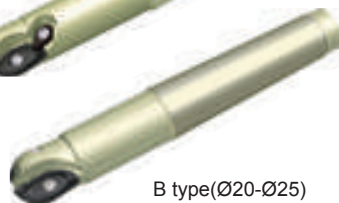


BMR03 P M K

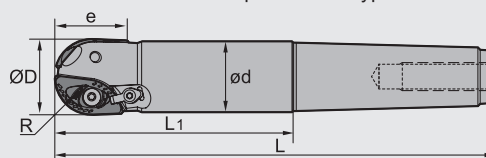
A type(Ø30-Ø50)



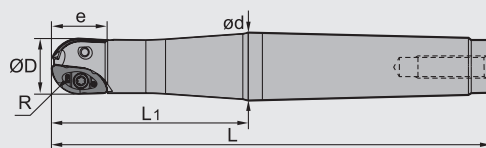
B type(Ø20-Ø25)



Morse taper shank A type



Morse taper shank B type



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | | Number of teeth Z | Weight (kg) | Type | Clamp |
|-------------------------|-------|----------------------|----|------|-----|-----|----|-------------------|-------------|------|--------|
| | | R | ØD | ød | L | L1 | e | | | | |
| BMR03 -020-MT3-M | ▲ | 10 | 20 | 18.7 | 156 | 70 | 20 | 2 | 0.4 | B | - |
| -020-MT3-L | △ | 10 | 20 | 18.7 | 186 | 100 | 20 | 2 | 0.4 | B | |
| -025-MT3-M | ▲ | 12.5 | 25 | 23.5 | 156 | 70 | 25 | 2 | 0.4 | B | |
| -025-MT3-L | △ | 12.5 | 25 | 23.5 | 186 | 100 | 25 | 2 | 0.4 | B | |
| -030-MT4-M | ▲ | 15 | 30 | 28.2 | 189 | 70 | 30 | 2 | 0.8 | A | WD-208 |
| -030-MT4-L | △ | 15 | 30 | 28.2 | 229 | 120 | 30 | 2 | 1.0 | A | |
| -032-MT4-M | ▲ | 16 | 32 | 29.2 | 179 | 70 | 32 | 2 | 0.9 | A | |
| -032-MT4-L | △ | 16 | 32 | 29.2 | 209 | 100 | 32 | 2 | 0.9 | A | |
| -040-MT4-M | ▲ | 20 | 40 | 36.9 | 199 | 100 | 40 | 2 | 1.0 | A | CBH5R1 |
| -040-MT5-L | ▲ | 20 | 40 | 36.9 | 226 | 90 | 40 | 2 | 1.8 | A | |
| -040-MT5-XL | ▲ | 20 | 40 | 36.9 | 256 | 120 | 40 | 2 | 2.0 | A | |
| -050-MT5-M | ▲ | 25 | 50 | 46.8 | 236 | 100 | 50 | 2 | 2.2 | A | |
| -050-MT5-L | ▲ | 25 | 50 | 46.8 | 286 | 150 | 50 | 2 | 2.9 | A | |

▲Stock available △Make-to-order

Indexable milling tools

Profile milling tools

Tools code key
B24-B25

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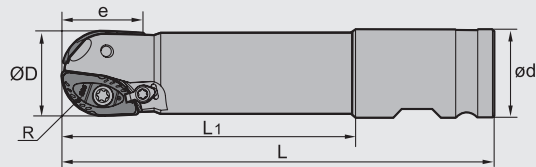
Profile milling tools



BMR03 P M K



Compound shank



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | | Number of teeth Z | Weight (kg) | Clamp |
|-------------------------|-------|----------------------|----|------|-----|-----|----|-------------------|-------------|--------|
| | | R | ØD | ød | L | L1 | e | | | |
| BMR03 -040-XPX-M | ▲ | 20 | 40 | 50.8 | 250 | 170 | 40 | 2 | 1.3 | CBH5R1 |
| -040-XPX-L | ▲ | 20 | 40 | 50.8 | 300 | 220 | 40 | 2 | 3.1 | |
| -040-XPX-XL | ▲ | 20 | 40 | 50.8 | 350 | 270 | 40 | 2 | 3.5 | |
| -050-XPX-M | ▲ | 25 | 50 | 50.8 | 250 | 170 | 50 | 2 | 3.1 | |
| -050-XPX-L | ▲ | 25 | 50 | 50.8 | 300 | 200 | 50 | 2 | 3.8 | |
| -050-XPX-XL | ▲ | 25 | 50 | 50.8 | 350 | 270 | 50 | 2 | 4.4 | |

▲Stock available △Make-to-order

Indexable milling tools

Profile milling tools

Spare parts

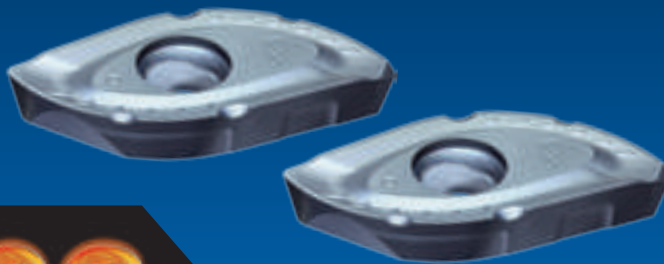
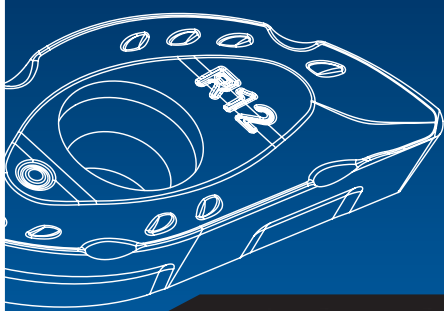
| Diameter ØD | Clamp | Screw | Wrench | |
|-------------|--------|--------------|--------|--------|
| | | | | |
| Ø16 | -- | I60M2.5×6.5 | -- | WT07P |
| Ø20 | -- | I60M3.5×08TT | | WT10IP |
| Ø25 | -- | I60M4×10 | | WT15S |
| Ø30 | WD-208 | I60M5×13 | WT20IT | -- |
| Ø32 | WD-208 | I60M5×13 | | |
| Ø40 | CBH5R1 | I43M6×16 | WT25IT | |
| Ø50 | CBH5R1 | I43M8×21 | WT25IT | |
| | | I43M6×16 | WT30IT | |



Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240



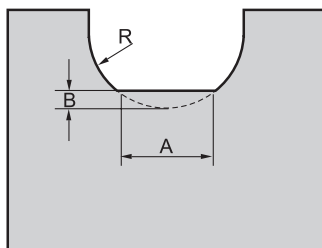
BMRO3

series ball nose end milling tools

- The unique chipbreaker and big rake angle can effectively control the curling and flowing direction of chips and reduce the cutting force, improving workpiece surface quality and tool life.
- After precise grinding of periphery and locating surface, the insert can sufficiently ensure the shape accuracy of cutting edge and the precision of installation and location, improving installation security and workpiece precision after machining.
- The concave structure of the flank can effectively enhance the strength of cutting edge and prevent scraping between the clearance face and workpiece surface. Therefore, it improves the workpiece surface quality and prolongs the life of insert.
- The designs of cutting edge over center and a large negative rake angle make it possible to cut vertically, thus anti-breakage capability is enhanced.
- The rough ball nose milling cutters with large diameter adopt the top and hole clamping style, so insert clamping becomes more firm and stable. The machining is also highly efficient even under poor conditions such as long overhang and large vibration, etc.
- The adapter types include straight shank, Weldon shank, Morse taper shank and combination shank.



Slot shape after machining



| R | A | B |
|------|-----|------|
| 08 | 1.7 | 0.09 |
| 10 | 2.2 | 0.12 |
| 12.5 | 3.0 | 0.18 |
| 15 | 3.9 | 0.20 |
| 16 | 3.5 | 0.22 |
| 20 | 3.6 | 0.24 |
| 25 | 3.8 | 0.26 |

Cautions:

The insert edge should correspond to the locating face of insert pocket in the tool. Don't install the wrong side up.

Before screwing down the insert, confirm the good connection between insert and insert pocket.

Select and adjust the cutting parameters according to machine power and machining conditions.

If vibration occurs in the machining process, cutting speed should be reduced properly.

▶ Recommended cutting parameters Diameter Ø16

| Operations | | | | | | |
|---|---------------------|-------------------|-----------------------|-----------|---------------------|--------------|
| Workpiece material | Cutting parameters | Machining of slot | Side milling (slight) | | Side milling (deep) | Insert grade |
| Medium carbon steel Hardness 150~250HB | Vc(m/min) | 150~220 | 150~220 | 150~220 | 150~220 | YBG302 |
| | Fz(mm/z) | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | |
| | a _p (mm) | 4 | 4 | 8 | 16 | |
| | a _e (mm) | -- | 3 | 4 | 1.5 | |
| Alloy steel Hardness 150~280HB | Vc(m/min) | 100~150 | 100~150 | 100~150 | 100~150 | |
| | Fz(mm/z) | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | |
| | a _p (mm) | 4 | 4 | 8 | 16 | |
| | a _e (mm) | -- | 3 | 4 | 1.5 | |
| Die steel Hardness 150~255HB | Vc(m/min) | 80~120 | 80~120 | 80~120 | 80~120 | |
| | Fz(mm/z) | 0.1~0.3 | 0.1~0.3 | 0.1~0.3 | 0.1~0.3 | |
| | a _p (mm) | 4 | 4 | 8 | 16 | |
| | a _e (mm) | -- | 3 | 4 | 1.5 | |
| Hardened steel Hardness 40~50HRC | Vc(m/min) | 80~100 | 80~100 | 80~100 | -- | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | -- | |
| | a _p (mm) | 4 | 4 | 8 | -- | |
| | a _e (mm) | -- | 2 | 3 | -- | |
| Gray cast iron Hardness 160~260HB | Vc(m/min) | 250~300 | 250~300 | 250~300 | 250~300 | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | |
| | a _p (mm) | 4 | 4 | 8 | 16 | |
| | a _e (mm) | -- | 3 | 4 | 1.5 | |
| Nodular cast iron Hardness 170~300HB | Vc(m/min) | 200~250 | 200~250 | 200~250 | 200~250 | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | |
| | a _p (mm) | 4 | 4 | 8 | 16 | |
| | a _e (mm) | -- | 3 | 4 | 1.5 | |

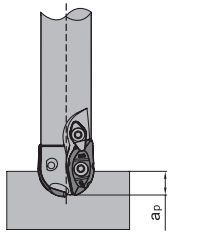
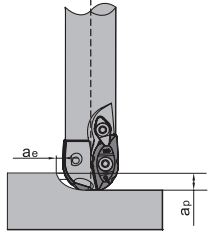
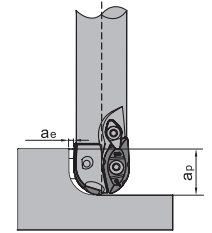
Note: 1. Parameters in the table shall be adjusted according to the rigidity of the machine or workpiece.

2. Wind cooling to be preferred.

Indexable
milling tools

Profile milling tools

▶ Recommended cutting parameters Diameter Ø20

| Operations | |  |  |  | | |
|---|---------------------|---|---|---|---------------------|--------------|
| Workpiece material | Cutting parameters | Machining of slot | Side milling (slight) | | Side milling (deep) | Insert grade |
| Medium carbon steel Hardness 150~250HB | Vc(m/min) | 150~220 | 150~220 | 150~220 | 150~220 | YBG302 |
| | Fz(mm/z) | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | |
| | a _p (mm) | 5 | 5 | 10 | 20 | |
| | a _e (mm) | -- | 4 | 5 | 2 | |
| Alloy steel Hardness 150~280HB | Vc(m/min) | 100~150 | 100~150 | 100~150 | 100~150 | |
| | Fz(mm/z) | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | |
| | a _p (mm) | 5 | 5 | 10 | 20 | |
| | a _e (mm) | -- | 4 | 5 | 2 | |
| Die steel Hardness 150~255HB | Vc(m/min) | 80~120 | 80~120 | 80~120 | 80~120 | |
| | Fz(mm/z) | 0.1~0.3 | 0.1~0.3 | 0.1~0.3 | 0.1~0.3 | |
| | a _p (mm) | 5 | 5 | 10 | 20 | |
| | a _e (mm) | -- | 4 | 5 | 2 | |
| Hardened steel Hardness 40~50HRC | Vc(m/min) | 80~100 | 80~100 | 80~100 | -- | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | -- | |
| | a _p (mm) | 5 | 5 | 10 | -- | |
| | a _e (mm) | -- | 4 | 5 | -- | |
| Gray cast iron Hardness 160~260HB | Vc(m/min) | 250~300 | 250~300 | 250~300 | 250~300 | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | |
| | a _p (mm) | 5 | 5 | 10 | 20 | |
| | a _e (mm) | -- | 4 | 5 | 2 | |
| Nodular cast iron Hardness 170~300HB | Vc(m/min) | 200~250 | 200~250 | 200~250 | 200~250 | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | |
| | a _p (mm) | 5 | 5 | 10 | 20 | |
| | a _e (mm) | -- | 4 | 5 | 2 | |

Note: 1. Parameters in the table shall be adjusted according to the rigidity of the machine or workpiece.

2. Wind cooling to be preferred.

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milling tools

Profile milling tools

▶ Recommended cutting parameters Diameter Ø25

| Operations | | | | | | |
|---|---------------------|-------------------|-----------------------|-----------|---------------------|--------------|
| Workpiece material | Cutting parameters | Machining of slot | Side milling (slight) | | Side milling (deep) | Insert grade |
| Medium carbon steel Hardness 150~250HB | Vc(m/min) | 150~220 | 150~220 | 150~220 | 150~220 | YBG302 |
| | Fz(mm/z) | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | |
| | a _p (mm) | 6 | 6 | 12.5 | 25 | |
| | a _e (mm) | -- | 5 | 6.5 | 3 | |
| Alloy steel Hardness 150~280HB | Vc(m/min) | 100~150 | 100~150 | 100~150 | 100~150 | |
| | Fz(mm/z) | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | |
| | a _p (mm) | 6 | 6 | 12.5 | 25 | |
| | a _e (mm) | -- | 5 | 6.5 | 3 | |
| Die steel Hardness 150~255HB | Vc(m/min) | 80~120 | 80~120 | 80~120 | 80~120 | |
| | Fz(mm/z) | 0.1~0.3 | 0.1~0.3 | 0.1~0.3 | 0.1~0.3 | |
| | a _p (mm) | 6 | 6 | 12.5 | 25 | |
| | a _e (mm) | -- | 5 | 6.5 | 3 | |
| Hardened steel Hardness 40~50HRC | Vc(m/min) | 80~100 | 80~100 | 80~100 | -- | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | -- | |
| | a _p (mm) | 6 | 6 | 12.5 | -- | |
| | a _e (mm) | -- | 5 | 6.5 | -- | |
| Gray cast iron Hardness 160~260HB | Vc(m/min) | 250~300 | 250~300 | 250~300 | 250~300 | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | |
| | a _p (mm) | 6 | 6 | 12.5 | 25 | |
| | a _e (mm) | -- | 5 | 6.5 | 3 | |
| Nodular cast iron Hardness 170~300HB | Vc(m/min) | 200~250 | 200~250 | 200~250 | 200~250 | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | |
| | a _p (mm) | 6 | 6 | 12.5 | 25 | |
| | a _e (mm) | -- | 5 | 6.5 | 3 | |

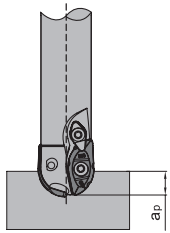
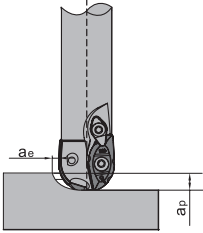
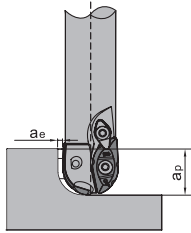
Note: 1. Parameters in the table shall be adjusted according to the rigidity of the machine or workpiece.

2. Wind cooling to be preferred.

Indexable
milling tools

Profile milling tools

▶ Recommended cutting parameters Diameter Ø30, Ø32

| Operations | |  |  |  | | |
|---|---------------------|---|---|---|---------------------|--------------|
| Workpiece material | Cutting parameters | Machining of slot | Side milling (slight) | | Side milling (deep) | Insert grade |
| Medium carbon steel Hardness 150~250HB | Vc(m/min) | 150~220 | 150~220 | 150~220 | 150~220 | YBG302 |
| | Fz(mm/z) | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | |
| | a _p (mm) | 10 | 10 | 16 | 28 | |
| | a _e (mm) | -- | 6 | 9 | 6 | |
| Alloy steel Hardness 150~280HB | Vc(m/min) | 100~150 | 100~150 | 100~150 | 100~150 | |
| | Fz(mm/z) | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | |
| | a _p (mm) | 10 | 10 | 16 | 28 | |
| | a _e (mm) | -- | 6 | 9 | 6 | |
| Die steel Hardness 150~255HB | Vc(m/min) | 80~120 | 80~120 | 80~120 | 80~120 | |
| | Fz(mm/z) | 0.1~0.3 | 0.1~0.3 | 0.1~0.3 | 0.1~0.3 | |
| | a _p (mm) | 10 | 10 | 16 | 28 | |
| | a _e (mm) | -- | 6 | 9 | 6 | |
| Hardened steel Hardness 40~50HRC | Vc(m/min) | 80~100 | 80~100 | 80~100 | -- | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | -- | |
| | a _p (mm) | 10 | 10 | 16 | -- | |
| | a _e (mm) | -- | 6 | 9 | -- | |
| Gray cast iron Hardness 160~260HB | Vc(m/min) | 250~300 | 250~300 | 250~300 | 250~300 | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | |
| | a _p (mm) | 10 | 10 | 16 | 28 | |
| | a _e (mm) | -- | 6 | 9 | 6 | |
| Nodular cast iron Hardness 170~300HB | Vc(m/min) | 200~250 | 200~250 | 200~250 | 200~250 | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | |
| | a _p (mm) | 10 | 10 | 16 | 28 | |
| | a _e (mm) | -- | 6 | 9 | 6 | |

Note: 1. Parameters in the table shall be adjusted according to the rigidity of the machine or workpiece.

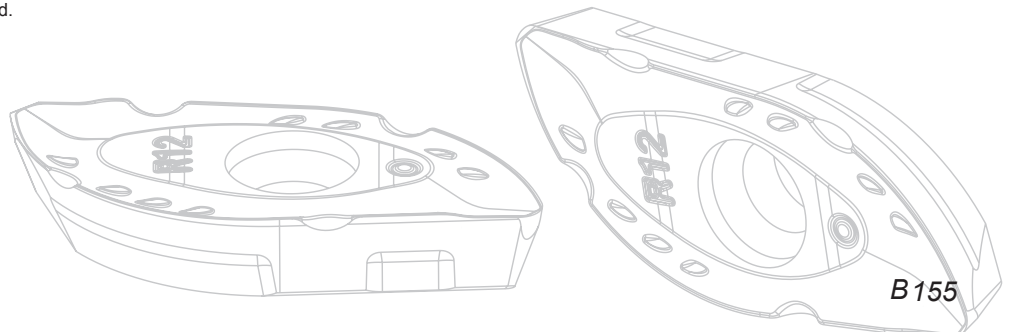
2. Wind cooling to be preferred.

▶ Recommended cutting parameters Diameter Ø40

| Operations | | | | | | |
|---|---------------------|-------------------|-----------------------|-----------|---------------------|--------------|
| Workpiece material | Cutting parameters | Machining of slot | Side milling (slight) | | Side milling (deep) | Insert grade |
| Medium carbon steel Hardness 150~250HB | Vc(m/min) | 150~220 | 150~220 | 150~220 | 150~220 | YBG302 |
| | Fz(mm/z) | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | |
| | a _p (mm) | 12 | 10 | 20 | 35 | |
| | a _e (mm) | -- | 8 | 12 | 8 | |
| Alloy steel Hardness 150~280HB | Vc(m/min) | 100~150 | 100~150 | 100~150 | 100~150 | |
| | Fz(mm/z) | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | |
| | a _p (mm) | 12 | 10 | 20 | 35 | |
| | a _e (mm) | -- | 8 | 12 | 8 | |
| Die steel Hardness 150~255HB | Vc(m/min) | 80~120 | 80~120 | 80~120 | 80~120 | |
| | Fz(mm/z) | 0.1~0.3 | 0.1~0.3 | 0.1~0.3 | 0.1~0.3 | |
| | a _p (mm) | 12 | 10 | 20 | 35 | |
| | a _e (mm) | -- | 8 | 12 | 8 | |
| Hardened steel Hardness 40~50HRC | Vc(m/min) | 80~100 | 80~100 | 80~100 | -- | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | -- | |
| | a _p (mm) | 12 | 10 | 20 | -- | |
| | a _e (mm) | -- | 8 | 12 | -- | |
| Gray cast iron Hardness 160~260HB | Vc(m/min) | 250~300 | 250~300 | 250~300 | 250~300 | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | |
| | a _p (mm) | 12 | 10 | 20 | 35 | |
| | a _e (mm) | -- | 8 | 12 | 8 | |
| Nodular cast iron Hardness 170~300HB | Vc(m/min) | 200~250 | 200~250 | 200~250 | 200~250 | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | |
| | a _p (mm) | 12 | 10 | 20 | 35 | |
| | a _e (mm) | -- | 8 | 12 | 8 | |

Note: 1. Parameters in the table shall be adjusted according to the rigidity of the machine or workpiece.

2. Wind cooling to be preferred.

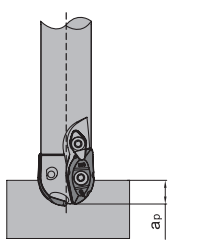
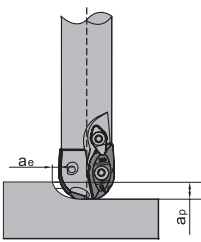
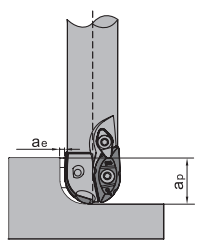


Indexable milling tools

Profile milling tools

B155

▶ Recommended cutting parameters Diameter Ø50

| Operations | |  |  |  | | |
|---|---------------------|---|---|---|---------------------|--------------|
| Workpiece material | Cutting parameters | Machining of slot | Side milling (slight) | | Side milling (deep) | Insert grade |
| Medium carbon steel Hardness 150~250HB | Vc(m/min) | 150~220 | 150~220 | 150~220 | 150~220 | YBG302 |
| | Fz(mm/z) | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | |
| | a _p (mm) | 15 | 10 | 25 | 40 | |
| | a _e (mm) | -- | 10 | 15 | 10 | |
| Alloy steel Hardness 150~280HB | Vc(m/min) | 100~150 | 100~150 | 100~150 | 100~150 | |
| | Fz(mm/z) | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | 0.1~0.4 | |
| | a _p (mm) | 15 | 10 | 25 | 40 | |
| | a _e (mm) | -- | 10 | 15 | 10 | |
| Die steel Hardness 150~255HB | Vc(m/min) | 80~120 | 80~120 | 80~120 | 80~120 | |
| | Fz(mm/z) | 0.1~0.3 | 0.1~0.3 | 0.1~0.3 | 0.1~0.3 | |
| | a _p (mm) | 15 | 10 | 25 | 40 | |
| | a _e (mm) | -- | 10 | 15 | 10 | |
| Hardened steel Hardness 40~50HRC | Vc(m/min) | 80~100 | 80~100 | 80~100 | -- | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | -- | |
| | a _p (mm) | 15 | 10 | 25 | -- | |
| | a _e (mm) | -- | 10 | 15 | -- | |
| Gray cast iron Hardness 160~260HB | Vc(m/min) | 250~300 | 250~300 | 250~300 | 250~300 | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | |
| | a _p (mm) | 15 | 10 | 25 | 40 | |
| | a _e (mm) | -- | 10 | 15 | 10 | |
| Nodular cast iron Hardness 170~300HB | Vc(m/min) | 200~250 | 200~250 | 200~250 | 200~250 | |
| | Fz(mm/z) | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | 0.08~0.15 | |
| | a _p (mm) | 15 | 10 | 25 | 40 | |
| | a _e (mm) | -- | 10 | 15 | 10 | |

Note: 1. Parameters in the table shall be adjusted according to the rigidity of the machine or workpiece.

2. Wind cooling to be preferred.

Indexable
milling tools

Profile milling tools

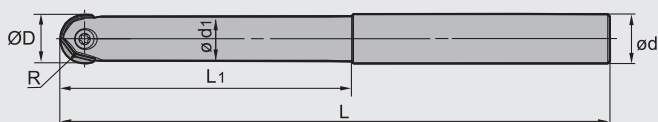
Profile milling tools



BMR04 P M K



Straight shank with straight neck



➤ Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | | Weight (kg) |
|-------------------------|-------|----------------------|----|----|-----------------|----------------|-----|-------------|
| | | R | ØD | ød | ød ₁ | L ₁ | L | |
| BMR04 -012-G12-M | ▲ | 6 | 12 | 12 | 11 | 35 | 125 | 0.1 |
| -012-G12-L | △ | 6 | 12 | 12 | 11 | 45 | 150 | 0.1 |
| -016-G16-M | ▲ | 8 | 16 | 16 | 14 | 40 | 150 | 0.2 |
| -016-G16-L | △ | 8 | 16 | 16 | 14 | 55 | 180 | 0.3 |
| -020-G20-M | ▲ | 10 | 20 | 20 | 18 | 65 | 180 | 0.4 |
| -020-G20-L | △ | 10 | 20 | 20 | 18 | 100 | 250 | 0.6 |
| -025-G25-M | ▲ | 12.5 | 25 | 25 | 23 | 70 | 200 | 0.7 |
| -025-G25-L | △ | 12.5 | 25 | 25 | 23 | 100 | 250 | 0.9 |
| -030-G32-M | ▲ | 15 | 30 | 32 | 27 | 130 | 250 | 1.2 |
| -030-G32-L | △ | 15 | 30 | 32 | 27 | 150 | 300 | 1.5 |
| -032-G32-M | ▲ | 16 | 32 | 32 | 29 | 80 | 250 | 1.4 |
| -032-G32-L | △ | 16 | 32 | 32 | 29 | 109 | 300 | 1.7 |

▲ Stock available △ Make-to-order

Indexable milling tools

Profile milling tools

Tools code key
B24–B25

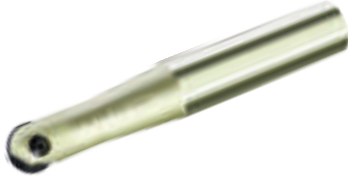
Grade selection guide
B19–B23

Technical data
B234–B240

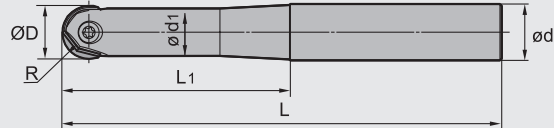
Profile milling tools



BMR04 P M K



Straight shank with taper neck



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | | Weight (kg) |
|-------------------------|-------|----------------------|----|----|-----------------|----------------|-----|-------------|
| | | R | ØD | ød | ød ₁ | L ₁ | L | |
| BMR04 -012-G16-M | ▲ | 6 | 12 | 16 | 11 | 50 | 125 | 0.2 |
| -012-G16-L | △ | 6 | 12 | 16 | 11 | 60 | 150 | 0.2 |
| -016-G20-M | ▲ | 8 | 16 | 20 | 14 | 60 | 150 | 0.3 |
| -016-G20-L | △ | 8 | 16 | 20 | 14 | 80 | 180 | 0.3 |
| -020-G25-M | ▲ | 10 | 20 | 25 | 18 | 75 | 180 | 0.6 |
| -020-G25-L | △ | 10 | 20 | 25 | 18 | 85 | 200 | 0.6 |
| -025-G32-M | ▲ | 12.5 | 25 | 32 | 23 | 90 | 200 | 1.0 |
| -025-G32-L | △ | 12.5 | 25 | 32 | 23 | 110 | 250 | 1.3 |
| -030-G40-M | ▲ | 15 | 30 | 40 | 27 | 110 | 250 | 2.0 |
| -030-G40-L | △ | 15 | 30 | 40 | 27 | 125 | 300 | 2.4 |
| -032-G40-M | ▲ | 16 | 32 | 40 | 29 | 110 | 250 | 2.0 |
| -032-G40-L | △ | 16 | 32 | 40 | 29 | 125 | 300 | 2.4 |

▲ Stock available △ Make-to-order

Indexable milling tools

Profile milling tools

Tools code key

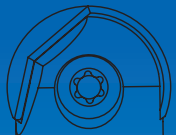
B24-B25

Grade selection guide

B19-B23

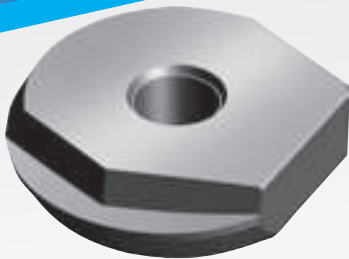
Technical data

B234-B240



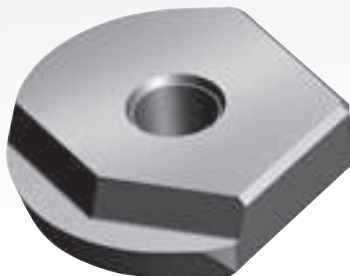
BMR04

Series ball nose finishing end milling tools



-GF

○ With positive rake angle and double clearance angle, the design of curved cutting edge combines sharpness and strength. The edge with high precision is applicable under stable machining conditions and in conditions requiring high workpiece profile precision.



-GM

○ 0° rake angle, only one clearance angle, high edge strength, suitable for conditions requiring high cutting efficiency.

The inserts are a combination of ultra-fine cemented carbide substrate and nano coating grade YBG252. With excellent cutting performance, they are suitable for semi-finish to finish machining.

Calculation of cutting speed for BMR02/04 series ball nose end mills

1. When the tool axial line is vertical to the surface being machined,

$$N = \frac{1000 V_c}{\pi D c} \text{ (r/min)}$$

$$Dc = 2\sqrt{a_p(D - a_p)}$$

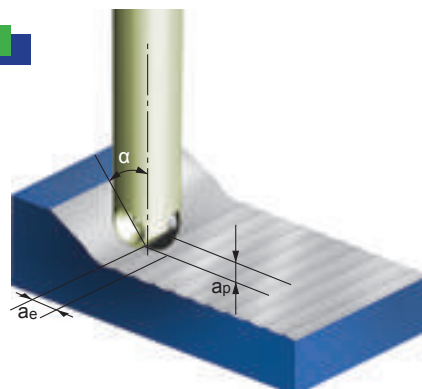
N: rotating speed

Vc: actual cutting speed

Dc: effective cutting diameter

D: tool nominal diameter

a_p: axial cutting depth



2. When there is an inclined angle between the tool axial line and the surface being machined, the recommended cutting speed should be multiplied by a factor in the table below to obtain the cutting speed used for programming.

| Diameter(mm) | | Ø12 | | Ø16 | | Ø20 | | Ø25 | | Ø30 | | Ø32 | |
|-----------------------------------|-----|------|------|------|------|------|------|------|------|------|------|------|------|
| Cutting depth a _p (mm) | | 0.2 | 0.5 | 0.2 | 0.5 | 0.5 | 1 | 0.5 | 1 | 0.5 | 1.5 | 0.5 | 1.5 |
| Inclined angle α | 15° | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.02 | 1.00 | 1.01 | 1.00 | 1.00 | 1.00 | 1.00 |
| | 30° | 1.04 | 1.01 | 1.05 | 1.01 | 1.02 | 1.04 | 1.03 | 1.04 | 1.04 | 1.01 | 1.04 | 1.00 |
| | 45° | 1.16 | 1.07 | 1.18 | 1.10 | 1.12 | 1.06 | 1.14 | 1.08 | 1.16 | 1.06 | 1.16 | 1.06 |
| | 60° | 1.42 | 1.24 | 1.47 | 1.30 | 1.34 | 1.21 | 1.38 | 1.25 | 1.42 | 1.21 | 1.43 | 1.22 |
| | 75° | 2.02 | 1.60 | 2.14 | 1.73 | 1.83 | 1.53 | 1.93 | 1.62 | 2.01 | 1.53 | 2.04 | 1.55 |
| | 90° | 3.92 | 2.50 | 4.48 | 2.87 | 3.20 | 2.29 | 3.57 | 2.55 | 3.9 | 2.29 | 4.03 | 2.37 |

Indexable milling tools

Profile milling tools

Recommended cutting parameters

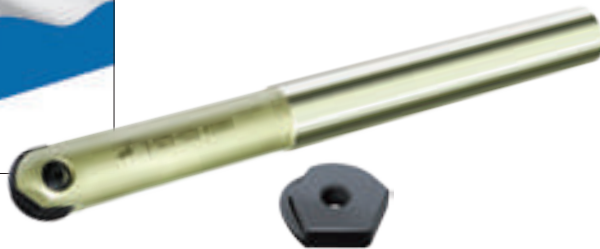
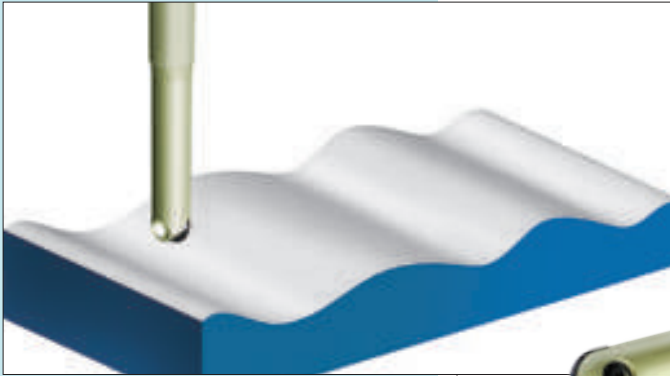
| Workpiece material | Hardness HB | Insert grade | Cutting parameters | Tool specification | | | | | |
|--------------------|-----------------|------------------------|------------------------|--------------------|-----------|---------|-----------|-----------|-----------|
| | | | | Ø12 | Ø16 | Ø20 | Ø25 | Ø30 | Ø32 |
| P | Carbon steel | YBG252 | Vc(m/min) | 100~200 | 100~200 | 100~200 | 100~200 | 100~200 | 100~200 |
| | | | fz(mm/z) | 0.15~0.25 | 0.2~0.3 | 0.2~0.3 | 0.25~0.35 | 0.25~0.35 | 0.25~0.35 |
| | | | a _p max(mm) | 0.8 | 1.0 | 1.25 | 1.5 | 2.0 | 2.0 |
| | | | a _e max(mm) | 0.8 | 1.0 | 1.25 | 1.5 | 2.0 | 2.0 |
| | Alloy steel | | Vc(m/min) | 80~180 | 80~180 | 80~180 | 80~180 | 80~180 | 80~180 |
| | | | fz(mm/z) | 0.15~0.25 | 0.2~0.3 | 0.2~0.3 | 0.25~0.35 | 0.25~0.35 | 0.25~0.35 |
| | | | a _p max(mm) | 0.8 | 1.0 | 1.25 | 1.5 | 2.0 | 2.0 |
| | | | a _e max(mm) | 0.8 | 1.0 | 1.25 | 1.5 | 2.0 | 2.0 |
| | Hardened steel | | Vc(m/min) | 60~100 | 60~100 | 60~100 | 60~100 | 60~100 | 60~100 |
| | | | fz(mm/z) | 0.15~0.25 | 0.2~0.3 | 0.2~0.3 | 0.25~0.35 | 0.25~0.35 | 0.25~0.35 |
| | | | a _p max(mm) | 0.4 | 0.5 | 0.6 | 0.8 | 1.0 | 1.0 |
| | | | a _e max(mm) | 0.4 | 0.5 | 0.6 | 0.8 | 1.0 | 1.0 |
| M | Stainless steel | Vc(m/min) | 70~150 | 70~150 | 70~150 | 70~150 | 70~150 | 70~150 | |
| | | fz(mm/z) | 0.1~0.2 | 0.1~0.25 | 0.1~0.25 | 0.2~0.3 | 0.2~0.3 | 0.2~0.3 | |
| | | a _p max(mm) | 0.6 | 0.8 | 1.0 | 1.25 | 1.5 | 1.5 | |
| | | a _e max(mm) | 0.6 | 0.8 | 1.0 | 1.25 | 1.5 | 1.5 | |
| K | Cast iron | Vc(m/min) | 160~300 | 160~300 | 160~300 | 160~300 | 160~300 | 160~300 | |
| | | fz(mm/z) | 0.2~0.3 | 0.25~0.35 | 0.25~0.35 | 0.3~0.4 | 0.3~0.4 | 0.3~0.4 | |
| | | a _p max(mm) | 1.0 | 1.5 | 1.8 | 2.0 | 2.5 | 2.5 | |
| | | a _e max(mm) | 1.0 | 1.5 | 1.8 | 2.0 | 2.5 | 2.5 | |

B

MILLING

Indexable Milling Tools

Case for BMR04



Tool type: BMR04-020-G25-M

Insert type/grade: ZOHX2005-GM/YBG252

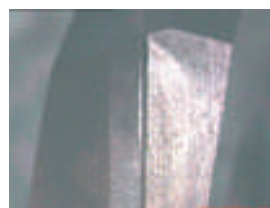
Workpiece material: 42CrMo (HRC35)
Cooling system: Dry cutting
Machine: Vertical machining center
Cutting parameters:
Vc=150m/min
ap=0.1mm
fz=0.2mm/Z

● Abrasion comparison of inserts after milling curved face

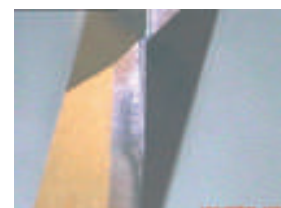
ZCC-CT

Other company product

After 60 minutes
of cutting



Abrasion on the
clearance face 0.08

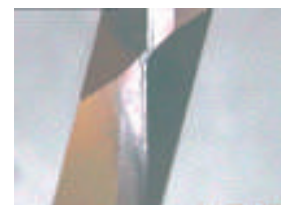


Abrasion on the
clearance face 0.10

After 120 minutes
of cutting



Abrasion on the
clearance face 0.12



Abrasion on the
clearance face 0.16

Indexable
milling tools

Profile milling tools

Side and face milling tools code key

| Cutter style | |
|--------------|-----------------------------------|
| FM | Face milling |
| EM | Square shoulder milling |
| HM | Helical end milling |
| SM | Side and face milling |
| BM | Profile milling |
| CM | Chamfer milling |
| XM | Special milling |
| TM | T-slot milling |
| AM | Aluminum alloy high speed milling |

| Approach angle | | |
|----------------|-----|--|
| P | 90° | |
| E | 75° | |
| D | 60° | |
| A | 45° | |
| R | | |

Sequence number of series

Cutting diameter ØD (mm)

Cutting width of milling tools

Coupling structure and demension

| | | | |
|----------|--------------------|----------|--------------------|
| A | A type of coupling | D | D type of coupling |
| B | B type of coupling | K | Mounting by keyway |
| C | C type of coupling | | |

SM P 03 - 160 × 16 - K40

- M P 12 - 12 L

| Insert shape | |
|--------------|------------------|
| C | Diamond with 80° |
| D | Diamond with 55° |
| R | Round |
| S | Square |
| T | Regular triangle |
| V | Diamond with 35° |
| M | Diamond with 86° |

| Insert clearance angle | |
|------------------------|-----|
| N | 0° |
| B | 5° |
| C | 7° |
| P | 11° |
| D | 15° |
| E | 20° |

| Diameter of IC | Length of cutting edge | | | | | |
|----------------|------------------------|----|----|----|----|----|
| | C | D | R | S | T | V |
| 5.556 | — | — | — | — | 09 | — |
| 6.350 | 06 | 07 | — | — | 11 | — |
| 9.525 | 09 | 11 | 09 | 09 | 16 | 16 |
| 12.700 | 12 | 15 | 12 | 12 | 22 | 22 |
| 15.875 | 16 | 19 | 15 | 15 | 27 | — |
| 19.050 | 19 | — | 19 | 19 | 33 | — |
| 25.400 | 25 | — | 25 | 25 | 44 | — |

Cutting direction

(R: Right L: Left)

Number of teeth

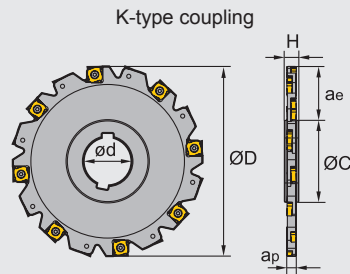
Indexable milling tools

Side and face milling tools

Side and face milling tools



SMP01 P M K



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | | Applicable inserts | Number of teeth Z | Type of coupling | Weight (kg) | |
|------------------------------------|--------------------|----------------------|-----|----|----|----|-------|--------------------|-------------------|------------------|-------------|-----|
| | | ØD | ød | øc | H | ap | aemax | | | | | |
| SMP01 Mounting by keyway | -100×4-K27-SN12-10 | △ | 100 | 27 | 45 | 12 | 4 | 25 | XSEQ1202 | 10 | K | 0.2 |
| | -125×4-K40-SN12-12 | △ | 125 | 40 | 56 | 12 | 4 | 32 | | 12 | K | 0.3 |
| | -160×4-K40-SN12-16 | △ | 160 | 40 | 67 | 12 | 4 | 44 | | 16 | K | 0.5 |
| | -100×5-K27-SN12-10 | △ | 100 | 27 | 45 | 12 | 5 | 25 | XSEQ1203 | 10 | K | 0.2 |
| | -125×5-K40-SN12-12 | △ | 125 | 40 | 56 | 12 | 5 | 32 | | 12 | K | 0.3 |
| | -160×5-K40-SN12-16 | △ | 160 | 40 | 67 | 12 | 5 | 44 | | 16 | K | 0.6 |
| | -100×6-K27-SN12-10 | △ | 100 | 27 | 45 | 12 | 6 | 25 | XSEQ12T3 | 10 | K | 0.3 |
| | -125×6-K40-SN12-12 | △ | 125 | 40 | 56 | 12 | 6 | 32 | | 12 | K | 0.4 |
| | -160×6-K40-SN12-16 | △ | 160 | 40 | 67 | 12 | 6 | 44 | | 16 | K | 0.7 |
| | -200×6-K50-SN12-18 | △ | 200 | 50 | 71 | 12 | 6 | 62 | | 18 | K | 1.1 |
| | -250×6-K50-SN12-24 | △ | 250 | 50 | 71 | 12 | 6 | 87 | | 24 | K | 1.7 |
| | -100×7-K27-SN12-10 | △ | 100 | 27 | 45 | 12 | 7 | 25 | XSEQ1204 | 10 | K | 0.3 |
| | -125×7-K40-SN12-12 | △ | 125 | 40 | 56 | 12 | 7 | 32 | | 12 | K | 0.4 |
| | -160×7-K40-SN12-16 | △ | 160 | 40 | 67 | 12 | 7 | 44 | | 16 | K | 0.8 |
| | -200×7-K50-SN12-18 | △ | 200 | 50 | 71 | 12 | 7 | 62 | | 18 | K | 1.2 |
| | -250×7-K50-SN12-24 | △ | 250 | 50 | 71 | 12 | 7 | 87 | | 24 | K | 1.9 |
| | -100×8-K27-SN12-10 | △ | 100 | 27 | 45 | 12 | 8 | 25 | XSEQ12T4 | 10 | K | 0.3 |
| | -125×8-K40-SN12-12 | △ | 125 | 40 | 56 | 12 | 8 | 32 | | 12 | K | 0.5 |
| | -160×8-K40-SN12-16 | △ | 160 | 40 | 67 | 12 | 8 | 44 | | 16 | K | 0.9 |
| | -200×8-K50-SN12-18 | △ | 200 | 50 | 71 | 12 | 8 | 62 | | 18 | K | 1.4 |
| | -250×8-K50-SN12-24 | △ | 250 | 50 | 71 | 12 | 8 | 87 | | 24 | K | 2.2 |

▲ Stock available △ Make-to-order

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Side and face milling tools

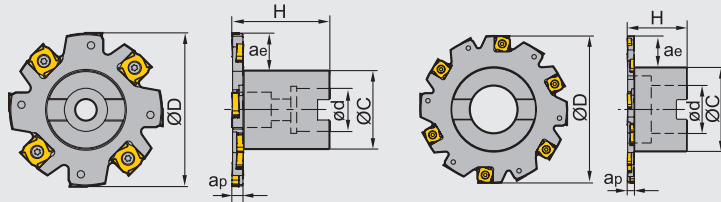


SMP01 P M K



A-type coupling

B-type coupling



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | | | Applicable inserts | Number of teeth Z | Type of coupling | Weight (kg) | |
|-------------------------|--------------------|---|----------------------|-----|----|----|----|-------------------|--------------------|-------------------|------------------|-------------|-----|
| | R | L | ØD | ød | øc | H | ap | ae _{max} | | | | | |
| SMP01 Arbor mounting | -063×4-A22-SN12-06 | △ | △ | 63 | 22 | 32 | 40 | 4 | 14 | XSEQ1202 | 6 | A | 0.2 |
| | -080×4-A22-SN12-08 | △ | △ | 80 | 22 | 40 | 50 | 4 | 18 | | 8 | A | 0.4 |
| | -100×4-A27-SN12-10 | △ | △ | 100 | 27 | 48 | 50 | 4 | 23 | | 10 | A | 0.6 |
| | -063×5-A22-SN12-06 | △ | △ | 63 | 22 | 32 | 40 | 5 | 14 | XSEQ1203 | 6 | A | 0.2 |
| | -080×5-A22-SN12-08 | △ | △ | 80 | 22 | 40 | 50 | 5 | 18 | | 8 | A | 0.4 |
| | -100×5-A27-SN12-10 | △ | △ | 100 | 27 | 48 | 50 | 5 | 23 | | 10 | A | 0.7 |
| | -063×6-A22-SN12-06 | △ | △ | 63 | 22 | 32 | 40 | 6 | 14 | XSEQ12T3 | 6 | A | 0.2 |
| | -080×6-A22-SN12-08 | △ | △ | 80 | 22 | 40 | 50 | 6 | 18 | | 8 | A | 0.5 |
| | -100×6-A27-SN12-10 | △ | △ | 100 | 27 | 48 | 50 | 6 | 23 | | 10 | A | 0.7 |
| | -125×6-B32-SN12-12 | △ | △ | 125 | 32 | 70 | 50 | 6 | 30 | | 12 | B | 1.0 |
| | -160×6-B40-SN12-16 | △ | △ | 160 | 40 | 70 | 50 | 6 | 41 | | 16 | B | 1.3 |
| | -063×7-A22-SN12-06 | △ | △ | 63 | 22 | 32 | 40 | 7 | 14 | | XSEQ1204 | 6 | A |
| -080×7-A22-SN12-08 | △ | △ | 80 | 22 | 40 | 50 | 7 | 18 | 8 | A | | 0.5 | |
| -100×7-A27-SN12-10 | △ | △ | 100 | 27 | 48 | 50 | 7 | 23 | 10 | A | | 0.7 | |
| | -125×7-B32-SN12-12 | △ | △ | 125 | 32 | 70 | 50 | 7 | 30 | | 12 | B | 1.1 |
| | -160×7-B40-SN12-16 | △ | △ | 160 | 40 | 70 | 50 | 7 | 41 | | 16 | B | 1.4 |
| | -063×8-A22-SN12-06 | △ | △ | 63 | 22 | 32 | 40 | 8 | 14 | | XSEQ12T4 | 6 | A |
| -080×8-A22-SN12-08 | △ | △ | 80 | 22 | 40 | 50 | 8 | 18 | 8 | A | | 0.5 | |
| -100×8-A27-SN12-10 | △ | △ | 100 | 27 | 48 | 50 | 8 | 23 | 10 | A | | 0.8 | |
| | -125×8-B32-SN12-12 | △ | △ | 125 | 32 | 70 | 50 | 8 | 30 | | 12 | B | 1.1 |
| | -160×8-B40-SN12-16 | △ | △ | 160 | 40 | 70 | 50 | 8 | 41 | | 16 | B | 1.5 |

▲Stock available △Make-to-order

Indexable milling tools
Side and face milling tools






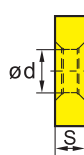
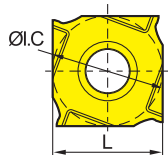
MILLING Indexable Milling Tools

▶▶ Spare parts

| Diameter ØD | Edge width ap | Screw | Wrench |
|----------------|------------------|------------|-----------|
| | | | |
| Ø63-Ø160 | 4 | I91M4×3.2X | WT08IS/IP |
| Ø63-Ø160 | 5 | I91M4×4.2X | |
| Ø63-Ø250 | 6 | I91M4×5.1X | |
| Ø63-Ø250 | 7 | I91M4×6.1X | |
| Ø63-Ø250 | 8 | I91M4×7.1X | |



▶▶ Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|--------------------|--------|-----------------|-----------|-------------------|--------------------------------|
| P | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| M | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| K | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| N | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| S | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | CVD Coating | | | | | PVD Coating | | | | Cemet | Cemented carbide | | | | | | | | | | | | | |
|--------------|----------|----------------------|------|-----|-----|-------------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|--|--|
| | | ØI.C | L | S | ød | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC305 | YD051 | YD101 | YD201 | | |
| | XSEQ1202 | 12.7 | 12.7 | 2.3 | 5.0 | | | | | | | | | | | | ★ | | | | | | | | | | | | |
| | XSEQ1203 | 12.7 | 12.7 | 3.0 | 5.0 | | | | | | | | | | | | ★ | | | | | | | | | | | | |
| | XSEQ12T3 | 12.7 | 12.7 | 3.5 | 5.0 | | | | | | | | | | | | ★ | | | | | | | | | | | | |
| | XSEQ1204 | 12.7 | 12.7 | 4.0 | 5.0 | | | | | | | | | | | | ★ | | | | | | | | | | | | |
| | XSEQ12T4 | 12.7 | 12.7 | 4.5 | 5.0 | | | | | | | | | | | | ★ | | | | | | | | | | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

▶▶ Recommended cutting parameters

| Cutting parameters | Hardness HB | Insert grade | Cutting parameters | |
|---|-------------|--------------|--------------------|-----------------|
| | | | Vc(m/min) | fz(mm/z) |
| P Low-carbon steel, Soft steel | ≤ 180 | YBG302 | 150 (100-200) | 0.15(0.1-0.3) |
| | 180-280 | YBG302 | 120 (80-200) | 0.15(0.1-0.3) |
| | 280-350 | YBG302 | 100 (80-200) | 0.15(0.1-0.3) |
| M Stainless steel | ≤ 270 | YBG302 | 100 (80-200) | 0.08(0.05-0.15) |
| K Cast iron | 180-250 | YBG302 | 150 (100-250) | 0.08(0.05-0.15) |

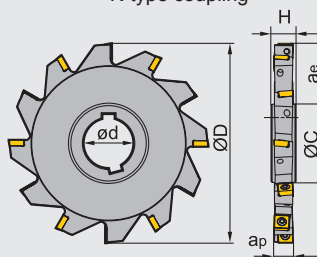
Side and face milling tools



SMP03 P M K



K-type coupling



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | | Applicable inserts | Number of teeth Z | Type of coupling | Weight (kg) |
|-----------------------------|-----------------------|----------------------|-----|----|-------|----|----|--------------------|-------------------|------------------|-------------|
| | | ØD | øc | ød | aemax | ap | H | | | | |
| SMP03 Mounting by keyway | ▲ -080×8-K27-MP06-10 | △ | 80 | 43 | 27 | 17 | 8 | 12 | MPHT060304-DM | K | 0.2 |
| | ▲ -100×8-K32-MP06-14 | △ | 100 | 47 | 32 | 25 | 8 | 12 | | K | 0.3 |
| | ▲ -100×10-K32-MP06-14 | △ | 100 | 47 | 32 | 25 | 10 | 14 | | K | 0.4 |
| | ▲ -125×10-K40-MP06-16 | △ | 125 | 55 | 40 | 34 | 10 | 14 | | K | 0.6 |
| | ▲ -125×12-K40-MP08-12 | △ | 125 | 55 | 40 | 34 | 12 | 16 | MPHT080305-DM | K | 0.7 |
| | ▲ -160×12-K40-MP08-14 | △ | 160 | 62 | 40 | 47 | 12 | 16 | | K | 1.3 |
| | ▲ -160×16-K40-MP12-12 | △ | 160 | 62 | 40 | 49 | 16 | 20 | MPHT120408-DM | K | 1.6 |
| | ▲ -160×18-K40-MP12-12 | △ | 160 | 62 | 40 | 49 | 18 | 24 | | K | 1.9 |
| | ▲ -160×20-K40-MP12-12 | △ | 160 | 62 | 40 | 49 | 20 | 26 | | K | 2.1 |
| | ▲ -200×16-K50-MP12-14 | △ | 200 | 72 | 50 | 62 | 16 | 20 | | K | 2.5 |
| | ▲ -200×18-K50-MP12-14 | △ | 200 | 72 | 50 | 62 | 18 | 24 | | K | 2.9 |
| | ▲ -200×20-K50-MP12-14 | △ | 200 | 72 | 50 | 62 | 20 | 26 | | K | 3.3 |

▲ Stock available △ Make-to-order

Indexable milling tools

Side and face milling tools

Spare parts

| Diameter Ød | Inserts | Screw | Wrench | |
|-------------|---------|-------------|--------|--------|
| | | | | |
| Ø80-Ø125 | MP06 | I60M2.5x6.5 | WT07IP | -- |
| Ø125-Ø160 | MP08 | I60M3x7 | WT09IP | -- |
| Ø160-Ø200 | MP12 | I60M5x13 | -- | WT20IS |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

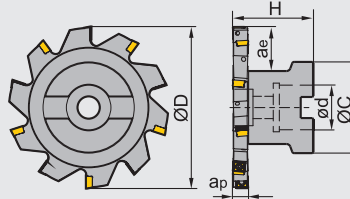
Side and face milling tools



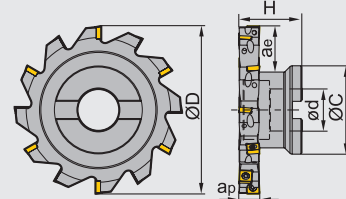
SMP03 **P** **M** **K**



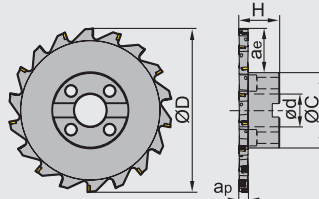
A-type coupling



B-type coupling



C-type coupling



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | | | Applicable inserts | Number of teeth Z | Type of coupling | Weight (kg) |
|--------------------------------|-------|-----|----------------------|----|----|-------------------|----|----|--------------------|-------------------|------------------|-------------|
| | R | L | ØD | øc | ød | ae _{max} | ap | H | | | | |
| SMP03 Arbor mounting | △ | △ | 80 | 45 | 22 | 21 | 8 | 40 | MPHT060304-DM | 10 | A | 0.4 |
| | △ | △ | 100 | 55 | 27 | 24 | 8 | 40 | | 14 | B | 0.6 |
| | △ | △ | 100 | 55 | 27 | 24 | 10 | 40 | | 14 | B | 0.7 |
| | △ | △ | 125 | 65 | 32 | 33 | 10 | 45 | | 16 | B | 1.1 |
| | △ | △ | 125 | 65 | 32 | 33 | 12 | 45 | MPHT080305-DM | 12 | B | 1.4 |
| | △ | △ | 160 | 80 | 40 | 45 | 12 | 50 | | 14 | B | 1.9 |
| | △ | △ | 200 | 92 | 40 | 53 | 12 | 50 | MPHT120408-DM | 18 | C | 3.2 |
| | △ | △ | 125 | 65 | 32 | 33 | 16 | 50 | | 10 | B | 2.3 |
| | △ | △ | 160 | 80 | 40 | 45 | 16 | 60 | | 12 | B | 2.3 |
| | △ | △ | 160 | 80 | 40 | 45 | 18 | 60 | | 12 | B | 2.4 |
| | △ | △ | 200 | 92 | 40 | 53 | 16 | 50 | | 14 | C | 3.6 |
| | △ | △ | 200 | 92 | 40 | 53 | 18 | 50 | | 14 | C | 3.9 |
| △ | △ | 200 | 92 | 40 | 53 | 20 | 50 | 14 | C | 4.2 | | |

▲Stock available △Make-to-order

Spare parts

| Diameter ØD | Inserts | Screw | Wrench | |
|-------------|---------|-------------|--------|--------|
| | | | | |
| Ø80-Ø125 | MP06 | I60M2.5×6.5 | WT07IP | -- |
| Ø125-Ø200 | MP08 | I60M3×7 | WT09IP | -- |
| Ø125-Ø200 | MP12 | I60M5×13 | -- | WT20IS |

Tools code key **B24-B25**

Grade selection guide **B19-B23**

Technical data **B234-B240**

Indexable milling tools

Side and face milling tools



SMP05 Slot milling

Groove Widths 1.1~4.8mm.
 Maximum cutting depth 5mm.
 Multi-function milling holder: slot milling,plunge
 milling, root cleaning

Slot milling specification code

Slot milling

Weldon shank

Insert

Teeth

SMP05 - 039×3.0 - XP 25 - QC 16- 03

Minimum machining diameter(mm)

| Code | Diameter |
|------|----------|
| 25 | 25 |
| 39 | 39 |
| 44 | 44 |

Maximum cutting width(mm)

| Code | Cutting width |
|------|---------------|
| 3.0 | 3.0 |
| 4.8 | 4.8 |

Cutter diameter(mm)

| Code | Diameter |
|------|----------|
| 25 | 25 |
| 32 | 32 |

Cutting edge length code

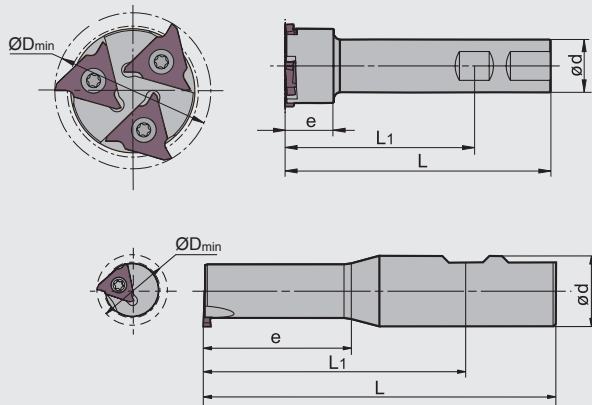
| | |
|----|-------|
| 16 | 9.525 |
| 22 | 12.70 |

Inscribed circuler(mm)

Side and face milling tools



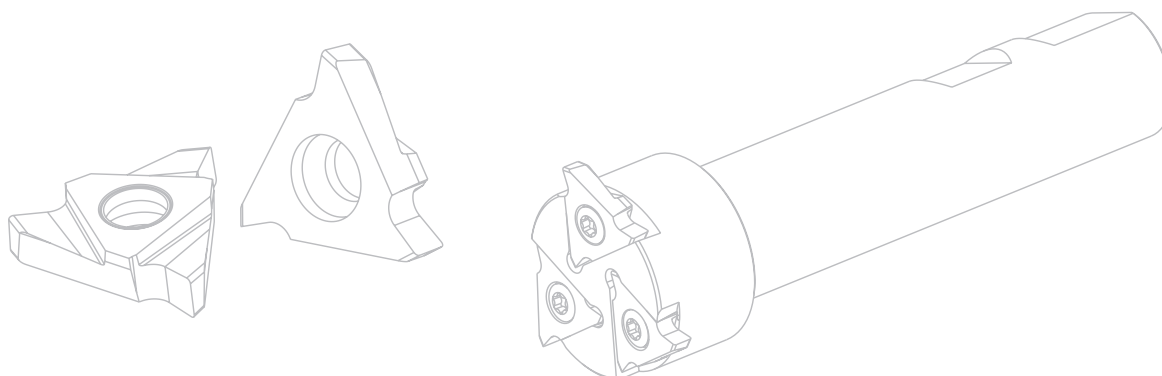
SMP05 P M K



Specification of tools


| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Applicable inserts | Width(mm) |
|------------------------------------|-------|----------------------|----|----|----------------|-----|-------------------|--------------------|-----------|
| | | ØD _{min} | ød | e | L ₁ | L | | | |
| SMP05 -025×3.0-XP25-QC16-01 | △ | 25 | 25 | 40 | 89 | 125 | 1 | QC16L 110~300 | 1.10-3.00 |
| -039×3.0-XP25-QC16-03 | △ | 39 | 25 | 23 | 89 | 125 | 3 | QC16L 110~300 | 1.10-3.00 |
| -044×4.8-XP25-QC22-03 | △ | 44 | 25 | 23 | 89 | 125 | 3 | QC22L 125~480 | 1.25-4.80 |

▲Stock available △Make-to-order



Spare parts

| Diameter ØD | Screw | Wrench |
|-------------|------------|--------|
| ø25 | I60M3.5×10 | WT15IP |
| ø39 | I60M3.5×10 | WT15IP |
| ø44 | I60M5×13 | WT20IP |



Tools code key
B24-B25

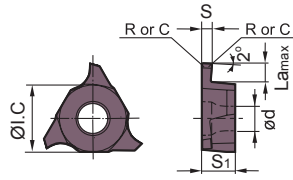
Grade selection guide
B19-B23

Technical data
B234-B240

Indexable milling tools

Side and face milling tools

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|----------------------------------|--------|-----------------|-----------|-------------------|--------------------------------|
| P Steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | | | |
|--------------|--------------|----------------------|-------|------|-------|------|-----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|---------|-------|-------|-------|
| | | S±0.025 | Lamax | R/C | ØI.C | S1 | ød | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 |
| | QC16L110-R01 | 1.10 | 2.00 | R0.1 | 9.525 | 3.18 | 4.4 | | | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | QC16L125-R02 | 1.25 | 2.00 | R0.2 | 9.525 | 3.18 | 4.4 | | | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | QC16L145-R02 | 1.45 | 2.00 | R0.2 | 9.525 | 3.18 | 4.4 | | | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | QC16L150-R02 | 1.50 | 2.00 | R0.2 | 9.525 | 3.18 | 4.4 | | | | | | | | | ○ | ★ | | | | | | | | | | | | |
| | QC16L175-R02 | 1.75 | 2.00 | R0.2 | 9.525 | 3.18 | 4.4 | | | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | QC16L185-R02 | 1.85 | 2.50 | R0.2 | 9.525 | 3.18 | 4.4 | | | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | QC16L200-R02 | 2.00 | 2.50 | R0.2 | 9.525 | 3.18 | 4.4 | | | | | | | | | ○ | ★ | | | | | | | | | | | | |
| | QC16L250-R02 | 2.50 | 2.50 | R0.2 | 9.525 | 3.18 | 4.4 | | | | | | | | | ○ | ★ | | | | | | | | | | | | |
| | QC16L300-R02 | 3.00 | 3.00 | R0.2 | 9.525 | 3.18 | 4.4 | | | | | | | | | ○ | ★ | | | | | | | | | | | | |
| | QC22L125-R02 | 1.25 | 2.00 | R0.2 | 12.70 | 4.76 | 5.5 | | | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | QC22L145-R02 | 1.45 | 2.00 | R0.2 | 12.70 | 4.76 | 5.5 | | | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | QC22L150-R02 | 1.50 | 3.50 | R0.2 | 12.70 | 4.76 | 5.5 | | | | | | | | | ○ | ★ | | | | | | | | | | | | |
| | QC22L175-R02 | 1.75 | 3.50 | R0.2 | 12.70 | 4.76 | 5.5 | | | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | QC22L185-R02 | 1.85 | 3.50 | R0.2 | 12.70 | 4.76 | 5.5 | | | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | QC22L200-R02 | 2.00 | 3.50 | R0.2 | 12.70 | 4.76 | 5.5 | | | | | | | | | ○ | ★ | | | | | | | | | | | | |
| | QC22L230-R02 | 2.30 | 3.50 | R0.2 | 12.70 | 4.76 | 5.5 | | | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | QC22L250-R03 | 2.50 | 4.00 | R0.3 | 12.70 | 4.76 | 5.5 | | | | | | | | | ○ | ★ | | | | | | | | | | | | |
| | QC22L265-R03 | 2.65 | 4.00 | R0.3 | 12.70 | 4.76 | 5.5 | | | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | QC22L280-R03 | 2.80 | 4.00 | R0.3 | 12.70 | 4.76 | 5.5 | | | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | QC22L300-R03 | 3.00 | 4.00 | R0.3 | 12.70 | 4.76 | 5.5 | | | | | | | | | ○ | ★ | | | | | | | | | | | | |
| | QC22L320-R03 | 3.20 | 4.00 | R0.3 | 12.70 | 4.76 | 5.5 | | | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | QC22L330-R03 | 3.30 | 4.00 | R0.3 | 12.70 | 4.76 | 5.5 | | | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | QC22L350-R03 | 3.50 | 5.00 | R0.3 | 12.70 | 4.76 | 5.5 | | | | | | | | | ○ | ★ | | | | | | | | | | | | |
| | QC22L400-R04 | 4.00 | 5.00 | R0.4 | 12.70 | 4.76 | 5.5 | | | | | | | | | ○ | ★ | | | | | | | | | | | | |
| | QC22L430-R04 | 4.30 | 5.00 | R0.4 | 12.70 | 4.76 | 5.5 | | | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | QC22L450-R04 | 4.50 | 5.00 | R0.4 | 12.70 | 4.76 | 5.5 | | | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | QC22L480-R04 | 4.80 | 5.00 | R0.4 | 12.70 | 5.06 | 5.5 | | | | | | | | | ○ | ○ | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools

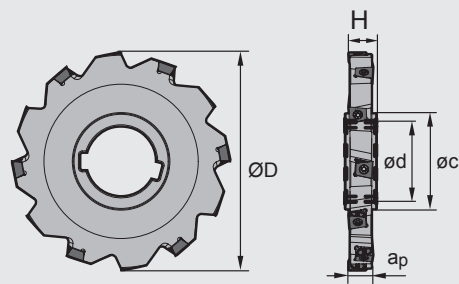
Side and face milling tools



Side and face milling tools



SMP09 P M K



K-type coupling

Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | | Applicable inserts | Number of teeth Z | Type of coupling | Weight (kg) |
|----------------------------------|-------|----------------------|----|----|----|----|-------|--------------------|-------------------|------------------|-------------|
| | | ØD | ød | øc | H | ap | aemax | | | | |
| SMP09 -080×10-K27-LN10-08 | △ | 80 | 27 | 43 | 14 | 10 | 17 | LNGX1005□□-GM | 8 | K | 0.2 |
| -100×10-K32-LN10-10 | △ | 100 | 32 | 47 | 14 | 10 | 25 | | 10 | K | 0.37 |
| -125×10-K40-LN10-12 | △ | 125 | 40 | 55 | 14 | 10 | 34 | | 12 | K | 0.5 |
| -160×10-K40-LN10-14 | △ | 160 | 40 | 62 | 14 | 10 | 47 | | 14 | K | 1 |
| -200×10-K50-LN10-16 | △ | 200 | 50 | 72 | 14 | 10 | 62 | | 16 | K | 1.6 |
| -100×12-K32-LN14-08 | △ | 100 | 32 | 47 | 16 | 12 | 25 | LNGX1407□□-GM | 8 | K | 0.4 |
| -125×12-K40-LN14-10 | △ | 125 | 40 | 55 | 16 | 12 | 34 | | 10 | K | 0.6 |
| -160×12-K40-LN14-12 | △ | 160 | 40 | 62 | 16 | 12 | 47 | | 12 | K | 1.1 |
| -200×12-K50-LN14-14 | △ | 200 | 50 | 72 | 16 | 12 | 62 | | 14 | K | 1.8 |
| -100×14-K32-LN10-10 | △ | 100 | 32 | 47 | 18 | 14 | 25 | LNGX1005□□-GM | 10 | K | 0.4 |
| -125×14-K40-LN10-12 | △ | 125 | 40 | 55 | 18 | 14 | 34 | | 12 | K | 0.9 |
| -160×14-K40-LN10-14 | △ | 160 | 40 | 62 | 18 | 14 | 47 | | 14 | K | 1.6 |
| -200×14-K50-LN10-16 | △ | 200 | 50 | 72 | 18 | 14 | 62 | | 16 | K | 2.5 |
| -125×16-K40-LN10-12 | △ | 125 | 40 | 55 | 20 | 16 | 34 | LNGX1005□□-GM | 12 | K | 1 |
| -160×16-K40-LN10-14 | △ | 160 | 40 | 62 | 20 | 16 | 47 | | 14 | K | 1.8 |
| -200×16-K50-LN10-16 | △ | 200 | 50 | 72 | 20 | 16 | 62 | | 16 | K | 2.9 |

▲Stock available △Make-to-order

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

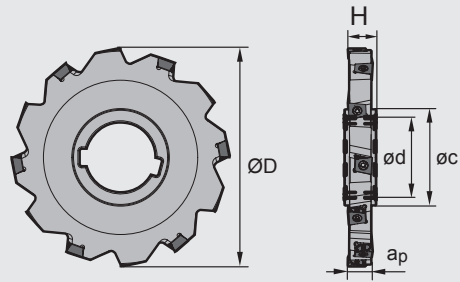
Indexable milling tools

Side and face milling tools

Side and face milling tools



SMP09 P M K



K-type coupling

Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | | Applicable inserts | Number of teeth Z | Type of coupling | Weight (kg) |
|----------------------------------|-------|----------------------|----|----|----|----|-------|--------------------|-------------------|------------------|-------------|
| | | ØD | ød | øc | H | ap | aemax | | | | |
| SMP09 -125×18-K40-LN10-12 | △ | 125 | 40 | 55 | 24 | 18 | 34 | LNGX1005□□-GM | 12 | K | 1.2 |
| -160×18-K40-LN10-14 | △ | 160 | 40 | 62 | 24 | 18 | 47 | | 14 | K | 2.1 |
| -200×18-K50-LN10-16 | △ | 200 | 50 | 72 | 24 | 18 | 62 | | 16 | K | 3.4 |
| -250×18-K50-LN10-18 | △ | 250 | 50 | 80 | 24 | 18 | 83 | | 18 | K | 5.5 |
| -125×20-K40-LN14-10 | △ | 125 | 40 | 55 | 26 | 20 | 34 | LNGX1407□□-GM | 10 | K | 1.2 |
| -160×20-K40-LN14-12 | △ | 160 | 40 | 62 | 26 | 20 | 47 | | 12 | K | 2.1 |
| -200×20-K50-LN14-14 | △ | 200 | 50 | 72 | 26 | 20 | 62 | | 14 | K | 3.5 |
| -250×20-K50-LN14-16 | △ | 250 | 50 | 80 | 26 | 20 | 83 | | 16 | K | 5.8 |
| -160×25-K40-LN14-12 | △ | 160 | 40 | 62 | 30 | 25 | 47 | LNGX1407□□-GM | 12 | K | 2.8 |
| -200×25-K50-LN14-14 | △ | 200 | 50 | 72 | 30 | 25 | 62 | | 14 | K | 4.5 |
| -250×25-K50-LN14-16 | △ | 250 | 50 | 80 | 30 | 25 | 83 | | 16 | K | 7.5 |

▲Stock available △Make-to-order

Spare parts

| Diameter ØD | Edge width ap | Inserts | Screw | Wrench | |
|-------------|---------------|---------------|-------------|--------|--|
| | | | | | |
| Ø80-Ø200 | 10 | LNGX1005□□-GM | I60M3.5×8TT | WP10IS | |
| Ø100-Ø200 | 12 | LNGX1407□□-GM | I60M4×10 | WP15IS | |
| Ø100-Ø250 | 14-18 | LNGX1005□□-GM | I60M3.5×8TT | WP10IS | |
| Ø125-Ø315 | 20-25 | LNGX1407□□-GM | I60M4×12 | WP15IS | |

Tools code key B24-B25

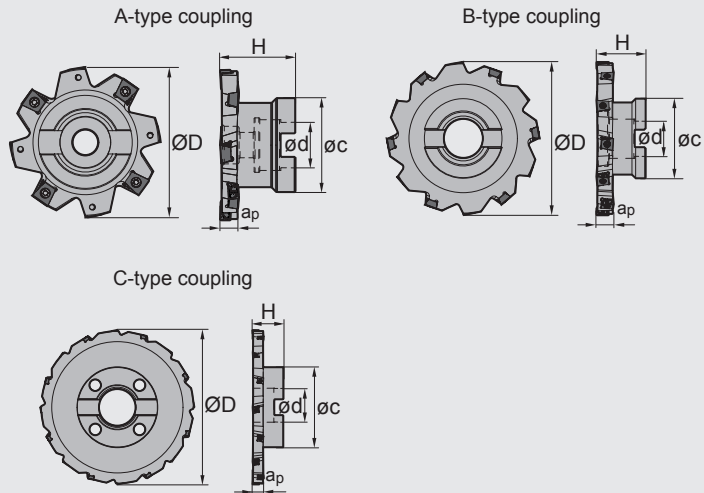
Grade selection guide B19-B23

Technical data B234-B240

Side and face milling tools



SMP09 P M K



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | | Applicable inserts | Number of teeth Z | Type of coupling | Weight (kg) |
|---------------------------|-------|----------------------|----|----|----|----|-------------------|--------------------|-------------------|------------------|-------------|
| | | ØD | ød | øc | H | ap | ae _{max} | | | | |
| SMP09 -080×10-A22-LN10-08 | △ | 80 | 22 | 45 | 40 | 10 | 20 | LNGX1005□□-GM | 8 | A | 0.4 |
| -100×10-B27-LN10-10 | △ | 100 | 27 | 55 | 45 | 10 | 24 | | 10 | B | 0.6 |
| -125×10-B32-LN10-12 | △ | 125 | 32 | 65 | 45 | 10 | 33 | | 12 | B | 1 |
| -160×10-B40-LN10-14 | △ | 160 | 40 | 80 | 50 | 10 | 42 | | 14 | B | 2 |
| -200×10-C40-LN10-16 | △ | 200 | 40 | 92 | 50 | 10 | 53 | | 16 | C | 2.9 |
| -100×12-B27-LN14-08 | △ | 100 | 27 | 55 | 45 | 12 | 24 | LNGX1407□□-GM | 8 | B | 0.6 |
| -125×12-B32-LN14-10 | △ | 125 | 32 | 65 | 45 | 12 | 33 | | 10 | B | 1 |
| -160×12-B40-LN14-12 | △ | 160 | 40 | 80 | 50 | 12 | 42 | | 12 | B | 2.1 |
| -200×12-C40-LN14-14 | △ | 200 | 40 | 92 | 50 | 12 | 53 | | 14 | C | 2.9 |
| -100×14-B27-LN10-10 | △ | 100 | 27 | 55 | 50 | 14 | 24 | LNGX1005□□-G | 10 | B | 0.7 |
| -125×14-B32-LN10-12 | △ | 125 | 32 | 65 | 50 | 14 | 33 | | 12 | B | 1.2 |
| -160×14-B40-LN10-14 | △ | 160 | 40 | 80 | 50 | 14 | 42 | | 14 | B | 2.4 |
| -200×14-C40-LN10-16 | △ | 200 | 40 | 92 | 50 | 14 | 53 | | 16 | C | 3.6 |
| -125×16-B32-LN10-12 | △ | 125 | 32 | 65 | 50 | 16 | 33 | LNGX1005□□-GM | 12 | B | 1.4 |
| -160×16-B40-LN10-14 | △ | 160 | 40 | 80 | 50 | 16 | 42 | | 14 | B | 2.6 |
| -200×16-C40-LN10-16 | △ | 200 | 40 | 92 | 50 | 16 | 53 | | 16 | C | 4 |

▲Stock available △Make-to-order

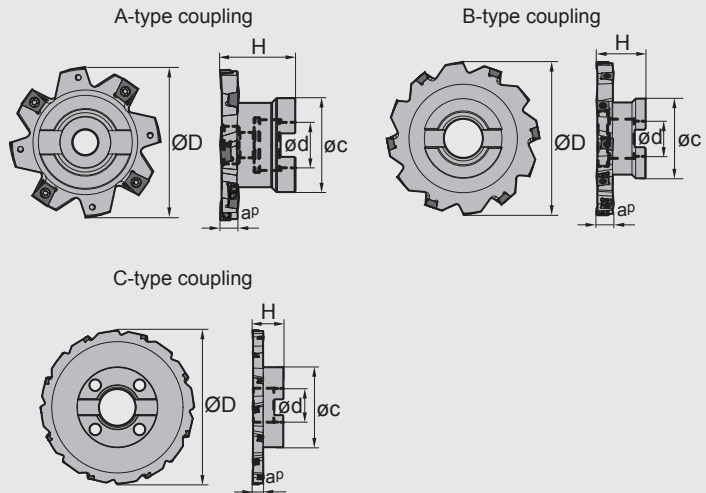
Indexable milling tools

Side and face milling tools

Side and face milling tools



SMP09 P M K



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | | Applicable inserts | Number of teeth Z | Type of coupling | Weight (kg) |
|----------------------------------|-------|----------------------|----|-----|----|----|-------|--------------------|-------------------|------------------|-------------|
| | | ØD | ød | øc | H | ap | aemax | | | | |
| SMP09 -125×18-B32-LN10-12 | △ | 125 | 32 | 65 | 50 | 18 | 33 | LNGX1005□□-GM | 12 | B | 1.5 |
| -160×18-B40-LN10-14 | △ | 160 | 40 | 80 | 50 | 18 | 42 | | 14 | B | 2.9 |
| -200×18-C40-LN10-16 | △ | 200 | 40 | 92 | 50 | 18 | 53 | | 16 | C | 4.3 |
| -250×18-C60-LN10-18 | △ | 250 | 60 | 132 | 50 | 18 | 58 | | 18 | C | 7.2 |
| -125×20-B32-LN14-10 | △ | 125 | 32 | 65 | 50 | 20 | 33 | LNGX1407□□-GM | 10 | B | 1.6 |
| -160×20-B40-LN14-12 | △ | 160 | 40 | 80 | 50 | 20 | 42 | | 12 | B | 2.7 |
| -200×20-C40-LN14-14 | △ | 200 | 40 | 92 | 50 | 20 | 53 | | 14 | C | 4.6 |
| -250×20-C60-LN14-16 | △ | 250 | 60 | 132 | 50 | 20 | 58 | | 16 | C | 7.4 |
| -160×25-B40-LN14-12 | △ | 160 | 40 | 80 | 50 | 25 | 42 | LNGX1407□□-GM | 12 | B | 3.2 |
| -200×25-C40-LN14-14 | △ | 200 | 40 | 92 | 50 | 25 | 53 | | 14 | C | 5.2 |
| -250×25-C60-LN14-16 | △ | 250 | 60 | 132 | 50 | 25 | 58 | | 16 | C | 8.6 |
| -315×25-C60-LN14-20 | △ | 315 | 60 | 132 | 50 | 25 | 90 | | 20 | C | 13.2 |

▲Stock available △Make-to-order

Spare parts

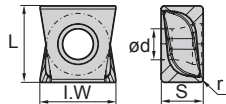
| Diameter ØD | Edge width ap | Inserts | Screw | Wrench | |
|-------------|---------------|---------------|-------------|--------|--|
| | | | | | |
| Ø80-Ø200 | 10 | LNGX1005□□-GM | I60M3.5×8TT | WP10IS | |
| Ø100-Ø200 | 12 | LNGX1407□□-GM | I60M4×10 | WP15IS | |
| Ø100-Ø250 | 14-18 | LNGX1005□□-GM | I60M3.5×8TT | WP10IS | |
| Ø125-Ø315 | 20-25 | LNGX1407□□-GM | I60M4×12 | WP15IS | |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|--------------------|-------|-----------------|-----------|-------------------|--------------------------------|
| P | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| M | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| K | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| N | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| S | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | CVD Coating | | | | | PVD Coating | | | | | Cermet | Cemented carbide | | | | | | | | | | | |
|--------------|---------------|----------------------|----|-----|-----|-----|-------------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|--|
| | | I.W | L | S | ød | r | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
| | LNGX100504-GM | 9.9 | 10 | 5.5 | 4.1 | 0.4 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | LNGX100508-GM | 9.9 | 10 | 5.5 | 4.1 | 0.8 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | LNGX100512-GM | 9.9 | 10 | 5.5 | 4.1 | 1.2 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | LNGX100516-GM | 9.9 | 10 | 5.5 | 4.1 | 1.6 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | LNGX100520-GM | 9.9 | 10 | 5.5 | 4.1 | 2.0 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | LNGX100524-GM | 9.9 | 10 | 5.5 | 4.1 | 2.4 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | LNGX100530-GM | 9.9 | 10 | 5.5 | 4.1 | 3.0 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | LNGX100540-GM | 9.9 | 10 | 5.5 | 4.1 | 4.0 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | LNGX140704-GM | 13.4 | 14 | 7.5 | 4.4 | 0.4 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | LNGX140708-GM | 13.4 | 14 | 7.5 | 4.4 | 0.8 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | LNGX140712-GM | 13.4 | 14 | 7.5 | 4.4 | 1.2 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | LNGX140716-GM | 13.4 | 14 | 7.5 | 4.4 | 1.6 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | LNGX140720-GM | 13.4 | 14 | 7.5 | 4.4 | 2.0 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | LNGX140724-GM | 13.4 | 14 | 7.5 | 4.4 | 2.4 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | LNGX140730-GM | 13.4 | 14 | 7.5 | 4.4 | 3.0 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | LNGX140740-GM | 13.4 | 14 | 7.5 | 4.4 | 4.0 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | LNGX140750-GM | 13.4 | 14 | 7.5 | 4.4 | 5.0 | | | ● | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Recommended cutting parameters

| Workpiece material | Hardness HB | Insert grade | Cutting parameters | |
|---|--------------------------------|------------------|--------------------|-----------------|
| | | | Vc(m/min) | fz(mm/z) |
| P Steel | Low-carbon steel, Soft steel | YB9320 YBM253 | 150(100-200) | 0.12(0.1-0.3) |
| | High-carbon steel, Alloy steel | YB9320 YBM253 | 120(80-200) | 0.12(0.1-0.3) |
| | Alloy tool steel | YB9320 YBM253 | 100(80-200) | 0.12(0.1-0.3) |
| M Stainless steel | ≤ 270 | YB9320 YBM253 | 100(80-200) | 0.08(0.05-0.15) |
| K Cast iron, Ductile iron, High nickel cast iron | 180-250 | YB9320 YBM253 | 150(100-250) | 0.08(0.05-0.15) |

Indexable milling tools

Side and face milling tools

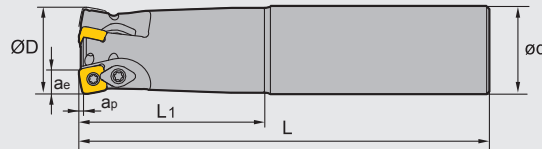
High feed milling cutters



XMR01 P M K S



S-type insert, straight shank



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | | Number of teeth Z | Weight (kg) |
|-------------------------------|-------|----------------------|-----|------|-----|-----|----|-------------------|-------------|
| | | ØD | ap | ae | L1 | L | ød | | |
| XMR01 -020-G20-SD06-02 | ▲ | 20 | 0.8 | 4.45 | 50 | 130 | 20 | 2 | 0.26 |
| -020-G20-SD06-02CL | △ | 20 | 0.8 | 4.45 | 100 | 180 | 20 | 2 | 0.364 |
| -020-G20-SD06-02CXL | △ | 20 | 0.8 | 4.45 | 130 | 250 | 20 | 2 | 0.522 |
| -025-G25-SD06-03 | ▲ | 25 | 0.8 | 4.45 | 60 | 140 | 25 | 3 | 0.46 |
| -025-G25-SD06-03CL | △ | 25 | 0.8 | 4.45 | 120 | 200 | 25 | 3 | 0.670 |
| -025-G25-SD06-03CXL | △ | 25 | 0.8 | 4.45 | 130 | 250 | 25 | 3 | 0.850 |
| -025-G25-SD09-02 | ▲ | 25 | 1.4 | 6.88 | 60 | 140 | 25 | 2 | 0.5 |
| -025-G25-SD09-02CL | △ | 25 | 1.4 | 6.88 | 120 | 200 | 25 | 2 | 0.636 |
| -025-G25-SD09-02CXL | △ | 25 | 1.4 | 6.88 | 180 | 300 | 25 | 3 | 0.980 |
| -032-G32-SD09-03 | ▲ | 32 | 1.4 | 6.88 | 90 | 150 | 32 | 3 | 0.8 |
| -032-G32-SD09-03CL | △ | 32 | 1.4 | 6.88 | 120 | 200 | 32 | 3 | 1.006 |
| -032-G32-SD09-03CXL | △ | 32 | 1.4 | 6.88 | 180 | 300 | 32 | 3 | 1.551 |
| -035-G32-SD09-03 | ▲ | 35 | 1.4 | 6.88 | 70 | 150 | 32 | 3 | 0.8 |
| -035-G32-SD09-03CL | △ | 35 | 1.4 | 6.88 | 120 | 200 | 32 | 3 | 1.037 |
| -035-G32-SD09-03CXL | △ | 35 | 1.4 | 6.88 | 180 | 300 | 32 | 3 | 1.582 |
| -032-G32-SD12-02 | ▲ | 32 | 1.8 | 8.77 | 90 | 150 | 32 | 2 | 0.8 |
| -032-G32-SD12-02CL | △ | 32 | 1.8 | 8.77 | 120 | 200 | 32 | 2 | 1.002 |
| -032-G32-SD12-02CXL | △ | 32 | 1.8 | 8.77 | 180 | 300 | 32 | 2 | 1.547 |
| -040-G40-SD12-03 | ▲ | 40 | 1.8 | 8.77 | 70 | 150 | 40 | 3 | 1.3 |
| -040-G40-SD12-03CL | △ | 40 | 1.8 | 8.77 | 70 | 250 | 40 | 3 | 2.118 |
| -040-G40-SD12-03CXL | △ | 40 | 1.8 | 8.77 | 70 | 300 | 40 | 3 | 2.579 |
| -040-G40-SD15-02 | ▲ | 40 | 2.2 | 11.7 | 70 | 200 | 40 | 2 | 1.6 |
| -040-G40-SD15-02CL | △ | 40 | 2.2 | 11.7 | 70 | 250 | 40 | 2 | 2.061 |
| -040-G40-SD15-02CXL | △ | 40 | 2.2 | 11.7 | 70 | 300 | 40 | 2 | 3.522 |

▲Stock available △Make-to-order

XMR01-020-G20-SD06QL-02CL/CXL

Standard toolholder sery ——— Long sery ——— Extended sery

Spare parts

| Tool type | Screw | Clamp Screw | Clamp | Wrench | |
|----------------|----------------|-------------|--------|--------|--------|
| | XMR01□□-SD06□□ | I60M2.2×5.5 | -- | -- | WT07IP |
| XMR01□□-SD09□□ | I60M3.5×08TT | I60M4×8.4 | WD-204 | WT10IP | WT15IP |
| XMR01□□-SD12□□ | I60M4×8.4 | | | WT15IP | |
| XMR01□□-SD15□□ | I60M5×13 | | WD-208 | WT20IP | -- |

Tools code key **B24-B25**

Grade selection guide **B19-B23**

Technical data **B234-B240**

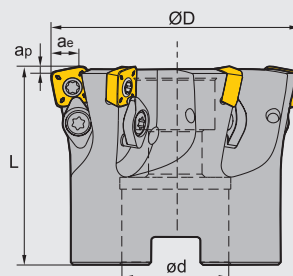
High feed milling cutters



XMR01 P M K S



S type insert milling cutter



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|--------------------------------|-------|----------------------|-----|------|----|----|-------------------|------------------|-------------|
| | | ØD | ap | ae | L | ød | | | |
| XMR01 -050-A22-SD06-07C | ▲ | 50 | 0.8 | 5.8 | 40 | 22 | 7 | A | 0.36 |
| -063-A22-SD06-10C | ▲ | 63 | 0.8 | 5.8 | 40 | 22 | 10 | A | 0.53 |
| -063-A27-SD06-10C | ▲ | 63 | 0.8 | 5.8 | 50 | 27 | 10 | A | 0.57 |
| -050-A22-SD09-04C | ▲ | 50 | 1.4 | 8.8 | 40 | 22 | 4 | A | 0.3 |
| -063-A22-SD09-06C | ▲ | 63 | 1.4 | 8.8 | 40 | 22 | 6 | A | 0.5 |
| -063-A27-SD09-06C | ▲ | 63 | 1.4 | 8.8 | 50 | 27 | 6 | A | 0.6 |
| -063-A22-SD12-05C | ▲ | 63 | 1.8 | 11.7 | 40 | 22 | 5 | A | 0.5 |
| -063-A27-SD12-05C | ▲ | 63 | 1.8 | 11.7 | 50 | 27 | 5 | A | 0.6 |
| -080-A27-SD12-05C | ▲ | 80 | 1.8 | 11.7 | 50 | 27 | 5 | A | 0.9 |
| -100-B32-SD12-06 | ▲ | 100 | 1.8 | 11.7 | 50 | 32 | 6 | B | 1.8 |
| -080-A27-SD15-05C | ▲ | 80 | 2.2 | 14 | 50 | 27 | 5 | A | 0.78 |
| -080-A32-SD15-05 | ▲ | 80 | 2.2 | 14 | 50 | 32 | 5 | A | 0.72 |
| -100-B32-SD15-07 | ▲ | 100 | 2.2 | 14 | 50 | 32 | 7 | B | 1.2 |
| -125-B40-SD15-09 | ▲ | 125 | 2.2 | 14 | 63 | 40 | 9 | B | 2.9 |
| -160-B40-SD15-12 | ▲ | 160 | 2.2 | 14 | 63 | 40 | 12 | B | 4.4 |

▲ Stock available △ Make-to-order

Indexable milling tools

High feed milling cutters

Spare parts

| Tool type | Screw | Clamp Screw | Clamp | Wrench | |
|----------------|--------------|-------------|--------|--------|--------|
| | | | | | |
| XMR01□□-SD06□□ | I60M2.2×5.5 | -- | -- | WT07IP | -- |
| XMR01□□-SD09□□ | I60M3.5×08TT | I60M4×8.4 | WD-204 | WT10IP | WT15IP |
| XMR01□□-SD12□□ | I60M4×8.4 | | | WT15IP | |
| XMR01□□-SD15□□ | I60M5×13 | | WD-208 | WT20IP | -- |

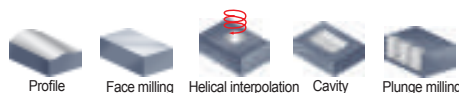


Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

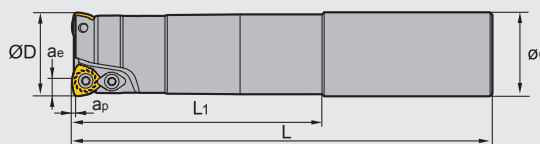
High feed milling cutters



XMR01 P M K



W-type insert, straight shank



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | | Number of teeth Z | Weight (kg) |
|---------------------------------|-------|----------------------|-----|------|-----|-----|----|-------------------|-------------|
| | | ØD | ap | ae | L1 | L | ød | | |
| XMR01 -020-G20-WP05-02-M | △ | 20 | 1.5 | 3.8 | 50 | 130 | 20 | 2 | 0.2 |
| -020-G20-WP05-02-L | △ | 20 | 1.5 | 3.8 | 100 | 180 | 20 | 2 | 0.3 |
| -020-G20-WP05-02-XL | △ | 20 | 1.5 | 3.8 | 130 | 250 | 20 | 2 | 0.8 |
| -025-G25-WP06-02-M | △ | 25 | 1.5 | 4.35 | 60 | 140 | 25 | 2 | 0.4 |
| -025-G25-WP06-02-L | △ | 25 | 1.5 | 4.35 | 120 | 200 | 25 | 2 | 0.6 |
| -025-G25-WP06-02-XL | △ | 25 | 1.5 | 4.35 | 180 | 300 | 25 | 2 | 1.0 |
| -032-G32-WP06-03-M | △ | 32 | 1.5 | 4.35 | 70 | 150 | 32 | 3 | 0.8 |
| -032-G32-WP06-03-L | △ | 32 | 1.5 | 4.35 | 120 | 200 | 32 | 3 | 1.0 |
| -032-G32-WP06-03-XL | △ | 32 | 1.5 | 4.35 | 180 | 300 | 32 | 3 | 1.6 |
| -040-G32-WP06-03-M | △ | 40 | 1.5 | 4.35 | 50 | 150 | 32 | 3 | 0.9 |
| -040-G32-WP06-03-L | △ | 40 | 1.5 | 4.35 | 50 | 250 | 32 | 3 | 1.5 |
| -040-G32-WP06-03-XL | △ | 40 | 1.5 | 4.35 | 50 | 300 | 32 | 3 | 1.8 |
| -040-G32-WP08-02-M | △ | 40 | 1.5 | 5.66 | 50 | 150 | 32 | 2 | 0.9 |
| -040-G32-WP08-02-L | △ | 40 | 1.5 | 5.66 | 50 | 250 | 32 | 2 | 1.5 |
| -040-G32-WP08-02-XL | △ | 40 | 1.5 | 5.66 | 50 | 300 | 32 | 2 | 1.9 |
| -050-G32-WP09-02-M | △ | 50 | 3.0 | 6.8 | 50 | 150 | 32 | 2 | 1.9 |
| -050-G32-WP09-02-L | △ | 50 | 3.0 | 6.8 | 50 | 250 | 32 | 2 | 2.5 |

▲Stock available △Make-to-order

Spare parts

| Tool type | Clamp/Insert screw | Clamp | Wrench | |
|----------------|--------------------|-------------|--------|--------|
| | XMR01□□-WP05□□ | I60M3.5×6.5 | -- | WT10P |
| XMR01□□-WP06□□ | I60M4×8.4 | -- | WT15P | -- |
| XMR01□□-WP08□□ | I60M5×13 | WD-208 | -- | WT20IT |
| XMR01□□-WP09□□ | | | | |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

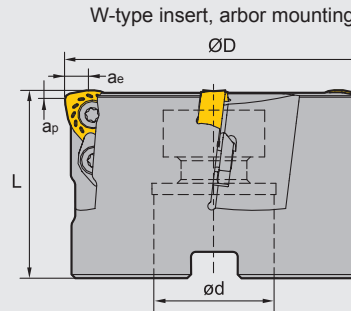
Indexable milling tools

High feed milling cutters

High feed milling cutters



XMR01 P M K



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Type of coupling | Weight (kg) |
|-------------------------------|-------|----------------------|-----|------|----|----|-------------------|------------------|-------------|
| | | ØD | ap | ae | L | ød | | | |
| XMR01 -050-A22-WP06-04 | △ | 50 | 1.5 | 4.35 | 40 | 22 | 4 | A | 0.4 |
| -050-A22-WP08-03 | △ | 50 | 1.5 | 5.66 | 50 | 22 | 3 | A | 0.4 |
| -063-A22-WP08-04C | △ | 63 | 1.5 | 5.66 | 50 | 22 | 4 | A | 0.7 |
| -063-A27-WP08-04C | △ | 63 | 1.5 | 5.66 | 50 | 27 | 4 | A | 0.7 |
| -080-A27-WP08-05C | △ | 80 | 1.5 | 5.66 | 63 | 27 | 5 | A | 1.5 |
| -100-B32-WP08-06 | △ | 100 | 1.5 | 5.66 | 63 | 32 | 6 | B | 2.2 |
| -125-B40-WP08-07 | △ | 125 | 1.5 | 5.66 | 63 | 40 | 7 | B | 3.5 |
| -160-B40-WP08-08 | △ | 160 | 1.5 | 5.66 | 63 | 40 | 8 | B | 6.0 |
| -063-A22-WP09-03C | △ | 63 | 3.0 | 6.8 | 50 | 22 | 3 | A | 0.7 |
| -080-A27-WP09-04C | △ | 80 | 3.0 | 6.8 | 63 | 27 | 4 | A | 1.4 |
| -100-B32-WP09-05 | △ | 100 | 3.0 | 6.8 | 63 | 32 | 5 | B | 2.1 |
| -125-B40-WP09-06 | △ | 125 | 3.0 | 6.8 | 63 | 40 | 6 | B | 3.7 |
| -160-B40-WP09-07 | △ | 160 | 3.0 | 6.8 | 63 | 40 | 7 | B | 6.3 |

▲Stock available △Make-to-order

Spare parts

| Tool type | Clamp/Insert screw | Clamp | Wrench | |
|----------------|--------------------|--------|--------|--------|
| | | | | |
| XMR01□□-WP06□□ | I60M4×8.4 | -- | WT15S | -- |
| XMR01□□-WP08□□ | I60M5×13 | WD-208 | -- | WT20IT |
| XMR01□□-WP09□□ | I60M5×13 | WD-208 | -- | |



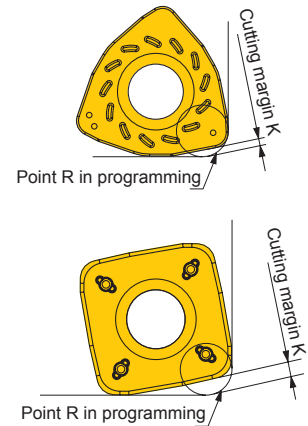
Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

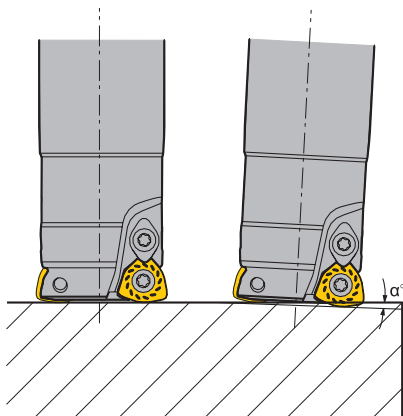
Approximate R in machining program

| Applicable insert | Approximate R(mm) | Cutting margin K(mm) |
|----------------------|-------------------|----------------------|
| WPGT050315ZSR/-PM | 2 | 0.5 |
| WPGT060415ZSR/-PM | 2.5 | 0.7 |
| WPGT080615ZSR/-PM | 2.5 | 0.7 |
| WPGT090725ZSR/-PM | 4.5 | 1.2 |
| SDMT06T208-DM/-PM/NM | 1.6 | 0.5 |
| SDMT09T312-DM/-PM/NM | 2.5 | 0.87 |
| SDMT120412-DM/-PM/NM | 4.0 | 0.93 |
| SDMT150520-DM/-PM/NM | 4.0 | 1.38 |

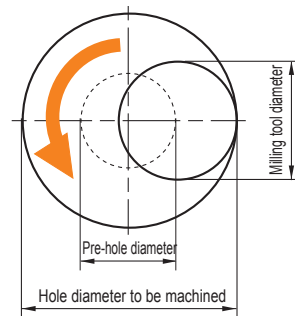


Different machining styles

■ Ramp machining



■ Helical interpolation milling



- Reduce the feed rate in ramp and helical machining operations.
- Set the axial feed rate below 0.2mm/rev in drilling operation.
- Be careful ! Long chips may fly off in drilling operation.
- The cutting depth of each rotation must not exceed the maximum cutting depth (a_p).
- The S-type insert can be used for plunge milling in addition to the machining operations mentioned above.

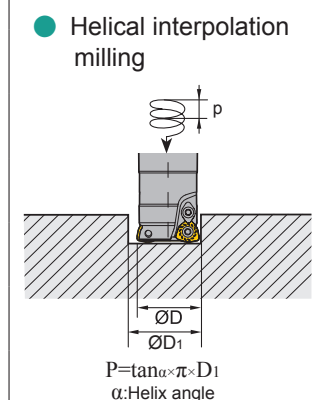
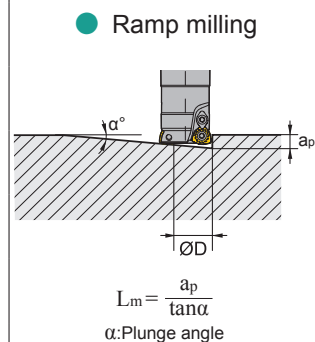
Selection guide for XMR01 series

XMR01 series tools (with SD□□ inserts) have perfect edge strength and good economical efficiency, advantageous in face milling.

XMR01 series tools (with WP□□ inserts) has good capability of chip removal, proficient in cavity milling.

Ramp milling, helical interpolation milling

| Insert | Diameter ØD(mm) | Ramp milling | | Helical interpolationmilling | |
|----------|-----------------|------------------------------|---------------------------------|-----------------------------------|-------------------|
| | | Max.cutting depth a_p (mm) | Max.plunge angle α° | Min.diameter ØD ₁ (mm) | Max.diameter (mm) |
| WP**05** | 20 | 1.5 | 12 | 24 | 37 |
| WP**06* | 25 | 1.5 | 8.8 | 31 | 47 |
| | 32 | 1.5 | 5 | 45 | 61 |
| | 40 | 1.5 | 3.2 | 61 | 77 |
| | 50 | 1.5 | 2.8 | 81 | 97 |
| WP**08* | 40 | 1.5 | 9 | 52 | 77 |
| | 50 | 1.5 | 5.4 | 71 | 97 |
| | 63 | 1.5 | 4.3 | 97 | 123 |
| | 80 | 1.5 | 2.9 | 131 | 157 |
| | 100 | 1.5 | 2.1 | 171 | 197 |
| | 125 | 1.5 | 1.3 | 221 | 247 |
| | 160 | 1.5 | 1.1 | 291 | 317 |
| WP**09* | 50 | 3.0 | 7.2 | 70 | 96 |
| | 63 | 3.0 | 4.5 | 96 | 122 |
| | 80 | 3.0 | 2.8 | 130 | 156 |
| | 100 | 3.0 | 2.2 | 170 | 196 |
| | 125 | 3.0 | 1.6 | 220 | 246 |
| | 160 | 3.0 | 1.2 | 290 | 316 |

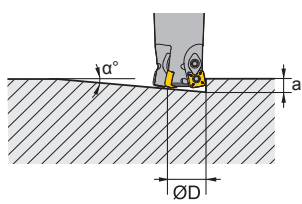
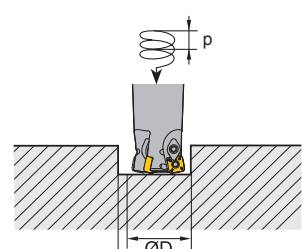


Reduce the feed rate when plunging and circular milling.
 For drilling operations (axial) set the feed rate under 0.2mm.
 "Attention"—drilling can produce long chips.

Indexable milling tools

High feed milling cutters

Ramp milling, helical interpolation milling

| Insert | Diameter ØD(mm) | Ramp milling | | Helical interpolationmilling | |
|--|--------------------|---------------------------------|-------------------------------------|--------------------------------------|----------------------|
| | | max.cutting depth a_p (mm) | max.cutting depth α° | min.diameter ØD ₁ (mm) | max. diameter(mm) |
| <p>● Ramp milling</p>  $L_m = \frac{a_p}{\tan \alpha}$ <p>α: Plunge angle</p> | 20 | 0.8 | 3.6 | 30 | 38 |
| | 25 | 0.8 | 2.8 | 40 | 48 |
| | 32 | 0.8 | 1.6 | 52 | 60 |
| | 40 | 0.8 | 1.1 | 70 | 78 |
| | 50 | 0.8 | 0.8 | 90 | 98 |
| | 63 | 0.8 | 0.7 | 114 | 122 |
| <p>● Helical interpolation milling</p>  $P = \tan \alpha \times \pi \times D_1$ <p>α: Helix angle</p> | 25 | 1.4 | 6.5 | 34 | 48 |
| | 32 | 1.4 | 4.5 | 48 | 62 |
| | 35 | 1.4 | 3.6 | 54 | 68 |
| | 50 | 1.4 | 1.8 | 84 | 98 |
| | 63 | 1.4 | 1.3 | 110 | 124 |
| <p>SD**06**</p> | 32 | 1.8 | 10.4 | 44 | 60 |
| | 40 | 1.8 | 5.7 | 60 | 76 |
| | 50 | 1.8 | 3.5 | 80 | 96 |
| | 63 | 1.8 | 2.5 | 106 | 122 |
| | 80 | 1.8 | 1.6 | 140 | 156 |
| | 100 | 1.8 | 1.2 | 180 | 196 |
| <p>SD**09**</p> | 40 | 2.2 | 7.3 | 54 | 76 |
| | 80 | 2.2 | 1.4 | 134 | 156 |
| | 100 | 2.2 | 1.0 | 174 | 196 |
| | 125 | 2.2 | 0.9 | 234 | 246 |
| | 160 | 2.2 | 0.6 | 304 | 316 |
| <p>SD**12**</p> | 40 | 2.2 | 7.3 | 54 | 76 |
| | 80 | 2.2 | 1.4 | 134 | 156 |
| | 100 | 2.2 | 1.0 | 174 | 196 |
| | 125 | 2.2 | 0.9 | 234 | 246 |
| | 160 | 2.2 | 0.6 | 304 | 316 |
| <p>SD**15**</p> | 40 | 2.2 | 7.3 | 54 | 76 |
| | 80 | 2.2 | 1.4 | 134 | 156 |
| | 100 | 2.2 | 1.0 | 174 | 196 |
| | 125 | 2.2 | 0.9 | 234 | 246 |
| | 160 | 2.2 | 0.6 | 304 | 316 |

Reduce the feed rate when plunging and circular milling.
 For drilling operations (axial) set the feed rate under 0.2mm.
 "Attention"—drilling can produce long chips.

Indexable
milling tools

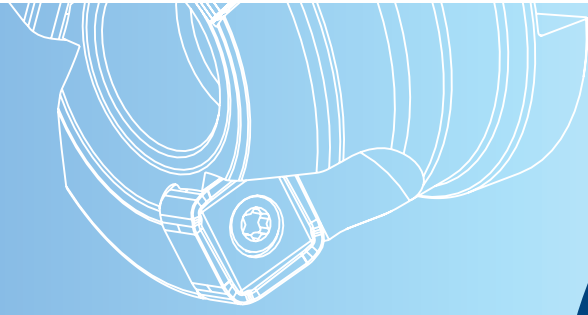
High feed milling cutters

▶▶ Recommended cutting parameters

| Workpiece material | Hardness HB | Insert grade | Cutting speed (m/min) | Ø25 | | Ø30/32/35 | |
|--|-----------------------------|--|------------------------------|---------------------|---------------------|---------------------|---------------------|
| | | | | Axial cutting depth | Feed rate per tooth | Axial cutting depth | Feed rate per tooth |
| P Soft steel Carbon Steel | ≤HB180 HB180-280 | YBC302 YBM351 YBM253 YBG205 YB9320 | 170(120-220) 150(100-200) | 0.6~1.5 | 0.6~1.2 | 0.6~1.2 | 0.5~1.4 |
| | HB280-350 | YBC302 YBM351 YBM253 YBG205 YB9320 | 130(80-180) | 0.4~1.2 | 0.6~1.2 | 0.4~1.0 | 0.5~1.4 |
| | pre-hardened steel | YBC302 YBM351 YBM253 YBG205 YB9320 | 120(80-160) | 0.4~1.0 | 0.5~1.0 | 0.4~1.0 | 0.5~1.0 |
| M Stainless steel | ≤HB270 | YBM351 YBM253 | 120(80-160) | 0.6~1.0 | 0.6~1.0 | 0.8~1.2 | 0.8~1.2 |
| | | YBG205 YB9320 | 120(80-190) | | | | |
| K Common cast iron | Tensile strength ≤350MPa | YBG302 | 150(100-200) | 0.6~1.0 | 0.6~1.4 | 0.6~1.2 | 0.6~1.6 |
| | Tensile strength ≤800MPa | YBG302 | 120(80-160) | 0.4~0.8 | 0.5~1.2 | 0.4~1.0 | 0.5~1.4 |
| S Difficult-to-machine materials | ≤400 | YBS203 | 80(60-120) | 0.6~1.0 | 0.6~1.0 | 0.8~1.2 | 0.8~1.2 |
| | | YBS303 | 60(45-110) | 0.4~0.8 | 0.4~0.8 | 0.4~1.0 | 0.4~0.8 |

▶▶ Recommended cutting parameters

| Workpiece material | Hardness HB | Insert grade | Cutting speed (m/min) | Ø40 | | Ø50/63 | | Ø80/100 | |
|--|-----------------------------|--|------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | | | | Axial cutting depth | Feed rate per tooth | Axial cutting depth | Feed rate per tooth | Axial cutting depth | Feed rate per tooth |
| P Soft steel Carbon Steel | ≤HB180 HB180-280 | YBC302 YBM351 YBM253 YBG205 YB9320 | 170(120-220) 150(100-200) | 0.6~1.5 | 0.8~1.5 | 0.6~1.5 | 0.8~1.5 | 0.6~1.5 | 0.5~1.5 |
| | HB280-350 | YBC302 YBM351 YBM253 YBG205 YB9320 | 130(80-180) | 0.4~1.2 | 0.6~1.5 | 0.4~1.3 | 0.6~1.5 | 0.4~1.3 | 0.5~1.5 |
| | pre-hardened steel | YBC302 YBM351 YBM253 YBG205 YB9320 | 120(80-160) | 0.4~1.0 | 0.5~1.0 | 0.4~1.3 | 0.5~1.0 | 0.4~1.3 | 0.5~1.0 |
| M Stainless steel | ≤HB270 | YBM351 YBM253 | 120(80-160) | 0.8~1.2 | 0.8~1.2 | 1.1~1.5 | 0.9~1.3 | 1.0~1.5 | 0.8~1.3 |
| | | YBG205 YB9320 | 120(80-190) | | | | | | |
| K Common cast iron | Tensile strength ≤350MPa | YBG302 | 150(100-200) | 0.6~1.5 | 0.8~1.6 | 0.6~1.5 | 0.8~1.7 | 0.6~1.5 | 0.6~1.7 |
| | Tensile strength ≤800MPa | YBG302 | 120(80-160) | 0.4~1.2 | 0.6~1.4 | 0.6~1.3 | 0.6~1.5 | 0.4~1.3 | 0.5~1.5 |
| S Difficult-to-machine materials | ≤400 | YBS203 | 80(60-120) | 0.8~1.2 | 0.6~1.0 | 1.1~1.5 | 0.6~1.2 | 1.0~1.5 | 0.4~1.2 |
| | | YBS303 | 60(45-110) | 0.4~1.0 | 0.4~1.0 | 0.6~1.2 | 0.6~1.0 | 0.4~1.0 | 0.4~0.8 |



After reasonable calculation and optimization, the axial and radial inclination angles effectively reduce the machining resistance of the tool.

The whole cutting tool can realize stable processing with excellent impact resistance and strong vibration resistance.

Screw clamping achieves high positioning accuracy and good economy.



XMRO3 Series of High Feed Milling Cutter



8 cutting edges on both sides achieve economical and cost-effective machining.

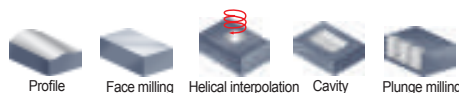
Large rake angle design, low cutting resistance, special edge shape and tool combination achieve a large chip space, leading to excellent chip removal performance.

Due to the good versatility, it can be used for large-feed processing of various steels, as well as processing viscous materials such as stainless steel and titanium alloy.

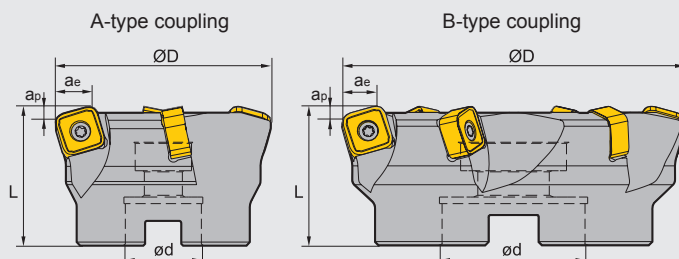
4×2=8 cutting edges



High feed milling cutters



XMR03 P M



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | Number of teeth Z | Type of coupling | Weight (kg) | |
|------------------------------|------------------|----------------------|-------|-----|-----|----|-------------------|------------------|-------------|-------|
| | | ØD | apmax | ae | L | ød | | | | |
| XMR03 Coarse pitch | -050-A22-SN12-03 | ▲ | 50 | 1.8 | 9.8 | 40 | 22 | 3 | A | 0.289 |
| | -063-A22-SN12-04 | ▲ | 63 | 1.8 | 9.8 | 40 | 22 | 4 | A | 0.482 |
| | -080-A27-SN12-05 | ▲ | 80 | 1.8 | 9.8 | 50 | 27 | 5 | A | 1.014 |
| | -100-B32-SN12-06 | ▲ | 100 | 1.8 | 9.8 | 50 | 32 | 6 | B | 1.45 |
| | -125-B40-SN12-07 | ▲ | 125 | 1.8 | 9.8 | 63 | 40 | 7 | B | 2.7 |
| Close pitch | -050-A22-SN12-04 | △ | 50 | 1.8 | 9.8 | 40 | 22 | 4 | A | 0.319 |
| | -063-A22-SN12-05 | △ | 63 | 1.8 | 9.8 | 40 | 22 | 5 | A | 0.512 |
| | -080-A27-SN12-06 | △ | 80 | 1.8 | 9.8 | 50 | 27 | 6 | A | 1.044 |
| | -100-B32-SN12-07 | △ | 100 | 1.8 | 9.8 | 50 | 32 | 7 | B | 1.48 |
| | -125-B40-SN12-08 | △ | 125 | 1.8 | 9.8 | 63 | 40 | 8 | B | 2.73 |
| Extra close pitch | -050-A22-SN12-05 | △ | 50 | 1.8 | 9.8 | 40 | 22 | 5 | A | 0.354 |
| | -063-A22-SN12-06 | △ | 63 | 1.8 | 9.8 | 40 | 22 | 6 | A | 0.547 |
| | -080-A27-SN12-07 | △ | 80 | 1.8 | 9.8 | 50 | 27 | 7 | A | 1.079 |
| | -100-B32-SN12-08 | △ | 100 | 1.8 | 9.8 | 50 | 32 | 8 | B | 1.435 |
| | -125-B40-SN12-09 | △ | 125 | 1.8 | 9.8 | 63 | 40 | 9 | B | 2.765 |

▲Stock available △Make-to-order

Indexable milling tools

High feed milling cutters

Spare parts

| Tool type | Insert screw | Wrench |
|-----------|----------------|----------|
| | XMR03□□-SD12□□ | I60M4×10 |

Tools code key
B24-B25

Grade selection guide
B19-B23

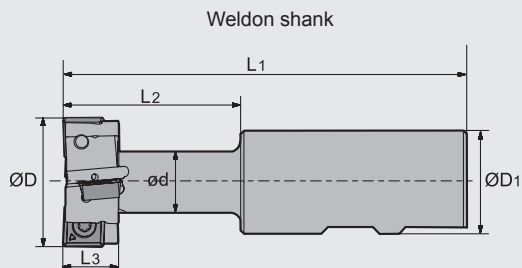
Technical data
B234-B240

T-slot milling tools

Kr:90°



TMP01 **K**



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | | | Number of teeth Z | Number of insert | T-slot specification |
|--------------------------------|-------|----------------------|-----------------|----|----------------|----------------|----------------|-------------------|------------------|----------------------|
| | | ØD | ØD ₁ | ød | L ₁ | L ₂ | L ₃ | | | |
| TMP01 -021-XP25-MP06-01 | ▲ | 21 | 25 | 10 | 100 | 32 | 9 | 1 | 2 | 12 |
| -025-XP25-MP06-01 | ▲ | 25 | 25 | 12 | 100 | 35 | 11 | 1 | 2 | 14 |
| -032-XP32-MP08-02 | ▲ | 32 | 32 | 15 | 110 | 45 | 14 | 2 | 4 | 18 |
| -040-XP32-MP12-02 | ▲ | 40 | 32 | 19 | 125 | 55 | 18 | 2 | 4 | 22 |
| -050-XP40-MP12-02 | ▲ | 50 | 40 | 25 | 140 | 65 | 22 | 2 | 4 | 28 |
| -060-XP50-MP12-02 | ▲ | 60 | 50 | 32 | 160 | 80 | 28 | 2 | 6 | 36 |

▲Stock available △Make-to-order

Indexable milling tools

T-slot milling tools

Spare parts

| Tool type | Screw | Wrench | |
|------------------------|-------------|--------|--------|
| | | | |
| TMP01-021-XP25-MP06-01 | I60M2.5×5.5 | WT07IP | -- |
| TMP01-025-XP25-MP06-01 | I60M2.5×5.5 | | |
| TMP01-032-XP32-MP08-02 | I60M3×7 | WT10IP | -- |
| TMP01-040-XP32-MP12-02 | I60M5×10 | -- | WT20IT |
| TMP01-050-XP40-MP12-02 | I60M5×10 | | |
| TMP01-060-XP50-MP12-02 | I60M5×10 | | |

Caution: When installing inserts, make sure the insert nose marked with "DM" or "Δ" is pointing to the slot.

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Helical milling

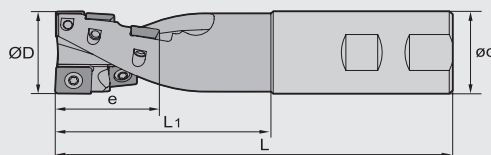
Kr:90°



HMP01 P K



Weldon shank



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | | Number of flute Z | Number of inserts | | Shank type |
|-----------------------------------|-------|---|----------------------|----|----|----|-----|-------------------|-------------------|-------------------|--------------|
| | R | L | ØD | ød | e | L1 | L | | APKT 150412-PM/KM | SPMT 120408-PM/KM | |
| HMP01 -040×55-XP40-SP12-02 | △ | △ | 40 | 40 | 55 | 95 | 175 | 2 | 1 | 5 | Weldon shank |
| -050×55-XP40-SP12-04 | △ | △ | 50 | 40 | 55 | 95 | 175 | 4 | 2 | 10 | Weldon shank |

▲Stock available △Make-to-order

Spare parts

| Diameter ØD | Screw | Wrench |
|-------------|----------|--------|
| Ø40 | I60M5×10 | WT20T |
| Ø50 | I60M5×13 | WT20T |



Tools code key
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Grade selection guide
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Indexable milling tools

Helical milling

Helical milling

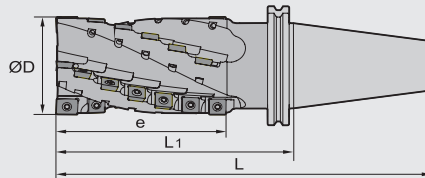
Kr:90°



HMP01 P K



JT shank/ BT shank (JT shank shown)




Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | Teeth row | Number of inserts | | Shank type |
|-----------------------------------|-------|---|----------------------|-----|-----|--------|-----------|----------------------|----------------------|------------|
| | R | L | ØD | e | L1 | L | | APKT 150412-PM/KM | SPMT 120408-PM/KM | |
| HMP01 -050×84-JT50-SP12-04 | △ | △ | 50 | 84 | 145 | 246.75 | 4 | 2 | 16 | JT |
| -063×74-JT50-SP12-04 | △ | △ | 63 | 74 | 135 | 236.75 | 4 | 2 | 14 | JT |
| -063×104-JT50-SP12-04 | △ | △ | 63 | 104 | 165 | 266.75 | 4 | 2 | 20 | JT |
| -063×134-JT50-SP12-04 | △ | △ | 63 | 134 | 195 | 296.75 | 4 | 2 | 26 | JT |
| -080×104-JT50-SP12-04 | △ | △ | 80 | 104 | 165 | 266.75 | 4 | 2 | 20 | JT |
| -080×144-JT50-SP12-04 | △ | △ | 80 | 144 | 205 | 306.75 | 4 | 2 | 28 | JT |
| -050×84-BT50-SP12-04 | △ | △ | 50 | 84 | 145 | 246.8 | 4 | 2 | 16 | BT |
| -063×74-BT50-SP12-04 | △ | △ | 63 | 74 | 135 | 236.8 | 4 | 2 | 14 | BT |
| -063×104-BT50-SP12-04 | △ | △ | 63 | 104 | 165 | 266.8 | 4 | 2 | 20 | BT |
| -063×134-BT50-SP12-04 | △ | △ | 63 | 134 | 195 | 296.8 | 4 | 2 | 26 | BT |
| -080×104-BT50-SP12-04 | △ | △ | 80 | 104 | 165 | 266.8 | 4 | 2 | 20 | BT |
| -080×144-BT50-SP12-04 | △ | △ | 80 | 144 | 205 | 306.8 | 4 | 2 | 28 | BT |

▲Stock available △Make-to-order

Spare parts

| Diameter ØD | Screw | Wrench |
|----------------|----------|----------|
| | Ø50 | I60M5×13 |
| Ø63 | I60M5×13 | WT20IS |
| Ø80 | I60M5×13 | WT20IS |



Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Helical milling

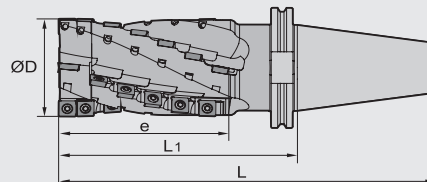
Kr:90°



HMP01 EC P K



JT shank/ BT shank (JT shank shown)



Specification of tools

| Type | Stock | | Basic dimensions(mm) | | | | Teeth row | Number of inserts | | Shank type |
|-------------------------------------|-------|---|----------------------|-----|-----|--------|-----------|----------------------|----------------------|------------|
| | R | L | ØD | e | L1 | L | | APKT 150412-PM/KM | SPMT 120408-PM/KM | |
| HMP01 -050×84EC-JT50-SP12-04 | △ | △ | 50 | 84 | 145 | 246.75 | 4 | 2 | 16 | JT |
| -063×74EC-JT50-SP12-04 | △ | △ | 63 | 74 | 135 | 236.75 | 4 | 2 | 14 | JT |
| -063×104EC-JT50-SP12-04 | △ | △ | 63 | 104 | 165 | 266.75 | 4 | 2 | 20 | JT |
| -063×134EC-JT50-SP12-04 | △ | △ | 63 | 134 | 195 | 296.75 | 4 | 2 | 26 | JT |
| -080×104EC-JT50-SP12-04 | △ | △ | 80 | 104 | 165 | 266.75 | 4 | 2 | 20 | JT |
| -080×144EC-JT50-SP12-04 | △ | △ | 80 | 144 | 205 | 306.75 | 4 | 2 | 28 | JT |
| -050×84EC-BT50-SP12-04 | △ | △ | 50 | 84 | 145 | 246.8 | 4 | 2 | 16 | BT |
| -063×74EC-BT50-SP12-04 | △ | △ | 63 | 74 | 135 | 236.8 | 4 | 2 | 14 | BT |
| -063×104EC-BT50-SP12-04 | △ | △ | 63 | 104 | 165 | 266.8 | 4 | 2 | 20 | BT |
| -063×134EC-BT50-SP12-04 | △ | △ | 63 | 134 | 195 | 296.8 | 4 | 2 | 26 | BT |
| -080×104EC-BT50-SP12-04 | △ | △ | 80 | 104 | 165 | 266.8 | 4 | 2 | 20 | BT |
| -080×144EC-BT50-SP12-04 | △ | △ | 80 | 144 | 205 | 306.8 | 4 | 2 | 28 | BT |

▲Stock available △Make-to-order

Indexable milling tools

Helical milling

Spare parts

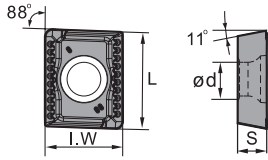
| Diameter ØD | Insert screw | Screw of interchangeable head | Wrench of insert screw | Wrench of interchangeable head | Interchangeable head |
|-------------|--------------|-------------------------------|------------------------|--------------------------------|----------------------|
| Ø50 | I60M5×13 | M10×50 | WT20IS | WH80L | 050EC |
| Ø63 | I60M5×13 | M10×50 | WT20IS | WH80L | 063EC |
| Ø80 | I60M5×13 | M12×55 | WT20IS | WH100L | 080EC |

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Good working condition (😊) | | | | | | | | | | | | Normal working condition (😐) | | | | | | | | | | | | Bad working condition (😞) | | | | | | | | | | | |
|------------------------------------|----------------------------|---|---|---|---|---|---|---|---|---|---|---|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---------------------------|--|--|--|--|--|--|--|--|--|--|--|
| | P | M | K | N | S | P | M | K | N | S | P | M | K | N | S | P | M | K | N | S | P | M | K | N | S | | | | | | | | | | | |
| Steel (P) | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | | | | |
| Stainless steel (M) | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | | | | |
| Cast iron (K) | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | | | | |
| Non-ferrous metal (N) | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | | | | |
| Heat resistant alloy, Ti alloy (S) | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | | | | |

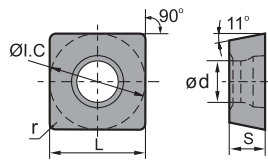
| Insert shape | Type | Basic dimensions(mm) | | | | | CVD Coating | | | | | PVD Coating | | | | | Cermet | Cemented carbide | | | | | | | | | | |
|--------------|---------------|----------------------|------|------|-----|-----|-------------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|
| | | L | I.W | S | ød | r | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
| | APKT150412-PM | 16.33 | 12.7 | 4.76 | 5.4 | 1.2 | | | | ★ | | | | | | | | ● | | | | | | | | | | |
| | APKT150412-KM | 16.33 | 12.7 | 4.76 | 5.4 | 1.2 | | | | | | | | | | | | ● | ○ | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools

Helical endmills with interchangeable heads

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Good working condition (😊) | | | | | | | | | | | | Normal working condition (😐) | | | | | | | | | | | | Bad working condition (😞) | | | | | | | | | | | |
|------------------------------------|----------------------------|---|---|---|---|---|---|---|---|---|---|---|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---------------------------|--|--|--|--|--|--|--|--|--|--|--|
| | P | M | K | N | S | P | M | K | N | S | P | M | K | N | S | P | M | K | N | S | P | M | K | N | S | | | | | | | | | | | |
| Steel (P) | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | | | |
| Stainless steel (M) | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | | | |
| Cast iron (K) | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | | | |
| Non-ferrous metal (N) | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | | | |
| Heat resistant alloy, Ti alloy (S) | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | | | |

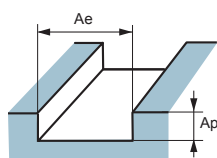
| Insert shape | Type | Basic dimensions(mm) | | | | | CVD Coating | | | | | PVD Coating | | | | | Cermet | Cemented carbide | | | | | | | | | | |
|--------------|---------------|----------------------|------|------|-----|-----|-------------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|
| | | L | ØI.C | S | ød | r | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
| | SPMT120408-PM | 12.7 | 12.7 | 4.76 | 5.5 | 0.8 | | | | ★ | | | | | | | | ● | | | | | | | | | | |
| | SPMT120408-KM | 12.7 | 12.7 | 4.76 | 5.5 | 0.8 | | | | | | | | | | | | ● | ○ | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Chipbreaker selection for HMP01 milling inserts

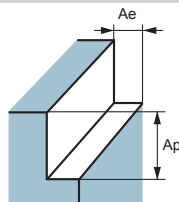
| Classification | Function | For semi-finishing | For roughing |
|----------------|----------|--------------------|--------------|
| P | | -PM | -PM |
| K | | -KM | -KM |

A Slot milling



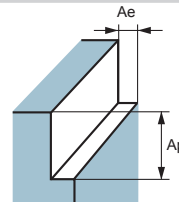
$A_e = D$
 $A_p = 0.5D$ (cast iron)
 Maximum 12mm (steel)

B Square shoulder milling



$A_e = 0.5D$
 $A_p = 1.5D$ (cast iron)
 1.0D (steel)

C Narrow shoulder milling



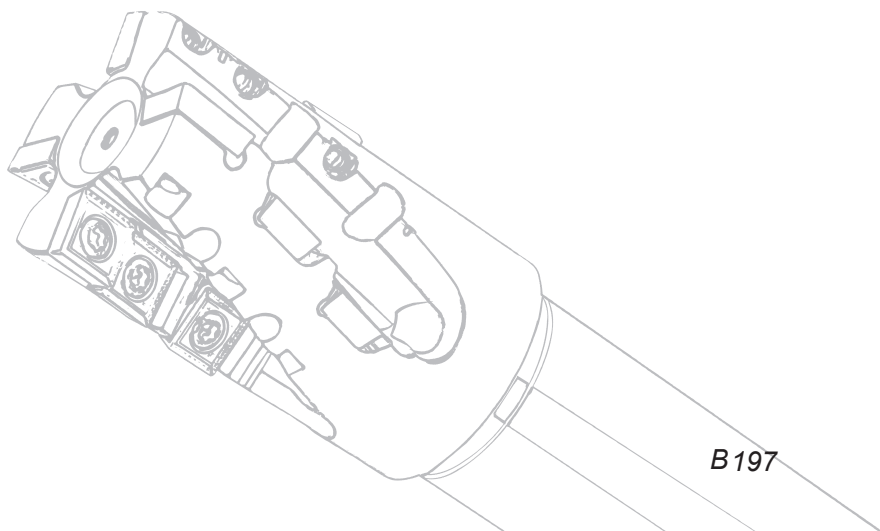
$A_e = 0.1D$
 $A_p \leq$ Maximum cutting length

➤ Recommended cutting parameters

| | Workpiece material | Hardness HB | Insert grade | Cutting parameters | | Operation (figure) |
|----------|-----------------------------------|-------------|------------------|-----------------------|-------------------|--------------------|
| | | | | Cutting speed (m/min) | Feed speed (mm/z) | |
| P | Low-carbon steel, Soft steel | ≤ 180 | YBM253 YBG302 | 80(60-90) | 0.25(0.1-0.35) | A |
| | | | | 90(70-120) | 0.3(0.15-0.4) | B |
| | | | | 90(70-120) | 0.3(0.15-0.4) | C |
| | High-carbon steel, Alloy steel | 180-280 | YBM253 YBG302 | 70(60-100) | 0.2(0.1-0.35) | A |
| | | | | 80(60-120) | 0.25(0.15-0.35) | B |
| | | | | 90(70-120) | 0.25(0.15-0.35) | C |
| | Alloy tool steel | 280-350 | YBM253 YBG302 | 50(40-80) | 0.15(0.08-0.25) | A |
| | | | | 60(50-100) | 0.2(0.1-0.35) | B |
| | | | | 70(50-100) | 0.2(0.1-0.35) | C |
| K | Cast iron | 180-250 | YBG152 YBG302 | 70(50-100) | 0.2(0.1-0.35) | A |
| | | | | 80(60-120) | 0.25(0.15-0.35) | B |
| | | | | 90(80-120) | 0.25(0.15-0.35) | C |

Indexable
milling tools

Helical endmills with
interchangeable heads

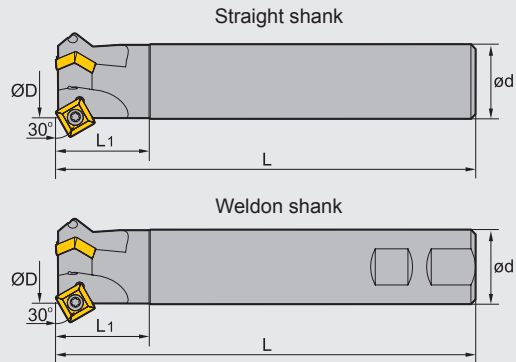


Chamfer milling

Kr:30°



CMZ01 P M K



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | Number of teeth Z | Weight (kg) |
|----------------|-------|----------------------|----|-----|----------------|-------------------|-------------|
| | | ØD | ød | L | L ₁ | | |
| Straight shank | △ | 12 | 20 | 100 | 40 | 1 | 0.2 |
| | △ | 25 | 25 | 120 | 40 | 2 | 0.8 |
| | △ | 32 | 32 | 180 | 40 | 3 | 1.1 |
| Weldon shank | △ | 12 | 20 | 100 | 40 | 1 | 0.2 |
| | △ | 25 | 25 | 120 | 40 | 2 | 0.6 |
| | △ | 32 | 32 | 180 | 40 | 3 | 1.0 |


▲ Stock available △ Make-to-order

Indexable milling tools

Chamfer milling

Spare parts

| Diameter ØD | Screw | Wrench |
|-------------|----------|--------|
| Ø12-Ø32 | I43M5×11 | WT20IS |



Tools code key
B24-B25

Grade selection guide
B19-B23

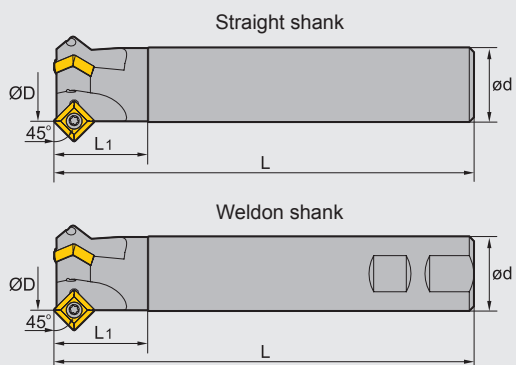
Technical data
B234-B240

Chamfer milling

Kr:45°



CMA01 P M K



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | Number of teeth Z | Weight (kg) |
|----------------|-------|----------------------|----|-----|----------------|-------------------|-------------|
| | | ØD | ød | L | L ₁ | | |
| Straight shank | ▲ | 12 | 20 | 100 | 40 | 1 | 0.2 |
| | ▲ | 25 | 25 | 120 | 40 | 2 | 0.8 |
| | ▲ | 32 | 32 | 180 | 40 | 3 | 1.1 |
| Weldon shank | ▲ | 12 | 20 | 100 | 40 | 1 | 0.2 |
| | ▲ | 25 | 25 | 120 | 40 | 2 | 0.6 |
| | ▲ | 32 | 32 | 180 | 40 | 3 | 1.0 |

▲Stock available △Make-to-order

Indexable milling tools

Chamfer milling

Spare parts

| Diameter ØD | Screw | Wrench |
|-------------|----------|--------|
| Ø12-Ø32 | I43M5×11 | WT20IS |



Tools code key
B24-B25

Grade selection guide
B19-B23

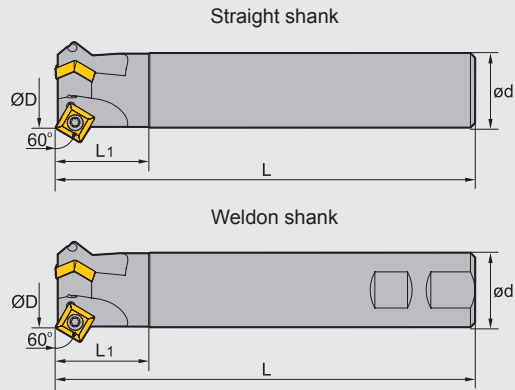
Technical data
B234-B240

Chamfer milling tools

Kr:60°



CMD01 P M K



Specification of tools

| Type | Stock | Basic dimensions(mm) | | | | Number of teeth Z | Weight (kg) |
|--------------------------------|---------------------|----------------------|----|-----|----------------|-------------------|-------------|
| | | ØD | ød | L | L ₁ | | |
| CMD01 Straight shank | ▲ -012-G20-SP12-01 | 12 | 20 | 100 | 40 | 1 | 0.2 |
| | ▲ -025-G25-SP12-02 | 25 | 25 | 120 | 40 | 2 | 0.8 |
| | ▲ -036-G32-SP12-03 | 36 | 32 | 180 | 40 | 3 | 1.0 |
| Straight shank | ▲ -012-XP20-SP12-01 | 12 | 20 | 100 | 40 | 1 | 0.2 |
| | ▲ -025-XP25-SP12-02 | 25 | 25 | 120 | 40 | 2 | 0.6 |
| | ▲ -036-XP32-SP12-03 | 36 | 32 | 180 | 40 | 3 | 1.0 |


▲ Stock available △ Make-to-order

Indexable milling tools

Chamfer milling tools

Spare parts

| Diameter ØD | Screw | Wrench |
|-------------|----------|--------|
| Ø12-Ø36 | I43M5×11 | WT20IS |








Tools code key **B24-B25**









Grade selection guide **B19-B23**









Technical data **B234-B240**









PCD&PCBN inserts









| | | | | |
|---|---|---|---|---|
|  |  |  |  |  |
| APHT-PCD | APHT-W | APHT-CBN | SEHT-PCD | SEHT-CBN |
| Page B206 | B206 | B206 | B224 | B224 |









Inserts for face milling









| | | | | | | | |
|---|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |  |
| SEET-CF | SEET-CM | SEET-CR | SEET-DF | SEET-DM | SEET-DR | SEET-EF | SEET-EM |
| Page B219 | B219 | B219 | B219 | B219 | B219 | B219 | B219 |









| | | | | | | | |
|---|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |  |
| SEET-LH | SEET-W | SEHT-AL | SEK(E)N | SEKR | SEMR-M | SEKR-M | SNG(M)X-GL |
| Page B219 | B219 | B224 | B220 | B220 | B220 | B220 | B222 |







| | | | | | | | |
|---|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |  |
| SNG(M)X-GM | SNG(M)X-GH | SNCU-W4 | ODHT-GM | ODHT-GH | ODHT-GL | ODMT-GM | ODHT-LH |
| Page B222 | B222 | B223 | B211 | B211 | B211 | B211 | B211 |

| | | | | | | | |
|---|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |  |
| OFKT-DF | OFKT-DM | OFKT-LH | ONHU-PF | ONHU-PM | ONHU-W | ONHU-GM | ONHU-GH |
| Page B211 | B211 | B211 | B212 | B212 | B212 | B212 | B212 |

| | | | | | | | |
|---|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |  |
| ONHU-GL | ONHU-W | ONMU-GM | ONMU-GH | SNEG-GM | SNEG-HGR | SNEG-W | HNEG-DF |
| Page B212 | B212 | B212 | B212 | B221 | B221 | B221 | B208 |

| | | | | | | | |
|---|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |  |
| HNEG-DM | HNEG-DR | PNEG-GL | PNEG-GM | PNEG-GH | PNEG-CF/CM/CR | PNEG-PF/PM/PR | PNEG-KL/KM/KH |
| Page B208 | B208 | B213 | B213 | B213 | B213 | B214 | B214 |






| | | | | | | | |
|---|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |  |
| LNKT-ZR | LNKT-ZR | LNKT-ZR | SPKW | SPKT | SP□N | SPKR-GM | SPEX |
| Page B209 | B209 | B209 | B226 | B224 | B225 | B226 | B227 |






| | | | | | |
|---|---|---|---|---|--|
|  |  |  |  |  |  |
| SPMR | SP□N | TPKN | TPGN | TPUN | TPMR |
| Page B227 | B228 | B229 | B229 | B230 | B230 |

Indexable milling tools









Milling inserts



Inserts for face milling

| | | | | | | | |
|---|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |  |
| SEET□PER-APF | SEET□PER-APM | SEET□PER-APR | WNHU-GM | WNHU-LH | RCKT-DM | RCKT-DR | RCKT-ER |
| Page B221 | Page B221 | Page B221 | Page B231 | Page B231 | Page B216 | Page B216 | Page B216 |

| | | | | |
|---|---|---|---|---|
|  |  |  |  |  |
| RCKT-NM | RCMW | RDKW□MO | RDKT□MO | RDKT□MO-NM |
| Page B216 | Page B216 | Page B217 | Page B217 | Page B217 |

Inserts for square shoulder milling

| | | | | | | | |
|---|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |  |
| APHT-AL | APKT-APF | APKT-APM | APKT-ALH | ANGX□PNR-GM | ANMX□PNR-GM | ANGX□PNR-LH | LNKT-GM |
| Page B206 | Page B207 | Page B207 | Page B207 | Page B208 | Page B208 | Page B208 | Page B210 |

| | |
|---|---|
|  |  |
| LNKT-GL | LNMT-GM |
| Page B210 | Page B210 |

Indexable milling tools

Milling inserts

Inserts for profile milling

| | | | | | | |
|---|---|---|---|---|--|---|
|  |  |  |  |  |  |  |
| ZDET | ZPNT | SDMT/SPMT | ROHX | XPHT-GM | ZOHX-GF | ZOHX-GM |
| Page B232 | Page B233 | Page B218/B224 | Page B217 | Page B232 | Page B233 | Page B233 |


Inserts for side and face milling

| | | | |
|---|---|---|---|
|  |  |  |  |
| LNGX-GM | XSEQ | MPHT | QC□□L |
| Page B209 | Page B232 | Page B210 | Page B215 |



Inserts for high feed

| | | | | | |
|---|---|--|---|---|---|
|  |  |  |  |  |  |
| SDMT-DM | SDMT-PM | SDMT-NM | WPGT | WPGT-PM | SNGU-GM |
| Page B218 | Page B218 | Page B218 | Page B231 | Page B231 | Page B223 |

Inserts for T-slot milling

| |
|---|
|  |
| MPHT |
| Page B210 |

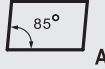
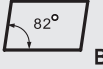



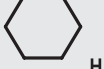
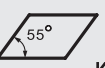
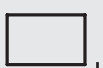

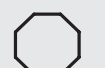
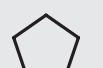





Inserts for helical milling

| | |
|---|---|
|  |  |
| APKT-PM/KM | SPMT-PM/KM |
| Page B207 | Page B224 |

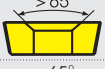



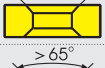






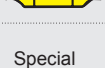

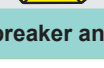
Inserts for chamfer milling

| |
|--|
|  |
| SPMT |
| Page B224 |

Indexable milling inserts code key

| Insert Shape / Code | | |
|---|---|---|
|  A |  B |  C |
|  D |  E |  H |
|  K |  L |  M |
|  O |  P |  R |
|  S |  T |  V |
|  W | Others Z | |

Insert shape










| Metric | | | | | | | |
|--------|-------------------|--------------------------|---|------|-------------------|--------------------------|---|
| Code | With/Without hole | With/Without chipbreaker | Section plane of Insert | Code | With/Without hole | With/Without chipbreaker | Section plane of Insert |
| B | With | Without |  | N | Without | Without |  |
| H | With | Single-side |  | R | Without | Single-side |  |
| C | With | Without |  | F | Without | Double-side |  |
| J | With | Double-side |  | A | With | Without |  |
| W | With | Without |  | M | With | Single-side |  |
| T | With | Single-side |  | G | With | Double-side |  |
| Q | With | Without |  | X | --- | --- | Special |
| U | With | Double-side |  | | | | |

Chipbreaker and clamping system

Indexable milling tools

Milling inserts

S P K N

| Clearance angle of main cutting edge | | | |
|--------------------------------------|---|------|---|
| Code | Clearance angle | Code | Clearance angle |
| A |  3° | B |  5° |
| C |  7° | D |  15° |
| E |  20° | F |  25° |
| G |  30° | N |  0° |
| P |  11° | O | Other clearance angle |

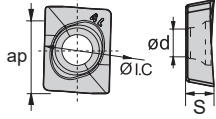
| Tolerance | | | | | | | | | | |
|-----------|-----------------------------|--|---------------------------|--|------------------|--------|------------------|------------------|------------------|-------|
| Code | Nose height M Tolerance(mm) | Inscribed circle ØD ₁ Tolerance(mm) | Thickness S Tolerance(mm) | (Reference) details of M-class tolerance (identified by shape and size) | | | | | | |
| | | | | ● Nose height tolerance(mm) | | | | | | |
| | | | | Inscribed circle | Regular triangle | Square | Diamond with 80° | Diamond with 55° | Diamond with 35° | Round |
| A | ±0.005 | ±0.025 | ±0.025 | 6.35 | ±0.08 | ±0.08 | ±0.08 | ±0.11 | ±0.16 | --- |
| F | ±0.005 | ±0.013 | ±0.025 | 9.525 | ±0.08 | ±0.08 | ±0.08 | ±0.11 | ±0.16 | --- |
| C | ±0.013 | ±0.025 | ±0.025 | 12.7 | ±0.13 | ±0.13 | ±0.13 | ±0.15 | --- | --- |
| H | ±0.013 | ±0.013 | ±0.025 | 15.875 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | --- | --- |
| E | ±0.025 | ±0.025 | ±0.025 | 19.05 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | --- | --- |
| G | ±0.025 | ±0.025 | ±0.13 | 25.4 | --- | ±0.18 | --- | --- | --- | --- |
| J | ±0.005 | ±0.05-±0.13 | ±0.025 | ● Tolerance of Inscribed Circle ØD ₁ (mm) | | | | | | |
| | | | | Inscribed circle | Regular triangle | Square | Diamond with 80° | Diamond with 55° | Diamond with 35° | Round |
| K | ±0.013 | ±0.05-±0.13 | ±0.025 | 6.35 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | --- |
| L | ±0.025 | ±0.05-±0.13 | ±0.025 | 9.525 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.05 |
| M | ±0.08-±0.18 | ±0.05-±0.13 | ±0.13 | 12.7 | ±0.08 | ±0.08 | ±0.08 | ±0.08 | --- | ±0.08 |
| N | ±0.08-±0.18 | ±0.05-±0.13 | ±0.025 | 15.875 | ±0.10 | ±0.10 | ±0.10 | ±0.10 | --- | ±0.10 |
| U | ±0.13-±0.38 | ±0.08-±0.25 | ±0.13 | 19.05 | ±0.10 | ±0.10 | ±0.10 | ±0.10 | --- | ±0.10 |
| | | | | 25.4 | --- | ±0.13 | --- | --- | --- | ±0.13 |

B

MILLING

Indexable Milling Tools

AP



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| | | | | |
|--------------------|----------------------------|---|---|---|
| Workpiece material | K Cast iron | | 😊 | 😞 |
| | N Non ferrous metal | 😊 | | 😊 |

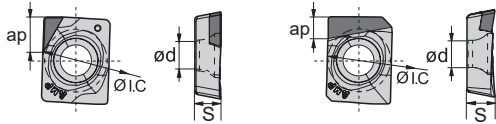
| Insert shape | Type | Basic dimensions(mm) | | | | PCD | PCBN | Cemented carbide |
|--------------|--------------------------|----------------------|------|-----|-------|--------|--------|------------------|
| | | ØI.C | S | ød | apmax | | | |
| | APHT12T304PPFR-AL | 12.7 | 3.97 | 4.4 | 12 | DN1021 | BK1021 | YD201 |
| | | | | | | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Indexable milling tools

Milling inserts

AP



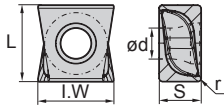
😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| | | | | |
|--------------------|----------------------------|---|---|---|
| Workpiece material | K Cast iron | | 😊 | 😞 |
| | N Non ferrous metal | 😊 | | 😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | PCD | PCBN | Cemented carbide |
|--------------|---------------------------|----------------------|------|-----|-------|-----|------|------------------|
| | | ØI.C | S | ød | apmax | | | |
| | APHT12T304PPFR-PCD | 12.7 | 3.97 | 4.4 | 3 | ★ | | |
| | APHT12T304PPFR-CBN | 12.7 | 3.97 | 4.4 | 2 | | ○ | |
| | APHT12T304-W | 12.7 | 3.97 | 4.4 | 1 | ★ | ★ | |
| | | | | | | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

LN



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|--------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| Steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| Stainless steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| Cast iron | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| Non-ferrous metal | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

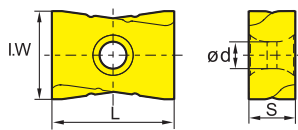
| Insert shape | Type | Basic dimensions(mm) | | | | | CVD Coating | | | | | PVD Coating | | | | | Cermet | Cemented carbide | | | | | | | | | | |
|---------------|---------------|----------------------|-----|-----|-----|-----|-------------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|
| | | I.W | L | S | ød | r | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
| | LNGX100504-GM | 9.9 | 10 | 5.5 | 4.1 | 0.4 | | | ● | | | | | | | | | | | | | | | | | | | |
| | LNGX100508-GM | 9.9 | 10 | 5.5 | 4.1 | 0.8 | | | ● | | | | | | | | | | | | | | | | | | | |
| | LNGX100512-GM | 9.9 | 10 | 5.5 | 4.1 | 1.2 | | | ● | | | | | | | | | | | | | | | | | | | |
| | LNGX100516-GM | 9.9 | 10 | 5.5 | 4.1 | 1.6 | | | ● | | | | | | | | | | | | | | | | | | | |
| | LNGX100520-GM | 9.9 | 10 | 5.5 | 4.1 | 2.0 | | | ● | | | | | | | | | | | | | | | | | | | |
| | LNGX100524-GM | 9.9 | 10 | 5.5 | 4.1 | 2.4 | | | ● | | | | | | | | | | | | | | | | | | | |
| | LNGX100530-GM | 9.9 | 10 | 5.5 | 4.1 | 3.0 | | | ● | | | | | | | | | | | | | | | | | | | |
| | LNGX100540-GM | 9.9 | 10 | 5.5 | 4.1 | 4.0 | | | ● | | | | | | | | | | | | | | | | | | | |
| | LNGX140704-GM | 13.4 | 14 | 7.5 | 4.4 | 0.4 | | | ● | | | | | | | | | | | | | | | | | | | |
| | LNGX140708-GM | 13.4 | 14 | 7.5 | 4.4 | 0.8 | | | ● | | | | | | | | | | | | | | | | | | | |
| | LNGX140712-GM | 13.4 | 14 | 7.5 | 4.4 | 1.2 | | | ● | | | | | | | | | | | | | | | | | | | |
| | LNGX140716-GM | 13.4 | 14 | 7.5 | 4.4 | 1.6 | | | ● | | | | | | | | | | | | | | | | | | | |
| | LNGX140720-GM | 13.4 | 14 | 7.5 | 4.4 | 2.0 | | | ● | | | | | | | | | | | | | | | | | | | |
| | LNGX140724-GM | 13.4 | 14 | 7.5 | 4.4 | 2.4 | | | ● | | | | | | | | | | | | | | | | | | | |
| | LNGX140730-GM | 13.4 | 14 | 7.5 | 4.4 | 3.0 | | | ● | | | | | | | | | | | | | | | | | | | |
| | LNGX140740-GM | 13.4 | 14 | 7.5 | 4.4 | 4.0 | | | ● | | | | | | | | | | | | | | | | | | | |
| LNGX140750-GM | 13.4 | 14 | 7.5 | 4.4 | 5.0 | | | ● | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools

Milling inserts

LN



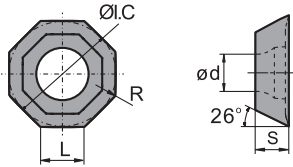
😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|--------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| Steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| Stainless steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| Cast iron | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| Non-ferrous metal | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | CVD Coating | | | | | PVD Coating | | | | | Cermet | Cemented carbide | | | | | | | | | | |
|--------------|---------------|----------------------|-----|-------|-----|-------------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|
| | | L | I.W | S | ød | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
| | LNKT1506EN-ZR | 15.875 | 14 | 6.35 | 4.6 | | | | | | | | | | | | ★ | | | | | | | | | | |
| | LNKT2007DN-ZR | 20 | 17 | 7.94 | 4.6 | | | | | | | | | | | | ★ | | | | | | | | | | |
| | LNKT2510-ZR | 25 | 18 | 9.525 | 5.5 | | | | | | | | | | | | ★ | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

OF



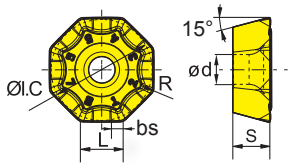
😊 Good working condition 🙄 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cemet | | Cemented carbide | | | | | | | | |
|--------------|-------------|----------------------|------|------|-----|-----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|---------|-------|-------|-------|-------|--|
| | | L | ØI.C | S | ød | R | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
| | OFKT05T3-DF | 5.26 | 12.7 | 3.97 | 4.4 | 0.5 | | | | | | | ○ | ★ | ★ | | | | | | | | | | | | | | |
| | OFKT05T3-DM | 5.26 | 12.7 | 3.97 | 4.4 | 0.5 | | ○ | | | ○ | ○ | ★ | ★ | ★ | ★ | ★ | | | | | | | | | | | | |
| | OFKT05T3-LH | 5.26 | 12.7 | 3.97 | 4.4 | 0.5 | | | | | | | | | | | | | | | | | | | | ○ | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

OD



😊 Good working condition 🙄 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cemet | | Cemented carbide | | | | | | | |
|--------------|---------------|----------------------|--------|------|-----|-----|-----|--------|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|--------|------------------|--------|---------|-------|-------|-------|-------|--|
| | | L | ØI.C | S | ød | R | bs | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
| | ODHT060508-GL | 6.5 | 15.875 | 5.56 | 5.4 | 0.8 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | |
| | ODHT060508-GM | 6.5 | 15.875 | 5.56 | 5.4 | 0.8 | 1.6 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | ODMT060512-GM | 6.5 | 15.875 | 5.56 | 5.4 | 1.2 | -- | | | ● | | | | | | | | | | | | | | | | | | | | |
| | ODHT060508-GH | 6.5 | 15.875 | 5.56 | 5.4 | 0.8 | 1.6 | | | ● | | | | | | | | | | | | | | | | | | | | |
| | ODHT060508-LH | 6.5 | 15.875 | 5.56 | 5.4 | 0.8 | 1.6 | | | | | | | | | | | | | | | | | | | | ● | | ● | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Indexable milling tools

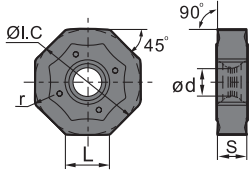
Milling inserts

B

MILLING

Indexable Milling Tools

ON



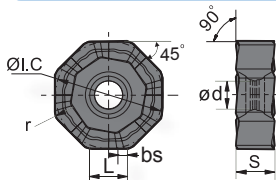
☺ Good working condition ☹ Normal working condition ☹ Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ |
| M Stainless steel | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ |
| K Cast iron | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ |
| N Non-ferrous metal | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ |
| S Heat resistant alloy, Ti alloy | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ |

| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | | Cemented carbide | | | | | | | |
|--------------|---------------|----------------------|--------|------|-----|------|--------|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|--------|------------------|--------|---------|-------|-------|-------|-------|--|
| | | L | ØI.C | S | ød | r | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
| | ONHU060408-PF | 6.58 | 15.875 | 4.76 | 4.4 | 0.83 | ★ | ● | ★ | | | | ★ | ★ | | | | | | | | | | | | | | | |
| | ONHU08T508-PF | 8.37 | 20.2 | 5.77 | 5.3 | 0.83 | ★ | ● | ★ | | | | ★ | ★ | ● | | | | | | | | | | | | | | |
| | ONHU060408-PM | 6.58 | 15.875 | 4.76 | 4.4 | 0.83 | ★ | | ★ | ★ | | | ● | | ● | | | | | | | | | | | | | | |
| | ONHU08T508-PM | 8.37 | 20.2 | 5.79 | 5.3 | 0.83 | ★ | | ★ | ★ | | | | | | | | | | | | | | | | | | | |
| | ONHU08T508-W | 6.9 | 20.5 | 6.00 | 5.3 | 0.80 | ★ | | | | ★ | | ★ | | | | | | | | | | | | | | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

ON



☺ Good working condition ☹ Normal working condition ☹ Bad working condition

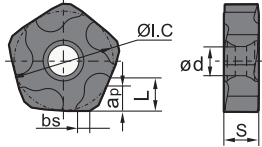
| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ |
| M Stainless steel | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ |
| K Cast iron | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ |
| N Non-ferrous metal | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ |
| S Heat resistant alloy, Ti alloy | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ | ☺☺☺☺☺☺ |

| Insert shape | Type | Basic dimensions(mm) | | | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | | Cemented carbide | | | | | | | | |
|--------------|------------------|----------------------|--------|------|----|-----|-----|--------|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|---------|-------|-------|-------|-------|--|
| | | L | ØI.C | S | ød | r | bs | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG105 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
| | ONHU060404ANN-GL | 6.15 | 15.875 | 5.54 | 6 | 0.4 | 1.2 | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| | ONHU09T508ANN-GL | 8.0 | 20.2 | 5.8 | 7 | 0.8 | 1.2 | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| | ONHU060408ANN-GM | 6.15 | 15.875 | 5.54 | 6 | 0.8 | 1 | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| | ONMU060408-GM | 6.15 | 15.875 | 5.54 | 6 | 0.8 | - | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| | ONHU09T508ANN-GM | 8.0 | 20.2 | 5.8 | 7 | 0.8 | 1.2 | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| | ONMU09T512-GM | 8.0 | 20.2 | 5.8 | 7 | 1.2 | - | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| | ONMU060408-GH | 6.15 | 15.875 | 5.54 | 6 | 0.8 | - | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| | ONHU060408ANN-GH | 6.15 | 15.875 | 5.54 | 6 | 0.8 | 1 | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| | ONHU09T508ANN-GH | 8.0 | 20.2 | 5.8 | 7 | 0.8 | 1.2 | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| | ONMU09T512-GH | 8.0 | 20.2 | 5.8 | 7 | 1.2 | - | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| | ONHU0604AN-W | 6.15 | 15.875 | 4.97 | 6 | 0.8 | - | | | | | | | ● | | | | | | | | | | | | | | | | | |

●Inserts are suitable for both left and right cuts. ★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Indexable milling tools
Milling inserts

PN



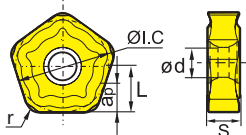
☺ Good working condition 😊 Normal working condition ☹ Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | ☺ | ☺ | ☺ | ☺ | ☺ |
| M Stainless steel | ☺ | ☺ | ☺ | ☺ | ☺ |
| K Cast iron | ☺ | ☺ | ☺ | ☺ | ☺ |
| N Non-ferrous metal | ☺ | ☺ | ☺ | ☺ | ☺ |
| S Heat resistant alloy, Ti alloy | ☺ | ☺ | ☺ | ☺ | ☺ |

| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | | | |
|--------------|----------------|----------------------|--------|------|------|-----|----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|---------|-------|-------|-------|
| | | L | ØI.C | S | ød | bs | ap | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 |
| | PNEG110512R-CF | 5.4 | 15.875 | 5.56 | 4.64 | 1.6 | 5 | | | | | | ● | | | | | | | | | | | | | | | | |
| | PNEG110512L-CF | 5.4 | 15.875 | 5.56 | 4.64 | 1.6 | 5 | | | | | | ● | | | | | | | | | | | | | | | | |
| | PNEG110512R-CM | 5.4 | 15.875 | 5.56 | 4.64 | 1.6 | 5 | | | | | | ● | | | | | | | | | | | | | | | | |
| | PNEG110512L-CM | 5.4 | 15.875 | 5.56 | 4.64 | 1.6 | 5 | | | | | | ● | | | | | | | | | | | | | | | | |
| | PNEG110512R-CR | 5.4 | 15.875 | 5.56 | 4.64 | 1.6 | 5 | | | | | | ● | ● | | | | | | | | | | | | | | | |
| | PNEG110512L-CR | 5.4 | 15.875 | 5.56 | 4.64 | 1.6 | 5 | | | | | | ● | ● | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

PN



☺ Good working condition 😊 Normal working condition ☹ Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | ☺ | ☺ | ☺ | ☺ | ☺ |
| M Stainless steel | ☺ | ☺ | ☺ | ☺ | ☺ |
| K Cast iron | ☺ | ☺ | ☺ | ☺ | ☺ |
| N Non-ferrous metal | ☺ | ☺ | ☺ | ☺ | ☺ |
| S Heat resistant alloy, Ti alloy | ☺ | ☺ | ☺ | ☺ | ☺ |

| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | | | | |
|--------------|---------------|----------------------|--------|------|------|-----|-------|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|---------|-------|-------|-------|-------|
| | | L | ØI.C | S | ød | r | apmax | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
| | PNEG110512-GL | 7.5 | 15.875 | 5.56 | 4.64 | 1.2 | 5.5 | | | | | | ● | | | | ● | ★ | | | | | | | | | | | | |
| | PNEG110530-GM | 7.5 | 15.875 | 5.56 | 4.64 | 3.0 | 5.5 | | | | | | ● | | | | ● | ★ | | | | | | | | | | | | |
| | PNEG110530-GH | 7.5 | 15.875 | 5.56 | 4.64 | 3.0 | 5.5 | | | | | | ● | | | | ● | ★ | | | | | | | | | | | | |

● Inserts are suitable for both left and right cuts.

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools

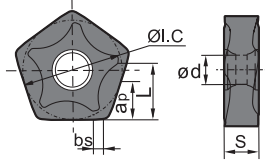
Milling inserts

B

MILLING

Indexable Milling Tools

PN



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |

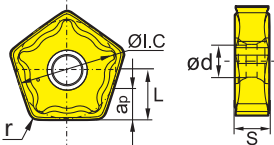
| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | PVD Coating | | | | | Cermet | Cemented carbide | | | | | | | | | | | |
|--------------|----------------|----------------------|--------|------|------|-----|-------|-------------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|--|
| | | L | ØI.C | S | ød | bs | apmax | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
| | PNEG110512R-PF | 7.5 | 15.875 | 5.56 | 4.64 | 1.4 | 7.5 | ★ | ● | | | | | | | | | | | | | | | | | | | | | |
| | PNEG110512L-PF | 7.5 | 15.875 | 5.56 | 4.64 | 1.4 | 7.5 | ★ | ● | | | | | | | | | | | | | | | | | | | | | |
| | PNEG110512R-PM | 7.5 | 15.875 | 5.56 | 4.64 | 1.4 | 7.5 | ★ | ● | | | | | | | | | | | | | | | | | | | | | |
| | PNEG110512L-PM | 7.5 | 15.875 | 5.56 | 4.64 | 1.4 | 7.5 | ★ | ● | | | | | | | | | | | | | | | | | | | | | |
| | PNEG110512R-PR | 7.5 | 15.875 | 5.56 | 4.64 | 1.4 | 7.5 | ★ | ● | | | | | | | | | | | | | | | | | | | | | |
| | PNEG110512L-PR | 7.5 | 15.875 | 5.56 | 4.64 | 1.4 | 7.5 | ★ | ● | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools

Milling inserts

PN



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

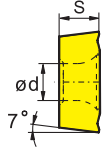
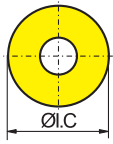
| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | PVD Coating | | | | | Cermet | Cemented carbide | | | | | | | | | | | |
|--------------|---------------|----------------------|--------|------|------|-----|-------|-------------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|--|
| | | L | ØI.C | S | ød | r | apmax | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
| | PNEG110512-KL | 6.5 | 15.875 | 5.56 | 4.64 | 1.2 | 6.5 | | | | | | ● | ● | | | | | | | | | | | | | | | | |
| | PNEG110512-KM | 6.5 | 15.875 | 5.56 | 4.64 | 1.2 | 6.5 | | | | | | ● | ● | | | | | | | | | | | | | | | | |
| | PNEG110512-KH | 6.5 | 15.875 | 5.56 | 4.64 | 1.2 | 6.5 | | | | | | ● | ● | | | | | | | | | | | | | | | | |

● Inserts are suitable for both left and right cuts.

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

RC □ □



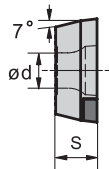
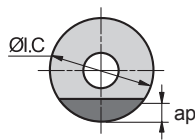
😊 Good working condition 😊 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | CVD Coating | | | | | | PVD Coating | | | Cermet | Cemented carbide | | | | | | | | | | | | |
|--------------|---------------|----------------------|------|------|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|--|
| | | Ø.L.C | S | ød | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC305 | YD051 | YD101 | YD201 | |
| | RCKT10T3MO-DM | 10.0 | 3.97 | 4.4 | ● | | | | | | | ● | ★ | | | | | | | | | | | | | | |
| | RCKT1204MO-DM | 12.0 | 4.76 | 4.0 | ● | ● | ● | ○ | | | | ● | ★ | ● | | | | | | | | | | | | | |
| | RCKT1606MO-DM | 16.0 | 6.35 | 5.56 | ● | | | | | | | | | ● | | | | | | | | | | | | | |
| | RCKT1204MO-DR | 12.0 | 4.76 | 4.0 | ○ | ○ | ○ | | | | | ● | ★ | | | | | | | | | | | | | | |
| | RCKT1606MO-DR | 16.0 | 6.35 | 5.56 | ● | | ● | ○ | | | | ● | ★ | | | | | | | | | | | | | | |
| | RCKT2006MO-DR | 20.0 | 6.35 | 6.55 | ● | | ● | ○ | | | ○ | ★ | ● | | | | | | | | | | | | | | |
| | RCKT1204MO-ER | 12.0 | 4.76 | 4.0 | | | ★ | | | | | | | | | | | | | | | | | | | | |
| | RCKT1606MO-ER | 16.0 | 6.35 | 5.56 | | | ★ | | | | | | | | | | | | | | | | | | | | |
| | RCKT2006MO-ER | 20.0 | 6.35 | 6.55 | | | ★ | | | | | | | | | | | | | | | | | | | | |
| | RCKT1204MO-NM | 12.0 | 4.76 | 4.0 | | | ○ | | | | | | | ○ | ○ | | | ○ | ○ | | | | | | | | |
| | RCKT1606MO-NM | 16.0 | 6.35 | 5.56 | | | ○ | | | | | | | ○ | ○ | | | ○ | ○ | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

RC □ □



😊 Good working condition 😊 Normal working condition 😞 Bad working condition

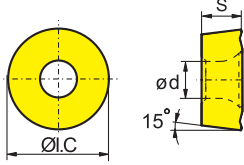
| Workpiece material | H Super hard material | K Cast iron | N Non-ferrous metal |
|-----------------------|-----------------------|-------------|---------------------|
| H Super hard material | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | PCBN | | Cemented carbide | | |
|--------------|-------------------|----------------------|------|-----|-------|--------|--------|------------------|-------|-------|
| | | Ø.L.C | S | ød | apmax | BK1041 | BK2531 | YD051 | YD101 | YD201 |
| | RCMW1204MOBS01225 | 12.0 | 4.76 | 4.1 | 2.7 | ○ | ○ | | | |
| | RCMW1204MOAS01225 | 12.0 | 4.76 | 4.1 | 2.7 | ○ | ○ | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools
Milling inserts

RD □ □



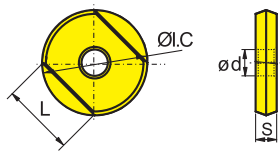
😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|---|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Insert shape | Type | Basic dimensions(mm) | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | | | | |
|--------------|----------------------|----------------------|------|-----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|---------|-------|-------|-------|-------|--|
| | | Ø.I.C | S | ød | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
| | RDKW0702MO | 7 | 2.38 | 2.8 | | | ○ | ● | | | | ● | ★ | ○ | | | | | | | | | | | | | |
| | RDKW0803MO | 8 | 3.18 | 3.4 | ○ | | | | ○ | | | ● | ★ | | ○ | | | | | | | | | | | | |
| | RDKW10T3MO | 10 | 3.97 | 4.4 | ○ | | | | ● | | | ● | ★ | | | | | | | | | | | | | | |
| | RDKW1204MO | 12 | 4.76 | 4.4 | ● | | ● | ● | | | | ● | ★ | ● | | | | | | | | | | | | | |
| | RDKW1605MO | 16 | 5.56 | 5.5 | ○ | | | | ○ | | | ○ | ★ | ○ | | | | | | | | | | | | | |
| | RDKW2006MO | 20 | 6.35 | 6.5 | ○ | | | | ○ | | | | ○ | | | | | | | | | | | | | | |
| | RDKT10T3MO-NM | 10 | 3.97 | 4.4 | | | | | | | | | ○ | | | ○ | ○ | | | | | | | | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

RO □ □



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|---|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| N Non-ferrous metal | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | | | |
|--------------|-----------------|----------------------|------|---|----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|---------|-------|-------|-------|-------|
| | | Ø.I.C | L | S | ød | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
| | ROHX1203 | 12 | 8.5 | 3 | 4 | | | | | | | | | | | | | | | | | | | | | | |
| | ROHX1604 | 16 | 11.3 | 4 | 5 | | | | | | | | | | | | | | | | | | | | | | |
| | ROHX2005 | 20 | 14.1 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Indexable milling tools

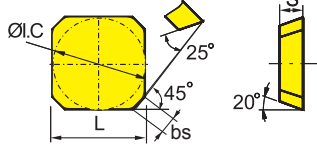
Milling inserts

B

MILLING

Indexable Milling Tools

SE □ □



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|----------------------------------|-------|-----------------|-----------|-------------------|--------------------------------|
| P Steel | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |

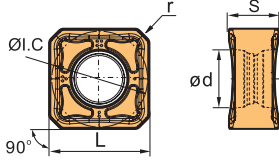
| Insert shape | Type | Basic dimensions(mm) | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | | |
|--------------|--------------|----------------------|--------|------|-----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|---------|-------|-------|-------|
| | | L | ØI.C | S | bs | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YBG320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC305 | YD051 | YD101 |
| | SEEN1203AFN | 12.7 | 12.7 | 3.18 | 1.8 | | | | | | | | ○ | | | | | | | | | ● | | | | |
| | SEKN1203AFFN | 12.7 | 12.7 | 3.18 | 1.8 | | | | | | | ★ | | | | | | | | | | | | | | |
| | SEKN1203AFN | 12.7 | 12.7 | 3.18 | 1.8 | ● | | | | | | | ○ | | | | | | | | | | ● | | | ○ |
| | SEKN1203AFTN | 12.7 | 12.7 | 3.18 | 1.8 | ● | ● | ● | | | | | ★ | | ○ | | | | | | | | | ● | | ● |
| | SEKR1203AFN | 12.7 | 12.7 | 3.18 | 1.8 | ● | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | SEMR1203AN-M | 12.7 | 12.7 | 3.3 | - | | | | | | | | | ● | | | | | | | | | | | | |
| | SEKR1203AN-M | 12.7 | 12.7 | 3.3 | - | | | | | | | | | ● | | | | | | | | | | | | |
| | SEKN1504AFN | 15.875 | 15.875 | 4.76 | 1.6 | ● | ● | | | | | | | | | | | | | | | | | | | ● |
| | SEKN1504AFTN | 15.875 | 15.875 | 4.76 | 1.6 | ○ | ● | ● | | | | | | | ○ | | | | | | | | ● | | ● | |
| | SEKR1504AFN | 15.875 | 15.875 | 4.76 | 1.6 | | | | | | | ★ | | | | | ★ | | | | | | ● | | | |
| | SEMR1504AN-M | 15.875 | 15.875 | 4.9 | - | | | | | | | | | ● | | | | | | | | | | | | |
| | SEKR1504AN-M | 15.875 | 15.875 | 4.9 | - | | | | | | | | | ● | | | | | | | | | | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Indexable milling tools

Milling inserts

SN



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|--------------------|-------|-----------------|-----------|-------------------|--------------------------------|
| P | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| M | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| K | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| N | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| S | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |

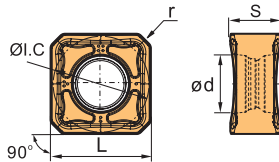
| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | | Cemented carbide | | | | | | | |
|--------------|----------------|----------------------|------|-----|-----|-----|-------|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|---------|-------|-------|-------|-------|
| | | L | ØI.C | S | ød | r | apmax | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
| | SNGX1205ANN-GL | 12.7 | 12.7 | 6.5 | 5.9 | 0.8 | 6.5 | | | ● | ● | | | | | | | ★ | | | | | | | | | | | |
| | SNMX120512-GL | 12.7 | 12.7 | 6.5 | 5.9 | 1.2 | 6.5 | | | ● | ● | | | | | | | ★ | | | | | | | | | | | |
| | SNGX1205ANN-GM | 12.7 | 12.7 | 6.5 | 5.9 | 0.8 | 6.5 | | | ● | ● | | | | | | | ★ | | | | ● | | | | | | | |
| | SNMX1205ANN-GM | 12.7 | 12.7 | 6.5 | 5.9 | 0.8 | 6.5 | | | ● | ● | | | | | | | ★ | | | | ● | | | | | | | |
| | SNMX120512-GM | 12.7 | 12.7 | 6.5 | 5.9 | 1.2 | 6.5 | | | ● | ● | | | | | | | ★ | | | | ● | | | | | | | |
| | SNGX1205ANN-GH | 12.7 | 12.7 | 6.5 | 5.9 | 0.8 | 6.5 | | | ● | ● | | | | | | | ★ | | | | | | | | | | | |
| | SNMX120512-GH | 12.7 | 12.7 | 6.5 | 5.9 | 1.2 | 6.5 | | | ● | ● | | | | | | | ★ | | | | | | | | | | | |

● Inserts are suitable for both left and right cuts. ★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools

Milling inserts

SN



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

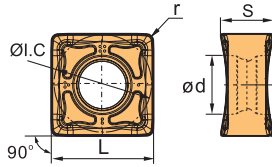
| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|--------------------|-------|-----------------|-----------|-------------------|--------------------------------|
| P | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| M | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| K | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| N | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| S | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | | Cemented carbide | | | | | | | |
|--------------|----------------|----------------------|------|-----|-----|-----|-------|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|---------|-------|-------|-------|-------|
| | | L | ØI.C | S | ød | r | apmax | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
| | SNGX1205ENN-GL | 12.7 | 12.7 | 6.5 | 5.9 | 0.8 | 8.0 | | | ● | ● | | | | | | | ★ | | | | | | | | | | | |
| | SNMX120512-GL | 12.7 | 12.7 | 6.5 | 5.9 | 1.2 | 8.0 | | | ● | ● | | | | | | | ★ | | | | | | | | | | | |
| | SNGX1205ENN-GM | 12.7 | 12.7 | 6.5 | 5.9 | 0.8 | 8.0 | | | ● | ● | | | | | | | ★ | | | | ● | | | | | | | |
| | SNMX120512-GM | 12.7 | 12.7 | 6.5 | 5.9 | 1.2 | 8.0 | | | ● | ● | | | | | | | ★ | | | | ● | | | | | | | |
| | SNGX1205ENN-GH | 12.7 | 12.7 | 6.5 | 5.9 | 0.8 | 8.0 | | | ● | ● | | | | | | | ★ | | | | | | | | | | | |
| | SNMX120512-GH | 12.7 | 12.7 | 6.5 | 5.9 | 1.2 | 8.0 | | | ● | ● | | | | | | | ★ | | | | | | | | | | | |

● Inserts are suitable for both left and right cuts. ★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order



SN



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

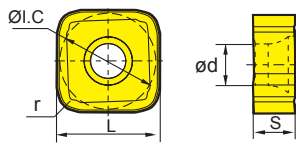
| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | | | | |
|--------------|----------------|----------------------|------|-----|-----|-----|-------|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|---------|-------|-------|-------|
| | | L | ØI.C | S | ød | r | apmax | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG105 | YBG202 | YBG205 | YB9320 | | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 |
| | SNGX1205PNN-GL | 12.7 | 12.7 | 6.5 | 5.9 | 0.8 | 10.5 | | | ● | ● | | | | | | | | ★ | | | | | | | | | | | |
| | SNMX120512-GL | 12.7 | 12.7 | 6.5 | 5.9 | 1.2 | 10.5 | | | ● | ● | | | | | | | | ★ | | | | | | | | | | | |
| | SNGX1205PNN-GM | 12.7 | 12.7 | 6.5 | 5.9 | 0.8 | 10.5 | | | ● | ● | | | | | | | | ★ | | | | ● | | | | | | | |
| | SNMX120512-GM | 12.7 | 12.7 | 6.5 | 5.9 | 1.2 | 10.5 | | | ● | ● | | | | | | | | ★ | | | | ● | | | | | | | |
| | SNGX1205PNN-GH | 12.7 | 12.7 | 6.5 | 5.9 | 0.8 | 10.5 | | | ● | ● | | | | | | | | ★ | | | | | | | | | | | |
| | SNMX120512-GH | 12.7 | 12.7 | 6.5 | 5.9 | 1.2 | 10.5 | | | ● | ● | | | | | | | | ★ | | | | | | | | | | | |
| | SNCU120420-W4 | 12.7 | 12.7 | 4.8 | 5.9 | 2 | 10.5 | | | | | | | ● | | | | | | | | | | | | | | | | |

● Inserts are suitable for both left and right cuts. ★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools

Milling inserts

SN



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | | | | |
|--------------|---------------|----------------------|------|-----|-----|-----|--------|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|---------|-------|-------|-------|-------|--|
| | | L | ØI.C | r | S | ød | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
| | SNGU120620-GM | 12.7 | 12.7 | 2.0 | 5.6 | 4.4 | | | | ● | | | | | | | | | | ● | ● | | | | | | | | | |

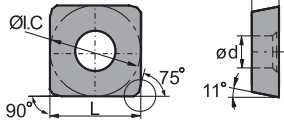
★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

B

MILLING

Indexable Milling Tools

SP□W



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | P | M | K | N | S | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
|---|---|---|---|---|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 | 😊 |
| K Cast iron | | | | | | | | | | | 😊 | 😊 | | | | | | 😊 | 😊 | | | | | | 😊 | 😊 | 😊 |
| N Non-ferrous metal | | | | | | | | | | | | | | | | | | | | | | | | | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | | | | 😊 | 😊 | 😊 | 😊 | | | | | | 😊 | 😊 | | | | |

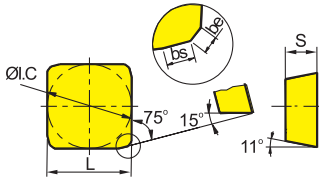
| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | | |
|--------------|--------------|----------------------|------|------|------|------|-----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|---------|-------|-------|-------|
| | | r | L | ØI.C | S | ød | α | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 |
| | SPKW1204EDFR | -- | 12.7 | 12.7 | 4.76 | 5.56 | 11° | | | | | | | | | | | | | | | | | | | | | |
| | SPKW1204EDSR | -- | 12.7 | 12.7 | 4.76 | 5.56 | 11° | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools

Milling inserts

SP□R



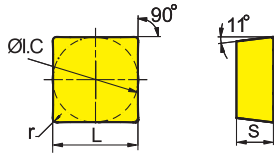
😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | P | M | K | N | S | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
|---|---|---|---|---|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|---|
| P Steel | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | | | | | | | | | | | | | | | |
| M Stainless steel | 😊 | 😊 | 😊 | 😊 | 😊 | | | | | | | | | | | | | | | | | | | | | | | |
| K Cast iron | | | | | | | | | | | 😊 | 😊 | | | | | | | 😊 | 😊 | | | | | | 😊 | 😊 | |
| N Non-ferrous metal | | | | | | | | | | | | | | | | | | | | | | | | | | 😊 | 😊 | 😊 |
| S Heat resistant alloy, Ti alloy | | | | | | | | | | | | | 😊 | 😊 | 😊 | 😊 | | | | | | | 😊 | 😊 | | | | |

| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | |
|--------------|----------------|----------------------|--------|------|----|-----|--------|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|---------|-------|-------|-------|
| | | L | ØI.C | S | be | bs | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 |
| | SPKR1203EDR-GM | 12.7 | 12.7 | 3.18 | 1 | 1.4 | | | | | | | | | | | | | | | | | | | | | |
| | SPKR1203EDL-GM | 12.7 | 12.7 | 3.18 | 1 | 1.4 | | | | | | | | | | | | | | | | | | | | | |
| | SPKR1504EDR-GM | 15.875 | 15.875 | 4.76 | 1 | 1.4 | | | | | | | | | | | | | | | | | | | | | |
| | SPKR1504EDL-GM | 15.875 | 15.875 | 4.76 | 1 | 1.4 | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

SP □ □



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

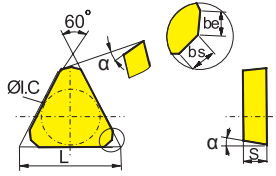
| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|--------------------|--------|-----------------|-----------|-------------------|--------------------------------|
| P | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| M | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| K | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| N | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| S | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | CVD Coating | | | | | | PVD Coating | | | Cermet | Cemented carbide | | | | | | | | | | | | |
|--------------|------------|----------------------|--------|------|-----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|---|
| | | L | ØI.C | s | r | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC305 | YD051 | YD101 | YD201 | |
| | SPUN090304 | 9.525 | 9.525 | 3.18 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | |
| | SPUN090308 | 9.525 | 9.525 | 3.18 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | |
| | SPUN120304 | 12.7 | 12.7 | 3.18 | 0.4 | | | | | | | | | | | | | | | | | ○ | | | | | | |
| | SPUN120308 | 12.7 | 12.7 | 3.18 | 0.8 | | | ○ | | ○ | | | | | | | | | | | | | | | ● | | ○ | ○ |
| | SPUN120312 | 12.7 | 12.7 | 3.18 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | |
| | SPUN150408 | 15.875 | 15.875 | 4.76 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | |
| | SPUN150412 | 15.875 | 15.875 | 4.76 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | |
| | SPUN190408 | 19.05 | 19.05 | 4.76 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | |
| | SPUN190412 | 19.05 | 19.05 | 4.76 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | |
| | SPUN190416 | 19.05 | 19.05 | 4.76 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | |
| | SPGN090304 | 9.525 | 9.525 | 3.18 | 0.4 | | | | | | | | | | | | | | | | | ● | | | | | ● | |
| | SPGN090308 | 9.525 | 9.525 | 3.18 | 0.8 | | | | | | | | | | | | | | | | | | | | ○ | ○ | ○ | |
| | SPGN120308 | 12.7 | 12.7 | 3.18 | 0.8 | | | | | | | | | ○ | | | | | | | | | | | ● | | ● | |
| | SPGN120404 | 12.7 | 12.7 | 4.76 | 0.4 | | | | | | | | | | | | | | | | | | | | | ○ | | ○ |
| | SPGN120408 | 12.7 | 12.7 | 4.76 | 0.8 | | | | | | | | | ○ | | | | | | | | | | | | ○ | | |
| | SPGN120412 | 12.7 | 12.7 | 4.76 | 1.2 | | | | | | | | | | | | | | | | | | | | | | ○ | |
| | SPGN150404 | 15.875 | 15.875 | 4.76 | 0.4 | | | | | | | | | | | | | | | | | | | | | ● | ○ | |
| | SPGN150408 | 15.875 | 15.875 | 4.76 | 0.8 | | | | | | | | | | | | | | | | | | | | | ● | | |
| | SPGN190408 | 19.05 | 19.05 | 4.76 | 0.8 | | | | | | | | | | | | | | | | | | | | | | ○ | |
| SPGN190416 | 19.05 | 19.05 | 4.76 | 1.6 | | | | | | | | | ○ | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools
Milling inserts

TP



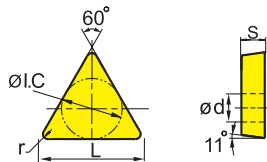
😊 Good working condition 😊 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | | | | |
|--------------|--------------|----------------------|------|------|-----|-----|-----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|---------|-------|-------|-------|-------|---|
| | | L | ØI.C | S | be | bs | α | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
| | TPKN2204PDFR | 22 | 12.7 | 4.76 | 1.4 | 0.7 | 11° | | | | | | | | ○ | | | | | | | | | | | | | | | ○ |
| | TPKN2204PDFL | 22 | 12.7 | 4.76 | 1.4 | 0.7 | 11° | | | | | | | | ○ | | | | | | | | | | | | | | | ○ |
| | TPKN2204PDR | 22 | 12.7 | 4.76 | 1.4 | 0.7 | 11° | ● | | | ● | | | | ★ | ★ | | | ★ | | | | | | | | ● | ○ | ○ | ● |
| | TPKN2204PDL | 22 | 12.7 | 4.76 | 1.4 | 0.7 | 11° | | | | | | | | | | | | | | | | | | | | ● | | | |
| | TPKN2204PDTR | 22 | 12.7 | 4.76 | 1.4 | 0.7 | 11° | ● | | | | | | | | | | | | | | | | | | | ● | | | |
| | TPKN2204PDTL | 22 | 12.7 | 4.76 | 1.4 | 0.7 | 11° | ○ | | | | | | | | | | | | | | | | | | | ○ | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

TP



😊 Good working condition 😊 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

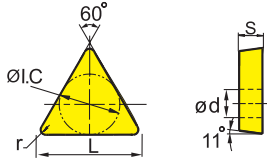
| Insert shape | Type | Basic dimensions(mm) | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | | | | | | | |
|--------------|------------|----------------------|--------|------|-----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|---------|-------|-------|-------|-------|---|---|---|---|
| | | L | ØI.C | s | r | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | | | | |
| | TPGN090204 | 9.6 | 5.56 | 2.38 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | ○ | |
| | TPGN090208 | 9.6 | 5.56 | 2.38 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | ○ | | |
| | TPGN110204 | 11 | 6.35 | 2.38 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | ○ | |
| | TPGN110304 | 11 | 6.35 | 3.18 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | ○ | ● | ○ |
| | TPGN110308 | 11 | 6.35 | 3.18 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | ○ | ○ | |
| | TPGN160304 | 16.5 | 9.525 | 3.18 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | ● | ○ | ○ | |
| | TPGN160308 | 16.5 | 9.525 | 3.18 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | ○ | | ● | |
| | TPGN160312 | 16.5 | 9.525 | 3.18 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | ○ | |
| | TPGN160316 | 16.5 | 9.525 | 3.18 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | ○ |
| | TPGN220404 | 22 | 12.7 | 4.76 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | ○ | |
| | TPGN220408 | 22 | 12.7 | 4.76 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | ○ | | |
| | TPGN220412 | 22 | 12.7 | 4.76 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | ○ |
| | TPGN270408 | 27.5 | 15.875 | 4.76 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | ○ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Indexable milling tools

Milling inserts

TP



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

| Workpiece material | Steel | Stainless steel | Cast iron | Non-ferrous metal | Heat resistant alloy, Ti alloy |
|--------------------|-------|-----------------|-----------|-------------------|--------------------------------|
| P | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| M | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| K | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| N | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| S | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |

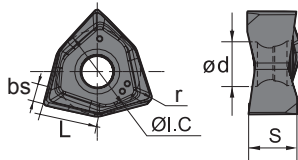
| Insert shape | Type | Basic dimensions(mm) | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cermet | Cemented carbide | | | | | | | | | |
|--------------|------------|----------------------|-------|------|-----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|---------|-------|-------|-------|-------|--|
| | | L | ØI.C | s | r | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC305 | YD051 | YD101 | YD201 | |
| | TPUN110208 | 11 | 6.35 | 2.38 | 0.8 | ○ | | | | | | | | | | | | | | | | | | | | | | |
| | TPUN110304 | 11 | 6.35 | 3.18 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | |
| | TPUN110308 | 11 | 6.35 | 3.18 | 0.8 | ○ | | | | | | | | | | | | | | | | | | | | | | |
| | TPUN160304 | 16.5 | 9.525 | 3.18 | 0.4 | | | ○ | | | | | | | | | | | | | | | | | | | | |
| | TPUN160308 | 16.5 | 9.525 | 3.18 | 0.8 | | | ○ | ○ | | | | | | | | | | | | | | | | | | | |
| | TPUN160312 | 16.5 | 9.525 | 3.18 | 1.2 | | | ○ | | | | | | | | | | | | | | | | | | | | |
| | TPUN160408 | 16.5 | 9.525 | 4.76 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | |
| | TPUN160412 | 16.5 | 9.525 | 4.76 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | |
| | TPUN220404 | 22 | 12.7 | 4.76 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | |
| | TPUN220408 | 22 | 12.7 | 4.76 | 0.8 | ● | | ○ | | | | | | | | | | | | | | | | | | | | |
| | TPUN220412 | 22 | 12.7 | 4.76 | 1.2 | | | | | ○ | | | | | | | | | | | | | | | | | | |
| | TPUN220416 | 22 | 12.7 | 4.76 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | |
| | TPMR090204 | 9.6 | 5.56 | 2.38 | 0.4 | | | ○ | | | | | | | | | | | | | | | | | | | | |
| | TPMR110304 | 11 | 6.35 | 3.18 | 0.4 | | | ● | | | | | | | | | | | | | ○ | | | | | | | |
| | TPMR110308 | 11 | 6.35 | 3.18 | 0.8 | | | ○ | | | | | | | | | | | | | ○ | | | | | | | |
| | TPMR160304 | 16.5 | 9.525 | 3.18 | 0.4 | | | ● | ○ | | | | | | | | | | | | ○ | | | | | | | |
| | TPMR160308 | 16.5 | 9.525 | 3.18 | 0.8 | | | ● | ● | | | | | | | | | | | | ○ | | | | | | | |
| | TPMR160312 | 16.5 | 9.525 | 3.18 | 1.2 | | | | | ○ | | | | | | | | | | | | | | | | | | |
| | TPMR220412 | 22 | 12.7 | 4.76 | 1.2 | | | | | ○ | | | | | | | | | | | | | | | | | | |
| | TPMR330916 | 33 | 19.05 | 9.52 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Indexable milling tools

Milling inserts

WN



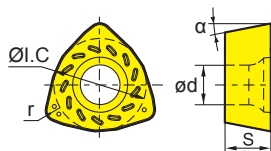
😊 Good working condition 😊 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cemet | | Cemented carbide | | | | | | | |
|--------------|------------------|----------------------|-------|-----|-----|------|-----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|---------|-------|-------|-------|-------|
| | | L | ØI.C | S | ød | bs | r | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
| | WNHU060404PNR-GM | 5.7 | 9.525 | 4.0 | 3.5 | 1.35 | 0.4 | | | ★ | ★ | | | | | ★ | ★ | | | | | | | | | | | | |
| | WNHU060408PNR-GM | 5.7 | 9.525 | 4.0 | 3.5 | 1.35 | 0.8 | | | ★ | ★ | | | | | ★ | ★ | | | | | | | | | | | | |
| | WNHU080608PNR-GM | 7.7 | 12.7 | 5.4 | 4.4 | 1.6 | 0.8 | | | ★ | ★ | | | | | ★ | ★ | | | | | | | | | | | | |
| | WNHU080612PNR-GM | 7.7 | 12.7 | 5.4 | 4.4 | 1.6 | 1.2 | | | ★ | ★ | | | | | ★ | ★ | | | | | | | | | | | | |
| | WNHU080616PNR-GM | 7.7 | 12.7 | 5.4 | 4.4 | 1.6 | 1.6 | | | ★ | ★ | | | | | ★ | ★ | | | | | | | | | | | | |
| | WNHU080608PNR-LH | 7.7 | 12.7 | 5.4 | 4.4 | 1.6 | 0.8 | | | | | | | | | | | | | | | | | | | | | ★ | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

WP



😊 Good working condition 😊 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | CVD Coating | | | | | | PVD Coating | | | | | | Cemet | | Cemented carbide | | | | | | | | |
|--------------|------------------|----------------------|-----|------|-----|-----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|---------|-------|-------|-------|-------|--|
| | | ØI.C | r | S | ød | α | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
| | WPGT050315ZSR | 7.94 | 1.5 | 3.5 | 4.0 | 11° | ★ | ● | ● | | | | | | | | | | | | | | | | | | | | |
| | WPGT060415ZSR | 9.525 | 1.5 | 4.2 | 4.4 | 11° | ★ | ● | ● | | | | | | ● | | | | | | | | | | | | | | |
| | WPGT080615ZSR | 12.85 | 1.5 | 6.35 | 5.5 | 11° | ★ | ● | ● | | | | | | ● | | | | | | | | | | | | | | |
| | WPGT090725ZSR | 15.00 | 2.5 | 7.00 | 5.5 | 11° | ★ | ● | ● | | | | | | ● | | | | | | | | | | | | | | |
| | WPGT050315ZSR-PM | 7.94 | 1.5 | 3.5 | 4.0 | 11° | ★ | | ● | | | | | | ● | | | | | | | | | | | | | | |
| | WPGT060415ZSR-PM | 9.525 | 1.5 | 4.2 | 4.4 | 11° | ★ | | ● | | | | | | ● | | | | | | | | ○ | | | | | | |
| | WPGT080615ZSR-PM | 12.85 | 1.5 | 6.35 | 5.5 | 11° | ★ | | ● | | | | | | ● | | | | | | | | ○ | | | | | | |
| | WPGT090725ZSR-PM | 15.00 | 2.5 | 7.00 | 5.5 | 11° | ★ | | ● | | | | | | ● | | | | | | | | | | | | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Indexable milling tools

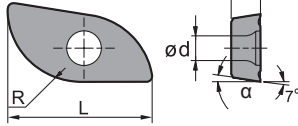
Milling inserts

B

MILLING

Indexable Milling Tools

XP



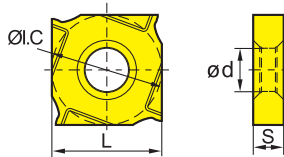
😊 Good working condition 🟡 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | CVD Coating | | | | | PVD Coating | | | | | Cermet | Cemented carbide | | | | | | | | | | |
|----------------|----------------|----------------------|------|------|-----|----|-------------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|
| | | R | ød | S | α | L | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 |
| | XPHT16R0803-GM | 8 | 3.1 | 3.18 | 9° | 16 | | | | | | | | | | | | ● | | | | | | | | | | |
| | XPHT20R10T3-GM | 10 | 4.0 | 3.97 | 9° | 20 | | | | | | | | | | | | ● | | | | | | | | | | |
| | XPHT25R1204-GM | 12.5 | 4.7 | 4.76 | 9° | 25 | | | | | | | | | | | | ● | | | | | | | | | | |
| | XPHT30R1506-GM | 15 | 5.8 | 6.35 | 11° | 30 | | | | | | | | | | | | ● | | | | | | | | | | |
| | XPHT32R1606-GM | 16 | 5.8 | 6.35 | 9° | 32 | | | | | | | | | | | | ● | | | | | | | | | | |
| | XPHT40R2007-GM | 20 | 6.7 | 7.94 | 9° | 40 | | | | | | | | | | | | ● | | | | | | | | | | |
| XPHT50R2507-GM | 25 | 9.2 | 7.94 | 9° | 50 | | | | | | | | | | | | ● | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

XS



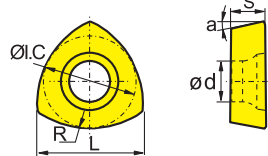
😊 Good working condition 🟡 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | CVD Coating | | | | | PVD Coating | | | | | Cermet | Cemented carbide | | | | | | | | | | | |
|--------------|----------|----------------------|------|-----|-----|-------------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|--|
| | | øI.C | L | S | ød | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 | YD201 | |
| | XSEQ1202 | 12.7 | 12.7 | 2.3 | 5.0 | | | | | | | | | | | | | ★ | | | | | | | | | | |
| | XSEQ1203 | 12.7 | 12.7 | 3.0 | 5.0 | | | | | | | | | | | | | ★ | | | | | | | | | | |
| | XSEQ12T3 | 12.7 | 12.7 | 3.5 | 5.0 | | | | | | | | | | | | | ★ | | | | | | | | | | |
| | XSEQ1204 | 12.7 | 12.7 | 4.0 | 5.0 | | | | | | | | | | | | | ★ | | | | | | | | | | |
| | XSEQ12T4 | 12.7 | 12.7 | 4.5 | 5.0 | | | | | | | | | | | | | ★ | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

ZD



😊 Good working condition 🟡 Normal working condition 😞 Bad working condition

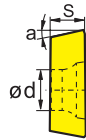
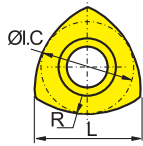
| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 | 😊😊😊😊😊😊 |

| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | PVD Coating | | | | | Cermet | Cemented carbide | | | | | | | | | |
|--------------|-----------------|----------------------|------|------|------|-----|-----|-------------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|---------|-------|-------|-------|
| | | øI.C | L | S | R | ød | α | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC30S | YD051 | YD101 |
| | ZDET08T2CYR10 | 6.75 | 8.4 | 2.78 | 10 | 2.8 | 14° | | | | | | | | | | | | | | | | | | | | | |
| | ZDET1103CYR12.5 | 8.5 | 10.6 | 3.18 | 12.5 | 2.8 | 14° | | | | | | | | | | | | | | | | | | | | | |
| | ZDET13T3CYR16 | 10.5 | 13.2 | 3.97 | 16 | 4.4 | 14° | | | | | | | | | | | | | | | | | | | | | |

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools
Milling inserts

ZP



😊 Good working condition 😊 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |

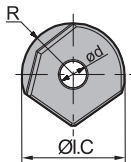
| Insert shape | Type | Basic dimensions(mm) | | | | | | CVD Coating | | | | | | PVD Coating | | | Cermet | Cemented carbide | | | | | | | | | | | |
|--------------|-----------------|----------------------|------|------|------|------|-----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|
| | | Ø1.C | L | S | R | ød | α | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC305 | YD051 | YD101 | YD201 |
| | ZPNT2204CY(R20) | 12.7 | 16.1 | 4.76 | 20 | 5.56 | 11° | | ○ | | | | | | | | | | ○ | | | | | | | | | | |
| | ZPNT2204CY(R25) | 12.7 | 16.9 | 4.76 | 25 | 5.56 | 11° | | ○ | | | | | | | | | | ○ | | | | | | | | | | |
| | ZPNT2204CY(R31) | 12.7 | 17.6 | 4.76 | 31.5 | 5.56 | 11° | | ○ | | | | | | | | | | ○ | | | | | | | | | | |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Indexable milling tools

Milling inserts

ZO



😊 Good working condition 😊 Normal working condition 😞 Bad working condition

| Workpiece material | P Steel | M Stainless steel | K Cast iron | N Non-ferrous metal | S Heat resistant alloy, Ti alloy |
|----------------------------------|---------|-------------------|-------------|---------------------|----------------------------------|
| P Steel | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| M Stainless steel | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| K Cast iron | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| N Non-ferrous metal | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |
| S Heat resistant alloy, Ti alloy | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 | 😊😊😊😊😊 |

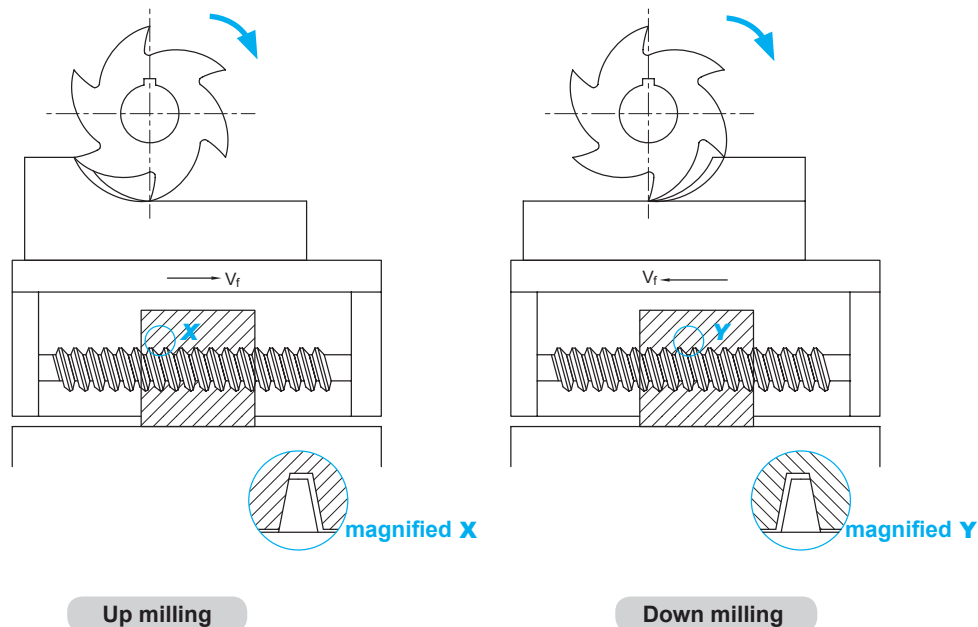
| Insert shape | Type | Basic dimensions(mm) | | | | CVD Coating | | | | | | PVD Coating | | | Cermet | Cemented carbide | | | | | | | | | | | | | |
|--------------|-------------|----------------------|------|---|----|-------------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|--------|---------|-------|-------|-------|-------|--|---|
| | | R | Ø1.C | S | ød | YBC301 | YBC302 | YBM251 | YBM253 | YBM351 | YBD152 | YBD252 | YBG102 | YBG202 | YBG205 | YB9320 | YBG302 | YBG152 | YBG252 | YBS203 | YBS303 | YNG151 | YNG151C | YC305 | YD051 | YD101 | YD201 | | |
| | ZOHX1203-GF | 6 | 12 | 3 | 4 | | | | | | | | | | | | | | | | | | | | | | | | |
| | ZOHX1604-GF | 8 | 16 | 4 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| | ZOHX2005-GF | 10 | 20 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| | ZOHX2506-GF | 12.5 | 25 | 6 | 6 | | | | | | | | | | | | | | | | | | | | | | | | |
| | ZOHX3007-GF | 15 | 30 | 7 | 8 | | | | | | | | | | | | | | | | | | | | | | | | |
| | ZOHX3207-GF | 16 | 32 | 7 | 8 | | | | | | | | | | | | | | | | | | | | | | | | |
| | ZOHX1203-GM | 6 | 12 | 3 | 4 | | | | | | | | | | | | | | | | | | | | | | | | |
| | ZOHX1604-GM | 8 | 16 | 4 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| | ZOHX2005-GM | 10 | 20 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| | ZOHX2506-GM | 12.5 | 25 | 6 | 6 | | | | | | | | | | | | | | | | | | | | | | | | |
| | ZOHX3007-GM | 15 | 30 | 7 | 8 | | | | | | | | | | | | | | | | | | | | | | | | |
| | ZOHX3207-GM | 16 | 32 | 7 | 8 | | | | | | | | | | | | | | | | | | | | | | | | ★ |

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Common problems in milling and solutions

| Main points of solution and inspection | | Selection of tool material | | Cutting condition | | | | Tool shape | | | | | | Machine clamping system | | | | | | | |
|---|---|---|---------------------------------|-------------------|-----------|---------------|--|----------------|------------|----------------|--------------------------|-----------------|-----------------------------------|---|----------------------------|------------------------------|------------------------------|------------------|------------|---|---|
| | | Material with higher hardness | Material with perfect toughness | Cutting speed | Feed rate | Cutting depth | Change the diameter and width of milling tools | Cutting liquid | Rake angle | Approach angle | Strength of cutting edge | Number of teeth | Increase the width of chip pocket | Examine the geometry shape of Minor cutting edge. | check the end face run-out | Improve the rigidity of tool | Clamping system of workpiece | Overhang of tool | Power, gap | | |
| Fracture of tool nose | severe abrasion on clearance face | Improper cutting condition | | | ↓ | | | ✓ | | | | | | | | | | | | | |
| | | Unsuitable geometry shape of cutting edge | ✓ | | | | | | ↑ | | ↓ | | | | | | | | | | |
| | severe abrasion on rake face | Improper cutting condition | | | ↓ | ↓ | ↓ | ✓ | | | | | | | | | | | | | |
| | | Unsuitable geometry shape of cutting edge | ✓ | | | | | | ↑ | ↓ | ↓ | | | | | | | | | | |
| | Fracture of cutting edge | Improper cutting condition | | | | ↓ | ↓ | | | | | | | | | | | | | | |
| | | Unsuitable geometry shape of cutting edge | | ✓ | | | | | | ↓ | ↑ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Thermal cracking | Improper cutting condition | | | ↓ | ↓ | ↓ | ✓ | | | | | | | | | | | | | |
| | | Unsuitable geometry shape of cutting edge | | | | | | | ↑ | | ↓ | | | | | | | | | | |
| | Build-up edge | Improper cutting condition | | | ↑ | ↑ | | ✓ | | | | | | | | | | | | | |
| | | Unsuitable geometry shape of cutting edge | | | | | | | ↑ | | ↓ | | | | | | | | | | |
| Machining precision | Bad surface roughness | Abrasion of tool Great vibration of milling tool | ✓ | | ↑ | ↓ | ↓ | ✓ | | | ↓ | | Wiper | ✓ | | | | | | | |
| | | Unsuitable geometry shape of cutting edge | | | ↓ | ↓ | ↓ | ✓ | | | | | | | | | | | | | |
| | Burr occurring | Improper geometry shape of cutting edge | | | | | | | ↑ | ↑ | ↓ | | | ✓ | | | | | | | |
| | | Unsuitable geometry shape of cutting edge | | | | ↓ | ↓ | | | | | | | | | | | | | | |
| | Side collapse | Unsuitable geometry shape of cutting edge | | | | | | | ↑ | ↓ | ↓ | ↑ | | ✓ | | ✓ | | | | | |
| Unsuitable geometry shape of cutting edge | | | | | | | | | ↑ | ↓ | ↓ | | ✓ | | ✓ | | | | | | |
| Planeness and parallelism deterioration | Improper geometry Improper technique | | | | ↓ | ↓ | | | ↑ | ↑ | | ↓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| | | | | | | | | | | | | | | | | | | | | | |
| Other | Vibration | Cutting condition Improper technology | | | ↓ | ↓ | ↓ | ✓ | | ↑ | ↑ | ↓ | | | | ✓ | ✓ | ✓ | ✓ | ✓ | |
| | | Improper cutting condition | | | ↑ | ↑ | ↓ | | ✓ | ✓ | | | | | | | | | | | |
| | Chips twisting and jamming | Unsuitable geometry shape of cutting edge | | | | | | | | ↑ | | | ↓ | ✓ | | | | | | | |
| Improper cutting condition | | | | | | | | | | | | | | | | | | | | | |

Difference and selection between down milling and up milling



Up milling

Down milling

Climb milling (also called down milling): the feed direction of workpiece is the same as that of the milling rotation at the connecting position.

Conventional milling (also called up milling): the feed direction of workpiece is opposite to that of the milling rotation at the connecting position.

In down milling, the major force of cutting edge is the compressive stress, while in up milling is the tensile stress. The compressive strength of cemented carbide material is much larger than its tensile strength. In down milling, as chips become thin from thick gradually, cutting edge and workpiece press against each other. The friction between edge and workpiece is small, thus reducing the abrasion of edge, the hardening of workpiece surface and the surface roughness (R_a). In up milling, chips become thick from thin gradually. When the insert is cutting into the workpiece, it produces strong friction and more heat than in down milling, and make workpiece surface hardened.




In up milling, because horizontal direction of cutting force milling cutter conducting on workpiece is opposite to the feed direction of workpiece, the lead screw of worktable joints closely with one side of the screw nut. In down milling, the direction of cutting force is the same as the feed direction. When edge's radial force on workpiece is large enough, the worktable will bounce left and right, thus make the gap fall behind. The gap will return to the front side with the continuing rotation of lead screw. At this moment the worktable stops motion, however, it will bounce left and right again when the radial cutting force is large enough again. The periodical bounce of worktable will cause poor surface quality of workpiece and tool breakage.

When using end mills for down milling, the edges always starts cutting at the workpiece surface, therefore end mills are not suitable for machining workpiece with hardened surface.

Up milling is recommended for milling thin-wall components or square milling with high requirement for precision.

Pitch selection

Pitch is the distance between one point on one cutting edge and the same point on the next edge. Milling cutters are mainly classified into coarse, close and extra close pitches.

| optimized stability | | |
|---|---|---|
| L (Low) | M (Medium) | H (High) |
| <p>Coarse pitch Unequal pitch design</p>  | <p>Close pitch</p>  | <p>Extra close pitch</p>  |
| <p>When the milling width is equal to diameter of cutter, the machining system is stable and main power of machine is sufficient, the use of coarse pitch can achieve high productive efficiency.</p> | <p>Used in general milling and multiple mixed productions.</p> | <p>When the milling width is less than diameter of cutter, cutting by maximum edges can achieve high productive efficiency.</p> |

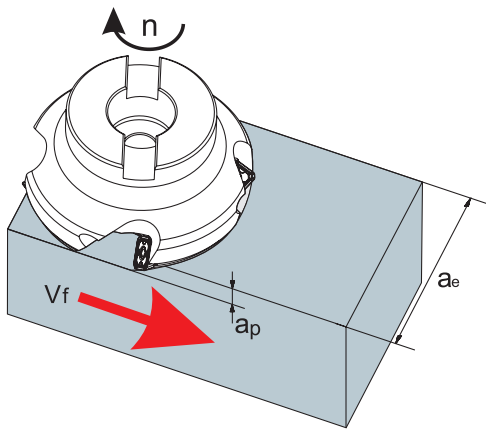
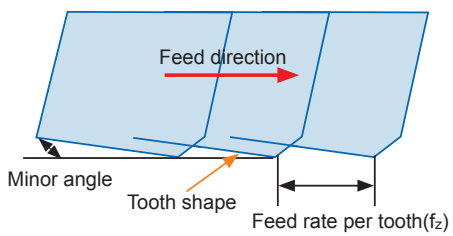
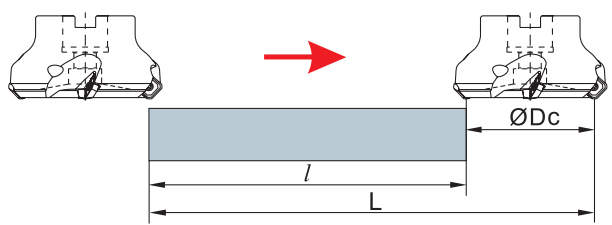
Selection of approach angle

The approach angle is formed by insert and tool body. It affects chip thickness, cutting forces and tool-life. Decreasing the approach angle reduces chip thickness and expands the cutting area between cutting edge and workpiece at a given feed rate.

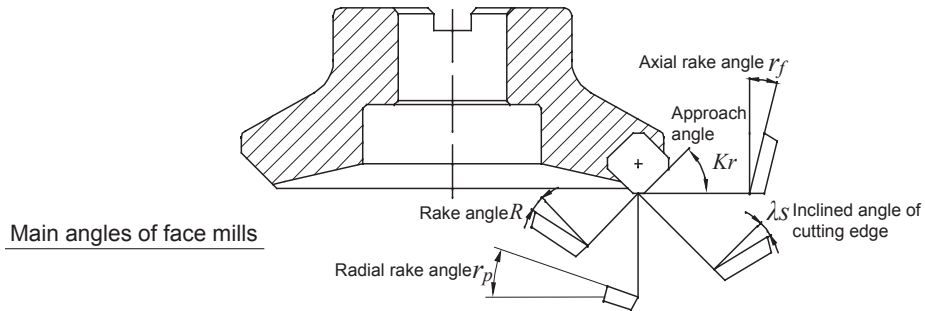
A smaller approach angle also ensures stable entry or exit, protecting the cutting edge and extending tool life. However, this will increase axial cutting forces on the workpiece, thus is not suitable for machining thin workpiece such as thin plate.

| Approach angle | Feed rate per tooth | Real maximum cutting depth |
|----------------|---------------------|---|
| 90° | f_z | $h_{ex}=f_z \times \sin \alpha$ |
| 75° | f_z | $h_{ex}=0.96 \times f_z$ |
| 60° | f_z | $h_{ex}=0.86 \times f_z$ |
| 45° | f_z | $h_{ex}=0.707 \times f_z$ |
| Round insert | f_z | $h_{ex} = \frac{\sqrt{i C^2 \times (i C - 2 a_p)^2}}{i C} \times f_z$ |

General formula

| | |
|---|---|
| <p>V_c : cutting speed(m/min)</p> <p>D_c : nominal diameter of milling tool(mm)</p> <p>n : spindle speed(rev/min)</p> <p>z_n : number of teeth</p> <p>Q : metal removal rate(cm³/min)</p> <p>L : Actual working distance(mm)</p> | <p>V_f : feed rate of worktable (feed speed)(mm/min)</p> <p>f_z : feed rate per tooth(mm/z)</p> <p>π : circumference ratio≈3.14</p> <p>T_c : machining time(min)</p> <p>f_n : feed rate per revolution (mm/rev)</p> |
| <p>● Cutting speed</p> $V_c = \frac{\pi \times D_c \times n}{1000} \text{ (m/min)}$ |    |
| <p>● Spindle speed</p> $n = \frac{1000 \times V_c}{\pi \times D_c} \text{ (rev/min)}$ | |
| <p>● Feed rate of worktable (feed speed)</p> $V_f = f_z \times n \times z_n \text{ (mm/min)}$ | |
| <p>● Feed rate per tooth</p> $f_z = \frac{V_f}{n \times Z_n} \text{ (mm/z)}$ | |
| <p>● Feed rate per revolution</p> $f_n = \frac{V_f}{n} \text{ (mm/rev)}$ | |
| <p>● Machining time</p> $T_c = \frac{L}{V_f} \text{ (min)}$ | |
| <p>● Metal removal rate</p> $Q = \frac{a_p \times a_e \times V_f}{1000} \text{ (cm}^3\text{/min)}$ | |

Function of each part in face milling

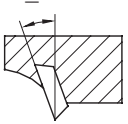
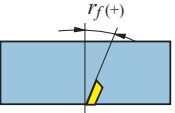
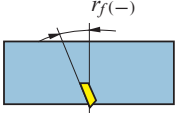
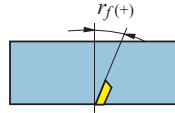
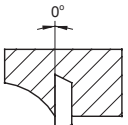

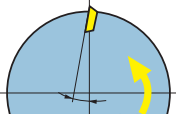
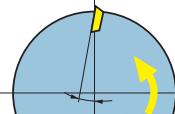
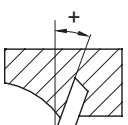
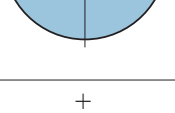
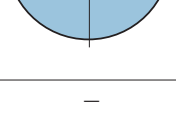
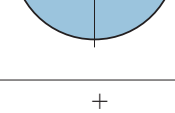


Main angles of face mills

Main angles of face mills

| Designation | Function | Effect | | |
|--|---|---|---------------|---|
| Axial rake angle r_f | Determining the chip direction | Negative angle, excellent capability of chip removal | | |
| Radial rake angle r_p | Determining whether the cutting is easy and fast or not | Positive angle: good cutting performance | | |
| Approach angle Kr | Determining the chip thickness | $Kr \uparrow$, chip thickness \uparrow ; $Kr \downarrow$, chip thickness \downarrow : | | |
| Rake angle R | Determining whether easy and fast the cutting is or not | Poor cutting performance, High-strength cutting edge | (-) - 0 - (+) | Good cutting performance, Low-strength cutting edge |
| Inclined angle of cutting edge λ_s | Determining the chip flow direction | Poor capability of chip removal, High-strength cutting edge | (-) - 0 - (+) | Good performance of chip removal, Low-strength cutting edge |

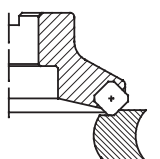
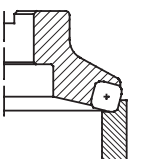
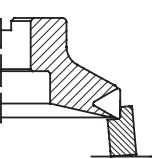
Characteristics of different rake angles combined

| | | Double positive rake angle | Double negative rake angle | Positive and negative rake angle |
|------------------------------|---|---|--|---|
| Negative rake angle |  |  |  |  |
| 0° rake angle |  |  |  |  |
| Positive rake angle |  |  |  |  |
| Axial rake angle r_f | | + | - | + |
| Radial rake angle r_p | | + | - | - |
| Applicable material machined | P | ✓ | | ✓ |
| | M | ✓ | | ✓ |
| | K | | ✓ | ✓ |
| | N | ✓ | | |
| | S | ✓ | | ✓ |

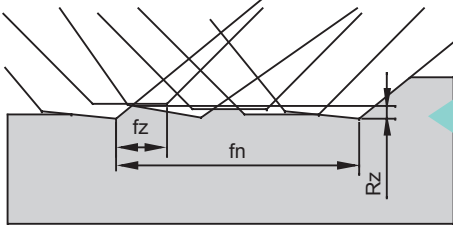
Indexable milling tools

Technical information

Cutting performances of different approach angles

| Approach angle | 45° | 75° | 90° |
|-------------------|--|---|---|
| Schematic diagram |  |  |  |
| Instruction | Axial force is the largest. It will bend when machining thin-wall workpiece, reducing the precision of workpiece. It can help avoid fringe breakage of workpiece when machining cast iron. | The main force is radial cutting force. It is often used in general face milling. | The axial force is zero in theory, suitable for milling thin plate workpiece. |

Wiper insert



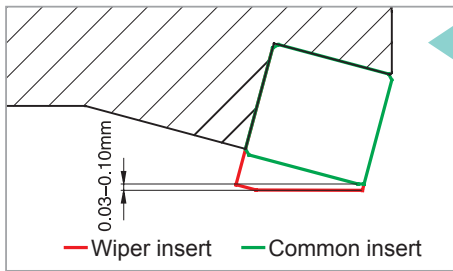
It has axial and radial run-out because tools and inserts have manufacturing tolerance. The axial run-out leads to poor surface roughness.

Solution

Mounting wiper inserts

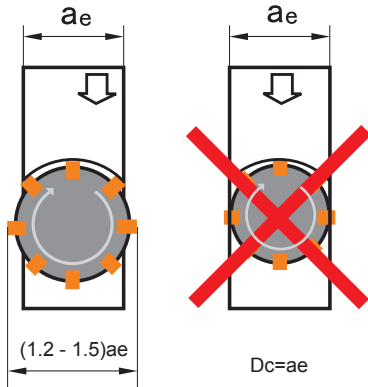
usage

The wiper insert must protrude below the other inserts by 0.03-0.10 mm at axial direction, so that the wiping function can take effect. Generally speaking, a cutter just needs only one wiper insert. If the diameter of cutter is much larger or cutter's feed rate per revolution is higher than the length of wiper edge, 2 to 3 wiper inserts can be mounted.



— Wiper insert — Common insert

■ Selection of cutting width and tool cutting diameter in face milling



Dc: Tool cutting diameter
ae: Cutting width

Generally speaking, the relation between cutting width and tool cutting diameter is $D_c = (1.2 - 1.5) a_e$.

In practical machining, same center line of tool center and work piece center should be avoided.