

# MILLING TOOLS



# About GESAC

Xiamen Golden Egret Special Alloy Co., Ltd. (GESAC), founded in 1989, is a Sino-foreign joint venture with national high-tech, affiliated with XTC, which is one of six major rare earth groups in China. GESAC is committed to research & development, production and professional solutions providing of high-quality tungsten powder materials, cemented carbide, precision cutting tools and other tungsten products. Up to now, GESAC has become world-famous manufacturer and supplier of tungsten powder, cemented carbide and precision cutting tools products.

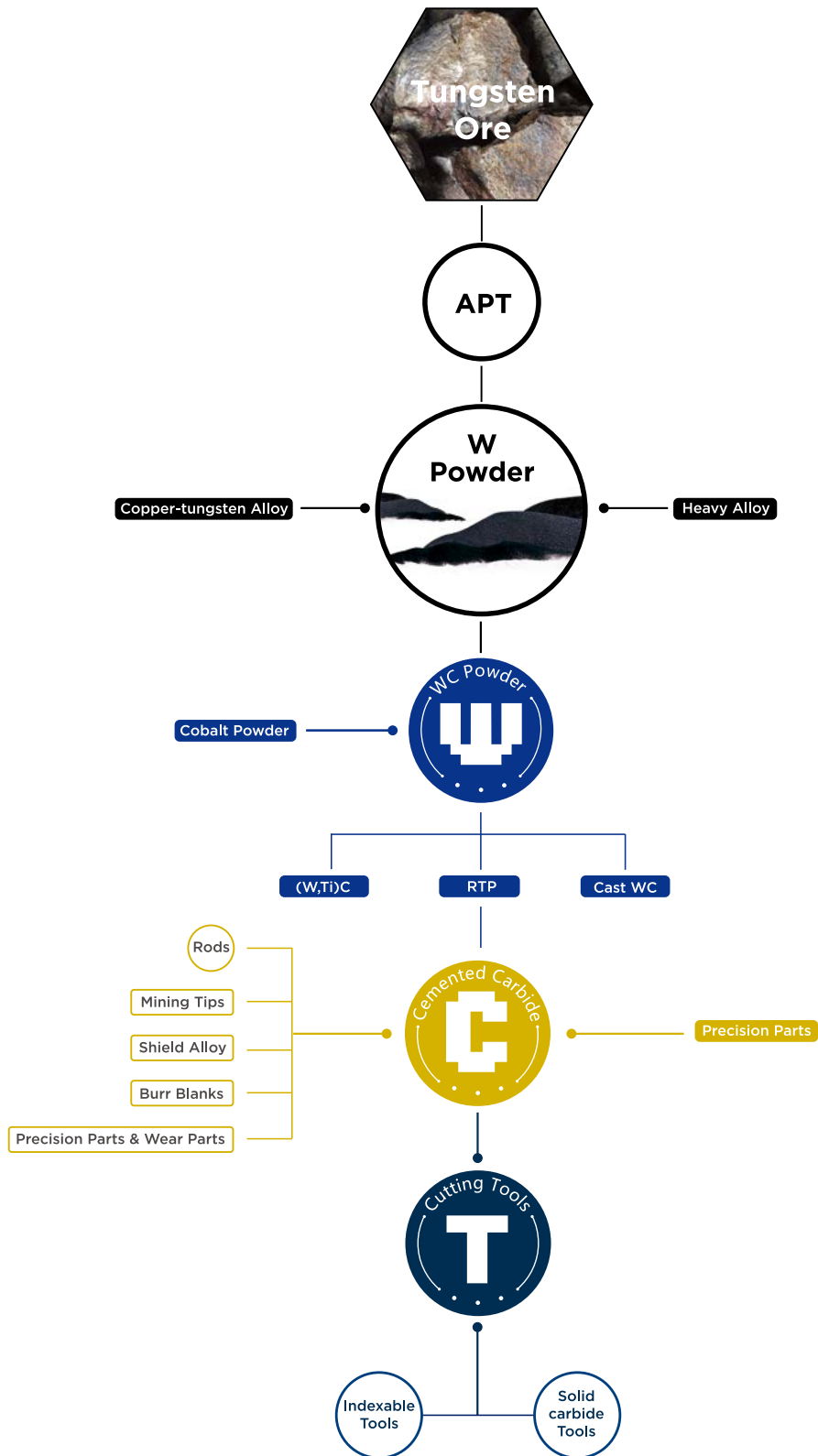
With the Integrated Product Development of complete tungsten industry chain, as well as a pragmatic and innovative management concept, GESAC has always maintained a strong momentum of development, providing the cost effective tungsten powder products and services for global users, offering the excellent products and perfect solutions for solving high hardness, high temperature resistance and wear resistance topics. Our brand "Golden Egret" has become one of the leading brand in the market, enjoying famous reputation in more than 40 countries and regions.

GESAC owns four production headquarters and one national level research center domestically, and three sales branches and one production base overseas. We undertook and completed several development programs independently, including the "National Science and Technology Support Programs", the "National Torch Program Projects", and the "National Key Projects" and so on. GESAC was awarded as "Key Enterprise for Strategic Emerging Industry", "Innovative Enterprise" and "Enterprise with Advanced Technology".



# Product Chain

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





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A

# INDEXABLE MILLING CUTTER

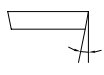


# ISO Milling Indexable Inserts Identification System

| Symbol | Shape         | Corner Angle | Figure |
|--------|---------------|--------------|--------|
| H      | Hexagon       | 120°         |        |
| O      | Octagon       | 135°         |        |
| P      | Pentagon      | 108°         |        |
| S      | Square        | 90°          |        |
| T      | Triangle      | 60°          |        |
| C      | Rhombic       | 80°          |        |
| D      |               | 55°          |        |
| E      |               | 75°          |        |
| F      |               | 50°          |        |
| M      |               | 86°          |        |
| V      |               | 35°          |        |
| W      | Trigon        | 80°          |        |
| L      | Rectangle     | 90°          |        |
| A      | Parallelogram | 85°          |        |
| B      |               | 82°          |        |
| K      |               | 55°          |        |
| R      | Round         | —            |        |

① Shape Symbol

| Symbol | Relief Angle |
|--------|--------------|
| A      | 3°           |
| B      | 5°           |
| C      | 7°           |
| D      | 15°          |
| E      | 20°          |
| F      | 25°          |
| G      | 30°          |
| N      | 0°           |
| P      | 11°          |
| O      | Others       |



② Relief Angle Symbol

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

③ Tolerance Symbol

|   |   |   |   |    |
|---|---|---|---|----|
| ① | ② | ③ | ④ | ⑤  |
| S | N | E | U | 12 |
| R | D | E | T | 12 |
| ① | ② | ③ | ④ | ⑤  |

| ④ Chipbreaker / Hole Symbol |  |            |                                       |         |
|-----------------------------|--|------------|---------------------------------------|---------|
| Symbol                      | Hole                                   | Hole Shape | Chipbreaker                           | Shape   |
| N                           | Without                                | —          | Without                               |         |
| R                           |  |            | Single-sided                          |         |
| F                           |  |            | Double-sided                          |         |
| A                           | With Hole                              | —          | Without                               |         |
| M                           |  |            | Single-sided                          |         |
| G                           |  |            | Double-sided                          |         |
| W                           |  |            | With hole and one countersink 40°-60° | Without |
| T                           | With hole and two countersinks 40°-60° | —          | Single-sided                          |         |
| Q                           |  |            | Without                               |         |
| U                           | With hole and one countersink 70°-90°  | —          | Double-sided                          |         |
| B                           |  |            | Without                               |         |
| H                           |  |            | Single-sided                          |         |
| C                           | With hole and two countersinks 70°-90° | —          | Without                               |         |
| J                           |  |            | Double-sided                          |         |
| X                           | —                                      | —          | —                                     | —       |

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

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

| Symbol            | Thickness (mm) |
|-------------------|----------------|
| 01                | 1.59           |
| T1                | 1.98           |
| 02                | 2.38           |
| T2                | 2.78           |
| 03                | 3.18           |
| T3                | 3.97           |
| 04                | 4.76           |
| 05                | 5.56           |
| 06                | 6.35           |
| 07                | 7.94           |
| 09                | 9.52           |
| ⓉThickness Symbol |                |

| Insert Shape: D       |       |                        |        |                            |        |
|-----------------------|-------|------------------------|--------|----------------------------|--------|
| Inscribed Circle Size |       | Tolerance of I.C. Size |        | Tolerance of Corner Height |        |
| mm                    | inch  | mm                     | inch   | mm                         | inch   |
| 6.35                  | 0.250 | ±0.05                  | ±0.002 | ±0.11                      | ±0.004 |
| 9.525                 | 0.375 | ±0.05                  | ±0.002 | ±0.11                      | ±0.004 |
| 12.7                  | 0.500 | ±0.08                  | ±0.003 | ±0.15                      | ±0.006 |
| 15.875                | 0.625 | ±0.10                  | ±0.004 | ±0.18                      | ±0.007 |
| 19.05                 | 0.750 | ±0.10                  | ±0.004 | ±0.18                      | ±0.007 |

| Insert Shape: V       |       |                        |        |                            |        |
|-----------------------|-------|------------------------|--------|----------------------------|--------|
| Inscribed Circle Size |       | Tolerance of I.C. Size |        | Tolerance of Corner Height |        |
| mm                    | inch  | mm                     | inch   | mm                         | inch   |
| 6.35                  | 0.250 | ±0.05                  | ±0.002 | ±0.15                      | ±0.006 |
| 9.525                 | 0.375 | ±0.05                  | ±0.002 | ±0.15                      | ±0.006 |
| 12.7                  | 0.500 | ±0.08                  | ±0.003 | ±0.20                      | ±0.008 |
| 15.875                | 0.625 | ±0.10                  | ±0.004 | ±0.27                      | ±0.011 |
| 19.05                 | 0.750 | ±0.10                  | ±0.004 | ±0.27                      | ±0.011 |

⑥

⑦

⑧

⑨

⑩

06      AN      E      N - GM  
 04      MO      T      - MM

⑥

⑦

⑧

⑨

⑩

**D. Theoretical Diameter of Inscribed Circle**

**S. Insert Thickness**

**M. See Fig.**

| ⑦ Wiper Angle or Nose Radius |                |                    |        |                       |        |                    |
|------------------------------|----------------|--------------------|--------|-----------------------|--------|--------------------|
| I                            |                |                    | II     |                       |        |                    |
| Symbol                       | Approach Angle | Cutting Edge Angle | Symbol | Relief Angle of Wiper | Symbol | Corner- $R_e$ (mm) |
| A                            | 45°            | 45°                | A      | 3°                    | M0     | circular inserts   |
| D                            | 30°            | 60°                | B      | 5°                    | 00     | 0.03               |
| E                            | 15°            | 75°                | C      | 7°                    | 02     | 0.2                |
| F                            | 5°             | 85°                | D      | 15°                   | 04     | 0.4                |
| P                            | 0°             | 90°                | E      | 20°                   | 08     | 0.8                |
| Z                            | Others         |                    | F      | 25°                   | 12     | 1.2                |
|                              |                |                    | G      | 30°                   | 16     | 1.6                |
|                              |                |                    | N      | 0°                    | 20     | 2.0                |
|                              |                |                    | P      | 11°                   | 24     | 2.4                |
|                              |                |                    | Z      | Others                | 28     | 2.8                |
|                              |                |                    |        |                       | 32     | 3.2                |

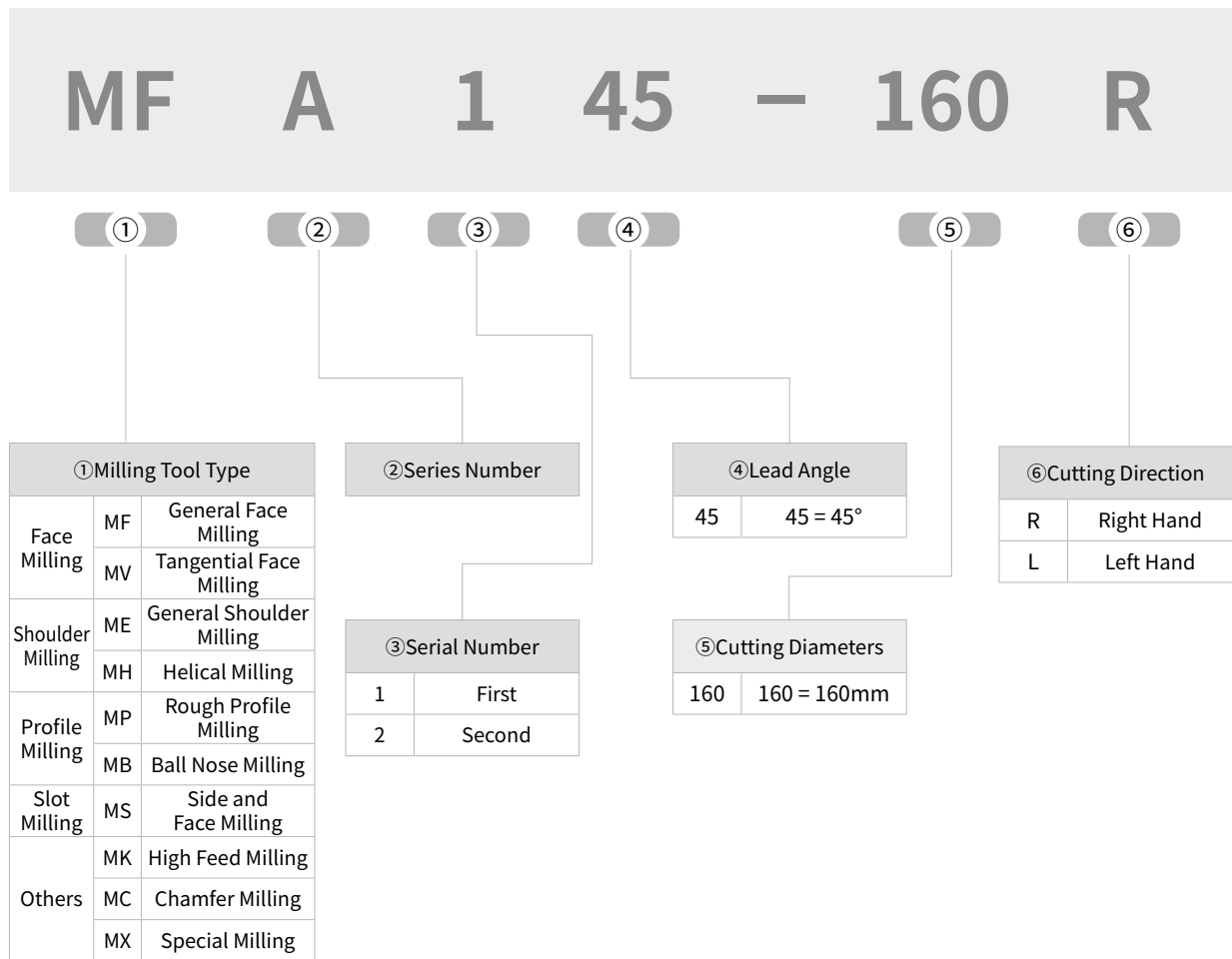
| ⑧ Major Cutting Edge |                     |       |
|----------------------|---------------------|-------|
| Symbol               | Description         | Shape |
| F                    | Sharp Edge          |       |
| E                    | R-Honed             |       |
| T                    | Chamfer             |       |
| S                    | Chamfer and R-Honed |       |

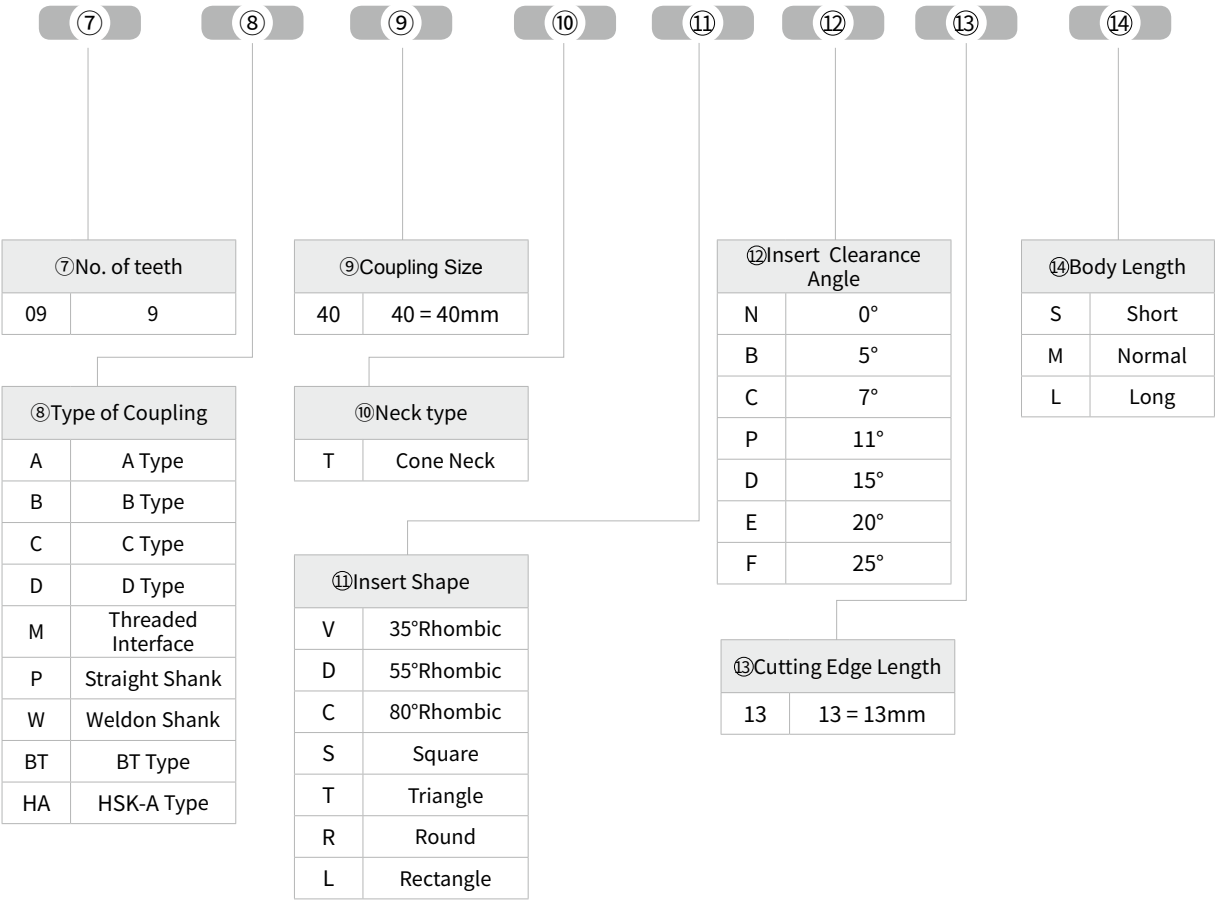
| ⑨ Direction |         |       |
|-------------|---------|-------|
| Symbol      | Hand    | Shape |
| R           | Right   |       |
| L           | Left    |       |
| N           | Neutral |       |

| ⑩ Chipbreaker Symbol |                                       |
|----------------------|---------------------------------------|
| Symbol               | Machining Condition                   |
| GL                   | General Lighting Cutting              |
| GM                   | General Medium Cutting                |
| GH                   | General Heavy Cutting                 |
| PL                   | Light Cutting for Steel               |
| PM                   | Medium Cutting for Steel              |
| PR                   | Rough Cutting for Steel               |
| KM                   | Medium Cutting for Cast Iron          |
| KR                   | Rough Cutting for Cast Iron           |
| MM                   | Medium Cutting for Stainless Steel    |
| W*                   | Wiper Cutting                         |
| NL/AL                | Lighting Cutting for Nonferrous Metal |
| .....                |                                       |

## Milling Cutter Holder Identification System



# 09 C 40 (T) S E 13 (M)



## Series Introduction

### Face Milling Series

## ODK(M)T

Positive eight edges 43° face milling  
ODK(M)T insert+MFA143 cutter holder

- Positive insert with eight edges, high economical efficiency
- The insert is with wiper design, suitable for finishing machining
- Suitable for finishing and semi-finishing machining of steel, cast iron and aluminum alloy



## SEE(M)T

Positive four edges 45° face milling  
SEE(M)T insert+MFA145 cutter holder

- Single face positive insert with four edge, various breaker design, light cutting
- The insert is with wiper design, suitable for finishing machining
- Suitable for finishing and semi-finishing machining of steel, cast iron and stainless steel



## SNE(M)U

Negative eight edges 45°/75°/88° face milling  
SNE(M)U insert+MFB145/245/275/288 cutter holder

- The insert is with thickening double face negative eight edges design, good strength, stable processing
- There are different cutting edge angle 45°、75°、88° and R radius
- There are sparse tooth, dense tooth and super dense tooth for choice. Suitable for different cutting condition
- MFB145 series is with Shim to protect the cutter holder
- Suitable for the semi-finishing and roughing face milling of steel and cast iron





## Series Introduction

### Face Milling Series

## HNE(M)X

Negative twelve edges 60°face milling  
HNE(M)X insert+MFB160/MFB260 cutter holder

- The insert is double face negative type with twelve edges, high economical efficiency, is best for the machining of cast iron
- Wedge type clamping way, MFB160 is adjustable , make sure the machining surface with good quality
- There are dense tooth and super dense tooth for choice. Suitable for different cutting condition
- Suitable for the semi-finishing and roughing machining for cast iron



## LNE(M)T

Vertical installation eight edges 90°face milling  
LNE(M)T insert+MVA190/MVA290 cutter holder

- Special vertical structure design, high strength, suitable for heavy load milling with high efficiency
- Negative type design with 8 edges, the left type cutter holder and right type cutter holder can be used mixedly
- There are dense tooth and super dense tooth for choice. Suitable for different cutting condition
- V type location design, the clamping is more stable
- Suitable for roughing machining for steel and cast iron



## Series Introduction

### Shoulder Milling Series

# APM(G)T

Positive two edges shoulder milling  
APM(G)T insert+MEA190 cutter holder

- There are many geometries available, suitable for different cutting condition
- There are geometries for aluminum alloy, suitable for machining of aluminum alloy
- Suitable for roughing machining of steel, stainless steel, cast iron and aluminum alloy



# APK(E)T

Positive two edges shoulder milling  
APK(E)T insert+MEB190/MHB190  
cutter holder

- The edge is with curve type design to decrease the cutting resistance
- Match with corn milling cutter holder, with high milling efficiency
- There are geometries for aluminum alloy, suitable for machining of aluminum alloy
- Suitable for semi-finishing and roughing machining of steel, stainless steel, cast iron and aluminum alloy



# ANKX

Negative four edges shoulder milling  
ANKX insert+MEC190/MHC190 cutter holder

- Negative type thickening design, with high strength, suitable for heavy cutting
- The edge is grinding type and with curve design, suitable for vertical wall machining
- Match with corn milling cutter holder, suitable for high efficiency heavy cutting
- Suitable for semi-finishing and roughing machining of steel, cast iron



## Series Introduction

### Shoulder Milling Series

## WNGU

### Negative six edges shoulder milling WNGU insert+MEE190 cutter holder

- Negative six edges design, with high economical efficiency
- Negative double face and big rake angle design, improve strength and ensure sharpness
- The bottom edge is wipe edge, ensure the cutting surface with good quality
- Available for face milling, shoulder milling, grooving milling and so on
- Suitable for semi-finishing and roughing machining of steel and cast iron



## SDKT

### Positive four edges shoulder milling SDKT insert+MES190 cutter holder

- Curve edge design with small cutting resistance
- Multi clearance angle design, ensure the inserts with higher strength and sharpness
- Available for face milling, shoulder milling, grooving milling and so on
- Suitable for semi-finishing and roughing machining of steel and cast iron



## XDHT

### Positive double edges shoulder milling for aluminum XDHT insert +MEH190 cutter holder

- Big rake angle design, ensure small cutting resistance
- Positive double clearance angle design, improve the strength of the edge
- Long cutting edge design, suitable for big cutting depth
- Curve edge design, ensure to achieve 90° step in shoulder milling
- Suitable for semi-finishing and roughing of aluminum alloy



## Series Introduction

### Profile Milling Series

## RD/RP/RC

Positive profile milling  
RD/RP/RC insert + MPA100/MPB100/MPC100  
cutter holder

- With economical and high efficiency, suitable for the profile milling of mould industry
- With full range of geometry, available from light cutting to heavy cutting
- RC+MPC100 is with anti rotation design, ensure stable cutting
- Economy type inserts and high precision type inserts for choice, satisfy different customer requirement
- Suitable for semi-finish and roughing machining of steel



## QTD

Finishing ballnose milling  
QTD insert +MBA100 cutter holder

- Full R shape design, there are edges available even in the cutting for straight wall face
- Special edge design, ensure the edge with higher strength
- QTD-S-T is with curve edge design, ensure small resistance
- Suitable for finishing machining of steel, cast iron and hardened steel



## Series Introduction

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### High Feed Milling Series

## UD/UP

### Positive triple edges high feed milling UD/UP insert +MKA110 cutter holder

- Multi segments line edge design, improve cutting effect in different cutting depth
- With resistance-reduce groove design, ensure to reduce the cutting temperature
- There are 3 size inserts with different geometries, available for cutting in most of the filed
- Suitable for roughing machining of steel, cast iron and stainless steel



## SDMT

### Positive four edges high feed milling SDMT insert +MKB113 cutter holder SDMT-SM insert +MKM113 cutter holder

- With big arc curve edge design, improve the strength of R angle
- With SM geometry which is with changing rake angle and changing edge width, suitable for aero industry
- Suitable for roughing machining of steel, cast iron, stainless steel and difficult-to-cut material



## Series Introduction

### Slot Milling Series

# SNEX

Narrow slot width three face edges slot milling  
SNEX insert + MSA104-108 cutter holder

- Sharp edge design, ensure to reduce cutting resistance
- There are 5 different slot width available
- Suitable for semi-finishing and roughing machining of steel and cast iron



# CNEU

Medium slot width three face edges slot milling  
CNEU insert + MSA110-113 cutter holder

- Positive cutting performance, the cutting is light and fast
- Grinding type changing rake angle design, ensure to reduce cutting resistance
- Suitable for semi-finishing and roughing machining of steel and cast iron



### Chamfer Milling Series

# SPMT

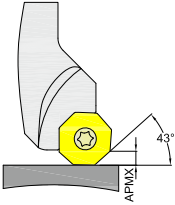

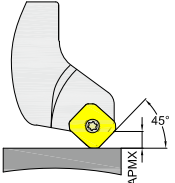

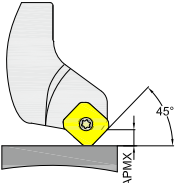

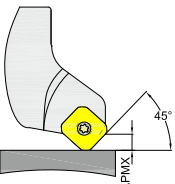

Positive four edges chamfer milling  
SPMT inserts + MCA130/145/160 cutter holder

- Four effective cutting edges, ensure both forward direction chamfer and opposite direction chamfer available
- The cutter holder is with multi cutting edge angle design, available for chamfer cutting of 30°/45°/60°
- Suitable for semi-finishing and roughing machining of steel and cast iron


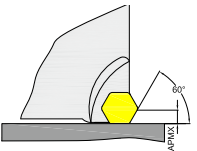




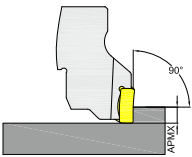

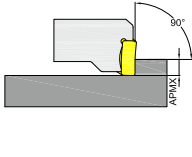
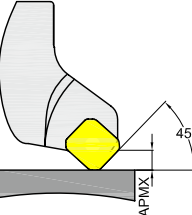
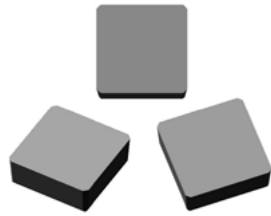
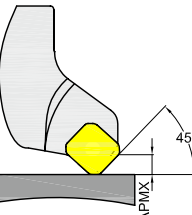

## Indexable Milling Products List

| Type         | Application  | Inserts Series | Cutter Holder Series | Picture  | Product Application   |
|--------------|--|----------------|----------------------|--|---|
| Face Milling |  <p>OD06: APMX =4.0mm</p>   | ODK(M)T        | MFA143<br>(Φ40-Φ200) |    | Face milling for steel, alloy steel, cast iron, aluminum alloy. |
|              |  <p>SE13: APMX =6.0mm</p>  | SEE(M)T        | MFA145<br>(Φ50-Φ160) |   | Face milling for steel, alloy steel, cast iron, aluminum alloy. |
|              |  <p>SN12: APMX =3.0mm</p> | SNE(M)U        | MFB145<br>(Φ50-Φ315) |  | High efficiency face milling for steel, cast iron.              |
|              |  <p>SN12: APMX =3.0mm</p> |                | MFB245<br>(Φ50-Φ315) |  |   |

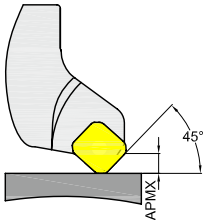

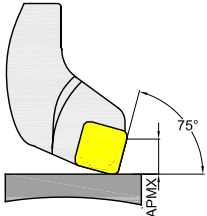

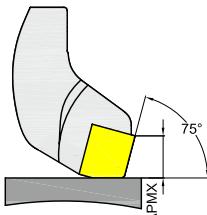
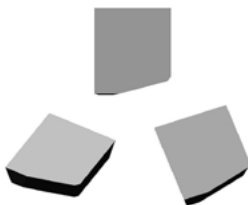
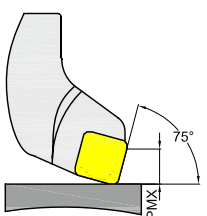

## Indexable Milling Products List

| Type         | Application  | Inserts Series | Cutter Holder Series  | Picture  | Product Application  |
|--------------|--|----------------|-----------------------|--|--|
| Face Milling |  <p>SN12: APMX =5.0mm</p>   | SNE(M)U        | MFB275<br>(Φ50-Φ315)  |    | High efficiency face milling for steel, cast iron.                                   |
|              |  <p>SN12: APMX =7.0mm</p>   |                | P041                  | MFB288<br>(Φ40-Φ315)   |   |
|              |  <p>HN09: APMX =8.0mm</p> | HNE(M)X        | MFB160<br>(Φ125-Φ315) |  | Adjustable high efficiency and economical face milling for cast iron.                |
|              |  <p>HN09: APMX =8.0mm</p> |                | P052                  | MFB260<br>(Φ63-Φ315)   |  |

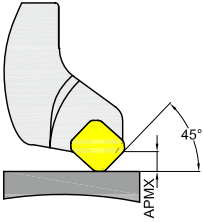

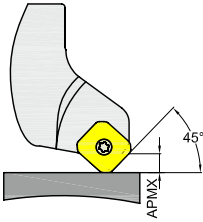

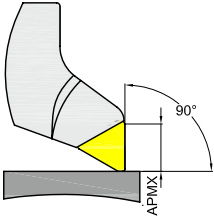

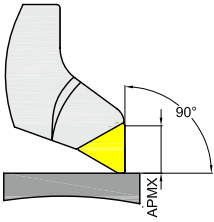

## Indexable Milling Products List

| Type         | Application  | Inserts Series       | Cutter Holder Series | Picture  | Product Application                                |
|--------------|--|----------------------|----------------------|--|--|
| Face Milling |  <p>LN11: APMX = 5.0mm<br/>LN15: APMX = 7.0mm</p>   | LNE(M)T              | MVA190<br>(Φ40-Φ315) |    | Heavy face milling for steel and cast iron.        |
|              |  <p>LN15: APMX = 7.0mm</p>                         |                      | P057                 | MVA290<br>(Φ80-Φ250)   |  |
|              |  <p>SB12: APMX = 7.1mm</p>                        | SBEX                 | —                    |  | Face milling for cast iron, steel and alloy steel. |
|              |  <p>SE12: APMX = 7.5mm<br/>SE15: APMX = 9.1mm</p> | SEEN<br>SEMN<br>SEEX | —                    |  |  |

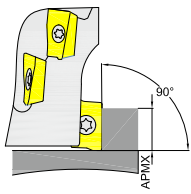
## Indexable Milling Products List

| Type         | Application   | Inserts Series         | Cutter Holder Series | Picture  | Product Application                                |
|--------------|---|------------------------|----------------------|--|--|
| Face Milling |  <p>SP15: APMX =13.3mm<br/>SP19: APMX =16.3mm<br/>SP25: APMX =21.8mm</p> | SPEN<br><b>P066</b>    | —                    |    | Face milling for cast iron, steel and alloy steel. |
|              |  <p>SP12: APMX =11.4mm<br/>SP15: APMX =13.2mm<br/>SP19: APMX =15.6mm</p> | SPK(M)N<br><b>P067</b> | —                    |    |  |
|              |  <p>SP15: APMX =14.0mm</p>   | SPEN-W<br><b>P068</b>  | —                    |  |  |
|              |  <p>SP12: APMX =10.7mm</p>   | SPER<br><b>P068</b>    | —                    |  |  |

# Indexable Milling Products List

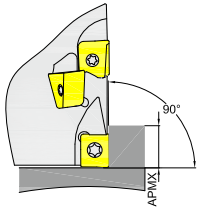
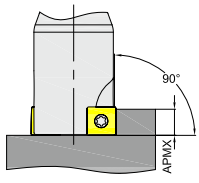

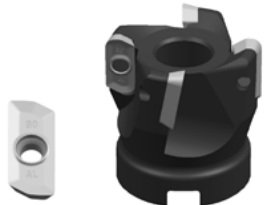
| Type         | Application  | Inserts Series                   | Cutter Holder Series | Picture  | Product Application                                |
|--------------|--|----------------------------------|----------------------|--|--|
| Face Milling |  <p>SP15: APMX = 9.5mm</p>                            | SPNR<br><br>P069                 | —                    |    | Face milling for cast iron, steel and alloy steel. |
|              |  <p>SP12: APMX = 7.5mm<br/>SP15: APMX = 9.5mm</p>     | SPCW<br><br>P069                 | —                    |   |  |
|              |  <p>TP16: APMX = 13.5mm<br/>TP22: APMX = 15.1mm</p> | TPER<br>TPKR<br>TPKN<br><br>P070 | —                    |  |  |
|              |  <p>TP22: APMX = 15.1mm</p>                         | TPNR<br><br>P070                 | —                    |  |  |

## Indexable Milling Products List

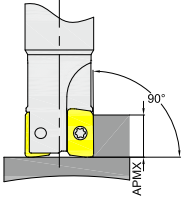

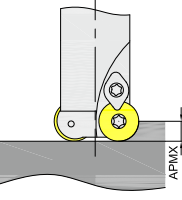

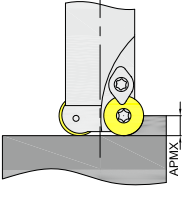

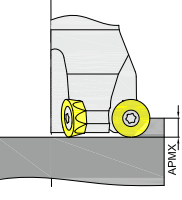

| Type             | Application  | Inserts Series      | Cutter Holder Series                 | Picture  | Product Application   |
|------------------|--|---------------------|--------------------------------------|--|---|
| Shoulder Milling |  <p>AP11: APMX = 9.0mm<br/>AP16: APMX = 14.0mm</p>    | APM(G)T<br><br>P071 | MEA190<br>( $\phi 16$ - $\phi 250$ ) |    | Shoulder, face, slot and cavity milling for steel, cast iron, stainless steel and aluminum alloy. |
|                  |  <p>AP11: APMX = 9.0mm<br/>AP16: APMX = 14.0mm</p>    | APK(E)T<br><br>P076 | MEB190<br>( $\phi 16$ - $\phi 200$ ) |   | Shoulder, face, slot and cavity milling for steel, cast iron, stainless steel and aluminum alloy. |
|                  |  <p>AP11: APMX = 39.9mm<br/>AP16: APMX = 57.0mm</p> | APKT<br><br>P076    | MHB190<br>( $\phi 32$ - $\phi 80$ )  |  | Big cutting depth shoulder milling for steel and cast iron.                                       |
|                  |  <p>AN12: APMX = 9.0mm<br/>AN16: APMX = 14.0mm</p>  | ANKX<br><br>P082    | MEC190<br>( $\phi 32$ - $\phi 200$ ) |  | High efficiency and economical shoulder, slot milling for steel and cast iron.                    |



## Indexable Milling Products List

| Type             | Application  | Inserts Series   | Cutter Holder Series                 | Picture  | Product Application  |
|------------------|--|------------------|--------------------------------------|--|--|
| Shoulder Milling |  <p>AN12: APMX =43.0mm<br/>AN16: APMX =57.0mm</p> | ANKX<br><br>P082 | MHC190<br>( $\phi 40$ - $\phi 80$ )  |    | Big cutting depth shoulder milling for steel and cast iron.                    |
|                  |  <p>WN04: APMX =4.0mm<br/>WN08: APMX =7.5mm</p>   | WNGU<br><br>P087 | MEE190<br>( $\phi 20$ - $\phi 200$ ) |   | High efficiency and economical shoulder, slot milling for steel and cast iron. |
|                  |  <p>SD14: APMX =10.0mm</p>                      | SDKT<br><br>P091 | MES190<br>( $\phi 40$ - $\phi 315$ ) |  | High efficiency and economical shoulder, slot milling for steel and cast iron. |
|                  |  <p>XD19: APMX =18.0mm</p>                      | XDHT<br><br>P096 | MEH190<br>( $\phi 25$ - $\phi 125$ ) |  | High efficiency shoulder milling for aluminum alloy.                           |

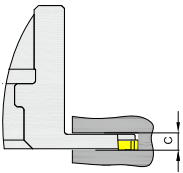

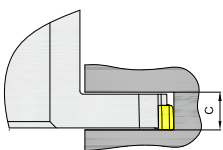

## Indexable Milling Products List

| Type             | Application  | Inserts Series          | Cutter Holder Series | Picture  | Product Application  |
|------------------|--|-------------------------|----------------------|--|--|
| Shoulder Milling |  <p>XP16: APMX =14.0mm</p>  | <p>XPHT</p> <p>P100</p> | —                    |   | Shoulder milling for steel and cast iron.  |
| Profile Milling  |  <p>RD05: APMX =2.5 mm<br/>RD07: APMX =3.5 mm<br/>RD08: APMX =4.0 mm<br/>RD10: APMX =5.0 mm<br/>RD12: APMX =6.0 mm<br/>RD16: APMX =8.0 mm</p> | <p>RD</p> <p>P101</p>   | MPA100<br>(Φ10-Φ125) |   | Profile, shoulder, face, slot milling and pocket milling of steel and alloy steel. |
|                  |  <p>RP08: APMX =4.0mm<br/>RP10: APMX =5.0 mm<br/>RP12: APMX =6.0 mm<br/>RP16: APMX =8.0 mm</p>  | <p>RP</p> <p>P105</p>   | MPB100<br>(Φ16-Φ125) |  | Profile, face, slot milling and pocket milling of steel and alloy steel.           |
|                  |  <p>RC10: APMX =5.0 mm<br/>RC12: APMX =6.0 mm<br/>RC16: APMX =8.0 mm<br/>RC20: APMX =10.0 mm</p>  | <p>RC</p> <p>P109</p>   | MPC100<br>(Φ20-Φ160) |  | Profile, face, slot milling and pocket milling of steel and alloy steel.           |

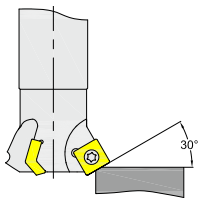

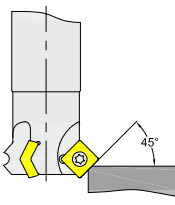

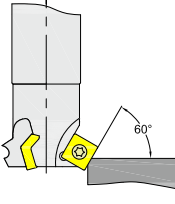
## Indexable Milling Products List

| Type              | Application  | Inserts Series | Cutter Holder Series                               | Picture  | Product Application   |
|-------------------|--|----------------|--|--|---|
| Profile Milling   |   | QTD            | MBA100<br>( $\Phi 12$ - $\Phi 32$ )                |    | High precision profile milling for steel, cast iron and hardened steel.                 |
|                   |  <p>UD08: APMX =1.0mm<br/>UD12: APMX =1.5mm<br/>UP17: APMX =2.0mm</p> | UD/UP          | MKA110<br>( $\Phi 20$ - $\Phi 100$ )               |   | High efficiency face, slot and cavity milling for steel, cast iron and stainless steel. |
| High Feed Milling |  <p>SD12: APMX =2.0mm<br/>SD15: APMX =3.0mm</p>                     | SDMT           | MKB113<br>( $\Phi 32$ - $\Phi 160$ )               |  | Face, slot milling and pocket milling of steel and alloy steel with high efficiency.    |
|                   |  <p>SD09: APMX =1.0mm<br/>SD12: APMX =2.0mm</p>                     | SDMT           | Aero Only:<br>MKM113<br>( $\Phi 25$ - $\Phi 125$ ) |  | High efficiency profile, face, slot and cavity milling for titanium alloy.              |

## Indexable Milling Products List


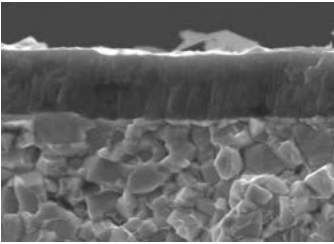
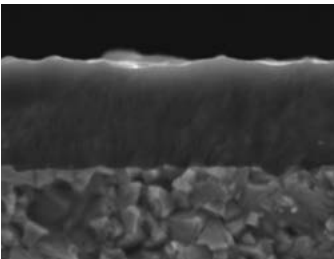
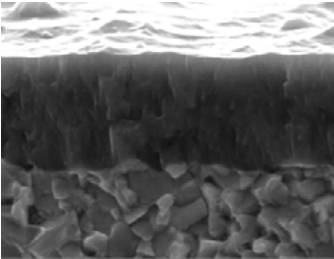
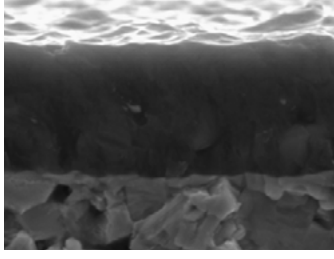
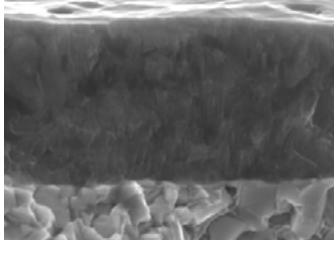
| Type         | Application   | Inserts Series          | Cutter Holder Series               | Picture   | Product Application                                  |
|--------------|---|-------------------------|------------------------------------|---|--|
| Slot Milling |  <p>C MIN =4.0mm<br/>C MAX =8.0 mm</p> | <p>SNEX</p> <p>P135</p> | <p>MSA(104~108)<br/>(Φ100)</p>     |   | <p>Slot milling<br/>for steel and<br/>cast iron.</p> |
|              |  <p>C MIN=10.0mm<br/>C MAX=13.0mm</p>  | <p>CNEU</p> <p>P138</p> | <p>MSA(110~113)<br/>(Φ80-Φ160)</p> |  | <p>Slot milling<br/>for steel and<br/>cast iron.</p> |

# Indexable Milling Products List

| Type            | Application  | Inserts Series | Cutter Holder Series | Picture   | Product Application                      |
|-----------------|--|----------------|----------------------|---|--|
| Chamfer Milling |  <p>SP09: APMX =3.0mm<br/>SP12: APMX =4.5mm</p>   | SPMT           | MCA130<br>(Φ25-Φ32)  |   | Chamfer milling for steel and cast iron. |
|                 |  <p>SP09: APMX =5.0mm<br/>SP12: APMX =7.0mm</p>  |                | MCA145<br>(Φ25-Φ32)  |  |  |
|                 |  <p>SP09: APMX =6.0mm<br/>SP12: APMX =8.0mm</p> |                | P142                 | MCA160<br>(Φ25-Φ36)   |  |

## Milling Inserts Grade

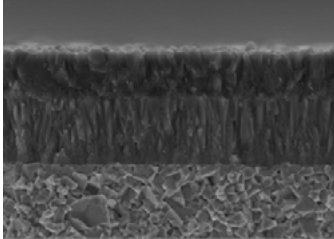
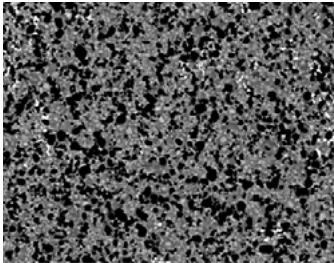
Grade for P

| Workpiece   | Grade  | Color      | Coating Type | Coating Structure   | Features   |
|---|--------|------------|--------------|---|--|
|  | GA4325 | Golden     | PVD          |    | <ul style="list-style-type: none"> <li>• Specially designed wear-resistant cemented carbide substrate, with newly upgraded AlCrN coating, has excellent wear resistance and oxidation resistance.</li> <li>• Suitable for medium-load processing of general steel, soft steel processing is the first choice.</li> </ul>   |
|   | GA4330 | Golden     | PVD          |    | <ul style="list-style-type: none"> <li>• The newly upgraded TiAlN coating is matched with fine-grained wear-resistant cemented carbide substrate, which improves the wear resistance of milling processing and increase the cutting stability.</li> <li>• Suitable for general processing of die steel, especially suitable for die steel processing.</li> </ul> |
|   | GA4225 | Slate Grey | PVD          |  | <ul style="list-style-type: none"> <li>• Combination of PVD AlCrN coating and fine-grained cemented carbide Substrate.</li> <li>• Suitable for general processing of steel, cast iron and general materials under medium to low speed conditions.</li> </ul>   |
|   | GA4230 | Fuchsia    | PVD          |  | <ul style="list-style-type: none"> <li>• The PVD TiAlN coating and cemented carbide substrate with high damage resistance have high bonding strength, which can realize stable processing under different working conditions.</li> <li>• Suitable for general processing of steel, cast iron and general material, with a wide range of applications.</li> </ul> |
|   | GP4225 | Golden     | PVD          |  | <ul style="list-style-type: none"> <li>• The newly upgraded nano-structured AlCrN coating is combined with the fine-grained cemented carbide matrix, which has excellent wear resistance.</li> <li>• Suitable for semi-finish to slight rough machining of steel.</li> </ul>   |

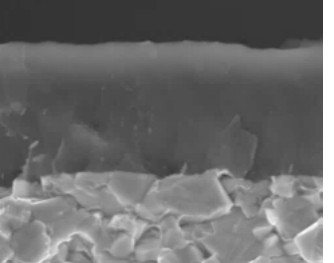
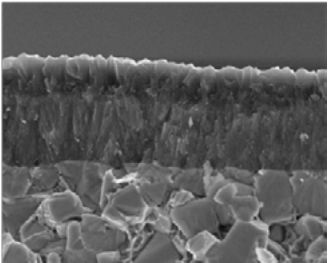


## Milling Inserts Grade

### Grade for P

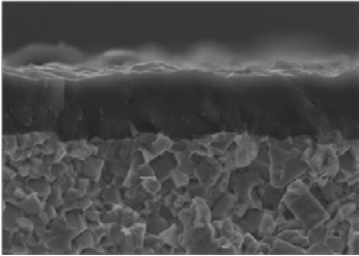
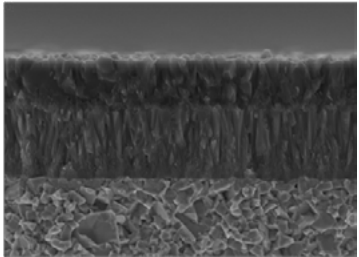
| Workpiece | Grade  | Color | Coating Type | Coating Structure   | Features  |
|-----------|--------|-------|--------------|---|---|
| <b>P</b>  | GP2115 | Black | CVD          |  | <ul style="list-style-type: none"> <li>• The ultra-fine MT-TiCN and AL2O3 coating are combined with high cobalt cemented carbide substrate, which can ensure the wear resistance, strength and toughness, and realize the stability and high efficiency of insert machining.</li> <li>• Suitable for fine to semi-finish milling of steel under medium to high speed conditions.</li> </ul> |
|           | GP01TM | —     | Uncoating    |  | <ul style="list-style-type: none"> <li>• After excellent processing, Uncoated cermet milling grade has high toughness, high wear resistance and excellent edge collapse resistance.</li> <li>• Suitable for milling processing of various materials, mainly steel processing.</li> </ul>  |

### Grade for M

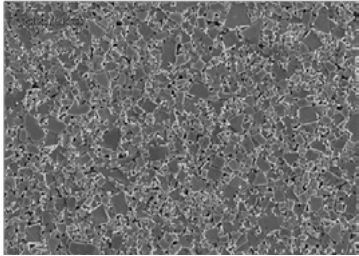
| Workpiece | Grade  | Color       | Coating Type | Coating Structure   | Features  |
|-----------|--------|-------------|--------------|---|---|
| <b>M</b>  | GM4135 | Dark Yellow | PVD          |  | <ul style="list-style-type: none"> <li>• The latest TiAlSiN multilayer coating, with high-strength fine-grained cemented carbide substrate, has good wear resistance, toughness and thermal stability.</li> <li>• It is suitable for rough machining and unstable working conditions of difficult-to-machine materials such as stainless steel and titanium alloy.</li> </ul> |
|           | GM2140 | Black       | CVD          |  | <ul style="list-style-type: none"> <li>• The upgraded MT-TiCN+ Al2O3 coating is matched with a fine-grained cemented carbide substrate, which has wear resistance, toughness and thermal stability.</li> <li>• Suitable for semi-finish to rough machining of stainless steel and titanium alloys.</li> </ul>   |

## Milling Inserts Grade

### Grade for K


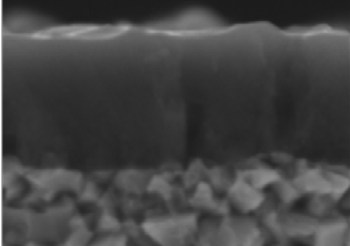
| Workpiece | Grade  | Color       | Coating Type | Coating Structure   | Features  |
|-----------|--------|-------------|--------------|---|---|
| <b>K</b>  | GK4125 | Grey Purple | PVD          |  | <ul style="list-style-type: none"> <li>• Nano-TiAlN coating is matched with fine-grained cemented carbide substrate, which has excellent wear resistance and anti-edge collapse.</li> <li>• It is suitable for semi-finishing to rough finishing, with low speed to medium speed, wet and dry milling of various cast irons.</li> </ul>   |
|           | GK2115 | Black       | CVD          |  | <ul style="list-style-type: none"> <li>• The brand-new medium-thick MT-TiCN+Al<sub>2</sub>O<sub>3</sub> coating with special fine-grained cemented carbide substrate, which has strength, toughness and wear resistance, ensuring the stability and efficiency of machining cast iron.</li> <li>• Suitable for precision to semi-finish milling of cast iron under medium to high speed conditions</li> </ul> |

### Grade for N


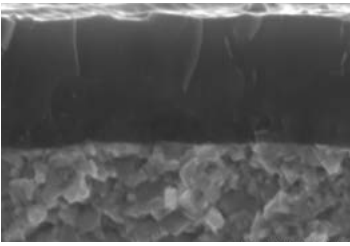
| Workpiece | Grade  | Color | Coating Type | Coating Structure   | Features  |
|-----------|--------|-------|--------------|---|---|
| <b>N</b>  | GN9125 | —     | Uncoatig     |  | <ul style="list-style-type: none"> <li>• Uncoated fine-grained cemented carbide Grade, with good wear resistance and toughness.</li> <li>• Suitable on semi-finishing to roughing processing of copper and aluminum.</li> </ul> |

## Milling Inserts Grade

### Grade for S

| Workpiece   | Grade  | Color       | Coating Type | Coating Structure   | Features   |
|---|--------|-------------|--------------|---|--|
|  | GS4130 | Grey Purple | PVD          |  | <ul style="list-style-type: none"> <li>• The latest nano TiAlN coating is matched with a high-toughness fine-grained cemented carbide substrate, which has good wear resistance and toughness.</li> <li>• Suitable on semi finishing to roughing processing of titanium and high temperature alloy.</li> </ul> |

### Grade for H

| Workpiece   | Grade  | Color  | Coating Type | Coating Structure  | Features   |
|---|--------|--------|--------------|--|--|
|  | GH4115 | Bronze | PVD          |  | <ul style="list-style-type: none"> <li>• The latest TiAlCrSiN coating is combined with ultra-fine grained cemented carbide substrate, which has both high oxidation resistance and red hardness.</li> <li>• Suitable for precision to semi-finish milling of high-hardness steel above 55HRC.</li> </ul> |




## Introduction and Application of Milling Grade

| Workpiece Material            | ISO | Coated |        | Uncoated | Cermet |
|-------------------------------|-----|--------|--------|----------|--------|
|                               |     | CVD    | PVD    |          |        |
| <b>P</b><br>Steel             | 01  |        |        |          | GP01TM |
|                               | 10  | GP2115 | GA4325 |          |        |
|                               | 20  |        | GA4330 | GA4225   |        |
|                               | 30  |        | GA4330 | GA4225   |        |
|                               | 40  |        | GA4330 | GA4225   |        |
|                               | 50  |        |        | GA4230   |        |
| <b>M</b><br>Stainless Steel   | 01  |        |        |          |        |
|                               | 10  |        |        |          |        |
|                               | 20  |        |        |          |        |
|                               | 30  | GM2140 | GM4135 |          |        |
|                               | 40  |        | GS4130 |          |        |
|                               | 50  |        | NEW    |          |        |
| <b>K</b><br>Cast Iron         | 01  |        |        |          |        |
|                               | 10  | GK2115 |        |          |        |
|                               | 20  |        | GK4125 |          |        |
|                               | 30  |        |        |          |        |
|                               | 40  |        |        |          |        |
| <b>N</b><br>Nonferrous Metal  | 01  |        |        |          |        |
|                               | 10  |        |        |          |        |
|                               | 20  |        |        | GN9125   |        |
|                               | 30  |        |        |          |        |
|                               | 40  |        |        |          |        |
| <b>S</b><br>HRSA              | 01  |        |        |          |        |
|                               | 10  |        |        |          |        |
|                               | 20  |        | GS4130 |          |        |
|                               | 30  | GM2140 | GM4135 |          |        |
|                               | 40  |        | NEW    |          |        |
| <b>H</b><br>Hardened Material | 01  |        |        |          |        |
|                               | 10  |        | GH4115 |          |        |
|                               | 20  |        |        |          |        |
|                               | 30  |        |        |          |        |

## Indexable Milling Holders Sparse and Dense Type Application

Choosing proper cutting tool teeth number is extremely important for balancing efficiency and precision in milling application. Under the same cutting speed  $V_c$  & feed per teeth  $f_z$ , increase the number of cutting edges can effectively increase producing efficiency, even though also increase the cutting force at the same time. Machine Power is an influence factor for cutting tool teeth number choosing. GEASC provides three type pitch for different application.

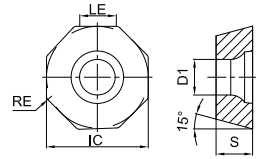
MFB145-080








|              |  |   |  |
|--------------|--|---|--|
| Shape        |   |    |   |
|              | Sparse Pitch   | Dense Pitch   | Extra Dense Pitch  |
| NO. of Teeth | Z=5  | Z=7   | Z=8  |
| Application  | <ul style="list-style-type: none"> <li>● Superior rigidity, suitable for unstable working condition</li> <li>● Mainly used in high feed and large cutting depth(ap.) machining, big size chip</li> <li>● First priority for Carbon Steel, Alloy Steel and stainless steel machining</li> </ul> | <ul style="list-style-type: none"> <li>● The best balance of rigidity and efficiency, first choice for general purpose machining</li> <li>● Mainly used in medium feed and medium cutting depth(ap.) machining, medium size chip</li> <li>● Also suitable for hardened steel and heat-resistance alloy machining</li> </ul> | <ul style="list-style-type: none"> <li>● With high efficiency, most suitable for stable working condition</li> <li>● Mainly used in low feed and small cutting depth(ap.), small size chip</li> <li>● First choice for cast iron and easy chip breaker workpieces machining</li> </ul> |

Face Milling

# ODK(M)T











Positive with Eight Edge



| Ordering Code   | Dimension(mm) |        |      |      |     | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cermat |        |        |        |
|---|---------------|--------|------|------|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|
|   | LE            | IC     | S    | D1   | RE  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115 | GN9125 |
|  ODKT060508-GL   | 5             | 15.875 | 5.56 | 5.56 | 0.8 | ●             |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|  ODKT060508-GM  | 5             | 15.875 | 5.56 | 5.56 | 0.8 | ●             |        |        |        | ●      |        | ○      | ●      | ●      |        |          |        |        |        |        |
|  ODMT060508-GM  | 5             | 15.875 | 5.56 | 5.56 | 0.8 | ●             | ●      |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |
|  ODKT060508-GH | 5             | 15.875 | 5.56 | 5.56 | 0.8 | ●             |        |        |        | ●      |        |        |        | ●      |        |          |        |        |        |        |
|  ODMT060508-GH | 5             | 15.875 | 5.56 | 5.56 | 0.8 | ●             |        |        |        | ○      |        |        |        |        |        |          |        |        |        |        |
|  ODKT060508-AL | 5             | 15.875 | 5.56 | 5.56 | 0.8 |               |        |        |        |        |        |        |        |        |        |          |        |        |        | ●      |
|  ODKW060508-WB | 5             | 15.875 | 5.56 | 5.56 | 0.8 | ●             |        |        |        |        |        |        |        |        |        |          |        |        |        |        |

● Stock ○ Available Upon Order

## ODK(M)T Series Geometry

| Light Cutting for General Material   | Medium Cutting for General Material   | Heavy Cutting for General Material  | General Cutting for Aluminum Alloys  | Wiper   |
|--|---|---|--|---|
|                         |                            |  |  |  |
| GL   | GM  | GH  | AL   | WB  |
|                         |                            |  |  |  |
| Large rake angle with narrow edge width. Suitable for Light Milling with low cutting speed and low feed. | Large rake angle smoothly cutting. High stability milling can be achieved under general cutting conditions. | Wide chip pocket with strong cutting edge for Rough cutting.                      | Large rake angle, sharp cutting edge, good polishment and good chip control.       | Wiper design to improve the surface quality.  |



Face Milling

# MFA143

Arbor

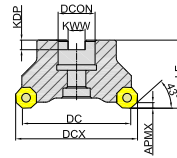


Fig1

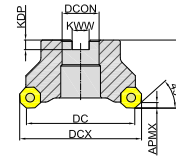


Fig2

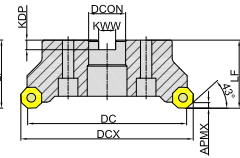

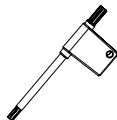
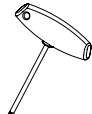


Fig3

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |      |    |      |     | APMX | Suitable for | Coolant Shape | Stock |   |
|---------------------|-----------|-------|---------------|-----|------|----|------|-----|------|--------------|---------------|-------|---|
|                     |           |       | DC            | DCX | DCON | LF | KWW  | KDP |      |              |               |       |   |
| MFA143040R03A16OD06 | 40        | 3     | 40            | 50  | 16   | 40 | 8.4  | 5.6 | 4    | ODK(M)T0605  | ×             | Fig1  | ● |
| MFA143050R04A22OD06 | 50        | 4     | 50            | 60  | 22   | 40 | 10.4 | 6.3 | 4    | ODK(M)T0605  | ×             | Fig1  | ● |
| MFA143063R05A22OD06 | 63        | 5     | 63            | 72  | 22   | 40 | 10.4 | 6.3 | 4    | ODK(M)T0605  | ×             | Fig1  | ● |
| MFA143080R06B27OD06 | 80        | 6     | 80            | 90  | 27   | 50 | 12.4 | 7   | 4    | ODK(M)T0605  | ×             | Fig2  | ● |
| MFA143100R07B32OD06 | 100       | 7     | 100           | 110 | 32   | 50 | 14.4 | 8   | 4    | ODK(M)T0605  | ×             | Fig2  | ● |
| MFA143125R08B40OD06 | 125       | 8     | 125           | 135 | 40   | 63 | 16.4 | 9   | 4    | ODK(M)T0605  | ×             | Fig2  | ● |
| MFA143160R10C40OD06 | 160       | 10    | 160           | 170 | 40   | 63 | 16.4 | 9   | 4    | ODK(M)T0605  | ×             | Fig3  | ● |
| MFA143200R12C60OD06 | 200       | 12    | 200           | 210 | 60   | 63 | 25.7 | 14  | 4    | ODK(M)T0605  | ×             | Fig3  | ● |

● Stock ○ Available Upon Order

## Spare Parts

| Part Name   |               | Inserts Screw   | Insert Screw Wrench  |   |
|-------------|---------------|---|--|---|
| Inserts     | Shape         |  |  |  |
|             | Specification | SI60M5.0X10.8-07209   | TT20P  | TT20T   |
| ODK(M)T0605 | Ordering Code | SI60M050108-07209S  | TT20PQ   | TT20TQ  |

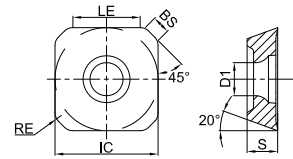
## Recommended Cutting Data

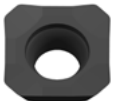










| Workpiece | Hardness   | Grade     | Specification              | Ap<br>(mm)  | Cutting Speed<br>Vc(m/min) | Feed Rate/Edges fz(mm) |                      |                     |                   |
|-----------|--|-----------|----------------------------|-------------|----------------------------|------------------------|----------------------|---------------------|-------------------|
|           |  |           |                            |             |                            | Light<br>Cutting(L)    | Medium<br>Cutting(M) | Heavy<br>Cutting(H) |                   |
| <b>P</b>  | Soft Steel   | ≤ HB180   | GA4225<br>GA4230           | ODK(M)T0605 | 2                          | 220<br>(180-260)       | 0.2<br>(0.1-0.3)     | 0.25<br>(0.15-0.35) | 0.3<br>(0.2-0.4)  |
|           | Carbon<br>Steel, Alloy<br>Steel                              | HB180-350 | GA4225<br>GA4230<br>GP2115 | ODK(M)T0605 | 2                          | 220<br>(180-260)       | 0.15<br>(0.1-0.2)    | 0.25<br>(0.15-0.35) | 0.3<br>(0.2-0.4)  |
|           | Pre-harden<br>Steel  | HRC35-45  | GA4230<br>GA4225<br>GP2115 | ODK(M)T0605 | 2                          | 150<br>(110-190)       | 0.1<br>(0.05-0.15)   | 0.15<br>(0.1-0.2)   | 0.2<br>(0.1-0.3)  |
| <b>M</b>  | Stainless<br>(Ferrite,<br>Martensite)                        | ≤ HB270   | GM2140<br>GA4230           | ODK(M)T0605 | 2                          | 160<br>(120-200)       | 0.15<br>(0.1-0.2)    | 0.25<br>(0.15-0.35) | 0.3<br>(0.2-0.4)  |
|           | Stainless<br>(Austenite,<br>Diphasic)                        | ≤ HB270   | GM2140                     | ODK(M)T0605 | 2                          | 140<br>(100-180)       | 0.1<br>(0.05-0.15)   | 0.15<br>(0.1-0.2)   | 0.2<br>(0.1-0.3)  |
| <b>K</b>  | Grey Cast<br>Iron  | ≤ HB280   | GK2115<br>GK4125           | ODK(M)T0605 | 2                          | 180<br>(140-220)       | 0.2<br>(0.1-0.3)     | 0.25<br>(0.15-0.35) | 0.3<br>(0.2-0.4)  |
|           | Nodular<br>Cast Iron,<br>Vermicular<br>Graphite<br>Cast Iron | ≤ HB350   | GK4125<br>GK2115           | ODK(M)T0605 | 2                          | 160<br>(120-200)       | 0.15<br>(0.1-0.2)    | 0.25<br>(0.15-0.35) | 0.3<br>(0.2-0.4)  |
| <b>N</b>  | Nonferrous<br>Metal  | HB60-210  | GN9125                     | ODKT0605    | 2                          | ≥ 300                  | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.3)    | 0.25<br>(0.2-0.4) |
| <b>S</b>  | Heat-<br>resistant<br>Alloy and<br>Titanium<br>Alloy         | HRC30-45  | GS4130                     | ODK(M)T0605 | 2                          | 40<br>(30-60)          | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.3)    | --                |

Face Milling

# SEE(M)T






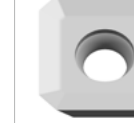








Common Face Milling



| Ordering Code   | Dimension(mm) |      |      |     |      |     | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cement |        |        |
|---|---------------|------|------|-----|------|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|
|   | LE            | IC   | S    | D1  | RE   | BS  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115 |
|  SEET1204AFEN-PL   | 8.2           | 12.7 | 4.76 | 5.5 | 1.2  | 1.6 | ●             | ●      | ●      | ●      | ●      |        |        | ●      | ●      |        | ●        |        | ●      | ●      |
|  SEET13T3AGEN-PL   | 8.8           | 13.4 | 3.97 | 4.4 | 1    | 1.7 | ●             | ●      | ○      | ●      | ○      |        |        | ●      |        |        | ●        |        |        |        |
|  SEET13T3AGEN-PM | 8.8           | 13.4 | 3.97 | 4.4 | 1.5  | 1.2 | ●             | ●      | ●      | ●      |        |        |        | ●      | ○      |        | ●        |        |        | ●      |
|  SEMT13T3AGEN-PM | 8.8           | 13.4 | 3.97 | 4.4 | 1.5  | 1.2 | ●             | ●      | ●      | ●      | ●      |        |        | ●      | ○      |        | ●        |        |        |        |
|  SEET13T3AGSN-PH | 8.8           | 13.4 | 3.97 | 4.4 | 1.66 | 1.2 | ○             | ●      | ○      | ●      | ○      |        |        | ○      | ○      |        |          |        |        |        |
|  SEMT13T3AGSN-PH | 8.8           | 13.4 | 3.97 | 4.4 | 1.66 | 1.2 | ○             | ●      | ○      | ●      | ●      |        |        | ○      | ○      |        |          |        |        |        |
|  SEET13T3AGSN-KM | 8.8           | 13.4 | 3.97 | 4.4 | 1.44 | 1.3 | ○             |        | ●      | ○      |        |        |        |        |        |        | ●        |        |        |        |
|  SEET13T3AGSN-KH | 8.8           | 13.4 | 3.97 | 4.4 | 1.6  | 1.3 | ○             |        | ○      | ○      | ○      |        |        |        | ●      |        |          |        |        |        |
|  SEMT13T3AGSN-KH | 8.8           | 13.4 | 3.97 | 4.4 | 1.6  | 1.3 |               |        | ○      | ○      |        |        |        |        | ○      | ○      |          |        |        |        |
|  SEET13T3AGFN-AL | 9.6           | 13.4 | 3.97 | 4.4 | 0.4  | 2.2 |               |        |        |        |        |        |        |        |        |        |          |        |        | ●      |
|  SEET13T3AGEN-WB | 9.5           | 13.4 | 3.97 | 4.3 | 1.2  | 7.5 |               | ●      |        | ○      |        |        |        |        | ○      |        |          |        |        |        |

● Stock ○ Available Upon Order

## SEE(M)T Series Geometry

| Light Cutting for General Material   | Medium Cutting for General Material   | Heavy Cutting for General Material   | Medium Cutting for Cast Iron  | Rough Cutting for Cast Iron   | General Cutting for Aluminum Alloys   | Wiper   |
|--|---|--|---|---|---|---|
|                     |                                |                       |  |   |  |  |
| PL   | PM  | PH   | KM  | KH  | AL  | WB  |
|                     |                                |                       |  |   |  |  |
| Large rake angle with narrow edge width. Suit for light milling with low cutting speed and low feed. | Large rake angle design, easy cutting. High stability milling can be achieved under general cutting conditions. | Strong cutting edge for interrupted cutting condition. Excellent performance when removing black skin. | The chipbreaker specially for cast iron. Suitable for medium cutting.             | Special chipbreaker for cast iron. Suitable for interrupted cutting condition and excellent performance when removing black skin under rough machining. | Large rake angle, sharp cutting edge, mirror polished, smoothly chip removal.       | With big circle wiper edge, improve the surface quality.                            |

Face Milling

# MFA145

Arbor

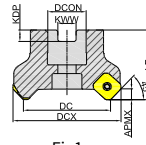


Fig1

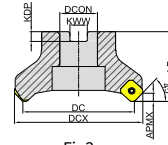


Fig2

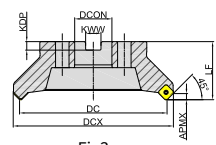


Fig3

Sparse Pitch

| Ordering Code       | Dia-<br>meter | Teeth | Dimension(mm) |     |      |    |      |     | APMX | Suitable for | Shim | Coolant | Shape | Stock |
|---------------------|---------------|-------|---------------|-----|------|----|------|-----|------|--------------|------|---------|-------|-------|
|                     |               |       | DC            | DCX | DCON | LF | KWW  | KDP |      |              |      |         |       |       |
| MFA145050R03A22SE13 | 50            | 3     | 50            | 63  | 22   | 40 | 10.4 | 6.3 | 6    | SEE(M)T13T3  | ×    | ×       | Fig1  | ●     |
| MFA145063R04A22SE13 | 63            | 4     | 63            | 76  | 22   | 40 | 10.4 | 6.3 | 6    | SEE(M)T13T3  | ×    | ×       | Fig1  | ●     |

● Stock ○ Available Upon Order

Dense Pitch

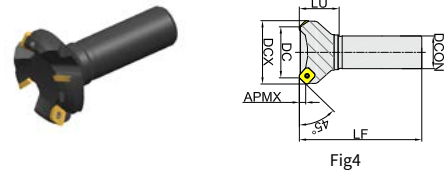
| Ordering Code       | Dia-<br>meter | Teeth | Dimension(mm) |     |      |    |      |     | APMX | Suitable for | Shim | Coolant | Shape | Stock |
|---------------------|---------------|-------|---------------|-----|------|----|------|-----|------|--------------|------|---------|-------|-------|
|                     |               |       | DC            | DCX | DCON | LF | KWW  | KDP |      |              |      |         |       |       |
| MFA145050R04A22SE13 | 50            | 4     | 50            | 63  | 22   | 40 | 10.4 | 6.3 | 6    | SEE(M)T13T3  | ×    | ×       | Fig1  | ●     |
| MFA145063R05A22SE13 | 63            | 5     | 63            | 76  | 22   | 40 | 10.4 | 6.3 | 6    | SEE(M)T13T3  | ×    | ×       | Fig1  | ●     |
| MFA145080R06B27SE13 | 80            | 6     | 80            | 93  | 27   | 50 | 12.4 | 7   | 6    | SEE(M)T13T3  | ✓    | ×       | Fig2  | ●     |
| MFA145100R07B32SE13 | 100           | 7     | 100           | 113 | 32   | 50 | 14.4 | 8   | 6    | SEE(M)T13T3  | ✓    | ×       | Fig2  | ●     |
| MFA145125R08B40SE13 | 125           | 8     | 125           | 138 | 40   | 50 | 16.4 | 9   | 6    | SEE(M)T13T3  | ✓    | ×       | Fig2  | ●     |
| MFA145160R10C40SE13 | 160           | 10    | 160           | 173 | 40   | 63 | 16.4 | 9   | 6    | SEE(M)T13T3  | ✓    | ×       | Fig3  | ●     |

● Stock ○ Available Upon Order

Face Milling

# MFA145

Cylindrical Straight Type



Sparse Pitch

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |      |     |    | APMX | Suitable for | Shim | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-----|------|-----|----|------|--------------|------|---------|-------|-------|
|                     |           |       | DC            | DCX | DCON | LF  | LU |      |              |      |         |       |       |
| MFA145050R03P32SE13 | 50        | 3     | 50            | 63  | 32   | 120 | 39 | 6    | SEE(M)T13T3  | ×    | ×       | Fig4  | ●     |
| MFA145063R04P32SE13 | 63        | 4     | 63            | 76  | 32   | 120 | 39 | 6    | SEE(M)T13T3  | ×    | ×       | Fig4  | ●     |

● Stock ○ Available Upon Order

Dense Pitch

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |      |     |    | APMX | Suitable for | Shim | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-----|------|-----|----|------|--------------|------|---------|-------|-------|
|                     |           |       | DC            | DCX | DCON | LF  | LU |      |              |      |         |       |       |
| MFA145050R04P32SE13 | 50        | 4     | 50            | 63  | 32   | 120 | 39 | 6    | SEE(M)T13T3  | ×    | ×       | Fig4  | ●     |
| MFA145063R05P32SE13 | 63        | 5     | 63            | 76  | 32   | 120 | 39 | 6    | SEE(M)T13T3  | ×    | ×       | Fig4  | ●     |

● Stock ○ Available Upon Order

## Spare Parts

| Part Name                |                             | Shim          | Shim Screw  | Wrench | Inserts Screw        | Insert Screw Wrench |        |
|--------------------------|-----------------------------|---------------|-------------|--------|----------------------|---------------------|--------|
| Inserts                  | Shape                       |               |             |        |                      |                     |        |
|                          | Specification Ordering Code | --            | --          | --     | SI60M3.5X8.0-05410   | TT15P               | TT15T  |
| SEE(M)T13T3 without Shim | Specification Ordering Code | --            | --          | --     | SI60M035080-05410B   | TT15PB              | TT15TB |
| SEE(M)T13T3 With Shim    | Specification Ordering Code | DSE1300S      | SSAM5X7.0   | TH35L  | SI60M3.5X11.6-05410I | TI15P               | TI15T  |
|                          | Specification Ordering Code | H0K30DSE1300S | SSAM050070B | TH35LB | SI60M035116-05410IB  | TI15PB              | TI15TB |

Note:

- ★ 1. Without Shim cutter bodies MFA145, choose without Shim Spare Parts specification
- ★ 2. With Shim cutter bodies MFA145, choose with Shim Spare Parts specification

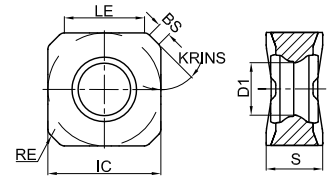
## Recommended Cutting Data











| Workpiece | Hardness   | Grade     | Specification              | Ap (mm)     | Cutting Speed | Feed Rate/Edges fz(mm) |                    |                     |                  |
|-----------|--|-----------|----------------------------|-------------|---------------|------------------------|--------------------|---------------------|------------------|
|           |  |           |                            |             |               | Vc(m/min)              | Light Cutting(L)   | Medium Cutting(M)   | Heavy Cutting(H) |
| <b>P</b>  | Soft Steel                                       | ≤ HB180   | GA4325<br>GA4330           | SEE(M)T13T3 | 2             | 250<br>(210-290)       | 0.2<br>(0.1-0.3)   | 0.25<br>(0.15-0.35) | 0.3<br>(0.2-0.4) |
|           | Carbon Steel, Alloy Steel                        | HB180-350 | GA4325<br>GA4330<br>GP2115 | SEE(M)T13T3 | 2             | 220<br>(180-260)       | 0.15<br>(0.1-0.2)  | 0.25<br>(0.15-0.35) | 0.3<br>(0.2-0.4) |
|           | Pre-harden Steel                                 | HRC35-45  | GA4330<br>GA4325<br>GP2115 | SEE(M)T13T3 | 2             | 140<br>(100-180)       | 0.1<br>(0.05-0.15) | 0.15<br>(0.1-0.2)   | 0.2<br>(0.1-0.3) |
| <b>M</b>  | Stainless (Ferrite, Martensite)                  | ≤ HB270   | GM2140<br>GA4230           | SEE(M)T13T3 | 2             | 180<br>(140-220)       | 0.15<br>(0.1-0.2)  | 0.25<br>(0.15-0.35) | 0.3<br>(0.2-0.4) |
|           | Stainless (Austenite, Diphasic)                  | ≤ HB270   | GM2140                     | SEE(M)T13T3 | 2             | 140<br>(100-180)       | 0.1<br>(0.05-0.15) | 0.15<br>(0.1-0.2)   | 0.2<br>(0.1-0.3) |
| <b>K</b>  | Grey Cast Iron                                   | ≤ HB280   | GK2115<br>GK4125           | SEE(M)T13T3 | 2             | 180<br>(140-220)       | 0.15<br>(0.1-0.2)  | 0.2<br>(0.1-0.3)    | 0.3<br>(0.2-0.4) |
|           | Nodular Cast Iron, Vermicular Graphite Cast Iron | ≤ HB350   | GK4125<br>GK2115           | SEE(M)T13T3 | 2             | 160<br>(120-200)       | 0.1<br>(0.05-0.2)  | 0.15<br>(0.1-0.2)   | 0.3<br>(0.2-0.4) |
| <b>N</b>  | Nonferrous Metal                                 | HB60-210  | GN9125                     | SEET13T3    | 2             | ≥ 300                  | 0.15<br>(0.1-0.2)  | 0.2<br>(0.1-0.3)    | 0.3<br>(0.2-0.4) |
| <b>S</b>  | Heat-resistant Alloy and Titanium Alloy          | HRC30-45  | GS4130                     | SEE(M)T13T3 | 2             | 40<br>(30-60)          | 0.15<br>(0.1-0.2)  | 0.2<br>(0.1-0.3)    | --               |

Face Milling

# SNE(M)U

Negative with Eight Edge Face



| Ordering Code   | Dimension(mm) |      |      |     |     |       |     | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cermat |        |        |        |
|---|---------------|------|------|-----|-----|-------|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|
|   | LE            | IC   | S    | BS  | D1  | KRINS | RE  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115 | GN6125 |
| SNEU1206ANEN-GL   | 9.1           | 12.7 | 6.35 | 1.6 | 5.9 | 45°   | 0.8 | ●             |        |        |        | ●      | ●      |        | ●      | ●      | ●      | ●        |        |        |        |        |
|    |               |      |      |     |     |       |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
| SNEU1206ANEN-GM   | 9.1           | 12.7 | 6.35 | 1.6 | 5.9 | 45°   | 0.8 | ●             | ●      |        |        |        | ●      |        | ●      | ●      | ●      | ●        |        |        |        |        |
|    |               |      |      |     |     |       |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
| SNMU1206ANEN-GM   | 9.1           | 12.7 | 6.35 | 1.6 | 5.9 | 45°   | 0.8 | ●             | ●      | ●      |        |        | ●      |        | ●      | ●      | ●      | ●        |        |        |        |        |
|  |               |      |      |     |     |       |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
| SNEU1206ANSN-GH   | 9.1           | 12.7 | 6.35 | 1.6 | 5.9 | 45°   | 0.8 |               |        |        |        | ●      |        | ●      | ●      | ●      |        |          |        |        |        |        |
|  |               |      |      |     |     |       |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
| SNMU1206ANSN-GH   | 9.1           | 12.7 | 6.35 | 1.6 | 5.9 | 45°   | 0.8 |               |        |        |        | ●      |        | ●      | ●      | ●      |        |          |        |        |        |        |
|  |               |      |      |     |     |       |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
| SNEU1206ANFN-NL   | 9.1           | 12.7 | 6.35 | 1.6 | 5.9 | 45°   | 0.8 |               |        |        |        |        |        |        |        |        |        |          |        |        | ●      |        |
|  |               |      |      |     |     |       |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
| SNEU1206ANEN-GW   | 9             | 12.7 | 6.35 | 5.1 | 5.9 | 45°   | 0.8 |               | ●      |        |        |        |        |        |        | ●      |        |          |        |        |        |        |
|  |               |      |      |     |     |       |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
| SNEU1206ENEN-GM   | 9.9           | 12.7 | 6.35 | 1.2 | 5.9 | 75°   | 0.8 |               | ●      |        |        | ●      | ●      |        | ●      | ●      | ●      | ●        |        |        |        |        |
|  |               |      |      |     |     |       |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
| SNMU1206ENEN-GM   | 9.9           | 12.7 | 6.35 | 1.2 | 5.9 | 75°   | 0.8 |               | ●      |        |        | ●      | ●      |        | ○      | ●      | ●      | ○        |        |        |        |        |
|  |               |      |      |     |     |       |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
| SNMU1206ZNEN-GL   | 10.7          | 12.7 | 6.35 | 1.1 | 5.9 | 88°   | 0.8 |               |        | ○      | ○      |        | ●      | ●      | ●      | ●      | ○      |          |        |        |        |        |
|  |               |      |      |     |     |       |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        |

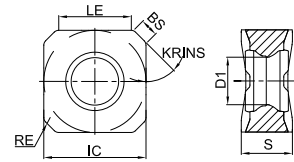
● Stock ○ Available Upon Order











Face Milling

# SNE(M)U

Negative with Eight Edge Face













| Ordering Code   | Dimension(mm) |      |      |     |     |       |     |        | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cemet |        |        |
|---|---------------|------|------|-----|-----|-------|-----|--------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-------|--------|--------|
|   | LE            | IC   | S    | BS  | D1  | KRINS | RE  | GA4225 | GA4230        | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 | GS4130 |          |       | GH4115 | GN9125 |
|  SNEU1206ZNEN-GM   | 10.7          | 12.7 | 6.35 | 1.1 | 5.9 | 88°   | 0.8 | ●      |               |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      |          |       |        |        |
|  SNMU1206ZNEN-GM   | 10.7          | 12.7 | 6.35 | 1.1 | 5.9 | 88°   | 0.8 | ●      |               |        |        | ●      | ●      | ●      | ●      | ●      | ○      |        |          |       |        |        |
|  SNMU1206ZNEN-GH   | 10.7          | 12.7 | 6.35 | 1.1 | 5.9 | 88°   | 0.8 |        |               | ○      | ○      |        |        |        | ●      | ●      |        |        |          |       |        |        |
|  SNEU1206ZNEN-GW | 10.1          | 12.7 | 6.35 | 4   | 5.9 | 88°   | 0.6 |        |               |        | ○      |        |        |        | ●      |        |        |        |          |       |        |        |
|  SNEU120612-GM   | 10.3          | 12.7 | 6.35 | --  | 5.9 | --    | 1.2 | ●      | ●             |        |        | ●      |        | ●      | ●      | ●      | ●      |        |          |       |        |        |
|  SNMU120612-GM   | 10.3          | 12.7 | 6.35 | --  | 5.9 | --    | 1.2 | ●      |               |        |        | ●      | ●      | ●      | ●      | ●      | ○      |        |          |       |        |        |
|  SNMU120616-GM   | 9.5           | 12.7 | 6.35 | --  | 5.9 | --    | 1.6 |        |               |        |        |        |        |        | ●      | ●      |        |        |          |       |        |        |
|  SNMU120620-GM   | 8.7           | 12.7 | 6.35 | --  | 5.9 | --    | 2.0 |        |               |        | ○      |        |        |        | ●      | ●      | ○      |        |          |       |        |        |

Note:

- ★ 1、SNE(M)U1206AN\*N match MFB145/24 cutter bodies
- ★ 2、SNE(M)U1206ENEN match MFB275 cutter bodies
- ★ 3、SNE(M)U1206ZNEN match MFB288 cutter bodies

● Stock ○ Available Upon Order

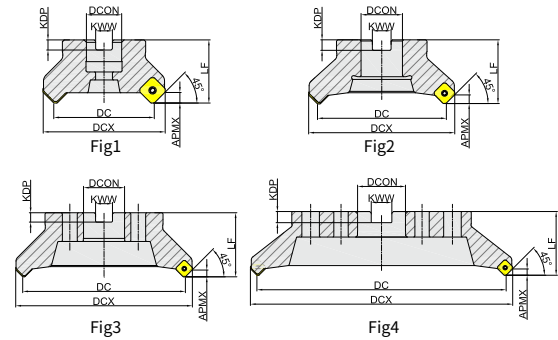
## SNE(M)U Series Geometry

| Light Cutting for General Material   | Medium Cutting for General Material   | Heavy Cutting for General Material   | Aluminium Cutting  | Wiper   |
|--|---|--|--|---|
|                       |          |         |  |  |
| GL   | GM  | GH   | NL   | GW  |
|                       |          |         |  |  |
| Large rake angle with narrow edge width. Suitable for light cutting of low cutting speed and low feed. | Large rake angle High stability milling can be achieved under general cutting conditions. | High strength edge, interrupted cutting, excellent performance when removing black skin. | Large rake angle, Sharp cutting edge, mirror polished, smoothly chip removal.      | With big circle wiper edge, improve the surface quality.                            |

Face Milling

# MFB145

Arbor(with Shim)



Sparse Pitch

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |       |      |    |      |     |   | APMX            | Suitable for | Shim | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-------|------|----|------|-----|---|-----------------|--------------|------|---------|-------|-------|
|                     |           |       | DC            | DCX   | DCON | LF | KWW  | KDP |   |                 |              |      |         |       |       |
| MFB145050R03A22SN12 | 50        | 3     | 50            | 63.5  | 22   | 40 | 10.4 | 6.3 | 3 | SNE(M)U1206AN*N | ✓            | ✓    | Fig1    | ●     |       |
| MFB145063R04A22SN12 | 63        | 4     | 63            | 76.5  | 22   | 40 | 10.4 | 6.3 | 3 | SNE(M)U1206AN*N | ✓            | ✓    | Fig1    | ●     |       |
| MFB145080R05A27SN12 | 80        | 5     | 80            | 93.5  | 27   | 50 | 12.4 | 7   | 3 | SNE(M)U1206AN*N | ✓            | ✓    | Fig1    | ●     |       |
| MFB145080L05A27SN12 | 80        | 5     | 80            | 93.5  | 27   | 50 | 12.4 | 7   | 3 | SNE(M)U1206AN*N | ✓            | ✓    | Fig1    | ●     |       |
| MFB145100R06B32SN12 | 100       | 6     | 100           | 113.5 | 32   | 50 | 14.4 | 8   | 3 | SNE(M)U1206AN*N | ✓            | ×    | Fig2    | ●     |       |
| MFB145125R07B40SN12 | 125       | 7     | 125           | 138.5 | 40   | 63 | 16.4 | 9   | 3 | SNE(M)U1206AN*N | ✓            | ×    | Fig2    | ●     |       |
| MFB145160R08C40SN12 | 160       | 8     | 160           | 173.5 | 40   | 63 | 16.4 | 9   | 3 | SNE(M)U1206AN*N | ✓            | ×    | Fig3    | ●     |       |
| MFB145200R10C60SN12 | 200       | 10    | 200           | 213.5 | 60   | 63 | 25.7 | 14  | 3 | SNE(M)U1206AN*N | ✓            | ×    | Fig3    | ●     |       |
| MFB145250R12C60SN12 | 250       | 12    | 250           | 263.5 | 60   | 63 | 25.7 | 14  | 3 | SNE(M)U1206AN*N | ✓            | ×    | Fig3    | ○     |       |
| MFB145315R15D60SN12 | 315       | 15    | 315           | 328.5 | 60   | 80 | 25.7 | 14  | 3 | SNE(M)U1206AN*N | ✓            | ×    | Fig4    | ○     |       |

● Stock ○ Available Upon Order

Dense Pitch

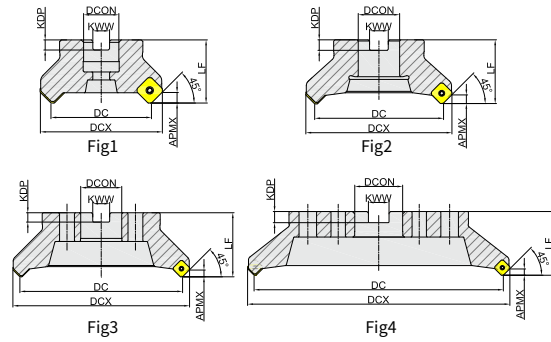
| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |       |      |    |      |     |   | APMX            | Suitable for | Shim | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-------|------|----|------|-----|---|-----------------|--------------|------|---------|-------|-------|
|                     |           |       | DC            | DCX   | DCON | LF | KWW  | KDP |   |                 |              |      |         |       |       |
| MFB145050R04A22SN12 | 50        | 4     | 50            | 63.5  | 22   | 40 | 10.4 | 6.3 | 3 | SNE(M)U1206AN*N | ✓            | ✓    | Fig1    | ●     |       |
| MFB145050L04A22SN12 | 50        | 4     | 50            | 63.5  | 22   | 40 | 10.4 | 6.3 | 3 | SNE(M)U1206AN*N | ✓            | ✓    | Fig1    | ●     |       |
| MFB145063R05A22SN12 | 63        | 5     | 63            | 76.5  | 22   | 40 | 10.4 | 6.3 | 3 | SNE(M)U1206AN*N | ✓            | ✓    | Fig1    | ●     |       |
| MFB145080R07A27SN12 | 80        | 7     | 80            | 93.5  | 27   | 50 | 12.4 | 7   | 3 | SNE(M)U1206AN*N | ✓            | ✓    | Fig1    | ●     |       |
| MFB145080L08A27SN12 | 80        | 8     | 80            | 93.5  | 27   | 50 | 12.4 | 7   | 3 | SNE(M)U1206AN*N | ✓            | ✓    | Fig1    | ●     |       |
| MFB145100R08B32SN12 | 100       | 8     | 100           | 113.5 | 32   | 50 | 14.4 | 8   | 3 | SNE(M)U1206AN*N | ✓            | ×    | Fig2    | ●     |       |
| MFB145125R10B40SN12 | 125       | 10    | 125           | 138.5 | 40   | 63 | 16.4 | 9   | 3 | SNE(M)U1206AN*N | ✓            | ×    | Fig2    | ●     |       |
| MFB145160R12C40SN12 | 160       | 12    | 160           | 173.5 | 40   | 63 | 16.4 | 9   | 3 | SNE(M)U1206AN*N | ✓            | ×    | Fig3    | ●     |       |
| MFB145160L12C40SN12 | 160       | 12    | 160           | 173.5 | 40   | 63 | 16.4 | 9   | 3 | SNE(M)U1206AN*N | ✓            | ×    | Fig3    | ●     |       |
| MFB145200R14C60SN12 | 200       | 14    | 200           | 213.5 | 60   | 63 | 25.7 | 14  | 3 | SNE(M)U1206AN*N | ✓            | ×    | Fig3    | ●     |       |
| MFB145200L14C60SN12 | 200       | 14    | 200           | 213.5 | 60   | 63 | 25.7 | 14  | 3 | SNE(M)U1206AN*N | ✓            | ×    | Fig3    | ●     |       |
| MFB145250R16C60SN12 | 250       | 16    | 250           | 263.5 | 60   | 63 | 25.7 | 14  | 3 | SNE(M)U1206AN*N | ✓            | ×    | Fig3    | ○     |       |
| MFB145315R20D60SN12 | 315       | 20    | 315           | 328.5 | 60   | 80 | 25.7 | 14  | 3 | SNE(M)U1206AN*N | ✓            | ×    | Fig4    | ○     |       |

● Stock ○ Available Upon Order

Face Milling

# MFB145

Arbor(with Shim)



Extral Dense Teeth

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |       |      |    |      |     | APMX | Suitable for    | Shim | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-------|------|----|------|-----|------|-----------------|------|---------|-------|-------|
|                     |           |       | DC            | DCX   | DCON | LF | KWW  | KDP |      |                 |      |         |       |       |
| MFB145050R05A22SN12 | 50        | 5     | 50            | 63.5  | 22   | 40 | 10.4 | 6.3 | 3    | SNE(M)U1206AN*N | ✓    | ✓       | Fig1  | ●     |
| MFB145063R06A22SN12 | 63        | 6     | 63            | 76.5  | 22   | 40 | 10.4 | 6.3 | 3    | SNE(M)U1206AN*N | ✓    | ✓       | Fig1  | ●     |
| MFB145080R08A27SN12 | 80        | 8     | 80            | 93.5  | 27   | 50 | 12.4 | 7   | 3    | SNE(M)U1206AN*N | ✓    | ✓       | Fig1  | ●     |
| MFB145100R10B32SN12 | 100       | 10    | 100           | 113.5 | 32   | 50 | 14.4 | 8   | 3    | SNE(M)U1206AN*N | ✓    | ×       | Fig2  | ●     |
| MFB145125R12B40SN12 | 125       | 12    | 125           | 138.5 | 40   | 63 | 16.4 | 9   | 3    | SNE(M)U1206AN*N | ✓    | ×       | Fig2  | ●     |
| MFB145160R15C40SN12 | 160       | 15    | 160           | 173.5 | 40   | 63 | 16.4 | 9   | 3    | SNE(M)U1206AN*N | ✓    | ×       | Fig3  | ●     |
| MFB145200R18C60SN12 | 200       | 18    | 200           | 213.5 | 60   | 63 | 25.7 | 14  | 3    | SNE(M)U1206AN*N | ✓    | ×       | Fig3  | ●     |
| MFB145200L18C60SN12 | 200       | 18    | 200           | 213.5 | 60   | 63 | 25.7 | 14  | 3    | SNE(M)U1206AN*N | ✓    | ×       | Fig3  | ●     |
| MFB145250R21C60SN12 | 250       | 21    | 250           | 263.5 | 60   | 63 | 25.7 | 14  | 3    | SNE(M)U1206AN*N | ✓    | ×       | Fig3  | ○     |
| MFB145315R24D60SN12 | 315       | 24    | 315           | 328.5 | 60   | 80 | 25.7 | 14  | 3    | SNE(M)U1206AN*N | ✓    | ×       | Fig4  | ○     |

● Stock ○ Available Upon Order

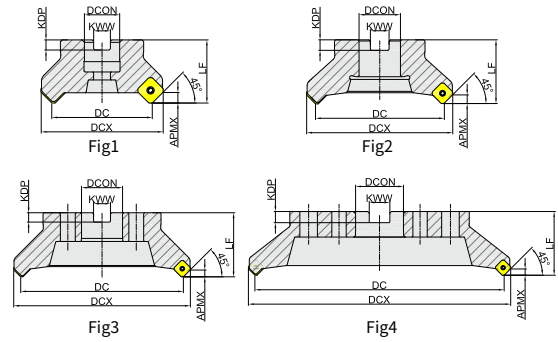
## Spare Parts

| Part Name |                                 | Shim                   | Shim Screw                  | Wrench          | Inserts Screw                             | Insert Screw Wrench |                 |
|-----------|---------------------------------|------------------------|-----------------------------|-----------------|---|---------------------|-----------------|
| Inserts   | Shape                           |                        |                             |                 |   |                     |                 |
|           | Specif-ication<br>Ordering Code | DSN1206M<br>H0K30SSN12 | SSAM6.0X7.5F<br>SSAM060075B | TH40L<br>TH40LB | SI60M4.0X15.8-07108<br>SI60M040158-07108B | TT15P<br>TT15PB     | TT15T<br>TT15TB |

Face Milling

# MFB245

Arbor(Without Shim)



### Sparse Pitch

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |       |      |    |      |     |   | APMX            | Suitable for | Shim | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-------|------|----|------|-----|---|-----------------|--------------|------|---------|-------|-------|
|                     |           |       | DC            | DCX   | DCON | LF | KWW  | KDP |   |                 |              |      |         |       |       |
| MFB245050R03A22SN12 | 50        | 3     | 50            | 63.5  | 22   | 40 | 10.4 | 6.3 | 3 | SNE(M)U1206AN*N | ×            | √    | Fig1    | ●     |       |
| MFB245063R04A22SN12 | 63        | 4     | 63            | 76.5  | 22   | 40 | 10.4 | 6.3 | 3 | SNE(M)U1206AN*N | ×            | √    | Fig1    | ●     |       |
| MFB245080R05A27SN12 | 80        | 5     | 80            | 93.5  | 27   | 50 | 12.4 | 7   | 3 | SNE(M)U1206AN*N | ×            | √    | Fig1    | ●     |       |
| MFB245080L05A27SN12 | 80        | 5     | 80            | 93.5  | 27   | 50 | 12.4 | 7   | 3 | SNE(M)U1206AN*N | ×            | √    | Fig1    | ●     |       |
| MFB245100R06B32SN12 | 100       | 6     | 100           | 113.5 | 32   | 50 | 14.4 | 8   | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig2    | ●     |       |
| MFB245100L06B32SN12 | 100       | 6     | 100           | 113.5 | 32   | 50 | 14.4 | 8   | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig2    | ●     |       |
| MFB245125R07B40SN12 | 125       | 7     | 125           | 138.5 | 40   | 63 | 16.4 | 9   | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig2    | ●     |       |
| MFB245160R08C40SN12 | 160       | 8     | 160           | 173.5 | 40   | 63 | 16.4 | 9   | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig3    | ●     |       |
| MFB245200R10C60SN12 | 200       | 10    | 200           | 213.5 | 60   | 63 | 25.7 | 14  | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig3    | ●     |       |
| MFB245250R12C60SN12 | 250       | 12    | 250           | 263.5 | 60   | 63 | 25.7 | 14  | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig3    | ○     |       |
| MFB245315R15D60SN12 | 315       | 15    | 315           | 328.5 | 60   | 80 | 25.7 | 14  | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig4    | ○     |       |

● Stock ○ Available Upon Order

### Dense Pitch

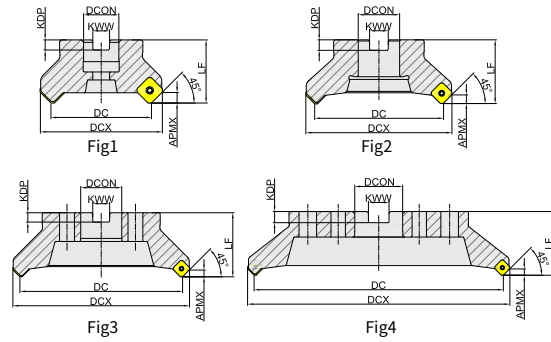
| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |       |      |    |      |     |   | APMX            | Suitable for | Shim | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-------|------|----|------|-----|---|-----------------|--------------|------|---------|-------|-------|
|                     |           |       | DC            | DCX   | DCON | LF | KWW  | KDP |   |                 |              |      |         |       |       |
| MFB245050R04A22SN12 | 50        | 4     | 50            | 63.5  | 22   | 40 | 10.4 | 6.3 | 3 | SNE(M)U1206AN*N | ×            | √    | Fig1    | ●     |       |
| MFB245050L04A22SN12 | 50        | 4     | 50            | 63.5  | 22   | 40 | 10.4 | 6.3 | 3 | SNE(M)U1206AN*N | ×            | √    | Fig1    | ●     |       |
| MFB245063R05A22SN12 | 63        | 5     | 63            | 76.5  | 22   | 40 | 10.4 | 6.3 | 3 | SNE(M)U1206AN*N | ×            | √    | Fig1    | ●     |       |
| MFB245063L05A22SN12 | 63        | 5     | 63            | 76.5  | 22   | 40 | 10.4 | 6.3 | 3 | SNE(M)U1206AN*N | ×            | √    | Fig1    | ●     |       |
| MFB245080R07A27SN12 | 80        | 7     | 80            | 93.5  | 27   | 50 | 12.4 | 7   | 3 | SNE(M)U1206AN*N | ×            | √    | Fig1    | ●     |       |
| MFB245080L07A27SN12 | 80        | 7     | 80            | 93.5  | 27   | 50 | 12.4 | 7   | 3 | SNE(M)U1206AN*N | ×            | √    | Fig1    | ●     |       |
| MFB245100R08B32SN12 | 100       | 8     | 100           | 113.5 | 32   | 50 | 14.4 | 8   | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig2    | ●     |       |
| MFB245100L08B32SN12 | 100       | 8     | 100           | 113.5 | 32   | 50 | 14.4 | 8   | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig2    | ●     |       |
| MFB245125R10B40SN12 | 125       | 10    | 125           | 138.5 | 40   | 63 | 16.4 | 9   | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig2    | ●     |       |
| MFB245125L10B40SN12 | 125       | 10    | 125           | 138.5 | 40   | 63 | 16.4 | 9   | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig2    | ●     |       |
| MFB245160R12C40SN12 | 160       | 12    | 160           | 173.5 | 40   | 63 | 16.4 | 9   | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig3    | ●     |       |
| MFB245160L12C40SN12 | 160       | 12    | 160           | 173.5 | 40   | 63 | 16.4 | 9   | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig3    | ●     |       |
| MFB245200R14C60SN12 | 200       | 14    | 200           | 213.5 | 60   | 63 | 25.7 | 14  | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig3    | ●     |       |
| MFB245200L14C60SN12 | 200       | 14    | 200           | 213.5 | 60   | 63 | 25.7 | 14  | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig3    | ●     |       |
| MFB245250R16C60SN12 | 250       | 16    | 250           | 263.5 | 60   | 63 | 25.7 | 14  | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig3    | ○     |       |
| MFB245250L16C60SN12 | 250       | 16    | 250           | 263.5 | 60   | 63 | 25.7 | 14  | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig3    | ○     |       |
| MFB245315R20D60SN12 | 315       | 20    | 315           | 328.5 | 60   | 80 | 25.7 | 14  | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig4    | ○     |       |
| MFB245315L20D60SN12 | 315       | 20    | 315           | 328.5 | 60   | 80 | 25.7 | 14  | 3 | SNE(M)U1206AN*N | ×            | ×    | Fig4    | ○     |       |

● Stock ○ Available Upon Order

Face Milling

# MFB245

Arbor(Without Shim)



Extral Dense Pitch

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |       |      |    |      |     | APMX | Suitable for    | Shim | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-------|------|----|------|-----|------|-----------------|------|---------|-------|-------|
|                     |           |       | DC            | DCX   | DCON | LF | KWW  | KDP |      |                 |      |         |       |       |
| MFB245050R05A22SN12 | 50        | 5     | 50            | 63.5  | 22   | 40 | 10.4 | 6.3 | 3    | SNE(M)U1206AN*N | ×    | √       | Fig1  | ●     |
| MFB245063R06A22SN12 | 63        | 6     | 63            | 76.5  | 22   | 40 | 10.4 | 6.3 | 3    | SNE(M)U1206AN*N | ×    | √       | Fig1  | ●     |
| MFB245080R08A27SN12 | 80        | 8     | 80            | 93.5  | 27   | 50 | 12.4 | 7   | 3    | SNE(M)U1206AN*N | ×    | √       | Fig1  | ●     |
| MFB245100R10B32SN12 | 100       | 10    | 100           | 113.5 | 32   | 50 | 14.4 | 8   | 3    | SNE(M)U1206AN*N | ×    | ×       | Fig2  | ●     |
| MFB245125R12B40SN12 | 125       | 12    | 125           | 138.5 | 40   | 63 | 16.4 | 9   | 3    | SNE(M)U1206AN*N | ×    | ×       | Fig2  | ●     |
| MFB245160R15C40SN12 | 160       | 15    | 160           | 173.5 | 40   | 63 | 16.4 | 9   | 3    | SNE(M)U1206AN*N | ×    | ×       | Fig3  | ●     |
| MFB245200R18C60SN12 | 200       | 18    | 200           | 213.5 | 60   | 63 | 25.7 | 14  | 3    | SNE(M)U1206AN*N | ×    | ×       | Fig3  | ●     |
| MFB245200R20C60SN12 | 200       | 20    | 200           | 213.5 | 60   | 63 | 25.7 | 14  | 3    | SNE(M)U1206AN*N | ×    | ×       | Fig3  | ●     |
| MFB245250R21C60SN12 | 250       | 21    | 250           | 263.5 | 60   | 63 | 25.7 | 14  | 3    | SNE(M)U1206AN*N | ×    | ×       | Fig3  | ○     |
| MFB245315R24D60SN12 | 315       | 24    | 315           | 328.5 | 60   | 80 | 25.7 | 14  | 3    | SNE(M)U1206AN*N | ×    | ×       | Fig4  | ○     |

● Stock ○ Available Upon Order

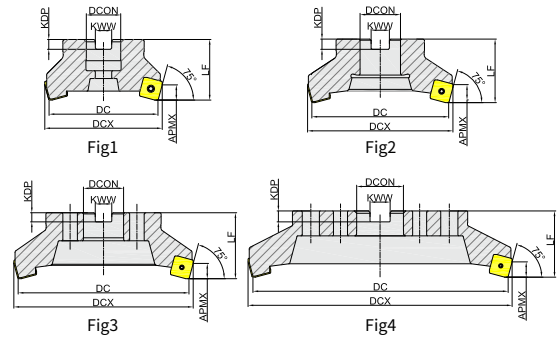
## Spare Parts

| Part Name   |                              | Inserts Screw        | Insert Screw Wrench |        |
|-------------|------------------------------|----------------------|---------------------|--------|
| Inserts     | Shape                        |                      |                     |        |
|             | Specif-ication Ordering Code | SI60M5.0X14.0-07010I | TI20P               | TI20T  |
| SNE(M)U1206 |                              | SI60M050140-07010IB  | TI20PB              | TI20TB |

Face Milling

# MFB275

Arbor(Without Shim)



| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |      |    |      |     |   | APMX            | Suitable for | Shim | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-----|------|----|------|-----|---|-----------------|--------------|------|---------|-------|-------|
|                     |           |       | DC            | DCX | DCON | LF | KWW  | KDP |   |                 |              |      |         |       |       |
| MFB275050R04A22SN12 | 50        | 4     | 50            | 55  | 22   | 40 | 10.4 | 6.3 | 5 | SNE(M)U1206ENEN | ×            | ✓    | Fig1    | ●     |       |
| MFB275063R05A22SN12 | 63        | 5     | 63            | 68  | 22   | 40 | 10.4 | 6.3 | 5 | SNE(M)U1206ENEN | ×            | ✓    | Fig1    | ●     |       |
| MFB275063R06A22SN12 | 63        | 6     | 63            | 68  | 22   | 40 | 10.4 | 6.3 | 5 | SNE(M)U1206ENEN | ×            | ✓    | Fig1    | ●     |       |
| MFB275080R07A27SN12 | 80        | 7     | 80            | 85  | 27   | 50 | 12.4 | 7   | 5 | SNE(M)U1206ENEN | ×            | ✓    | Fig1    | ●     |       |
| MFB275100R08B32SN12 | 100       | 8     | 100           | 105 | 32   | 50 | 14.4 | 8   | 5 | SNE(M)U1206ENEN | ×            | ×    | Fig2    | ●     |       |
| MFB275125R10B40SN12 | 125       | 10    | 125           | 130 | 40   | 63 | 16.4 | 9   | 5 | SNE(M)U1206ENEN | ×            | ×    | Fig2    | ●     |       |
| MFB275160R12C40SN12 | 160       | 12    | 160           | 165 | 40   | 63 | 16.4 | 9   | 5 | SNE(M)U1206ENEN | ×            | ×    | Fig3    | ●     |       |
| MFB275200R14C60SN12 | 200       | 14    | 200           | 205 | 60   | 63 | 25.7 | 14  | 5 | SNE(M)U1206ENEN | ×            | ×    | Fig3    | ●     |       |
| MFB275250R16C60SN12 | 250       | 16    | 250           | 255 | 60   | 63 | 25.7 | 14  | 5 | SNE(M)U1206ENEN | ×            | ×    | Fig3    | ○     |       |
| MFB275315R20D60SN12 | 315       | 20    | 315           | 320 | 60   | 80 | 25.7 | 14  | 5 | SNE(M)U1206ENEN | ×            | ×    | Fig4    | ○     |       |

● Stock ○ Available Upon Order

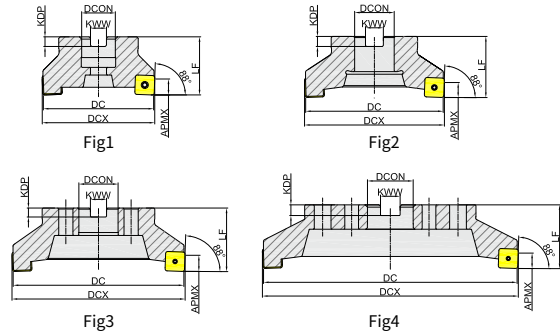
## Spare Parts

| Part Name   |                              | Inserts Screw        | Insert Screw Wrench |        |
|-------------|------------------------------|----------------------|---------------------|--------|
| Inserts     | Shape                        |                      |                     |        |
|             | Specif-ication Ordering Code | SI60M5.0X14.0-07010I | TI20P               | TI20T  |
| SNE(M)U1206 |                              | SI60M050140-07010IB  | TI20PB              | TI20TB |

Face Milling

# MFB288

Arbor( Without Shim)



| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |      |    |      |     |   | APMX            | Suitable for | Shim | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-----|------|----|------|-----|---|-----------------|--------------|------|---------|-------|-------|
|                     |           |       | DC            | DCX | DCON | LF | KWW  | KDP |   |                 |              |      |         |       |       |
| MFB288050R04A22SN12 | 50        | 4     | 50            | 51  | 22   | 40 | 10.4 | 6.3 | 7 | SNE(M)U1206ZNEN | ×            | ✓    | Fig1    | ●     |       |
| MFB288063R05A22SN12 | 63        | 5     | 63            | 64  | 22   | 40 | 10.4 | 6.3 | 7 | SNE(M)U1206ZNEN | ×            | ✓    | Fig1    | ●     |       |
| MFB288063L05A22SN12 | 63        | 5     | 63            | 64  | 22   | 40 | 10.4 | 6.3 | 7 | SNE(M)U1206ZNEN | ×            | ✓    | Fig1    | ●     |       |
| MFB288063R06A22SN12 | 63        | 6     | 63            | 64  | 22   | 40 | 10.4 | 6.3 | 7 | SNE(M)U1206ZNEN | ×            | ✓    | Fig1    | ●     |       |
| MFB288080R05A27SN12 | 80        | 5     | 80            | 81  | 27   | 50 | 12.4 | 7   | 7 | SNE(M)U1206ZNEN | ×            | ✓    | Fig1    | ●     |       |
| MFB288080R07A27SN12 | 80        | 7     | 80            | 81  | 27   | 50 | 12.4 | 7   | 7 | SNE(M)U1206ZNEN | ×            | ✓    | Fig1    | ●     |       |
| MFB288080L07A27SN12 | 80        | 7     | 80            | 81  | 27   | 50 | 12.4 | 7   | 7 | SNE(M)U1206ZNEN | ×            | ✓    | Fig1    | ●     |       |
| MFB288100R08B32SN12 | 100       | 8     | 100           | 101 | 32   | 50 | 14.4 | 8   | 7 | SNE(M)U1206ZNEN | ×            | ×    | Fig2    | ●     |       |
| MFB288125R10B40SN12 | 125       | 10    | 125           | 126 | 40   | 63 | 16.4 | 9   | 7 | SNE(M)U1206ZNEN | ×            | ×    | Fig2    | ●     |       |
| MFB288160R12C40SN12 | 160       | 12    | 160           | 161 | 40   | 63 | 16.4 | 9   | 7 | SNE(M)U1206ZNEN | ×            | ×    | Fig3    | ●     |       |
| MFB288200R14C60SN12 | 200       | 14    | 200           | 201 | 60   | 63 | 25.7 | 14  | 7 | SNE(M)U1206ZNEN | ×            | ×    | Fig3    | ●     |       |
| MFB288250R16C60SN12 | 250       | 16    | 250           | 251 | 60   | 63 | 25.7 | 14  | 7 | SNE(M)U1206ZNEN | ×            | ×    | Fig3    | ○     |       |
| MFB288315R20D60SN12 | 315       | 20    | 315           | 316 | 60   | 80 | 25.7 | 14  | 7 | SNE(M)U1206ZNEN | ×            | ×    | Fig4    | ○     |       |

● Stock ○ Available Upon Order



Face Milling

# MFB288

Cylindrical Straight Type( Without Shim)

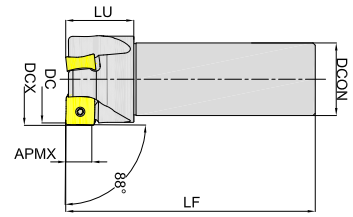


Fig5

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |      |     |    | APMX | Suitable for | Shim | Coolant | Shape | Stock |   |
|---------------------|-----------|-------|---------------|-----|------|-----|----|------|--------------|------|---------|-------|-------|---|
|                     |           |       | DC            | DCX | DCON | LF  | LU |      |              |      |         |       |       |   |
| MFB288040R03P32SN12 | 40        | 3     | 40            | 41  | 32   | 110 | 30 | 7    | SNE(M)U1206Z | NEN  | ×       | √     | Fig5  | ● |

● Stock ○ Available Upon Order

## Spare Parts

| Part Name   |                             | Inserts Screw       | Insert Screw Wrench |        |
|-------------|-----------------------------|---------------------|---------------------|--------|
| Inserts     | Shape                       |                     |                     |        |
|             | Specification Ordering Code | SI60M5X14-07010I    | TI20P               | TI20T  |
| SNE(M)U1206 | Specification Ordering Code | SI60M050140-07010IB | TI20PB              | TI20TB |

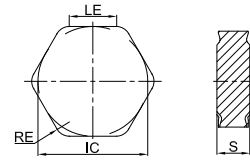
## Recommended Cutting Data





|          | Workpiece  | Hardness  | Grade                      | Specification   | Ap<br>(mm) | Cutting<br>Speed<br>Vc(m/min) | Feed Rate/Edges fz(mm) |                      |                     |
|----------|--|-----------|----------------------------|-----------------|------------|-------------------------------|------------------------|----------------------|---------------------|
|          |  |           |                            |                 |            |                               | Light<br>Cutting(L)    | Medium<br>Cutting(M) | Heavy<br>Cutting(H) |
| <b>P</b> | Soft Steel   | ≤ HB180   | GA4225<br>GA4230           | SNE(M)U1206ANEN | 1.5        | 250<br>(210-290)              | 0.2<br>(0.1-0.3)       | 0.25<br>(0.15-0.35)  | 0.3<br>(0.2-0.4)    |
|          |  |           |                            | SNE(M)U1206ENEN | 2.5        |                               |                        |                      |                     |
|          |  |           |                            | SNE(M)U1206ZNEN | 3.5        |                               |                        |                      |                     |
|          | Carbon<br>Steel, Alloy<br>Steel                              | HB180-350 | GA4225<br>GA4230<br>GP2115 | SNE(M)U1206ANEN | 1.5        | 220<br>(180-260)              | 0.15<br>(0.1-0.2)      | 0.25<br>(0.15-0.35)  | 0.3<br>(0.2-0.4)    |
|          |  |           |                            | SNE(M)U1206ENEN | 2.5        |                               |                        |                      |                     |
|          |  |           |                            | SNE(M)U1206ZNEN | 3.5        |                               |                        |                      |                     |
|          | Pre-harden<br>Steel  | HRC35-45  | GA4230<br>GA4225<br>GP2115 | SNE(M)U1206ANEN | 1.5        | 140<br>(100-180)              | 0.1<br>(0.05-0.15)     | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.3)    |
|          |  |           |                            | SNE(M)U1206ENEN | 2.5        |                               |                        |                      |                     |
|          |  |           |                            | SNE(M)U1206ZNEN | 3.5        |                               |                        |                      |                     |
| <b>M</b> | Stainless<br>(Ferrite,<br>Martensite)                        | ≤ HB270   | GM2140<br>GM4135<br>GA4230 | SNE(M)U1206ANEN | 1.5        | 180<br>(140-220)              | 0.15<br>(0.1-0.2)      | 0.25<br>(0.15-0.35)  | 0.3<br>(0.2-0.4)    |
|          |  |           |                            | SNE(M)U1206ENEN | 2.5        |                               |                        |                      |                     |
|          |  |           |                            | SNE(M)U1206ZNEN | 3.5        |                               |                        |                      |                     |
|          | Stainless<br>(Austenite,<br>Diphasic)                        | ≤ HB270   | GM2140<br>GM4135           | SNE(M)U1206ANEN | 1.5        | 160<br>(120-200)              | 0.1<br>(0.05-0.15)     | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.3)    |
|          |  |           |                            | SNE(M)U1206ENEN | 2.5        |                               |                        |                      |                     |
|          |  |           |                            | SNE(M)U1206ZNEN | 3.5        |                               |                        |                      |                     |
| <b>K</b> | Grey Cast<br>Iron  | ≤ HB280   | GK2115<br>GK4125           | SNE(M)U1206ANEN | 1.5        | 180<br>(140-220)              | 0.15<br>(0.1-0.2)      | 0.2<br>(0.1-0.3)     | 0.3<br>(0.2-0.4)    |
|          |  |           |                            | SNE(M)U1206ENEN | 2.5        |                               |                        |                      |                     |
|          |  |           |                            | SNE(M)U1206ZNEN | 3.5        |                               |                        |                      |                     |
|          | Nodular<br>Cast Iron,<br>Vermicular<br>Graphite<br>Cast Iron | ≤ HB350   | GK4125<br>GK2115           | SNE(M)U1206ANEN | 1.5        | 160<br>(120-200)              | 0.15<br>(0.1-0.2)      | 0.2<br>(0.1-0.3)     | 0.3<br>(0.2-0.4)    |
|          |  |           |                            | SNE(M)U1206ENEN | 2.5        |                               |                        |                      |                     |
|          |  |           |                            | SNE(M)U1206ZNEN | 3.5        |                               |                        |                      |                     |
| <b>N</b> | Aluminium  | HB60-210  | GN9125                     | SNEU1206ANFN    | 1.5        | ≥ 300                         | 0.15<br>(0.1-0.2)      | 0.2<br>(0.1-0.3)     | --                  |
| <b>S</b> | Heat-<br>resistant<br>Alloy and<br>Titanium<br>Alloy         | HRC30-45  | GS4130                     | SNE(M)U1206ANEN | 1.5        | 40<br>(30-60)                 | 0.15<br>(0.1-0.2)      | 0.2<br>(0.1-0.3)     | --                  |
|          |  |           |                            | SNE(M)U1206ENEN | 2.5        |                               |                        |                      |                     |
|          |  |           |                            | SNE(M)U1206ZNEN | 3.5        |                               |                        |                      |                     |

Face Milling

# HNE(M)X

Negative Twelve Edge Face Milling Insert











| Ordering Code   | Dimension(mm) |     |        |      | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cermet |        |                                  |                                  |                                  |
|---|---------------|-----|--------|------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|----------------------------------|----------------------------------|----------------------------------|
|   | LE            | IC  | S      | RE   | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115                           | GN9125                           | GP01TM                           |
|    | HNEX090510-KF | 8.2 | 16.2   | 5.56 | 1.0           |        |        |        |        |        |        |        |        |        |          |        |        |                                  | <input type="radio"/>            | <input type="radio"/>            |
|   | HNEX090520-KF | 7.0 | 16.2   | 5.56 | 2.0           |        |        |        |        |        |        |        |        |        |          |        |        |                                  | <input type="radio"/>            | <input checked="" type="radio"/> |
|   | HNEX090520-KM | 7.2 | 16.2   | 5.56 | 2.0           |        |        |        |        |        |        |        |        |        |          |        |        | <input checked="" type="radio"/> | <input checked="" type="radio"/> |                                  |
|   | HNMX090520-KM | 7.2 | 16.2   | 5.56 | 2.0           |        |        |        |        |        |        |        |        |        |          |        |        | <input checked="" type="radio"/> | <input checked="" type="radio"/> |                                  |
|  | HNEX090516-KR | 7.8 | 16.2   | 5.56 | 1.6           |        |        |        |        |        |        |        |        |        |          |        |        | <input checked="" type="radio"/> | <input checked="" type="radio"/> |                                  |
|   | HNEX090530-KR | 6.2 | 16.2   | 5.56 | 3.0           |        |        |        |        |        |        |        |        |        |          |        |        | <input checked="" type="radio"/> | <input checked="" type="radio"/> |                                  |
|   | HNMX090516-KR | 7.8 | 16.2   | 5.56 | 1.6           |        |        |        |        |        |        |        |        |        |          |        |        | <input checked="" type="radio"/> | <input type="radio"/>            |                                  |
|  | HNEX090502-WC | 6.6 | 15.875 | 5.56 | 0.2           |        |        |        |        |        |        |        |        |        |          |        |        | <input type="radio"/>            | <input checked="" type="radio"/> |                                  |
|   |               |     |        |      |               |        |        |        |        |        |        |        |        |        |          |        |        |                                  |                                  |                                  |

● Stock ○ Available Upon Order

Note:

★ The HNEX090502-WC insert only corresponds to the MFB160 series cutter body.

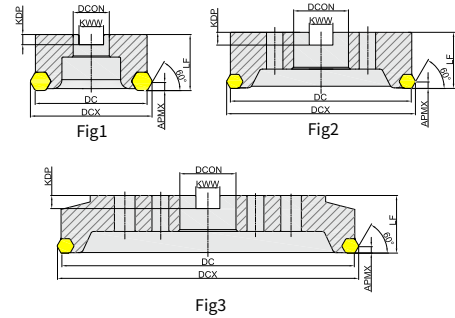
## HNE(M)X Series Geometry

| Light Cutting for Iron Material   | Medium Cutting for Iron Material  | Heavy Cutting for Iron Material  | Wiper  |
|---|---|--|--|
|  |  |  |                   |
| KF  | KM  | KR   | WC   |
|  |  |  |                   |
| Light cutting breaker, big rake angle, small aris width, small breaker width.     | Medium cutting breaker, sector design, unique aris-width design.                  | Heavy load cutting breaker, big breaker width and unique rake face design.         | Specialized wiped insert, matching adjustable holder could reach high surface quality and stability. |

Face Milling

# MFB160

Arbor



| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |      |    |      |     |   | APMX        | Suitable for | Coolant | Shim | Shape | Stock |
|---------------------|-----------|-------|---------------|-----|------|----|------|-----|---|-------------|--------------|---------|------|-------|-------|
|                     |           |       | DC            | DCX | DCON | LF | KWW  | KDP |   |             |              |         |      |       |       |
| MFB160125R12B40HN09 | 125       | 12/3  | 125           | 135 | 40   | 63 | 16.4 | 9   | 8 | HNE(M)X0905 | ×            | ✓       | Fig1 | ●     |       |
| MFB160125R15B40HN09 | 125       | 15/3  | 125           | 135 | 40   | 63 | 16.4 | 9   | 8 | HNE(M)X0905 | ×            | ✓       | Fig1 | ●     |       |
| MFB160160R20C40HN09 | 160       | 20/4  | 160           | 170 | 40   | 63 | 16.4 | 9   | 8 | HNE(M)X0905 | ×            | ✓       | Fig2 | ●     |       |
| MFB160200R25C60HN09 | 200       | 25/5  | 200           | 210 | 60   | 63 | 25.7 | 14  | 8 | HNE(M)X0905 | ×            | ✓       | Fig2 | ●     |       |
| MFB160250R30C60HN09 | 250       | 30/6  | 250           | 260 | 60   | 80 | 25.7 | 14  | 8 | HNE(M)X0905 | ×            | ✓       | Fig2 | ○     |       |
| MFB160315R40D60HN09 | 315       | 40/8  | 315           | 325 | 60   | 80 | 25.7 | 14  | 8 | HNE(M)X0905 | ×            | ✓       | Fig3 | ○     |       |

● Stock ○ Available Upon Order

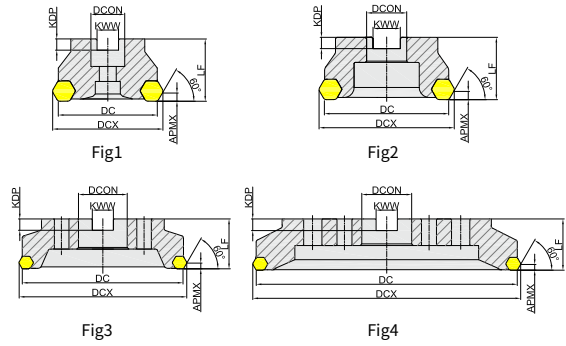
## Spare Parts

| Part Name   |               | Adjusted Wedge | Clamp Wedge | Clamp Double Head Screw | Adjusted Double Head Screw | Adjustable Lamp | Wrench |        |
|-------------|---------------|----------------|-------------|-------------------------|----------------------------|-----------------|--------|--------|
| Inserts     | Shape         |                |             |                         |                            |                 |        |        |
|             | Specification | CWA02          | CWA01       | SDAM6.0X20.0            | SDAM8.0X24.5               | AMFB160-1-RA    | TH30L  | TH40L  |
| HNE(M)X0905 | Ordering Code | CWA02B         | CWA01B      | SDAM060200B             | SDAM080245B                | AMFB1601RAB     | TH30LB | TH40LB |

Face Milling

# MFB260

Arbor



Sparse Pitch

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |      |    |      |     | APMX | Suitable for | Coolant | Shim | Shape | Stock |
|---------------------|-----------|-------|---------------|-----|------|----|------|-----|------|--------------|---------|------|-------|-------|
|                     |           |       | DC            | DCX | DCON | LF | KWW  | KDP |      |              |         |      |       |       |
| MFB260063R05A22HN09 | 63        | 5     | 63            | 72  | 22   | 40 | 10.4 | 6.3 | 8    | HNE(M)X0905  | ×       | ×    | Fig1  | ●     |
| MFB260080R06A27HN09 | 80        | 6     | 80            | 90  | 27   | 50 | 12.4 | 7   | 8    | HNE(M)X0905  | ×       | ×    | Fig1  | ●     |
| MFB260100R08B32HN09 | 100       | 8     | 100           | 110 | 32   | 50 | 14.4 | 8   | 8    | HNE(M)X0905  | ×       | ×    | Fig2  | ●     |
| MFB260125R12B40HN09 | 125       | 12    | 125           | 135 | 40   | 63 | 16.4 | 9   | 8    | HNE(M)X0905  | ×       | ×    | Fig2  | ●     |
| MFB260160R15C40HN09 | 160       | 15    | 160           | 170 | 40   | 63 | 16.4 | 9   | 8    | HNE(M)X0905  | ×       | ×    | Fig3  | ●     |
| MFB260200R18C60HN09 | 200       | 18    | 200           | 210 | 60   | 63 | 25.7 | 14  | 8    | HNE(M)X0905  | ×       | ×    | Fig3  | ●     |




● Stock ○ Available Upon Order

Dense Pitch

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |      |    |      |     | APMX | Suitable for | Coolant | Shim | Shape | Stock |
|---------------------|-----------|-------|---------------|-----|------|----|------|-----|------|--------------|---------|------|-------|-------|
|                     |           |       | DC            | DCX | DCON | LF | KWW  | KDP |      |              |         |      |       |       |
| MFB260080R08A27HN09 | 80        | 8     | 80            | 90  | 27   | 50 | 12.4 | 7   | 8    | HNE(M)X0905  | ×       | ×    | Fig1  | ●     |
| MFB260080R10A27HN09 | 80        | 10    | 80            | 90  | 27   | 50 | 12.4 | 7   | 8    | HNE(M)X0905  | ×       | ×    | Fig1  | ●     |
| MFB260100R10B32HN09 | 100       | 10    | 100           | 110 | 32   | 50 | 14.4 | 8   | 8    | HNE(M)X0905  | ×       | ×    | Fig2  | ●     |
| MFB260100R14B32HN09 | 100       | 14    | 100           | 110 | 32   | 50 | 14.4 | 8   | 8    | HNE(M)X0905  | ×       | ×    | Fig2  | ●     |
| MFB260125R15B40HN09 | 125       | 15    | 125           | 135 | 40   | 63 | 16.4 | 9   | 8    | HNE(M)X0905  | ×       | ×    | Fig2  | ●     |
| MFB260160R20C40HN09 | 160       | 20    | 160           | 170 | 40   | 63 | 16.4 | 9   | 8    | HNE(M)X0905  | ×       | ×    | Fig3  | ●     |
| MFB260200R25C60HN09 | 200       | 25    | 200           | 210 | 60   | 63 | 25.7 | 14  | 8    | HNE(M)X0905  | ×       | ×    | Fig3  | ●     |
| MFB260250R30C60HN09 | 250       | 30    | 250           | 260 | 60   | 80 | 25.7 | 14  | 8    | HNE(M)X0905  | ×       | ×    | Fig3  | ○     |
| MFB260315R40D60HN09 | 315       | 40    | 315           | 325 | 60   | 80 | 25.7 | 14  | 8    | HNE(M)X0905  | ×       | ×    | Fig4  | ○     |
| MFB260315L40D60HN09 | 315       | 40    | 315           | 325 | 60   | 80 | 25.7 | 14  | 8    | HNE(M)X0905  | ×       | ×    | Fig4  | ○     |

● Stock ○ Available Upon Order

## Spare Parts

| Part Name | Clamp Wedge   | Clamp Double Head Crew   | Wrench  |
|-----------|---|--|---|
| Shape     |  |  |  |
| Inserts   | CWA01   | SDAM6.0X20.0   | TH30L   |
|           | CWA01B  | SDAM060200B  | TH30LB  |

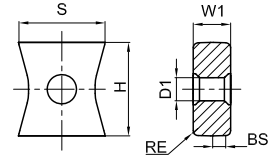
## Recommended Cutting Data





| Workpiece | Hardness   | Grade   | Specification    | Ap<br>(mm)  | Cutting<br>Speed<br>Vc(m/min) | Feed Rate/Edges fz(mm) |                      |                     |                   |
|-----------|--|---------|------------------|-------------|-------------------------------|------------------------|----------------------|---------------------|-------------------|
|           |  |         |                  |             |                               | Light<br>Cutting(L)    | Medium<br>Cutting(M) | Heavy<br>Cutting(H) |                   |
| <b>K</b>  | Grey Cast Iron   | ≤ HB280 | GK2115<br>GK4125 | HNE(M)X0905 | 4                             | 280<br>(180-400)       | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.3)    | 0.3<br>(0.2-0.4)  |
|           | Nodular Cast Iron,<br>Vermicular Graphite<br>Cast Iron | ≤ HB350 | GK4125<br>GK2115 | HNE(M)X0905 | 4                             | 230<br>(160-350)       | 0.1<br>(0.05-0.15)   | 0.15<br>(0.1-0.2)   | 0.2<br>(0.15-0.3) |

Face Milling

# LNE(M)T

Vertically Eight Edge Milling Insert













| Ordering Code  | Dimension(mm)  |      |    |    |      |     | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cermat |        |        |        |        |  |
|--|----------------|------|----|----|------|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|--|
|  | H              | W1   | D1 | S  | RE   | BS  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115 | GN9125 | GP01TM |  |
|  LNET110608-GL    | 11.2           | 6    | 5  | 11 | 0.8  | 2   | ●             |        |        |        | ●      |        | ●      |        | ●      |        |          |        |        |        |        |        |  |
|  | LNET150608-GL  | 15.0 | 6  | 7  | 13.9 | 0.8 | 2             | ●      |        |        | ●      |        | ●      | ●      | ●      |        |          |        |        |        |        |        |  |
|  LNMT110608-GM   | 11.2           | 6    | 5  | 11 | 0.8  | 2   | ●             |        |        | ●      | ●      |        | ●      | ●      | ●      |        |          |        |        |        |        |        |  |
|  | LNMT150608-MM  | 15.0 | 6  | 7  | 13.9 | 0.8 | 2             | ●      |        | ●      |        |        | ●      | ●      | ●      | ●      |          |        |        |        |        |        |  |
|  LNMT110608-GH  | 11.2           | 6    | 5  | 11 | 0.8  | 2   | ●             |        |        | ●      |        |        |        | ●      |        |        |          |        |        |        |        |        |  |
|  | LNMT150608-GH  | 15.0 | 6  | 7  | 13.9 | 0.8 | 2             | ●      |        | ●      |        |        |        | ●      | ●      |        |          |        |        |        |        |        |  |
|  LNET1106PNEN-W | 11.4           | 6    | 5  | 11 | --   | 4.6 |               |        |        |        |        |        |        |        | ●      |        |          |        |        |        |        |        |  |
|  | LNET1506PNTN-W | 15.2 | 6  | 7  | 13.9 | --  | 4.8           |        |        |        |        |        |        |        | ●      |        |          |        |        |        |        |        |  |

● Stock ○ Available Upon Order



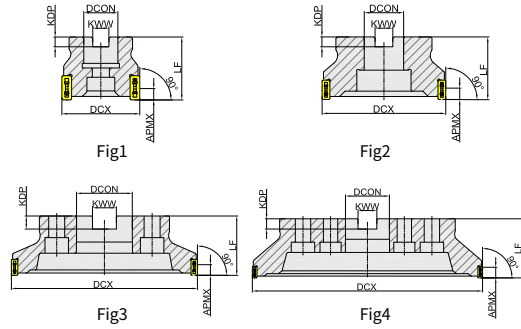
## LNE(M)T Series Geometry

| Light Cutting for General Material  | Medium Cutting for General Material   | Stainless Steel Medium Cutting   | Heavy Cutting for General Material   | Wiper   |
|---|---|--|--|---|
|  |  |                     |                      |  |
| GL  | GM  | MM   | GH   | W   |
|  |  |                     |                      |  |
| Low cutting resistance of light load cutting, better processing quality.          | High stability machining is achieved under general working conditions.            | Under the general working conditions, stainless steel material is realized High stability machining. | High strength cutting edge, excellent performance when cutting intermittently and removing black skin. | High precision wiped edge, improve surface quality.                                 |

Face Milling

# MVA190

Arbor



Sparse Pitch

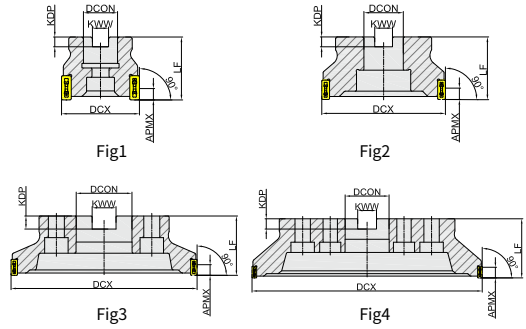
| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |    |      |     | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|------|----|------|-----|------|--------------|---------|-------|-------|
|                     |           |       | DCX           | DCON | LF | KWW  | KDP |      |              |         |       |       |
| MVA190040R04A16LN11 | 40        | 4     | 40            | 16   | 40 | 8.4  | 5.6 | 5    | LNE(M)T1106  | ×       | Fig1  | ○     |
| MVA190040L04A16LN11 | 40        | 4     | 40            | 16   | 40 | 8.4  | 5.6 | 5    | LNE(M)T1106  | ×       | Fig1  | ○     |
| MVA190050R05A22LN11 | 50        | 5     | 50            | 22   | 40 | 10.4 | 6.3 | 5    | LNE(M)T1106  | ×       | Fig1  | ●     |
| MVA190050L05A22LN11 | 50        | 5     | 50            | 22   | 40 | 10.4 | 6.3 | 5    | LNE(M)T1106  | ×       | Fig1  | ●     |
| MVA190063R06A22LN11 | 63        | 6     | 63            | 22   | 40 | 10.4 | 6.3 | 5    | LNE(M)T1106  | ×       | Fig1  | ●     |
| MVA190063L06A22LN11 | 63        | 6     | 63            | 22   | 40 | 10.4 | 6.3 | 5    | LNE(M)T1106  | ×       | Fig1  | ●     |
| MVA190080R08B27LN11 | 80        | 8     | 80            | 27   | 50 | 12.4 | 7   | 5    | LNE(M)T1106  | ×       | Fig2  | ●     |
| MVA190080L08B27LN11 | 80        | 8     | 80            | 27   | 50 | 12.4 | 7   | 5    | LNE(M)T1106  | ×       | Fig2  | ○     |
| MVA190100R09B32LN11 | 100       | 9     | 100           | 32   | 50 | 14.4 | 8   | 5    | LNE(M)T1106  | ×       | Fig2  | ●     |
| MVA190100L09B32LN11 | 100       | 9     | 100           | 32   | 50 | 14.4 | 8   | 5    | LNE(M)T1106  | ×       | Fig2  | ○     |
| MVA190125R10B40LN11 | 125       | 10    | 125           | 40   | 63 | 16.4 | 9   | 5    | LNE(M)T1106  | ×       | Fig2  | ●     |
| MVA190125L10B40LN11 | 125       | 10    | 125           | 40   | 63 | 16.4 | 9   | 5    | LNE(M)T1106  | ×       | Fig2  | ○     |
| MVA190160R12C40LN11 | 160       | 12    | 160           | 40   | 63 | 16.4 | 9   | 5    | LNE(M)T1106  | ×       | Fig3  | ●     |
| MVA190160L12C40LN11 | 160       | 12    | 160           | 40   | 63 | 16.4 | 9   | 5    | LNE(M)T1106  | ×       | Fig3  | ○     |
| MVA190200R16C60LN11 | 200       | 16    | 200           | 60   | 63 | 25.7 | 14  | 5    | LNE(M)T1106  | ×       | Fig3  | ●     |
| MVA190200L16C60LN11 | 200       | 16    | 200           | 60   | 63 | 25.7 | 14  | 5    | LNE(M)T1106  | ×       | Fig3  | ○     |

● Stock ○ Available Upon Order

Face Milling

# MVA190

Arbor



Dense Pitch

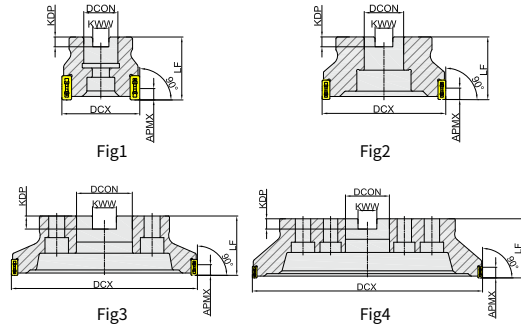
| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |    |      |     | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|------|----|------|-----|------|--------------|---------|-------|-------|
|                     |           |       | DCX           | DCON | LF | KWW  | KDP |      |              |         |       |       |
| MVA190040R05A16LN11 | 40        | 5     | 40            | 16   | 40 | 8.4  | 5.6 | 5    | LNE(M)T1106  | ×       | Fig1  | ○     |
| MVA190040L05A16LN11 | 40        | 5     | 40            | 16   | 40 | 8.4  | 5.6 | 5    | LNE(M)T1106  | ×       | Fig1  | ○     |
| MVA190050R07A22LN11 | 50        | 7     | 50            | 22   | 40 | 10.4 | 6.3 | 5    | LNE(M)T1106  | ×       | Fig1  | ○     |
| MVA190050L07A22LN11 | 50        | 7     | 50            | 22   | 40 | 10.4 | 6.3 | 5    | LNE(M)T1106  | ×       | Fig1  | ○     |
| MVA190063R09A22LN11 | 63        | 9     | 63            | 22   | 40 | 10.4 | 6.3 | 5    | LNE(M)T1106  | ×       | Fig1  | ●     |
| MVA190063L09A22LN11 | 63        | 9     | 63            | 22   | 40 | 10.4 | 6.3 | 5    | LNE(M)T1106  | ×       | Fig1  | ○     |
| MVA190080R11B27LN11 | 80        | 11    | 80            | 27   | 50 | 12.4 | 7   | 5    | LNE(M)T1106  | ×       | Fig2  | ○     |
| MVA190080L11B27LN11 | 80        | 11    | 80            | 27   | 50 | 12.4 | 7   | 5    | LNE(M)T1106  | ×       | Fig2  | ○     |
| MVA190100R14B32LN11 | 100       | 14    | 100           | 32   | 50 | 14.4 | 8   | 5    | LNE(M)T1106  | ×       | Fig2  | ○     |
| MVA190100L14B32LN11 | 100       | 14    | 100           | 32   | 50 | 14.4 | 8   | 5    | LNE(M)T1106  | ×       | Fig2  | ○     |
| MVA190125R18B40LN11 | 125       | 18    | 125           | 40   | 63 | 16.4 | 9   | 5    | LNE(M)T1106  | ×       | Fig2  | ○     |
| MVA190125L18B40LN11 | 125       | 18    | 125           | 40   | 63 | 16.4 | 9   | 5    | LNE(M)T1106  | ×       | Fig2  | ○     |
| MVA190160R23C40LN11 | 160       | 23    | 160           | 40   | 63 | 16.4 | 9   | 5    | LNE(M)T1106  | ×       | Fig3  | ○     |
| MVA190160L23C40LN11 | 160       | 23    | 160           | 40   | 63 | 16.4 | 9   | 5    | LNE(M)T1106  | ×       | Fig3  | ○     |
| MVA190200R28C60LN11 | 200       | 28    | 200           | 60   | 63 | 25.7 | 14  | 5    | LNE(M)T1106  | ×       | Fig3  | ○     |
| MVA190200L28C60LN11 | 200       | 28    | 200           | 60   | 63 | 25.7 | 14  | 5    | LNE(M)T1106  | ×       | Fig3  | ○     |

● Stock ○ Available Upon Order

Face Milling

# MVA190

Arbor



Sparse Pitch

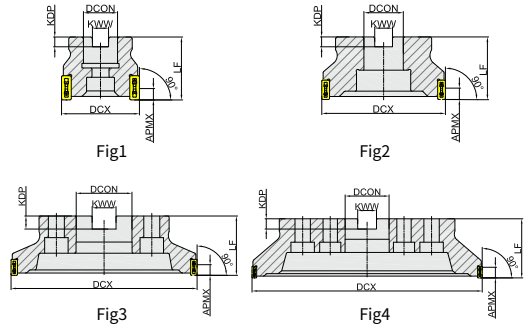
| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |    |      |     | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|------|----|------|-----|------|--------------|---------|-------|-------|
|                     |           |       | DCX           | DCON | LF | KWW  | KDP |      |              |         |       |       |
| MVA190050R04A22LN15 | 50        | 4     | 50            | 22   | 40 | 10.4 | 6.3 | 7    | LNE(M)T1506  | ×       | Fig1  | ●     |
| MVA190050L04A22LN15 | 50        | 4     | 50            | 22   | 40 | 10.4 | 6.3 | 7    | LNE(M)T1506  | ×       | Fig1  | ○     |
| MVA190063R05A22LN15 | 63        | 5     | 63            | 22   | 40 | 10.4 | 6.3 | 7    | LNE(M)T1506  | ×       | Fig1  | ●     |
| MVA190063L05A22LN15 | 63        | 5     | 63            | 22   | 40 | 10.4 | 6.3 | 7    | LNE(M)T1506  | ×       | Fig1  | ●     |
| MVA190080R06B27LN15 | 80        | 6     | 80            | 27   | 50 | 12.4 | 7   | 7    | LNE(M)T1506  | ×       | Fig2  | ●     |
| MVA190080L06B27LN15 | 80        | 6     | 80            | 27   | 50 | 12.4 | 7   | 7    | LNE(M)T1506  | ×       | Fig2  | ○     |
| MVA190100R08B32LN15 | 100       | 8     | 100           | 32   | 50 | 14.4 | 8   | 7    | LNE(M)T1506  | ×       | Fig2  | ●     |
| MVA190100L08B32LN15 | 100       | 8     | 100           | 32   | 50 | 14.4 | 8   | 7    | LNE(M)T1506  | ×       | Fig2  | ○     |
| MVA190125R10B40LN15 | 125       | 10    | 125           | 40   | 63 | 16.4 | 9   | 7    | LNE(M)T1506  | ×       | Fig2  | ●     |
| MVA190125L10B40LN15 | 125       | 10    | 125           | 40   | 63 | 16.4 | 9   | 7    | LNE(M)T1506  | ×       | Fig2  | ○     |
| MVA190160R12C40LN15 | 160       | 12    | 160           | 40   | 63 | 16.4 | 9   | 7    | LNE(M)T1506  | ×       | Fig3  | ●     |
| MVA190160L12C40LN15 | 160       | 12    | 160           | 40   | 63 | 16.4 | 9   | 7    | LNE(M)T1506  | ×       | Fig3  | ○     |
| MVA190200R12C60LN15 | 200       | 12    | 200           | 60   | 63 | 25.7 | 14  | 7    | LNE(M)T1506  | ×       | Fig3  | ●     |
| MVA190200L12C60LN15 | 200       | 12    | 200           | 60   | 63 | 25.7 | 14  | 7    | LNE(M)T1506  | ×       | Fig3  | ○     |
| MVA190200R15C60LN15 | 200       | 15    | 200           | 60   | 63 | 25.7 | 14  | 7    | LNE(M)T1506  | ×       | Fig3  | ○     |
| MVA190200L15C60LN15 | 200       | 15    | 200           | 60   | 63 | 25.7 | 14  | 7    | LNE(M)T1506  | ×       | Fig3  | ○     |
| MVA190250R15C60LN15 | 250       | 15    | 250           | 60   | 63 | 25.7 | 14  | 7    | LNE(M)T1506  | ×       | Fig3  | ○     |
| MVA190250L15C60LN15 | 250       | 15    | 250           | 60   | 63 | 25.7 | 14  | 7    | LNE(M)T1506  | ×       | Fig3  | ○     |
| MVA190250R20C60LN15 | 250       | 20    | 250           | 60   | 63 | 25.7 | 14  | 7    | LNE(M)T1506  | ×       | Fig3  | ○     |
| MVA190250L20C60LN15 | 250       | 20    | 250           | 60   | 63 | 25.7 | 14  | 7    | LNE(M)T1506  | ×       | Fig3  | ○     |
| MVA190315R18D60LN15 | 315       | 18    | 315           | 60   | 80 | 25.7 | 14  | 7    | LNE(M)T1506  | ×       | Fig4  | ○     |
| MVA190315L18D60LN15 | 315       | 18    | 315           | 60   | 80 | 25.7 | 14  | 7    | LNE(M)T1506  | ×       | Fig4  | ○     |
| MVA190315R25D60LN15 | 315       | 25    | 315           | 60   | 80 | 25.7 | 14  | 7    | LNE(M)T1506  | ×       | Fig4  | ○     |
| MVA190315L25D60LN15 | 315       | 25    | 315           | 60   | 80 | 25.7 | 14  | 7    | LNE(M)T1506  | ×       | Fig4  | ○     |

● Stock ○ Available Upon Order

Face Milling

# MVA190

Arbor



Dense Pitch

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |    |      |     |   | APMX        | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|------|----|------|-----|---|-------------|--------------|---------|-------|-------|
|                     |           |       | DCX           | DCON | LF | KWW  | KDP |   |             |              |         |       |       |
| MVA190050R05A22LN15 | 50        | 5     | 50            | 22   | 40 | 10.4 | 6.3 | 7 | LNE(M)T1506 | ×            | Fig1    | ●     |       |
| MVA190050L05A22LN15 | 50        | 5     | 50            | 22   | 40 | 10.4 | 6.3 | 7 | LNE(M)T1506 | ×            | Fig1    | ○     |       |
| MVA190063R06A22LN15 | 63        | 6     | 63            | 22   | 40 | 10.4 | 6.3 | 7 | LNE(M)T1506 | ×            | Fig1    | ○     |       |
| MVA190063L06A22LN15 | 63        | 6     | 63            | 22   | 40 | 10.4 | 6.3 | 7 | LNE(M)T1506 | ×            | Fig1    | ○     |       |
| MVA190080R08B27LN15 | 80        | 8     | 80            | 27   | 50 | 12.4 | 7   | 7 | LNE(M)T1506 | ×            | Fig2    | ●     |       |
| MVA190080L08B27LN15 | 80        | 8     | 80            | 27   | 50 | 12.4 | 7   | 7 | LNE(M)T1506 | ×            | Fig2    | ○     |       |
| MVA190100R10B32LN15 | 100       | 10    | 100           | 32   | 50 | 14.4 | 8   | 7 | LNE(M)T1506 | ×            | Fig2    | ●     |       |
| MVA190100L10B32LN15 | 100       | 10    | 100           | 32   | 50 | 14.4 | 8   | 7 | LNE(M)T1506 | ×            | Fig2    | ○     |       |
| MVA190125R12B40LN15 | 125       | 12    | 125           | 40   | 63 | 16.4 | 9   | 7 | LNE(M)T1506 | ×            | Fig2    | ○     |       |
| MVA190125L12B40LN15 | 125       | 12    | 125           | 40   | 63 | 16.4 | 9   | 7 | LNE(M)T1506 | ×            | Fig2    | ○     |       |
| MVA190160R15C40LN15 | 160       | 15    | 160           | 40   | 63 | 16.4 | 9   | 7 | LNE(M)T1506 | ×            | Fig3    | ○     |       |
| MVA190160L15C40LN15 | 160       | 15    | 160           | 40   | 63 | 16.4 | 9   | 7 | LNE(M)T1506 | ×            | Fig3    | ○     |       |
| MVA190200R20C60LN15 | 200       | 20    | 200           | 60   | 63 | 25.7 | 14  | 7 | LNE(M)T1506 | ×            | Fig3    | ○     |       |
| MVA190200L20C60LN15 | 200       | 20    | 200           | 60   | 63 | 25.7 | 14  | 7 | LNE(M)T1506 | ×            | Fig3    | ○     |       |
| MVA190250R25C60LN15 | 250       | 25    | 250           | 60   | 63 | 25.7 | 14  | 7 | LNE(M)T1506 | ×            | Fig3    | ○     |       |
| MVA190250L25C60LN15 | 250       | 25    | 250           | 60   | 63 | 25.7 | 14  | 7 | LNE(M)T1506 | ×            | Fig3    | ○     |       |
| MVA190315R30D60LN15 | 315       | 30    | 315           | 60   | 80 | 25.7 | 14  | 7 | LNE(M)T1506 | ×            | Fig4    | ○     |       |
| MVA190315L30D60LN15 | 315       | 30    | 315           | 60   | 80 | 25.7 | 14  | 7 | LNE(M)T1506 | ×            | Fig4    | ○     |       |

● Stock ○ Available Upon Order

Face Milling

# MVA290

Disc

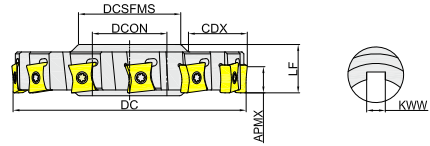
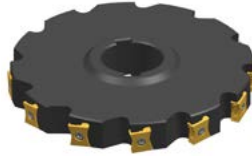


Fig5

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |      |        |     |    |   | APMX        | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-----|------|--------|-----|----|---|-------------|--------------|---------|-------|-------|
|                     |           |       | DC            | CDX | DCON | DCSFMS | KWW | LF |   |             |              |         |       |       |
| MVA290080R08K27LN15 | 80        | 8     | 80            | 18  | 27   | 41     | 7   | 24 | 7 | LNE(M)T1506 | ×            | Fig5    | ○     |       |
| MVA290080L08K27LN15 | 80        | 8     | 80            | 18  | 27   | 41     | 7   | 24 | 7 | LNE(M)T1506 | ×            | Fig5    | ○     |       |
| MVA290100R10K32LN15 | 100       | 10    | 100           | 23  | 32   | 47     | 8   | 26 | 7 | LNE(M)T1506 | ×            | Fig5    | ○     |       |
| MVA290100L10K32LN15 | 100       | 10    | 100           | 23  | 32   | 47     | 8   | 26 | 7 | LNE(M)T1506 | ×            | Fig5    | ○     |       |
| MVA290125R12K40LN15 | 125       | 12    | 125           | 32  | 40   | 55     | 10  | 26 | 7 | LNE(M)T1506 | ×            | Fig5    | ○     |       |
| MVA290125L12K40LN15 | 125       | 12    | 125           | 32  | 40   | 55     | 10  | 26 | 7 | LNE(M)T1506 | ×            | Fig5    | ○     |       |
| MVA290160R15K40LN15 | 160       | 15    | 160           | 49  | 40   | 55     | 10  | 26 | 7 | LNE(M)T1506 | ×            | Fig5    | ○     |       |
| MVA290160L15K40LN15 | 160       | 15    | 160           | 49  | 40   | 55     | 10  | 26 | 7 | LNE(M)T1506 | ×            | Fig5    | ○     |       |
| MVA290200R20K50LN15 | 200       | 20    | 200           | 63  | 50   | 68     | 12  | 28 | 7 | LNE(M)T1506 | ×            | Fig5    | ○     |       |
| MVA290200L20K50LN15 | 200       | 20    | 200           | 63  | 50   | 68     | 12  | 28 | 7 | LNE(M)T1506 | ×            | Fig5    | ○     |       |
| MVA290250R25K60LN15 | 250       | 25    | 250           | 80  | 60   | 84     | 14  | 28 | 7 | LNE(M)T1506 | ×            | Fig5    | ○     |       |
| MVA290250L25K60LN15 | 250       | 25    | 250           | 80  | 60   | 84     | 14  | 28 | 7 | LNE(M)T1506 | ×            | Fig5    | ○     |       |

● Stock ○ Available Upon Order

## Spare Parts

| Part Name   |                             | Inserts Screw       | Insert Screw Wrench |        |
|-------------|-----------------------------|---------------------|---------------------|--------|
| Inserts     | Shape                       |                     |                     |        |
|             | Specification Ordering Code | SI60M3.5X9.4-04909I | TI10P               | TI10T  |
| LNE(M)T1106 | Specification Ordering Code | SI60M035094-04909IB | TI10PB              | TI10TB |
|             | Specification Ordering Code | SI60M4X11-05708I    | TI15P               | TI15T  |
| LNE(M)T1506 | Specification Ordering Code | SI60M040110-05708IB | TI15PB              | TI15TB |

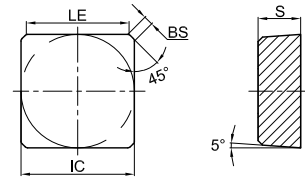
## Recommended Cutting Data


| Workpiece | Hardness   | Grade     | Specification              | Ap (mm)     | Cutting Speed Vc(m/min) | Feed Rate/Edges fz(mm) |                    |                     |                    |
|-----------|--|-----------|----------------------------|-------------|-------------------------|------------------------|--------------------|---------------------|--------------------|
|           |  |           |                            |             |                         | Light Cutting(L)       | Medium Cutting(M)  | Heavy Cutting(H)    |                    |
| <b>P</b>  | Soft Steel                                       | ≤ HB180   | GA4225<br>GA4230           | LNE(M)T1106 | 2.5                     | 220<br>(180-260)       | 0.1<br>(0.05-0.15) | 0.15<br>(0.1-0.2)   | 0.2<br>(0.15-0.25) |
|           |  |           |                            | LNE(M)T1506 | 3.5                     |                        | 0.2<br>(0.1-0.3)   | 0.25<br>(0.1-0.4)   | 0.3<br>(0.2-0.5)   |
|           | Carbon Steel, Alloy Steel                        | HB180-350 | GA4225<br>GA4230<br>GP2115 | LNE(M)T1106 | 2.5                     | 180<br>(140-220)       | 0.1<br>(0.05-0.15) | 0.15<br>(0.1-0.2)   | 0.2<br>(0.15-0.25) |
|           |  |           |                            | LNE(M)T1506 | 3.5                     |                        | 0.2<br>(0.1-0.3)   | 0.25<br>(0.1-0.4)   | 0.3<br>(0.2-0.5)   |
|           | Pre-harden Steel                                 | HRC35-45  | GA4230<br>GA4225<br>GP2115 | LNE(M)T1106 | 2.5                     | 160<br>(120-200)       | 0.06<br>(0.05-0.1) | 0.1<br>(0.05-0.15)  | 0.15<br>(0.1-0.2)  |
|           |  |           |                            | LNE(M)T1506 | 3.5                     |                        | 0.1<br>(0.05-0.15) | 0.15<br>(0.1-0.2)   | 0.2<br>(0.15-0.25) |
| <b>M</b>  | Stainless (Ferrite, Martensite)                  | ≤ HB270   | GM2140<br>GM4135<br>GA4230 | LNE(M)T1106 | 2.5                     | 160<br>(120-200)       | 0.1<br>(0.05-0.15) | 0.15<br>(0.1-0.2)   | 0.2<br>(0.15-0.25) |
|           |  |           |                            | LNE(M)T1506 | 3.5                     |                        | 0.15<br>(0.1-0.2)  | 0.25<br>(0.15-0.35) | 0.3<br>(0.2-0.4)   |
|           | Stainless (Austenite, Diphasic)                  | ≤ HB270   | GM2140<br>GM4135           | LNE(M)T1106 | 2.5                     | 140<br>(100-180)       | 0.06<br>(0.05-0.1) | 0.1<br>(0.05-0.15)  | 0.15<br>(0.1-0.2)  |
|           |  |           |                            | LNE(M)T1506 | 3.5                     |                        | 0.1<br>(0.05-0.15) | 0.15<br>(0.1-0.2)   | 0.2<br>(0.15-0.25) |
| <b>K</b>  | Grey Cast Iron                                   | ≤ HB280   | GK2115<br>GK4125           | LNE(M)T1106 | 2.5                     | 220<br>(180-260)       | 0.2<br>(0.1-0.3)   | 0.25<br>(0.1-0.4)   | 0.3<br>(0.2-0.5)   |
|           |  |           |                            | LNE(M)T1506 | 3.5                     |                        | 0.2<br>(0.1-0.3)   | 0.25<br>(0.1-0.4)   | 0.3<br>(0.2-0.5)   |
|           | Nodular Cast Iron, Vermicular Graphite Cast Iron | ≤ HB350   | GK4125<br>GK2115           | LNE(M)T1106 | 2.5                     | 140<br>(100-180)       | 0.1<br>(0.05-0.15) | 0.15<br>(0.1-0.2)   | 0.2<br>(0.15-0.25) |
|           |  |           |                            | LNE(M)T1506 | 3.5                     |                        | 0.1<br>(0.05-0.15) | 0.15<br>(0.1-0.2)   | 0.2<br>(0.15-0.25) |

Face Milling

# SBEX

ISO Milling Insert

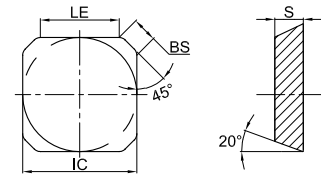



| Ordering Code  | Dimension(mm) |      |      |     | Uncoated |        | Coated |        |        | Coated |
|--|---------------|------|------|-----|----------|--------|--------|--------|--------|--------|
|  | LE            | IC   | S    | BS  | GA0115   | GK0115 | GA4225 | GA4230 | GP4225 | GP01TM |
|  SBEX1204ZZ-1 | 11.18         | 12.7 | 4.76 | 0.8 | ○        |        |        |        |        |        |
|  |               |      |      |     |          |        |        |        |        |        |
|  |               |      |      |     |          |        |        |        |        |        |

● Stock ○ Available Upon Order

# SEEN/SEMN/SEEX

ISO Milling Insert



| Ordering Code  | Dimension(mm) |        |      |     | Uncoated |        | Coated |        |        | Coated |
|--|---------------|--------|------|-----|----------|--------|--------|--------|--------|--------|
|  | LE            | IC     | S    | BS  | GA0115   | GK0115 | GA4225 | GA4230 | GP4225 | GP01TM |
|  SEEN1203AFTN | 8.8           | 12.7   | 3.18 | 2.3 |          | ○      | ○      |        |        | ●      |
| SEEN1204AFTN   | 8.8           | 12.7   | 4.76 | 2.4 |          | ○      |        |        |        |        |
| SEEN1504AFTN   | 10.45         | 15.875 | 4.76 | 2.4 |          |        | ○      | ●      |        |        |
| SEMN1203AFTN   | 8.8           | 12.7   | 4.76 | 2.4 |          |        |        | ○      |        | ●      |
| SEEN1203AFEN   | 8.8           | 12.7   | 3.18 | 2.3 |          |        |        |        |        | ●      |
| SEEX1203AFTN   | 8.8           | 12.7   | 3.18 | 3.0 |          |        |        | ●      |        |        |
|  |               |        |      |     |          |        |        |        |        |        |
|  |               |        |      |     |          |        |        |        |        |        |

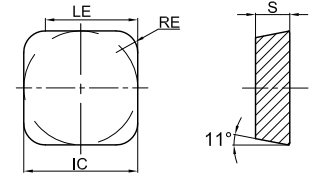
● Stock ○ Available Upon Order



Face Milling

# SPEN

ISO Milling Insert



| Ordering Code | Dimension(mm) |        |      |     | Uncoated |        | Coated |        |        | Coated |
|---------------|---------------|--------|------|-----|----------|--------|--------|--------|--------|--------|
|               | LE            | IC     | S    | RE  | GA0115   | GK0115 | GA4225 | GA4230 | GP4225 | GP01TM |
| SPEN150420T   | 13.87         | 15.875 | 4.76 | 2.0 | ○        |        |        |        |        |        |
| SPEN150430T   | 12.87         | 15.875 | 4.76 | 3.0 | ○        |        |        |        |        |        |
| SPEN190424T   | 16.65         | 19.05  | 4.76 | 2.4 | ○        |        |        |        |        |        |
| SPEN250730T   | 22.4          | 25.4   | 7.94 | 3.0 | ○        |        |        |        |        |        |
| SPEN190424-WC | 15.65         | 19.05  | 4.76 | 2.4 | ○        |        |        |        |        |        |
| SPEN250730-WC | 21.45         | 25.4   | 7.94 | 3.0 | ○        |        |        |        |        |        |

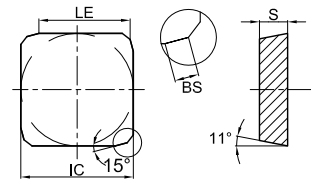


● Stock ○ Available Upon Order

## Face Milling

# SPK(M)N

ISO Milling Insert



| Ordering Code | Dimension(mm) |        |      |     | Uncoated |        | Coated |        |        | Coated |
|---------------|---------------|--------|------|-----|----------|--------|--------|--------|--------|--------|
|               | LE            | IC     | S    | BS  | GA0115   | GK0115 | GA4225 | GA4230 | GP4225 | GP01TM |
| SPKN1203EDL   | 10.8          | 12.7   | 3.18 | 1.4 | ○        | ○      | ○      | ○      |        |        |
| SPKN1203EDR   | 10.8          | 12.7   | 3.18 | 1.4 | ○        | ○      |        | ●      |        |        |
| SPKN1203EDTL  | 10.8          | 12.7   | 3.18 | 1.4 |          |        |        | ○      |        |        |
| SPKN1203EDTR  | 10.8          | 12.7   | 3.18 | 1.4 |          |        |        | ●      |        |        |
| SPKN1504EDL   | 13.5          | 15.875 | 4.76 | 1.4 |          | ●      |        |        |        |        |
| SPKN1504EDR   | 13.5          | 15.875 | 4.76 | 1.4 | ●        | ●      |        |        |        |        |
| SPKN1504EDTL  | 13.5          | 15.875 | 4.76 | 1.4 |          | ○      |        | ○      |        |        |
| SPKN1504EDTR  | 13.5          | 15.875 | 4.76 | 1.4 |          | ○      |        | ●      |        |        |
| SPKN1905EDL   | 15.1          | 19.05  | 5.56 | 2.7 |          |        |        | ○      |        |        |
| SPKN1905EDR   | 15.1          | 19.05  | 5.56 | 2.7 |          |        |        | ○      |        |        |
| SPKN1905EDTL  | 15.1          | 19.05  | 5.56 | 2.7 |          |        |        | ○      |        |        |
| SPKN1905EDTR  | 15.1          | 19.05  | 5.56 | 2.7 |          |        |        | ○      |        |        |
| SPMN1504EDL   | 13.5          | 15.875 | 4.76 | 1.4 |          | ○      |        |        |        |        |
| SPMN1504EDR   | 13.5          | 15.875 | 4.76 | 1.4 |          | ●      |        |        |        |        |
| SPMN1504EDTR  | 13.5          | 15.875 | 4.76 | 1.4 |          |        |        |        | ○      |        |

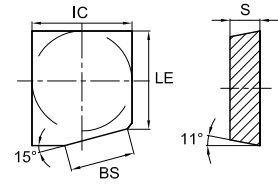
●Stock ○Available Upon Order




Face Milling

# SPEN-W

ISO Milling Insert

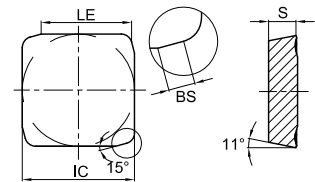



| Ordering Code   | Dimension(mm) |      |        |      | Uncoated |        | Coated                           |        |        | Coated |
|---|---------------|------|--------|------|----------|--------|----------------------------------|--------|--------|--------|
|   | LE            | IC   | S      | BS   | GA0115   | GK0115 | GA4225                           | GA4230 | GP4225 | GP01TM |
|  | SPEN1504EDL-W | 15.5 | 15.875 | 4.76 | 10.2     |        | <input checked="" type="radio"/> |        |        |        |
|   | SPEN1504EDR-W | 15.5 | 15.875 | 4.76 | 10.2     |        | <input type="radio"/>            |        |        |        |
|   |               |      |        |      |          |        |                                  |        |        |        |

● Stock ○ Available Upon Order

# SPER

ISO Milling Insert



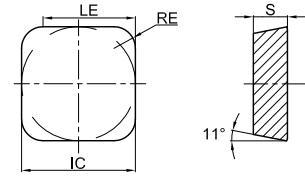
| Ordering Code   | Dimension(mm)   |      |      |      | Uncoated |        | Coated |                       |        | Coated |
|---|-----------------|------|------|------|----------|--------|--------|-----------------------|--------|--------|
|   | LE              | IC   | S    | BS   | GA0115   | GK0115 | GA4225 | GA4230                | GP4225 | GP01TM |
|  | SPER1203EDTL-MR | 10.2 | 12.7 | 3.18 | 1.3      |        |        | <input type="radio"/> |        |        |
|   | SPER1203EDTR-MR | 10.2 | 12.7 | 3.18 | 1.3      |        |        | <input type="radio"/> |        |        |
|   |                 |      |      |      |          |        |        |                       |        |        |


● Stock ○ Available Upon Order

Face Milling

# SPNR

ISO Milling Insert

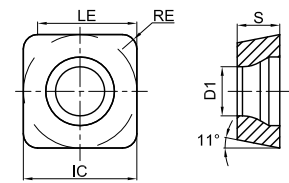



| Ordering Code   | Dimension(mm) |        |      |     | Uncoated |        | Coated |        |        | Coated |
|---|---------------|--------|------|-----|----------|--------|--------|--------|--------|--------|
|   | LE            | IC     | S    | RE  | GA0115   | GK0115 | GA4225 | GA4230 | GP4225 | GP01TM |
| SPNR150424T   | 13.475        | 15.875 | 4.76 | 2.4 |          | ○      |        |        |        |        |
|  |               |        |      |     |          |        |        |        |        |        |

●Stock ○Available Upon Order

# SPCW

ISO Milling Insert



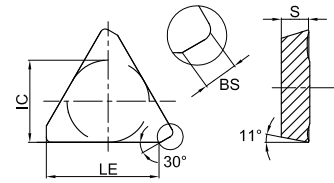
| Ordering Code   | Dimension(mm) |        |      |     |     | Uncoated |        | Coated |        |        | Coated |
|---|---------------|--------|------|-----|-----|----------|--------|--------|--------|--------|--------|
|   | LE            | IC     | S    | D1  | RE  | GA0115   | GK0115 | GA4225 | GA4230 | GP4225 | GP01TM |
| SPCW120412  | 11.5          | 12.7   | 4.76 | 5.5 | 1.2 |          | ○      |        |        | ○      |        |
| SPCW120416  | 11.1          | 12.7   | 4.76 | 5.5 | 1.6 |          | ○      |        |        |        |        |
| SPCW150516  | 14.275        | 15.875 | 5.56 | 5.5 | 1.6 |          |        |        |        | ○      |        |
|  |               |        |      |     |     |          |        |        |        |        |        |




●Stock ○Available Upon Order

Face Milling

# TPER/TPKR/TPKN

ISO Milling Insert

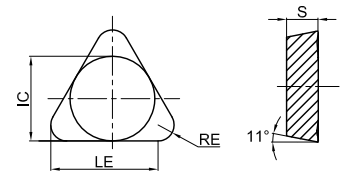



| Ordering Code   | Dimension(mm)   |       |       |      | Uncoated |        | Coated |        |        | Coated |
|---|-----------------|-------|-------|------|----------|--------|--------|--------|--------|--------|
|   | LE              | IC    | S     | BS   | GA0115   | GK0115 | GA4225 | GA4230 | GP4225 | GP01TM |
| <br>TPER1603PDTL-MR  | 13.2            | 9.525 | 3.18  | 1.3  |          |        |        |        |        | ○      |
|   | TPER1603PDTR-MR | 13.2  | 9.525 | 3.18 | 1.3      |        |        |        |        | ○      |
| <br>TPKR1603PPTR  | 13.6            | 9.525 | 3.18  | 1.3  |          |        | ●      |        |        |        |
|   |                 |       |       |      |          |        |        |        |        |        |
| <br>TPKN1603PDL<br>TPKN1603PDR<br>TPKN1603PDTL<br>TPKN1603PDTR<br>TPKN2204PDL<br>TPKN2204PDR<br>TPKN2204PDTL<br>TPKN2204PDTR | 13.4            | 9.525 | 3.18  | 1.3  |          | ●      |        |        |        |        |
|   | 13.4            | 9.525 | 3.18  | 1.3  | ○        | ●      |        | ●      |        |        |
|   | 13.4            | 9.525 | 3.18  | 1.3  |          |        |        | ○      |        |        |
|   | 13.4            | 9.525 | 3.18  | 1.3  |          |        |        |        | ●      |        |
|   | 18.66           | 12.7  | 4.76  | 1.4  |          |        |        | ○      |        |        |
|   | 18.66           | 12.7  | 4.76  | 1.4  | ●        |        |        | ●      |        |        |
| 18.66   | 12.7            | 4.76  | 1.4   |      |          |        | ○      |        |        |        |
| 18.66   | 12.7            | 4.76  | 1.4   | ○    | ○        | ○      | ●      |        |        |        |

●Stock ○Available Upon Order

# TPNR

ISO Milling Insert



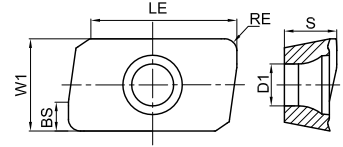
| Ordering Code  | Dimension(mm) |      |      |     | Uncoated |        | Coated |        |        | Coated |
|--|---------------|------|------|-----|----------|--------|--------|--------|--------|--------|
|  | LE            | IC   | S    | RE  | GA0115   | GK0115 | GA4225 | GA4230 | GP4225 | GP01TM |
| <br>TPNR220424T | 16.08         | 12.7 | 4.76 | 2.4 |          |        |        |        |        | ○      |
|  |               |      |      |     |          |        |        |        |        |        |
|  |               |      |      |     |          |        |        |        |        |        |






●Stock ○Available Upon Order

Shoulder Milling

# APM(G)T











Positive Two Edge Shoulder Milling Insert



| Ordering Code   | Dimension(mm)   |      |      |      |      |     | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cermat |        |        |        |
|---|-----------------|------|------|------|------|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|
|   | LE              | W1   | S    | BS   | D1   | RE  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115 | GN9125 |
|    | APMT1135PDER-PL | 9.7  | 6.16 | 3.5  | 1.92 | 2.8 | 0.8           | ●      | ●      | ●      | ●      | ●      |        | ●      |        |        | ●        |        |        |        |        |
|   | APMT1604PDER-PL | 14.9 | 9.26 | 4.76 | 2    | 4.6 | 0.8           | ●      | ●      | ●      | ●      |        |        |        |        |        | ●        |        |        |        |        |
|   | APMT1135PDER-PM | 9.7  | 6.16 | 3.5  | 1.92 | 2.8 | 0.8           | ●      | ●      | ●      | ●      | ●      |        | ●      | ●      | ●      | ●        |        |        |        | ●      |
|   | APMT113504R-PM  | 9.7  | 6.16 | 3.5  | 1.92 | 2.8 | 0.4           |        | ●      | ○      | ●      | ●      |        |        |        |        |          |        |        |        |        |
|   | APMT1604PDER-PM | 14.9 | 9.26 | 4.76 | 2    | 4.6 | 0.8           | ●      | ●      | ●      | ●      | ●      |        | ●      | ●      | ●      | ●        |        |        |        | ●      |
|   | APMT160416R-PM  | 14.9 | 9.26 | 4.76 | 2    | 4.6 | 1.6           |        | ●      | ○      | ●      |        |        |        |        |        |          |        |        |        |        |
|  | APMT113508-GM   | 9.7  | 6.16 | 3.5  | 1.92 | 2.8 | 0.8           |        |        | ○      | ○      |        |        |        |        |        |          |        |        |        |        |
|   | APMT160410-GM   | 14.9 | 9.26 | 4.76 | 2    | 4.6 | 1.0           |        |        | ○      | ●      |        | ○      |        |        |        |          |        |        |        |        |
|  | APMT1135PDER-PR | 9.7  | 6.16 | 3.5  | 1.87 | 2.8 | 0.8           | ●      | ●      | ●      | ●      | ●      |        | ●      | ●      |        | ●        |        |        |        |        |
|   | APMT1604PDER-PR | 14.9 | 9.26 | 4.76 | 2.2  | 4.6 | 0.8           | ●      | ●      | ●      | ●      | ●      |        | ●      | ●      | ●      | ●        |        |        |        |        |
|  | APGT1135PDFR-AL | 9.7  | 6.16 | 3.5  | 1.92 | 2.8 | 0.8           |        |        |        |        |        |        |        |        |        |          |        |        |        | ●      |
|   | APGT1604PDFR-AL | 14.9 | 9.26 | 4.76 | 2.2  | 4.6 | 0.8           |        |        |        |        |        |        |        |        |        |          |        |        |        | ●      |

● Stock ○ Available Upon Order

## APM(G)T Series Geometry

| Light Cutting for General Material  | Medium Cutting for General Material   | Medium Cutting for General Material   | Steel Workpiece Heavy Cutting   | Aluminum Cutting  |
|---|---|---|---|---|
|  |  |  |  |  |
| PL  | PM  | GM  | PR  | AL  |
|  |  |  |   |  |
| Under normal working conditions, Achieve high stability machining.                | Light load cutting with low cutting resistance, Get better processing quality.    | Under normal working conditions, Achieve high stability machining.                | Suitable on roughing, good edge strength.   | Suitable on Al processing, sharp edge with polishing.                               |

## Shoulder Milling

**MEA190**

Arbor

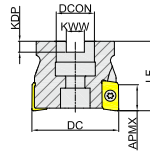


Fig1

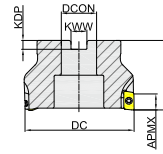


Fig2

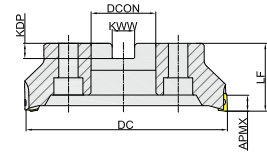


Fig3

| Ordering Code       | Dia-<br>meter | Teeth | Dimension(mm) |      |    |      |     | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|---------------|-------|---------------|------|----|------|-----|------|--------------|---------|-------|-------|
|                     |               |       | DC            | DCON | LF | KWW  | KDP |      |              |         |       |       |
| MEA190040R05A16AP11 | 40            | 5     | 40            | 16   | 40 | 10.4 | 6.3 | 9    | APMT1135     | ×       | Fig1  | ●     |
| MEA190050R04A22AP16 | 50            | 4     | 50            | 22   | 50 | 10.4 | 6.3 | 14   | APMT1604     | ×       | Fig1  | ●     |
| MEA190050R06A22AP11 | 50            | 6     | 50            | 22   | 50 | 10.4 | 6.3 | 9    | APMT1135     | ×       | Fig1  | ●     |
| MEA190063R05A22AP16 | 63            | 5     | 63            | 22   | 50 | 10.4 | 6.3 | 14   | APMT1604     | ×       | Fig1  | ●     |
| MEA190080R06A27AP16 | 80            | 6     | 80            | 27   | 50 | 12.4 | 7   | 14   | APMT1604     | ×       | Fig1  | ●     |
| MEA190100R07B32AP16 | 100           | 7     | 100           | 32   | 63 | 14.4 | 8   | 14   | APMT1604     | ×       | Fig2  | ●     |
| MEA190125R08B40AP16 | 125           | 8     | 125           | 40   | 63 | 16.4 | 9   | 14   | APMT1604     | ×       | Fig2  | ●     |
| MEA190160R10C40AP16 | 160           | 10    | 160           | 40   | 63 | 16.4 | 9   | 14   | APMT1604     | ×       | Fig3  | ●     |
| MEA190200R12C60AP16 | 200           | 12    | 200           | 60   | 63 | 25.7 | 14  | 14   | APMT1604     | ×       | Fig3  | ●     |
| MEA190250R14C60AP16 | 250           | 14    | 250           | 60   | 63 | 25.7 | 14  | 14   | APMT1604     | ×       | Fig3  | ○     |

● Stock ○ Available Upon Order



Shoulder Milling

# MEA190

Cylindrical Straight Type

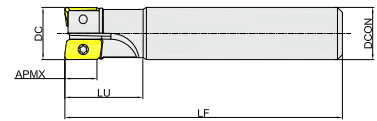


Fig4

| Ordering Code        | Dia-meter | Teeth | Dimension(mm) |      |     |    | APMX | Suitable for | Coolant | Shape | Stock |
|----------------------|-----------|-------|---------------|------|-----|----|------|--------------|---------|-------|-------|
|                      |           |       | DC            | DCON | LF  | LU |      |              |         |       |       |
| MEA190016R02P15AP11  | 16        | 2     | 16            | 15   | 150 | 70 | 9    | APMT1135     | ×       | Fig4  | ●     |
| MEA190016R02P16AP11  | 16        | 2     | 16            | 16   | 120 | 40 | 9    | APMT1135     | ×       | Fig4  | ●     |
| MEA190016R02P16AP11L | 16        | 2     | 16            | 16   | 170 | 50 | 9    | APMT1135     | ×       | Fig4  | ●     |
| MEA190020R02P20AP11  | 20        | 2     | 20            | 20   | 160 | 50 | 9    | APMT1135     | ×       | Fig4  | ●     |
| MEA190020R03P20AP11  | 20        | 3     | 20            | 20   | 160 | 50 | 9    | APMT1135     | ×       | Fig4  | ●     |
| MEA190025R02P25AP16  | 25        | 2     | 25            | 25   | 160 | 50 | 14   | APMT1604     | ×       | Fig4  | ●     |
| MEA190025R03P25AP11  | 25        | 3     | 25            | 25   | 160 | 50 | 9    | APMT1135     | ×       | Fig4  | ●     |
| MEA190025R04P25AP11  | 25        | 4     | 25            | 25   | 160 | 50 | 9    | APMT1135     | ×       | Fig4  | ●     |
| MEA190032R03P32AP16  | 32        | 3     | 32            | 32   | 160 | 50 | 14   | APMT1604     | ×       | Fig4  | ●     |
| MEA190032R04P32AP11  | 32        | 4     | 32            | 32   | 160 | 80 | 9    | APMT1135     | ×       | Fig4  | ●     |

● Stock ○ Available Upon Order

## Spare Parts

| Part Name |               | Inserts Screw      | Insert Screw Wrench |        |
|-----------|---------------|--------------------|---------------------|--------|
| Inserts   | Shape         |                    |                     |        |
|           | Specification | SI60M2.5X6.5-03509 | TT07P               | --     |
| APMT1135  | Ordering Code | SI60M025065-03509S | TT07PQ              | --     |
| APMT1604  | Specification | SI60M4X8.9-05313   | TT15P               | TT15T  |
|           | Ordering Code | SI60M040089-05313S | TT15PQ              | TT15TQ |

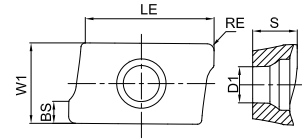
## Recommended Cutting Data



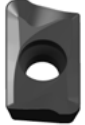

|          | Workpiece  | Hardness  | Grade                      | Specification | Ap<br>(mm) | Cutting Speed<br>Vc(m/min) | Feed Rate/Edges fz(mm) |                      |                     |
|----------|--|-----------|----------------------------|---------------|------------|----------------------------|------------------------|----------------------|---------------------|
|          |  |           |                            |               |            |                            | Light<br>Cutting(L)    | Medium<br>Cutting(M) | Heavy<br>Cutting(H) |
| <b>P</b> | Soft Steel   | ≤ HB180   | GA4325<br>GA4330           | APMT1135      | 2.7        | 250<br>(210-290)           | 0.1<br>(0.05-0.15)     | 0.15<br>(0.1-0.2)    | 0.20<br>(0.1-0.25)  |
|          |  |           |                            | APMT1604      | 4.2        |                            | 0.2<br>(0.1-0.3)       | 0.25<br>(0.15-0.35)  | 0.3<br>(0.2-0.4)    |
|          | Carbon<br>Steel, Alloy<br>Steel                              | HB180-350 | GA4325<br>GA4330<br>GP2115 | APMT1135      | 2.7        | 220<br>(180-260)           | 0.1<br>(0.05-0.15)     | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.25)   |
|          |  |           |                            | APMT1604      | 4.2        |                            | 0.2<br>(0.1-0.3)       | 0.25<br>(0.15-0.35)  | 0.3<br>(0.2-0.4)    |
|          | Pre-harden<br>Steel  | HRC35-45  | GA4330<br>GA4325<br>GP2115 | APMT1135      | 2.7        | 140<br>(100-180)           | 0.08<br>(0.05-0.15)    | 0.1<br>(0.05-0.15)   | 0.15<br>(0.1-0.2)   |
|          |  |           |                            | APMT1604      | 4.2        |                            | 0.1<br>(0.05-0.15)     | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.25)   |
| <b>M</b> | Stainless<br>(Ferrite,<br>Martensite)                        | ≤ HB270   | GM2140<br>GM4135<br>GA4230 | APMT1135      | 2.7        | 180<br>(140-220)           | 0.12<br>(0.1-0.2)      | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.3)    |
|          |  |           |                            | APMT1604      | 4.2        |                            | 0.15<br>(0.1-0.2)      | 0.25<br>(0.15-0.35)  | 0.3<br>(0.2-0.4)    |
|          | Stainless<br>(Austenite,<br>Diphasic)                        | ≤ HB270   | GM2140<br>GM4135           | APMT1135      | 2.7        | 140<br>(100-180)           | 0.1<br>(0.05-0.15)     | 0.12<br>(0.1-0.2)    | 0.15<br>(0.1-0.2)   |
|          |  |           |                            | APMT1604      | 4.2        |                            | 0.12<br>(0.1-0.2)      | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.3)    |
| <b>K</b> | Grey Cast<br>Iron  | ≤ HB280   | GK2115<br>GK4125           | APMT1135      | 2.7        | 180<br>(140-220)           | 0.1<br>(0.05-0.15)     | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.25)   |
|          |  |           |                            | APMT1604      | 4.2        |                            | 0.2<br>(0.1-0.3)       | 0.25<br>(0.1-0.4)    | 0.3<br>(0.2-0.5)    |
|          | Nodular<br>Cast Iron,<br>Vermicular<br>Graphite<br>Cast Iron | ≤ HB350   | GK4125<br>GK2115           | APMT1135      | 2.7        | 160<br>(120-200)           | 0.08<br>(0.05-0.15)    | 0.1<br>(0.05-0.15)   | 0.15<br>(0.1-0.2)   |
|          |  |           |                            | APMT1604      | 4.2        |                            | 0.1<br>(0.05-0.15)     | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.25)   |
| <b>N</b> | Aluminium<br>alloy   | HB60-210  | GN9125                     | APGT1135      | 2.7        | ≥ 300                      | 0.08<br>(0.05-0.15)    | 0.1<br>(0.05-0.15)   | 0.15<br>(0.1-0.2)   |
|          |  |           |                            | APGT1604      | 4.2        |                            | 0.1<br>(0.05-0.15)     | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.25)   |
| <b>S</b> | Heat-<br>resistant<br>Alloy and<br>Titanium<br>Alloy         | HRC30-45  | GS4130                     | APMT1135      | 2.7        | 40<br>(30-60)              | 0.08<br>(0.05-0.15)    | 0.08<br>(0.05-0.15)  | 0.1<br>(0.05-0.15)  |
|          |  |           |                            | APMT1604      | 4.2        |                            | 0.1<br>(0.05-0.15)     | 0.1<br>(0.05-0.15)   | 0.15<br>(0.1-0.2)   |

Shoulder Milling

# APK(E)T




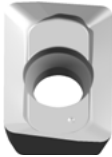




Normal Two Edge Square-Shoulder Milling Cutter Insert



| Ordering Code  | Dimension(mm) |      |      |      |     |     | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cermet |        |        |        |
|--|---------------|------|------|------|-----|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|
|  | LE            | W1   | S    | BS   | D1  | RE  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115 | GN9125 |
|  APKT113504R-GL   | 10.5          | 7    | 3.5  | 2    | 3.2 | 0.4 | ●             |        |        |        | ●      |        | ●      | ●      |        |        |          | ●      |        |        |        |
| APKT113508R-GL   | 15.2          | 7    | 3.5  | 2    | 3.2 | 0.8 | ●             | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●        |        |        |        |        |
| APKT160408R-GL   | 15.2          | 9.4  | 5.2  | 2.57 | 4.2 | 0.8 |               |        | ○      | ○      |        | ○      | ○      | ○      | ○      | ○      | ○        |        |        |        |        |
| APKT113504R-GM   | 10.5          | 7    | 3.5  | 2    | 3.2 | 0.4 | ●             | ●      |        |        | ●      | ●      |        | ●      | ●      | ●      | ●        |        |        |        |        |
| APKT113508R-GM   | 10.5          | 7    | 3.5  | 2    | 3.2 | 0.8 | ●             | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●        |        |        |        |        |
| APKT113516R-GM   | 10.5          | 7    | 3.5  | 2    | 3.2 | 1.6 |               |        | ○      | ○      |        | ○      | ○      | ○      | ○      | ○      | ○        |        |        |        |        |
|  APKT113532R-GM | 10.5          | 7    | 3.44 | 3.6  | 3.2 | 3.2 | ●             | ●      |        |        | ●      | ●      |        | ●      | ●      | ●      | ●        |        |        |        |        |
| APKT160404R-GM   | 15.2          | 9.4  | 5.2  | 2.57 | 4.2 | 0.4 |               |        | ○      | ○      |        | ○      | ○      | ○      | ○      | ○      | ○        |        |        |        |        |
| APKT160408R-GM   | 15.2          | 9.4  | 5.2  | 2.57 | 4.2 | 0.8 | ●             | ●      |        |        | ●      | ●      |        | ●      | ●      | ●      | ●        |        |        |        |        |
| APKT160412R-GM   | 15.2          | 9.4  | 5.2  | 2.57 | 4.2 | 1.2 |               | ●      |        |        | ●      |        |        | ●      | ●      | ●      |          |        |        |        |        |
| APKT160416R-GM   | 15.2          | 9.4  | 5.2  | 2.57 | 4.2 | 1.6 | ●             | ●      |        |        | ●      |        |        | ●      | ●      |        | ●        |        |        |        |        |
| APKT160432R-GM   | 15.2          | 9.4  | 5.2  | 2.57 | 4.2 | 3.2 | ●             | ●      |        |        | ●      |        |        | ●      | ●      |        |          |        |        |        |        |
| APKT113508R-GH   | 10.5          | 7    | 3.5  | 2    | 3.2 | 0.8 |               |        | ○      | ○      |        |        |        |        | ○      | ○      |          |        |        |        |        |
|  APKT113516R-GH | 10.5          | 7    | 3.5  | 2    | 3.2 | 1.6 | ●             | ●      |        |        |        |        |        |        | ●      | ●      |          |        |        |        |        |
| APKT160408R-GH   | 15.2          | 9.4  | 5.2  | 2.57 | 4.2 | 0.8 |               |        | ○      | ○      |        |        |        |        | ○      | ○      |          |        |        |        |        |
| APKT160416R-GH   | 15.2          | 9.4  | 5.2  | 2.57 | 4.2 | 1.6 |               | ●      |        |        | ●      |        |        |        | ●      | ●      |          |        |        |        |        |
| APET113504R-NL   | 10.5          | 7    | 3.8  | 1.92 | 3.2 | 0.4 |               |        |        |        |        |        |        |        |        |        |          |        |        |        | ●      |
|  APET160408R-NL | 15.2          | 9.44 | 4.92 | 2.64 | 4.2 | 0.8 |               |        |        |        |        |        |        |        |        |        |          |        |        |        | ●      |

● Stock ○ Available Upon Order

## APK(E)T Series Geometry

| Light Cutting for General Material  | Medium Cutting for General Material   | Heavy Cutting for General Material   | Aluminum Cutting  |
|---|---|--|---|
|  |  |   |  |
| GL  | GM  | GH   | NL  |
|  |  |  |  |
| Light cutting of low cutting force, good processing quality.                      | High stability in most cases.   | Suitable on roughing, good edge strength.  | Suitable on Al processing, sharp edge with polishing.                               |

Shoulder Milling

# MEB190

Arbor

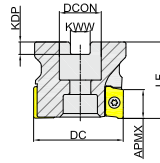


Fig1

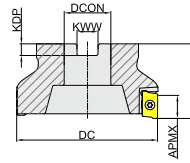


Fig2

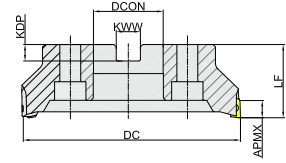


Fig3

| Ordering Code       | Dia-<br>meter | Teeth | Dimension(mm) |      |    |      |     | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|---------------|-------|---------------|------|----|------|-----|------|--------------|---------|-------|-------|
|                     |               |       | DC            | DCON | LF | KWW  | KDP |      |              |         |       |       |
| MEB190040R05A16AP11 | 40            | 5     | 40            | 16   | 40 | 8.4  | 5.6 | 9    | APK(E)T1135  | ✓       | Fig1  | ●     |
| MEB190050R04A22AP16 | 50            | 4     | 50            | 22   | 40 | 10.4 | 6.3 | 14   | APK(E)T1604  | ✓       | Fig1  | ●     |
| MEB190050R07A22AP11 | 50            | 7     | 50            | 22   | 40 | 10.4 | 6.3 | 9    | APK(E)T1135  | ✓       | Fig1  | ●     |
| MEB190063R05A22AP16 | 63            | 5     | 63            | 22   | 40 | 10.4 | 6.3 | 14   | APK(E)T1604  | ✓       | Fig1  | ●     |
| MEB190063R07A22AP11 | 63            | 7     | 63            | 22   | 40 | 10.4 | 6.3 | 9    | APK(E)T1135  | ×       | Fig1  | ●     |
| MEB190080R07A27AP16 | 80            | 7     | 80            | 27   | 50 | 12.4 | 7   | 14   | APK(E)T1604  | ✓       | Fig1  | ●     |
| MEB190080R08A27AP11 | 80            | 8     | 80            | 27   | 50 | 12.4 | 7   | 9    | APK(E)T1135  | ✓       | Fig1  | ●     |
| MEB190100R08A32AP16 | 100           | 8     | 100           | 32   | 50 | 14.4 | 8   | 14   | APK(E)T1604  | ✓       | Fig1  | ●     |
| MEB190100R12B32AP11 | 100           | 12    | 100           | 32   | 63 | 14.4 | 8   | 9    | APK(E)T1135  | ✓       | Fig2  | ●     |
| MEB190125R06B40AP16 | 125           | 6     | 125           | 40   | 63 | 16.4 | 9   | 14   | APK(E)T1604  | ×       | Fig2  | ●     |
| MEB190125R09B40AP16 | 125           | 9     | 125           | 40   | 63 | 16.4 | 9   | 14   | APK(E)T1604  | ×       | Fig2  | ●     |
| MEB190125R11B40AP11 | 125           | 11    | 125           | 40   | 63 | 16.4 | 9   | 9    | APK(E)T1135  | ×       | Fig2  | ●     |
| MEB190160R10C40AP16 | 160           | 10    | 160           | 40   | 63 | 16.4 | 9   | 14   | APK(E)T1604  | ×       | Fig3  | ●     |
| MEB190200R12C60AP16 | 200           | 12    | 200           | 60   | 63 | 25.7 | 13  | 14   | APK(E)T1604  | ×       | Fig3  | ●     |

● Stock ○ Available Upon Order

## Shoulder Milling

# MEB190

Side Clamp Type

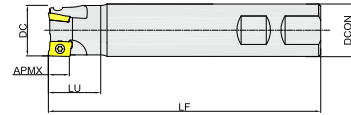


Fig4

| Ordering Code        | Dia-meter | Teeth | Dimension(mm) |      |     |    | APMX | Suitable for | Coolant | Shape | Stock |
|----------------------|-----------|-------|---------------|------|-----|----|------|--------------|---------|-------|-------|
|                      |           |       | DC            | DCON | LF  | LU |      |              |         |       |       |
| MEB190016R02W16AP11  | 16        | 2     | 16            | 16   | 130 | 25 | 9    | APK(E)T1135  | ×       | Fig4  | ●     |
| MEB190016R02W16AP11L | 16        | 2     | 16            | 16   | 200 | 50 | 9    | APK(E)T1135  | ×       | Fig4  | ●     |
| MEB190020R02W20AP11  | 20        | 2     | 20            | 20   | 130 | 25 | 9    | APK(E)T1135  | ×       | Fig4  | ●     |
| MEB190020R03W20AP11  | 20        | 3     | 20            | 20   | 130 | 25 | 9    | APK(E)T1135  | ✓       | Fig4  | ●     |
| MEB190020R03W20AP11L | 20        | 3     | 20            | 20   | 200 | 85 | 9    | APK(E)T1135  | ✓       | Fig4  | ●     |
| MEB190025R02W25AP16  | 25        | 2     | 25            | 25   | 130 | 45 | 14   | APK(E)T1604  | ✓       | Fig4  | ●     |
| MEB190025R02W25AP16L | 25        | 2     | 25            | 25   | 200 | 83 | 14   | APK(E)T1604  | ✓       | Fig4  | ●     |
| MEB190025R03W25AP11  | 25        | 3     | 25            | 25   | 130 | 28 | 9    | APK(E)T1135  | ✓       | Fig4  | ●     |
| MEB190025R03W25AP11L | 25        | 3     | 25            | 25   | 200 | 89 | 9    | APK(E)T1135  | ×       | Fig4  | ●     |
| MEB190025R04W25AP11  | 25        | 4     | 25            | 25   | 130 | 28 | 9    | APK(E)T1135  | ✓       | Fig4  | ●     |
| MEB190032R03W32AP16  | 32        | 3     | 32            | 32   | 130 | 40 | 14   | APK(E)T1604  | ✓       | Fig4  | ●     |
| MEB190032R03W32AP16L | 32        | 3     | 32            | 32   | 200 | 54 | 14   | APK(E)T1604  | ✓       | Fig4  | ●     |
| MEB190032R04W32AP11  | 32        | 4     | 32            | 32   | 130 | 30 | 9    | APK(E)T1135  | ✓       | Fig4  | ●     |
| MEB190032R04W32AP11L | 32        | 4     | 32            | 32   | 200 | 90 | 9    | APK(E)T1135  | ✓       | Fig4  | ●     |
| MEB190040R03W32AP16  | 40        | 3     | 40            | 32   | 150 | 45 | 14   | APK(E)T1604  | ✓       | Fig4  | ●     |

● Stock ○ Available Upon Order

# MEB190

Replaceable Tool Head

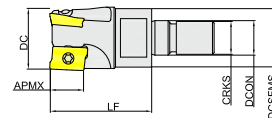


Fig5

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |        |      |    |      | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|--------|------|----|------|------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCSFMS | DCON | LF | CRKS |      |              |         |       |       |
| MEB190016R02M08AP11 | 16        | 2     | 16            | 14.5   | 8.5  | 26 | M8   | 9    | APK(E)T1135  | ×       | Fig5  | ●     |
| MEB190020R03M10AP11 | 20        | 3     | 20            | 17.8   | 10.5 | 31 | M10  | 9    | APK(E)T1135  | ✓       | Fig5  | ●     |
| MEB190025R02M12AP16 | 25        | 2     | 25            | 23     | 17   | 35 | M12  | 14   | APK(E)T1604  | ✓       | Fig5  | ●     |
| MEB190025R03M12AP11 | 25        | 3     | 25            | 23     | 12.5 | 35 | M12  | 9    | APK(E)T1135  | ✓       | Fig5  | ●     |
| MEB190025R04M12AP11 | 25        | 4     | 25            | 23     | 12.5 | 35 | M12  | 9    | APK(E)T1135  | ✓       | Fig5  | ●     |
| MEB190032R03M16AP16 | 32        | 3     | 32            | 28.5   | 17   | 43 | M16  | 14   | APK(E)T1604  | ✓       | Fig5  | ●     |
| MEB190032R04M16AP11 | 32        | 4     | 32            | 28.5   | 17   | 43 | M16  | 9    | APK(E)T1135  | ✓       | Fig5  | ●     |
| MEB190032R05M16AP11 | 32        | 5     | 32            | 28.5   | 17   | 43 | M16  | 9    | APK(E)T1135  | ✓       | Fig5  | ●     |
| MEB190035R05M16AP11 | 35        | 5     | 35            | 28.5   | 17   | 43 | M16  | 9    | APK(E)T1135  | ✓       | Fig5  | ●     |

● Stock ○ Available Upon Order

Shoulder Milling

# MHB190

Corn Milling Cutter Body MHB190-Arbor

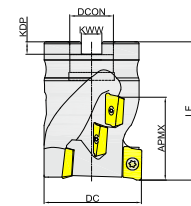


Fig6

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |    |      |     | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|------|----|------|-----|------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCON | LF | KWW  | KDP |      |              |         |       |       |
| MHB190050R03A22AP16 | 50        | 3/9   | 50            | 22   | 70 | 10.4 | 6.3 | 43   | APKT1604     | ✓       | Fig6  | ●     |
| MHB190050R04A22AP11 | 50        | 4/16  | 50            | 22   | 70 | 10.4 | 6.3 | 39.9 | APKT1135     | ×       | Fig6  | ●     |
| MHB190063R04A27AP16 | 63        | 4/16  | 63            | 27   | 85 | 12.4 | 6.3 | 57   | APKT1604     | ✓       | Fig6  | ●     |
| MHB190063R05A27AP11 | 63        | 5/20  | 63            | 27   | 70 | 12.4 | 6.3 | 39.9 | APKT1135     | ✓       | Fig6  | ●     |
| MHB190080R05A32AP16 | 80        | 5/20  | 80            | 32   | 85 | 14.4 | 7   | 57   | APKT1604     | ✓       | Fig6  | ●     |

● Stock ○ Available Upon Order

# MHB190

Corn Milling Cutter Body MHB190-Side Clamp Type

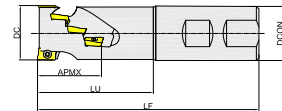


Fig7

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |     |    | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|------|-----|----|------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCON | LF  | LU |      |              |         |       |       |
| MHB190032R02W32AP11 | 32        | 2/8   | 32            | 32   | 130 | 65 | 39.9 | APKT1135     | ✓       | Fig7  | ●     |
| MHB190040R03W32AP11 | 40        | 3/12  | 40            | 32   | 130 | 66 | 39.9 | APKT1135     | ✓       | Fig7  | ●     |

● Stock ○ Available Upon Order

## Spare Parts

| Part Name |               | Inserts Screw      | Insert Screw Wrench |        |
|-----------|---------------|--------------------|---------------------|--------|
| Inserts   | Shape         |                    |                     |        |
|           | Specification | SI60M3.0X7.2-04210 | TT09P               | TT09T  |
| APKT1135  | Ordering Code | SI60M030072-04210S | TT09PQ              | TT09TQ |
|           | Specification | SI60M3.5X8-05314   | TT15P               | TT15T  |
| APKT1604  | Ordering Code | SI60M035080-05314S | TT15PQ              | TT15TQ |

## Recommended Cutting Data

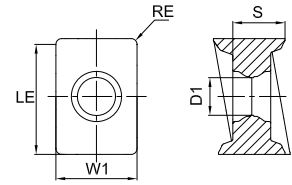
|          | Workpiece  | Hardness      | Grade                      | Specification | Ap<br>(mm) | Cutting<br>Speed<br>Vc(m/min) | Feed Rate/Edges fz(mm) |                      |                     |
|----------|--|---------------|----------------------------|---------------|------------|-------------------------------|------------------------|----------------------|---------------------|
|          |  |               |                            |               |            |                               | Light<br>Cutting(L)    | Medium<br>Cutting(M) | Heavy<br>Cutting(H) |
| <b>P</b> | Soft<br>Steel  | ≤ HB180       | GA4225<br>GA4230           | APKT1135      | 2.7        | 180<br>(140-220)              | 0.1<br>(0.05-0.15)     | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.25)   |
|          |  |               |                            | APKT1604      | 4.2        |                               | 0.2<br>(0.1-0.3)       | 0.25<br>(0.15-0.35)  | 0.3<br>(0.2-0.4)    |
|          | Carbon<br>Steel,<br>Alloy<br>Steel                           | HB180-<br>350 | GA4225<br>GA4230<br>GP2115 | APKT1135      | 2.7        | 150<br>(110-190)              | 0.1<br>(0.05-0.15)     | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.25)   |
|          |  |               |                            | APKT1604      | 4.2        |                               | 0.2<br>(0.1-0.3)       | 0.25<br>(0.15-0.35)  | 0.3<br>(0.2-0.4)    |
|          | Pre-<br>harden<br>Steel                                      | HRC35-45      | GA4230<br>GA4225<br>GP2115 | APKT1135      | 2.7        | 130<br>(90-170)               | 0.08<br>(0.05-0.15)    | 0.1<br>(0.05-0.15)   | 0.15<br>(0.1-0.2)   |
|          |  |               |                            | APKT1604      | 4.2        |                               | 0.1<br>(0.05-0.15)     | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.25)   |
| <b>M</b> | Stainless<br>(Ferrite,<br>Martensite)                        | ≤ HB270       | GM2140<br>GM4135<br>GA4230 | APKT1135      | 2.7        | 160<br>(120-200)              | 0.12<br>(0.1-0.2)      | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.3)    |
|          |  |               |                            | APKT1604      | 4.2        |                               | 0.15<br>(0.1-0.2)      | 0.25<br>(0.15-0.35)  | 0.3<br>(0.2-0.4)    |
|          | Stainless<br>(Austenite,<br>Diphasic)                        | ≤ HB270       | GM2140<br>GM4135           | APKT1135      | 2.7        | 160<br>(120-200)              | 0.1<br>(0.05-0.15)     | 0.12<br>(0.1-0.2)    | 0.15<br>(0.1-0.2)   |
|          |  |               |                            | APKT1604      | 4.2        |                               | 0.12<br>(0.1-0.2)      | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.3)    |
| <b>K</b> | Grey<br>Cast Iron  | ≤ HB280       | GK2115<br>GK4125           | APKT1135      | 2.7        | 180<br>(150-220)              | 0.1<br>(0.05-0.15)     | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.25)   |
|          |  |               |                            | APKT1604      | 4.2        |                               | 0.2<br>(0.1-0.3)       | 0.25<br>(0.1-0.4)    | 0.3<br>(0.2-0.5)    |
|          | Nodular<br>Cast Iron,<br>Vermicular<br>Graphite<br>Cast Iron | ≤ HB350       | GK4125<br>GK2115           | APKT1135      | 2.7        | 120<br>(100-180)              | 0.1<br>(0.05-0.15)     | 0.1<br>(0.05-0.15)   | 0.15<br>(0.1-0.2)   |
|          |  |               |                            | APKT1604      | 4.2        |                               | 0.2<br>(0.1-0.3)       | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.25)   |
| <b>N</b> | Aluminium<br>alloy   | HB60-210      | GN9125                     | APET1135      | 2.7        | 500<br>(200-900)              | 0.08<br>(0.05-0.15)    | 0.1<br>(0.05-0.15)   | 0.15<br>(0.1-0.2)   |
|          |  |               |                            | APET1604      | 4.2        |                               | 0.1<br>(0.05-0.15)     | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.25)   |
| <b>S</b> | Heat-<br>resistant<br>Alloy and<br>Titanium<br>Alloy         | HRC30-45      | GS4130                     | APKT1135      | 2.7        | 60<br>(50-100)                | 0.08<br>(0.05-0.15)    | 0.08<br>(0.05-0.15)  | 0.1<br>(0.05-0.15)  |
|          |  |               |                            | APKT1604      | 4.2        |                               | 0.1<br>(0.05-0.15)     | 0.1<br>(0.05-0.15)   | 0.15<br>(0.1-0.2)   |






Shoulder Milling

# ANKX







## Curved Edge Shoulder Milling Insert



| Ordering Code   | Dimension(mm)  |      |      |     |     | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cermet |        |        |        |
|---|----------------|------|------|-----|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|
|   | LE             | W1   | S    | D1  | RE  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115 | GN9125 |
|    | ANKX120704R-GL | 11.6 | 10   | 8   | 4.6 | 0.4           | ●      | ●      |        | ●      |        | ○      | ○      | ○      |        | ○        |        |        |        |        |
|   | ANKX160708R-GL | 15.2 | 11.2 | 7.9 | 5.2 | 0.8           | ○      | ○      |        | ●      |        | ○      | ○      | ○      | ○      | ○        |        |        |        |        |
|   | ANKX120708R-GM | 11.2 | 10   | 8   | 4.6 | 0.8           | ●      | ●      |        | ●      | ○      |        | ○      | ●      | ○      | ○        |        |        |        |        |
|   | ANKX160708R-GM | 15.2 | 11.2 | 7.9 | 5.2 | 0.8           | ●      | ●      |        | ●      | ○      |        | ●      | ●      | ●      | ○        |        |        |        |        |
|   | ANKX160716R-GM | 14.4 | 11.2 | 7.9 | 5.2 | 1.6           | ●      | ●      |        |        | ○      |        | ○      | ○      | ●      | ○        |        |        |        |        |
|  | ANKX160716R-GH | 14.4 | 11.2 | 7.9 | 5.2 | 1.6           |        |        | ●      | ○      |        |        |        | ●      |        |          |        |        |        |        |

● Stock ○ Available Upon Order

## ANKX Series Geometry

| Light Cutting for General Material  | Medium Cutting for General Material   | Heavy Cutting for General Material  |
|---|---|---|
|  |  |  |
| GL  | GM  | GH  |
|  |  |  |
| <p>Light cutting of low cutting force, good processing quality.</p>               | <p>High stability in most cases.</p>  | <p>Suitable on roughing, good edge strength.</p>                                    |

Shoulder Milling

# MEC190

Arbor

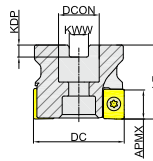


Fig1

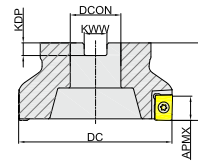


Fig2

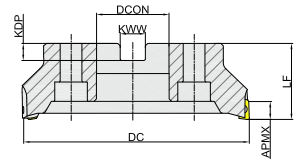


Fig3

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |    |      |     | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|------|----|------|-----|------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCON | LF | KWW  | KDP |      |              |         |       |       |
| MEC190050R04A22AN12 | 50        | 4     | 50            | 22   | 40 | 10.4 | 6.3 | 9    | ANKX1207     | ✓       | Fig1  | ●     |
| MEC190050R04A22AN16 | 50        | 4     | 50            | 22   | 40 | 10.4 | 6.3 | 14   | ANKX1607     | ✓       | Fig1  | ●     |
| MEC190063R05A22AN12 | 63        | 5     | 63            | 22   | 40 | 10.4 | 6.3 | 9    | ANKX1207     | ✓       | Fig1  | ●     |
| MEC190063R05A22AN16 | 63        | 5     | 63            | 22   | 40 | 10.4 | 6.3 | 14   | ANKX1607     | ✓       | Fig1  | ●     |
| MEC190080R05A27AN16 | 80        | 5     | 80            | 27   | 50 | 12.4 | 7   | 14   | ANKX1607     | ✓       | Fig1  | ●     |
| MEC190080R06A27AN16 | 80        | 6     | 80            | 27   | 50 | 12.4 | 7   | 14   | ANKX1607     | ✓       | Fig1  | ●     |
| MEC190100R07B32AN16 | 100       | 7     | 100           | 32   | 50 | 14.4 | 8   | 14   | ANKX1607     | ×       | Fig2  | ●     |
| MEC190100R08B32AN16 | 100       | 8     | 100           | 32   | 50 | 14.4 | 8   | 14   | ANKX1607     | ×       | Fig2  | ●     |
| MEC190125R10B40AN16 | 125       | 10    | 125           | 40   | 63 | 16.4 | 9   | 14   | ANKX1607     | ×       | Fig2  | ●     |
| MEC190160R12C40AN16 | 160       | 12    | 160           | 40   | 63 | 16.4 | 9   | 14   | ANKX1607     | ×       | Fig3  | ●     |
| MEC190200R14C60AN16 | 200       | 14    | 200           | 60   | 63 | 25.7 | 14  | 14   | ANKX1607     | ×       | Fig3  | ●     |

● Stock ○ Available Upon Order

# MEC190

Side Clamp Type

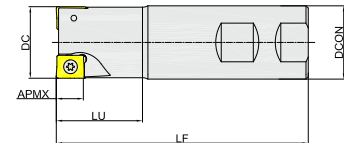


Fig4

| Ordering Code        | Dia-meter | Teeth | Dimension(mm) |      |     |    | APMX | Suitable for | Coolant | Shape | Stock |
|----------------------|-----------|-------|---------------|------|-----|----|------|--------------|---------|-------|-------|
|                      |           |       | DC            | DCON | LF  | LU |      |              |         |       |       |
| MEC190032R02W32AN12  | 32        | 2     | 32            | 32   | 110 | 40 | 9    | ANKX1207     | ×       | Fig4  | ●     |
| MEC190032R02W32AN16  | 32        | 2     | 32            | 32   | 150 | 40 | 14   | ANKX1607     | ×       | Fig4  | ●     |
| MEC190032R02W32AN16L | 32        | 2     | 32            | 32   | 200 | 54 | 14   | ANKX1607     | ×       | Fig4  | ●     |
| MEC190032R03W32AN16  | 32        | 3     | 32            | 32   | 150 | 40 | 14   | ANKX1607     | ×       | Fig4  | ●     |
| MEC190032R03W32AN16L | 32        | 3     | 32            | 32   | 200 | 56 | 14   | ANKX1607     | ×       | Fig4  | ●     |
| MEC190040R03W32AN12  | 40        | 3     | 43            | 32   | 130 | 40 | 9    | ANKX1207     | ✓       | Fig4  | ●     |
| MEC190040R03W32AN16  | 40        | 3     | 40            | 32   | 150 | 47 | 14   | ANKX1607     | ✓       | Fig4  | ●     |

● Stock ○ Available Upon Order

Shoulder Milling

# MHC190

Corn Milling Cutter Body MHC190-Arbor

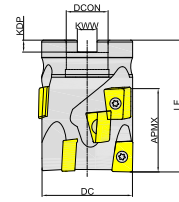


Fig5

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |    |      |     | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|------|----|------|-----|------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCON | LF | KWW  | KDP |      |              |         |       |       |
| MHC190050R03A22AN12 | 50        | 3/12  | 50            | 22   | 70 | 10.4 | 6.3 | 43   | ANKX1207     | ✓       | Fig5  | ●     |
| MHC190050R03A22AN16 | 50        | 3/9   | 50            | 22   | 70 | 10.4 | 6.3 | 43   | ANKX1607     | ✓       | Fig5  | ●     |
| MHC190063R04A27AN12 | 63        | 4/16  | 63            | 27   | 70 | 12.4 | 6.3 | 43   | ANKX1207     | ✓       | Fig5  | ●     |
| MHC190063R04A27AN16 | 63        | 4/12  | 63            | 27   | 85 | 12.4 | 6.3 | 57   | ANKX1607     | ✓       | Fig5  | ●     |
| MHC190080R05A32AN16 | 80        | 5/15  | 80            | 32   | 85 | 14.4 | 7   | 57   | ANKX1607     | ✓       | Fig5  | ●     |

● Stock ○ Available Upon Order

# MHC190

Corn Milling Cutter Body MHC190-Side Clamp Type

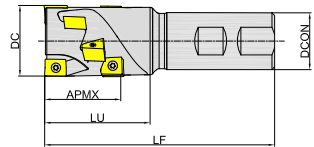

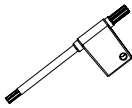
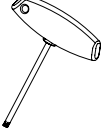


Fig6

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |     |    | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|------|-----|----|------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCON | LF  | LU |      |              |         |       |       |
| MHC190040R02W32AN12 | 40        | 2/8   | 40            | 32   | 130 | 66 | 43   | ANKX1207     | ✓       | Fig6  | ●     |

● Stock ○ Available Upon Order

## Spare Parts

| Part Name |   | Inserts Screw   | Insert Screw Wrench  |   |
|-----------|---|---|--|---|
| Inserts   | Shape   |  |  |  |
|           | ANZX1207  | Specification<br>SI60M3.5X12-05314<br>Ordering Code<br>SI60M035120-05314S         | TT15P<br>TT15PQ  | TT15T<br>TT15TQ   |
| ANZX1607  | Specification<br>SI60M4.5X12-06412<br>Ordering Code<br>SI60M045120-06412S | TT20P<br>TT20PQ   | TT20T<br>TT20TQ  |   |

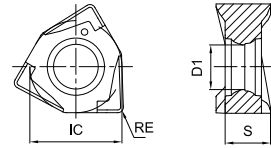
## Recommended Cutting Data




| Workpiece | Hardness   | Grade     | Specification              | Ap (mm)  | Cutting Speed Vc(m/min) | Feed Rate/Edges fz(mm) |                     |                     |                     |
|-----------|--|-----------|----------------------------|----------|-------------------------|------------------------|---------------------|---------------------|---------------------|
|           |  |           |                            |          |                         | Light Cutting(L)       | Medium Cutting(M)   | Heavy Cutting(H)    |                     |
| <b>P</b>  | Soft Steel                                       | ≤ HB180   | GA4225<br>GA4230           | ANZX1207 | 2.7                     | 180<br>(140-220)       | 0.1<br>(0.05-0.15)  | 0.15<br>(0.1-0.2)   | 0.2<br>(0.1-0.25)   |
|           |  |           |                            | ANZX1607 |                         |                        | 4.2                 | 0.15<br>(0.1-0.2)   | 0.25<br>(0.15-0.35) |
|           | Carbon Steel, Alloy Steel                        | HB180-350 | GA4225<br>GA4230<br>GP2115 | ANZX1207 | 2.7                     | 150<br>(110-190)       | 0.1<br>(0.05-0.15)  | 0.15<br>(0.1-0.2)   | 0.2<br>(0.1-0.25)   |
|           |  |           |                            | ANZX1607 |                         |                        | 4.2                 | 0.15<br>(0.1-0.2)   | 0.25<br>(0.15-0.35) |
|           | Pre-harden Steel                                 | HRC35-45  | GA4230<br>GA4225<br>GP2115 | ANZX1207 | 2.7                     | 150<br>(110-190)       | 0.08<br>(0.05-0.15) | 0.1<br>(0.05-0.15)  | 0.15<br>(0.1-0.2)   |
|           |  |           |                            | ANZX1607 |                         |                        | 4.2                 | 0.1<br>(0.05-0.15)  | 0.15<br>(0.1-0.2)   |
| <b>M</b>  | Stainless (Ferrite, Martensite)                  | ≤ HB270   | GM2140<br>GM4135<br>GA4230 | ANZX1207 | 2.7                     | 140<br>(100-180)       | 0.12<br>(0.1-0.2)   | 0.15<br>(0.1-0.2)   | 0.2<br>(0.1-0.3)    |
|           |  |           |                            | ANZX1607 |                         |                        | 4.2                 | 0.15<br>(0.1-0.2)   | 0.25<br>(0.15-0.35) |
|           | Stainless (Austenite, Diphasic)                  | ≤ HB270   | GM2140<br>GM4135           | ANZX1207 | 2.7                     | 120<br>(80-160)        | 0.1<br>(0.05-0.15)  | 0.12<br>(0.1-0.2)   | 0.15<br>(0.1-0.2)   |
|           |  |           |                            | ANZX1607 |                         |                        | 4.2                 | 0.12<br>(0.1-0.2)   | 0.15<br>(0.1-0.2)   |
| <b>K</b>  | Grey Cast Iron                                   | ≤ HB280   | GK2115<br>GK4125           | ANZX1207 | 2.7                     | 180<br>(150-220)       | 0.1<br>(0.05-0.15)  | 0.15<br>(0.1-0.2)   | 0.2<br>(0.1-0.25)   |
|           |  |           |                            | ANZX1607 |                         |                        | 4.2                 | 0.15<br>(0.1-0.2)   | 0.25<br>(0.1-0.4)   |
|           | Nodular Cast Iron, Vermicular Graphite Cast Iron | ≤ HB350   | GK4125<br>GK2115           | ANZX1207 | 2.7                     | 120<br>(100-180)       | 0.1<br>(0.05-0.15)  | 0.1<br>(0.05-0.15)  | 0.2<br>(0.1-0.25)   |
|           |  |           |                            | ANZX1607 |                         |                        | 4.2                 | 0.15<br>(0.1-0.2)   | 0.25<br>(0.15-0.35) |
| <b>S</b>  | Heat-resistant Alloy and Titanium Alloy          | HRC30-45  | GS4130                     | ANZX1207 | 2.7                     | 60<br>(50-100)         | 0.08<br>(0.05-0.15) | 0.08<br>(0.05-0.15) | 0.1<br>(0.05-0.15)  |
|           |  |           |                            | ANZX1607 |                         |                        | 4.2                 | 0.1<br>(0.05-0.15)  | 0.1<br>(0.05-0.15)  |

Shoulder Milling

# WNGU







Double Face Six Edge Shoulder Milling



| Ordering Code  | Dimension(mm) |      |      |     | Coating Grade |        |        |        |        |        |        |        |        |        | Uncolored | Cement |        |        |        |        |
|--|---------------|------|------|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------|--------|--------|--------|--------|--------|
|  | IC            | D1   | S    | RE  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |           |        | GS4130 | GH4115 | GN9125 | GP01TM |
| <br>WNGU080608-GL   | 12.48         | 4.7  | 6.45 | 0.8 |               |        |        |        |        |        |        |        |        |        |           |        |        |        |        |        |
|  |               |      |      |     |               |        |        |        |        |        |        |        |        |        |           |        |        |        |        |        |
|  |               |      |      |     |               |        |        |        |        |        |        |        |        |        |           |        |        |        |        |        |
| <br>WNGU040304-GM<br>WNGU040308-GM<br>WNGU080608-GM<br>WNGU080616-GM | 6.7           | 3.25 | 3.3  | 0.4 | ●             |        |        |        | ●      | ●      |        | ●      | ●      | ●      | ●         |        |        |        |        |        |
|  | 6.7           | 3.25 | 3.3  | 0.8 | ●             |        |        |        | ●      | ●      |        | ●      | ●      | ●      | ●         |        |        |        |        |        |
|  | 12.48         | 4.6  | 6.45 | 0.8 | ●             |        |        |        | ●      | ●      |        | ●      | ●      | ●      | ●         |        |        |        |        |        |
|  | 12.48         | 4.6  | 6.45 | 1.6 |               |        |        |        |        |        | ○      |        | ○      | ○      | ○         |        |        |        |        |        |
| <br>WNGU080608-GH   | 12.48         | 4.6  | 6.45 | 0.8 | ●             |        |        |        | ●      |        |        |        | ●      | ●      |           |        |        |        |        |        |
|  |               |      |      |     |               |        |        |        |        |        |        |        |        |        |           |        |        |        |        |        |

● Stock ○ Available Upon Order

### WNGU Series Geometry

| Light Cutting for General Material  | Medium Cutting for General Material   | Heavy Cutting for General Material  |
|---|---|---|
|  |  |  |
| GL  | GM  | GH  |
|  |  |  |
| Light cutting of low cutting force, good processing quality.                      | High stability in most cases.   | Suitable on roughing, good edge strength.   |

Shoulder Milling

# MEE190

Arbor

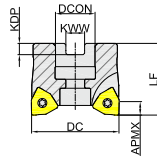


Fig1

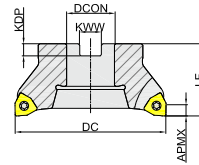


Fig2

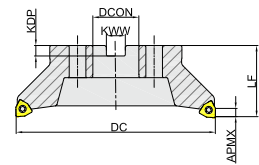


Fig3

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |    |      |     | APMX | Coolant | Suitable for | Shape | Stock |
|---------------------|-----------|-------|---------------|------|----|------|-----|------|---------|--------------|-------|-------|
|                     |           |       | DC            | DCON | LF | KWW  | KDP |      |         |              |       |       |
| MEE190040R06A16WN04 | 40        | 6     | 40            | 16   | 40 | 8.4  | 5.6 | 4    | ✓       | WNGU0403     | Fig1  | ●     |
| MEE190050R04A22WN08 | 50        | 4     | 50            | 22   | 40 | 10.4 | 6.3 | 7.5  | ✓       | WNGU0806     | Fig1  | ●     |
| MEE190050R05A22WN08 | 50        | 5     | 50            | 22   | 40 | 10.4 | 6.3 | 7.5  | ✓       | WNGU0806     | Fig1  | ●     |
| MEE190063R06A22WN08 | 63        | 6     | 63            | 22   | 40 | 10.4 | 6.3 | 7.5  | ✓       | WNGU0806     | Fig1  | ●     |
| MEE190080R07A27WN08 | 80        | 7     | 80            | 27   | 50 | 12.4 | 7   | 7.5  | ✓       | WNGU0806     | Fig1  | ●     |
| MEE190100R08B32WN08 | 100       | 8     | 100           | 32   | 50 | 14.4 | 8   | 7.5  | ×       | WNGU0806     | Fig2  | ●     |
| MEE190125R07B40WN08 | 125       | 7     | 125           | 40   | 63 | 16.4 | 9   | 7.5  | ×       | WNGU0806     | Fig2  | ●     |
| MEE190125R11B40WN08 | 125       | 11    | 125           | 40   | 63 | 16.4 | 9   | 7.5  | ×       | WNGU0806     | Fig2  | ●     |
| MEE190160R08C40WN08 | 160       | 8     | 160           | 40   | 63 | 16.4 | 9   | 7.5  | ×       | WNGU0806     | Fig3  | ●     |
| MEE190160R12C40WN08 | 160       | 12    | 160           | 40   | 63 | 16.4 | 9   | 7.5  | ×       | WNGU0806     | Fig3  | ●     |
| MEE190200R08C60WN08 | 200       | 8     | 200           | 60   | 63 | 25.7 | 14  | 7.5  | ×       | WNGU0806     | Fig3  | ●     |
| MEE190200R16C60WN08 | 200       | 16    | 200           | 60   | 63 | 25.7 | 14  | 7.5  | ×       | WNGU0806     | Fig3  | ●     |

● Stock ○ Available Upon Order

# MEE190

Cylindrical Straight Type

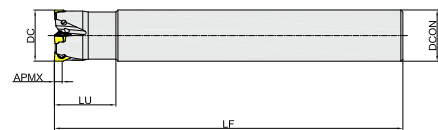



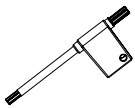
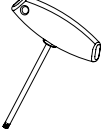
Fig4

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |     |      | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|------|-----|------|------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCON | LF  | LU   |      |              |         |       |       |
| MEE190020R03P20WN04 | 20        | 3     | 20            | 20   | 150 | 30   | 4    | WNGU0403     | ✓       | Fig4  | ●     |
| MEE190025R04P25WN04 | 25        | 4     | 25            | 25   | 170 | 30   | 4    | WNGU0403     | ✓       | Fig4  | ●     |
| MEE190032R05P32WN04 | 32        | 5     | 32            | 32   | 195 | 30   | 4    | WNGU0403     | ✓       | Fig4  | ●     |
| MEE190035R05P32WN04 | 35        | 5     | 35            | 32   | 195 | 30   | 4    | WNGU0403     | ✓       | Fig4  | ●     |
| MEE190040R03P32WN08 | 40        | 3     | 40            | 32   | 160 | 60.2 | 7.5  | WNGU0806     | ×       | Fig4  | ●     |
| MEE190040R06P32WN04 | 40        | 6     | 40            | 32   | 195 | 30   | 4    | WNGU0403     | ✓       | Fig4  | ●     |

● Stock ○ Available Upon Order



## Spare Parts

| Part Name |               | Inserts Screw   | Insert Screw Wrench  |   |
|-----------|---------------|---|--|---|
| Inserts   | Shape         |  |  |  |
|           | WNGU0403      | Specification<br>SI60M2.5X6.5-03610I  | TI07P  | --  |
|           | Ordering Code | SI60M025065-03610IS   | TI07PB   | --  |
| WNGU0806  | Specification | SI60M4.0X10-05510I  | TI15P  | TI15T   |
|           | Ordering Code | SI60M040100-05510IS   | TI15PB   | TI15TB  |

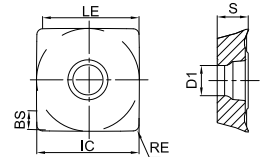
## Recommended Cutting Data




| Workpiece | Hardness   | Grade     | Specification    | Ap (mm)  | Cutting Speed Vc(m/min) | Feed Rate/Edges fz(mm) |                     |                     |                     |
|-----------|--|-----------|------------------|----------|-------------------------|------------------------|---------------------|---------------------|---------------------|
|           |  |           |                  |          |                         | Light Cutting(L)       | Medium Cutting(M)   | Heavy Cutting(H)    |                     |
| <b>P</b>  | Soft Steel                                       | ≤ HB180   | GA4225           | WNGU0403 | 1.2                     | 180<br>(140-220)       | 0.1<br>(0.05-0.15)  | 0.15<br>(0.1-0.2)   | 0.2<br>(0.1-0.25)   |
|           |  |           | GA4230           | WNGU0806 |                         |                        | 2.3                 | 0.15<br>(0.1-0.2)   | 0.25<br>(0.15-0.35) |
|           | Carbon Steel, Alloy Steel                        | HB180-350 | GA4225           | WNGU0403 | 1.2                     | 150<br>(110-190)       | 0.1<br>(0.05-0.15)  | 0.15<br>(0.1-0.2)   | 0.2<br>(0.1-0.25)   |
|           |  |           | GA4230<br>GP2115 | WNGU0806 |                         |                        | 2.3                 | 0.15<br>(0.1-0.2)   | 0.25<br>(0.15-0.35) |
|           | Pre-harden Steel                                 | HRC35-45  | GA4230           | WNGU0403 | 1.2                     | 150<br>(110-190)       | 0.08<br>(0.05-0.15) | 0.1<br>(0.05-0.15)  | 0.15<br>(0.1-0.2)   |
|           |  |           | GA4225<br>GP2115 | WNGU0806 |                         |                        | 2.3                 | 0.1<br>(0.05-0.15)  | 0.15<br>(0.1-0.2)   |
| <b>M</b>  | Stainless (Ferrite, Martensite)                  | ≤ HB270   | GM2140           | WNGU0403 | 1.2                     | 140<br>(100-180)       | 0.12<br>(0.1-0.2)   | 0.15<br>(0.1-0.2)   | 0.2<br>(0.1-0.3)    |
|           |  |           | GM4135<br>GA4230 | WNGU0806 |                         |                        | 2.3                 | 0.15<br>(0.1-0.2)   | 0.25<br>(0.15-0.35) |
|           | Stainless (Austenite, Diphasic)                  | ≤ HB270   | GM2140           | WNGU0403 | 1.2                     | 120<br>(80-160)        | 0.1<br>(0.05-0.15)  | 0.12<br>(0.1-0.2)   | 0.15<br>(0.1-0.2)   |
|           |  |           | GM4135           | WNGU0806 |                         |                        | 2.3                 | 0.12<br>(0.1-0.2)   | 0.15<br>(0.1-0.2)   |
| <b>K</b>  | Grey Cast Iron                                   | ≤ HB280   | GK2115           | WNGU0403 | 1.2                     | 180<br>(150-220)       | 0.1<br>(0.05-0.15)  | 0.15<br>(0.1-0.2)   | 0.2<br>(0.1-0.25)   |
|           |  |           | GK4125           | WNGU0806 |                         |                        | 2.3                 | 0.15<br>(0.1-0.2)   | 0.25<br>(0.1-0.4)   |
|           | Nodular Cast Iron, Vermicular Graphite Cast Iron | ≤ HB350   | GK4125           | WNGU0403 | 1.2                     | 120<br>(100-180)       | 0.1<br>(0.05-0.15)  | 0.1<br>(0.05-0.15)  | 0.2<br>(0.1-0.25)   |
|           |  |           | GK2115           | WNGU0806 |                         |                        | 2.3                 | 0.15<br>(0.1-0.2)   | 0.25<br>(0.15-0.35) |
| <b>S</b>  | Heat-resistant Alloy and Titanium Alloy          | HRC30-45  | GS4130           | WNGU0403 | 1.2                     | 40<br>(30-60)          | 0.08<br>(0.05-0.15) | 0.08<br>(0.05-0.15) | 0.1<br>(0.05-0.15)  |
|           |  |           |                  | WNGU0806 |                         |                        | 2.3                 | 0.1<br>(0.05-0.15)  | 0.1<br>(0.05-0.15)  |

Shoulder Milling

# SDKT







One Side Four Edge Shoulder Milling



| Ordering Code   | Dimension(mm) |       |      |     |     |     | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cermet |        |        |        |
|---|---------------|-------|------|-----|-----|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|
|   | LE            | IC    | S    | BS  | D1  | RE  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115 | GN9125 |
|  SDKT14T3PEER-GL   | 13.12         | 13.92 | 3.96 | 2.5 | 4.1 | 0.8 | ●             | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●        |        |        |        |        |
|  SDKT14T3PEER-GM  | 13.12         | 13.92 | 3.96 | 2.5 | 4.1 | 0.8 | ●             | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●        |        |        |        |        |
|  SDKT14T3PEER-GH | 13.12         | 13.92 | 3.96 | 2.5 | 4.1 | 0.8 |               |        | ●      |        | ●      |        |        |        | ●      | ●      |          |        |        |        |        |

● Stock ○ Available Upon Order

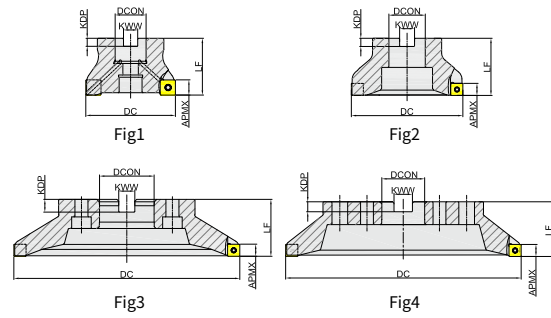
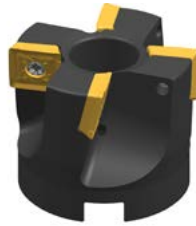
## SDKT Series Geometry

| Light Cutting for General Material  | Medium Cutting for General Material   | Heavy Cutting for General Material  |
|---|---|---|
|  |  |  |
| GL  | GM  | GH  |
|  |  |  |
| <p>Light cutting of low cutting force, good processing quality.</p>               | <p>High stability in most cases.</p>  | <p>Suitable on roughing, good edge strength.</p>                                    |

Shoulder Milling

# MES190

Arbor



Sparse Pitch

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |    |      |     | APMX | Coolant | Suitable for | Shape | Stock |
|---------------------|-----------|-------|---------------|------|----|------|-----|------|---------|--------------|-------|-------|
|                     |           |       | DC            | DCON | LF | KWW  | KDP |      |         |              |       |       |
| MES190050R04A22SD14 | 50        | 4     | 50            | 22   | 40 | 10.4 | 6.3 | 10   | ✓       | SDKT14T3     | Fig1  | ●     |
| MES190063R05A22SD14 | 63        | 5     | 63            | 22   | 40 | 10.4 | 6.3 | 10   | ✓       | SDKT14T3     | Fig1  | ●     |
| MES190080R06A27SD14 | 80        | 6     | 80            | 27   | 50 | 12.4 | 7   | 10   | ✓       | SDKT14T3     | Fig1  | ●     |
| MES190100R07B32SD14 | 100       | 7     | 100           | 32   | 50 | 14.4 | 8   | 10   | ×       | SDKT14T3     | Fig2  | ●     |
| MES190125R08B40SD14 | 125       | 8     | 125           | 40   | 63 | 16.4 | 9   | 10   | ×       | SDKT14T3     | Fig2  | ●     |
| MES190160R08C40SD14 | 160       | 8     | 160           | 40   | 63 | 16.4 | 9   | 10   | ×       | SDKT14T3     | Fig3  | ○     |
| MES190200R10C60SD14 | 200       | 10    | 200           | 60   | 63 | 25.7 | 14  | 10   | ×       | SDKT14T3     | Fig3  | ●     |
| MES190250R12C60SD14 | 250       | 12    | 250           | 60   | 63 | 25.7 | 14  | 10   | ×       | SDKT14T3     | Fig3  | ○     |
| MES190315R15D60SD14 | 315       | 15    | 315           | 60   | 80 | 25.7 | 14  | 10   | ×       | SDKT14T3     | Fig4  | ○     |

● Stock ○ Available Upon Order

Dense Pitch

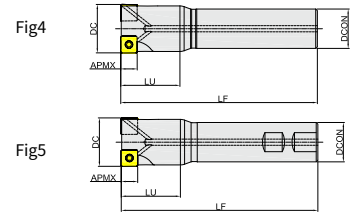
| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |    |      |     | APMX | Coolant | Suitable for | Shape | Stock |
|---------------------|-----------|-------|---------------|------|----|------|-----|------|---------|--------------|-------|-------|
|                     |           |       | DC            | DCON | LF | KWW  | KDP |      |         |              |       |       |
| MES190050R05A22SD14 | 50        | 5     | 50            | 22   | 40 | 10.4 | 6.3 | 10   | ✓       | SDKT14T3     | Fig1  | ●     |
| MES190063R06A22SD14 | 63        | 6     | 63            | 22   | 40 | 10.4 | 6.3 | 10   | ✓       | SDKT14T3     | Fig1  | ●     |
| MES190080R08A27SD14 | 80        | 8     | 80            | 27   | 50 | 12.4 | 7   | 10   | ✓       | SDKT14T3     | Fig1  | ●     |
| MES190100R08B32SD14 | 100       | 8     | 100           | 32   | 50 | 14.4 | 8   | 10   | ×       | SDKT14T3     | Fig2  | ●     |
| MES190125R10B40SD14 | 125       | 10    | 125           | 40   | 63 | 16.4 | 9   | 10   | ×       | SDKT14T3     | Fig2  | ●     |
| MES190160R12C40SD14 | 160       | 12    | 160           | 40   | 63 | 16.4 | 9   | 10   | ×       | SDKT14T3     | Fig3  | ●     |
| MES190200R16C60SD14 | 200       | 16    | 200           | 60   | 63 | 25.7 | 14  | 10   | ×       | SDKT14T3     | Fig3  | ●     |
| MES190250R18C60SD14 | 250       | 18    | 250           | 60   | 63 | 25.7 | 14  | 10   | ×       | SDKT14T3     | Fig3  | ○     |
| MES190315R24D60SD14 | 315       | 24    | 315           | 60   | 80 | 25.7 | 14  | 10   | ×       | SDKT14T3     | Fig4  | ○     |

● Stock ○ Available Upon Order

Shoulder Milling

# MES190

Side Clamp Type/Cylindrical Straight Type



| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |     |    | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|------|-----|----|------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCON | LF  | LU |      |              |         |       |       |
| MES190040R03P20SD14 | 40        | 3     | 40            | 20   | 120 | 60 | 10   | SDKT14T3     | ✓       | Fig4  | ○     |
| MES190040R03W32SD14 | 40        | 3     | 40            | 32   | 160 | 62 | 10   | SDKT14T3     | ✓       | Fig5  | ●     |
| MES190040R04W32SD14 | 40        | 4     | 40            | 32   | 160 | 62 | 10   | SDKT14T3     | ✓       | Fig5  | ●     |
| MES190050R04W32SD14 | 50        | 4     | 50            | 32   | 160 | 76 | 10   | SDKT14T3     | ✓       | Fig5  | ●     |
| MES190050R05W32SD14 | 50        | 5     | 50            | 32   | 160 | 76 | 10   | SDKT14T3     | ✓       | Fig5  | ●     |

● Stock ○ Available Upon Order

## Spare Parts

| Part Name |               | Inserts Screw       | Insert Screw Wrench |        |
|-----------|---------------|---------------------|---------------------|--------|
| Inserts   | Shape         |                     |                     |        |
|           | Specification | SI60M3.5X10-05018I  | TI15P               | TI15T  |
| SDKT14T3  | Ordering Code | SI60M035100-05018IS | TI15PB              | TI15TB |

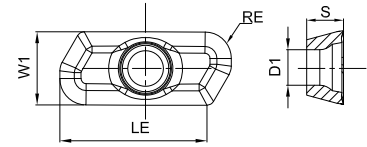
## Recommended Cutting Data


|          | Workpiece  | Hardness  | Grade                      | Specification | Ap<br>(mm) | Cutting Speed<br>Vc(m/min) | Feed Rate/Edges fz(mm) |                      |                     |
|----------|--|-----------|----------------------------|---------------|------------|----------------------------|------------------------|----------------------|---------------------|
|          |  |           |                            |               |            |                            | Light<br>Cutting(L)    | Medium<br>Cutting(M) | Heavy<br>Cutting(H) |
| <b>P</b> | Soft Steel   | ≤ HB180   | GA4225<br>GA4230           | SDKT14T3      | 3          | 180<br>(140-220)           | 0.2<br>(0.1-0.3)       | 0.25<br>(0.15-0.35)  | 0.3<br>(0.2-0.4)    |
|          | Carbon<br>Steel, Alloy<br>Steel                              | HB180-350 | GA4225<br>GA4230<br>GP2115 | SDKT14T3      | 3          | 150<br>(110-190)           | 0.2<br>(0.1-0.3)       | 0.25<br>(0.15-0.35)  | 0.3<br>(0.2-0.4)    |
|          | Pre-harden<br>Steel  | HRC35-45  | GA4230<br>GA4225<br>GP2115 | SDKT14T3      | 3          | 150<br>(110-190)           | 0.1<br>(0.05-0.15)     | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.3)    |
| <b>M</b> | Stainless<br>(Ferrite,<br>Martensite)                        | ≤ HB270   | GM2140<br>GM4135<br>GA4230 | SDKT14T3      | 3          | 140<br>(100-180)           | 0.12<br>(0.1-0.2)      | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.3)    |
|          | Stainless<br>(Austenite,<br>Diphasic)                        | ≤ HB270   | GM2140<br>GM4135           | SDKT14T3      | 3          | 120<br>(80-160)            | 0.1<br>(0.05-0.15)     | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.3)    |
| <b>K</b> | Grey Cast<br>Iron  | ≤ HB280   | GK2115<br>GK4125           | SDKT14T3      | 3          | 180<br>(140-220)           | 0.2<br>(0.1-0.3)       | 0.25<br>(0.1-0.4)    | 0.3<br>(0.2-0.5)    |
|          | Nodular<br>Cast Iron,<br>Vermicular<br>Graphite<br>Cast Iron | ≤ HB350   | GK4125<br>GK2115           | SDKT14T3      | 3          | 140<br>(100-180)           | 0.1<br>(0.05-0.15)     | 0.15<br>(0.1-0.2)    | 0.2<br>(0.1-0.25)   |
| <b>S</b> | Heat-<br>resistant<br>Alloy and<br>Titanium<br>Alloy         | HRC30-45  | GS4130                     | SDKT14T3      | 3          | 40<br>(30-60)              | 0.1<br>(0.05-0.15)     | 0.1<br>(0.05-0.15)   | 0.15<br>(0.1-0.2)   |

Shoulder Milling

# XDHT

Shoulder Milling Insert For Aluminium



| Ordering Code   | Dimension(mm) |     |      |     |     | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cermat |        |        |        |        |
|---|---------------|-----|------|-----|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|
|   | LE            | W1  | S    | D1  | RE  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115 | GN9125 | GP01TM |
|  XDHT190402FR-AL | 19            | 9.5 | 4.76 | 4.6 | 0.2 |               |        |        |        |        |        |        |        |        |        |          |        |        |        | ●      |        |
| XDHT190408FR-AL   | 19            | 9.5 | 4.76 | 4.6 | 0.8 |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ●      |
| XDHT190420FR-AL   | 19            | 9.5 | 4.76 | 4.6 | 2.0 |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ●      |
| XDHT190432FR-AL   | 19            | 9.5 | 4.76 | 4.6 | 3.2 |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ●      |
| XDHT190440FR-AL   | 19            | 9.5 | 4.76 | 4.6 | 4.0 |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ●      |
| XDHT190450FR-AL   | 19            | 9.5 | 4.76 | 4.6 | 5.0 |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ●      |

● Stock ○ Available Upon Order

## XDHT Series Geometry

General Cutting  
for Aluminum Alloys



AL

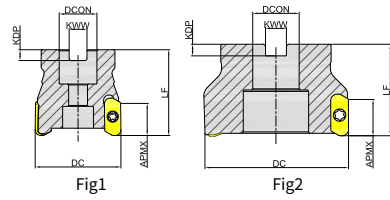


Large rake angle, sharp edge, light cutting, polishing and good chip removal

## Shoulder Milling

**MEH190**

Arbor



| Ordering Code       | Dia-<br>meter | Teeth | Dimension(mm) |      |    |      |     | APMX | Suitable for     | Coolant | Shape | Stock |
|---------------------|---------------|-------|---------------|------|----|------|-----|------|------------------|---------|-------|-------|
|                     |               |       | DC            | DCON | LF | KWW  | KDP |      |                  |         |       |       |
| MEH190040R03A16XD19 | 40            | 3     | 40            | 16   | 50 | 8.4  | 5.6 | 18   | XDHT1904(RE ≤ 4) | ×       | Fig1  | ●     |
| MEH190050R04A22XD19 | 50            | 4     | 50            | 22   | 50 | 10.4 | 6.3 | 18   | XDHT1904(RE ≤ 4) | ×       | Fig1  | ●     |
| MEH190063R04A22XD19 | 63            | 4     | 63            | 22   | 50 | 10.4 | 6.3 | 18   | XDHT1904(RE ≤ 4) | ×       | Fig1  | ●     |
| MEH190063R05A22XD19 | 63            | 5     | 63            | 22   | 50 | 10.4 | 6.3 | 18   | XDHT1904(RE ≤ 4) | ×       | Fig1  | ●     |
| MEH190080R04A27XD19 | 80            | 4     | 80            | 27   | 50 | 12.4 | 7   | 18   | XDHT1904(RE ≤ 4) | ×       | Fig1  | ●     |
| MEH190080R05A27XD19 | 80            | 5     | 80            | 27   | 50 | 12.4 | 7   | 18   | XDHT1904(RE ≤ 4) | ×       | Fig1  | ●     |
| MEH190100R05B32XD19 | 100           | 5     | 100           | 32   | 50 | 14.4 | 8   | 18   | XDHT1904(RE ≤ 4) | ×       | Fig2  | ○     |
| MEH190100R08B32XD19 | 100           | 8     | 100           | 32   | 50 | 14.4 | 8   | 18   | XDHT1904(RE ≤ 4) | ×       | Fig2  | ○     |
| MEH190125R05B40XD19 | 125           | 5     | 125           | 40   | 63 | 16.4 | 9   | 18   | XDHT1904(RE ≤ 4) | ×       | Fig2  | ○     |
| MEH190125R06B40XD19 | 125           | 6     | 125           | 40   | 63 | 16.4 | 9   | 18   | XDHT1904(RE ≤ 4) | ×       | Fig2  | ○     |

● Stock ○ Available Upon Order



Shoulder Milling

# MEH190

Cylindrical Straight Type

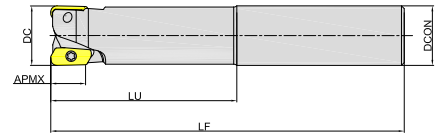


Fig3

| Ordering Code        | Dia-meter | Teeth | Dimension(mm) |      |     |     | APMX | Suitable for     | Coolant | Shape | Stock |
|----------------------|-----------|-------|---------------|------|-----|-----|------|------------------|---------|-------|-------|
|                      |           |       | DC            | DCON | LF  | LU  |      |                  |         |       |       |
| MEH190025R02P25XD19  | 25        | 2     | 25            | 25   | 121 | 50  | 18   | XDHT1904(RE ≤ 4) | ×       | Fig3  | ●     |
| MEH190025R02P25XD19L | 25        | 2     | 25            | 25   | 165 | 63  | 18   | XDHT1904(RE ≤ 4) | ×       | Fig3  | ●     |
| MEH190032R02P32XD19S | 32        | 2     | 32            | 32   | 125 | 65  | 18   | XDHT1904(RE ≤ 4) | ×       | Fig3  | ●     |
| MEH190032R02P32XD19  | 32        | 2     | 32            | 32   | 165 | 80  | 18   | XDHT1904(RE ≤ 4) | ×       | Fig3  | ●     |
| MEH190032R02P32XD19L | 32        | 2     | 32            | 32   | 190 | 100 | 18   | XDHT1904(RE ≤ 4) | ×       | Fig3  | ●     |
| MEH190032R03P32XD19S | 32        | 3     | 32            | 32   | 125 | 65  | 18   | XDHT1904(RE ≤ 4) | ×       | Fig3  | ●     |
| MEH190032R03P32XD19  | 32        | 3     | 32            | 32   | 165 | 80  | 18   | XDHT1904(RE ≤ 4) | ×       | Fig3  | ●     |
| MEH190032R03P32XD19L | 32        | 3     | 32            | 32   | 190 | 100 | 18   | XDHT1904(RE ≤ 4) | ×       | Fig3  | ●     |

● Stock ○ Available Upon Order

# MEH190

Replaceable Tool Head

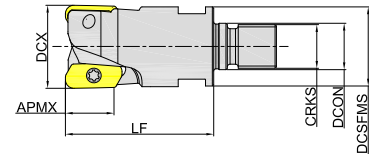


Fig4

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |        |    |      | APMX | Suitable for     | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|------|--------|----|------|------|------------------|---------|-------|-------|
|                     |           |       | DCX           | DCON | DCSFMS | LF | CRKS |      |                  |         |       |       |
| MEH190025R02M12XD19 | 25        | 2     | 25            | 12.5 | 24     | 45 | M12  | 18   | XDHT1904(RE ≤ 4) | ×       | Fig4  | ○     |
| MEH190032R03M16XD19 | 32        | 3     | 32            | 17   | 29     | 52 | M16  | 18   | XDHT1904(RE ≤ 4) | ×       | Fig4  | ○     |
| MEH190040R03M16XD19 | 40        | 3     | 40            | 17   | 32     | 52 | M16  | 18   | XDHT1904(RE ≤ 4) | ×       | Fig4  | ○     |

● Stock ○ Available Upon Order

## Shoulder Milling

# MEH190

Integrated Cutter-HSK63A

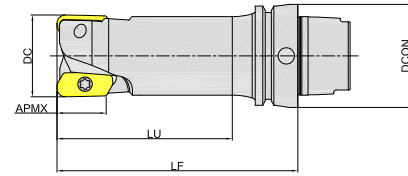


Fig5

| Ordering Code         | Dia-meter | Teeth | Dimension(mm) |      |     |    | APMX | Suitable for     | Coolant | Shape | Stock |
|-----------------------|-----------|-------|---------------|------|-----|----|------|------------------|---------|-------|-------|
|                       |           |       | DC            | DCON | LF  | LU |      |                  |         |       |       |
| MEH190025R02HA63XD19S | 25        | 2     | 25            | 63   | 90  | 50 | 18   | XDHT1904(RE ≤ 4) | ×       | Fig5  | ○     |
| MEH190025R02HA63XD19  | 25        | 2     | 25            | 63   | 100 | 63 | 18   | XDHT1904(RE ≤ 4) | ×       | Fig5  | ○     |
| MEH190032R02HA63XD19S | 32        | 2     | 32            | 63   | 100 | 63 | 18   | XDHT1904(RE ≤ 4) | ×       | Fig5  | ○     |
| MEH190032R02HA63XD19  | 32        | 2     | 32            | 63   | 120 | 80 | 18   | XDHT1904(RE ≤ 4) | ×       | Fig5  | ○     |
| MEH190032R03HA63XD19S | 32        | 3     | 32            | 63   | 100 | 63 | 18   | XDHT1904(RE ≤ 4) | ×       | Fig5  | ○     |
| MEH190032R03HA63XD19  | 32        | 3     | 32            | 63   | 120 | 80 | 18   | XDHT1904(RE ≤ 4) | ×       | Fig5  | ○     |
| MEH190040R03HA63XD19S | 40        | 3     | 40            | 63   | 100 | 63 | 18   | XDHT1904(RE ≤ 4) | ×       | Fig5  | ○     |
| MEH190040R03HA63XD19  | 40        | 3     | 40            | 63   | 120 | 80 | 18   | XDHT1904(RE ≤ 4) | ×       | Fig5  | ○     |

● Stock ○ Available Upon Order

## Spare Parts

| Part Name |               | Inserts Screw       | Insert Screw Wrench |        |
|-----------|---------------|---------------------|---------------------|--------|
| Inserts   | Shape         |                     |                     |        |
|           | Specification | SI60M4.0X8.5-05512I | TI15P               | TI15T  |
| XDHT1904  | Ordering Code | SI60M040085-05512IB | TI15PB              | TI15TB |

## Recommended Cutting Data

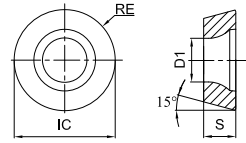
| Workpiece | Hardness | Grade  | Specification | Ap (mm) | Cutting Speed Vc(m/min) | Feed Rate/Edges fz(mm) |                   |                  |
|-----------|----------|--------|---------------|---------|-------------------------|------------------------|-------------------|------------------|
|           |          |        |               |         |                         | Light Cutting(L)       | Medium Cutting(M) | Heavy Cutting(H) |
| Aluminium | HB60-210 | GN9125 | XDHT1904      | 7       | ≥ 300                   | 0.15<br>(0.1-0.2)      | 0.2<br>(0.1-0.3)  | 0.3<br>(0.2-0.4) |



Profile Milling

# RD

Profile Milling Inserts (Positive)



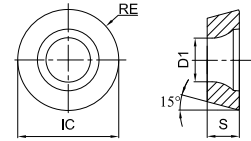
| Ordering Code | Dimension(mm)  |      |      |     | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cermat |        |        |
|---------------|----------------|------|------|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|
|               | IC             | S    | RE   | D1  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115 |
|               | RDET0803M0-BL  | 8    | 3.18 | 4   | 2.9           | ○      | ○      | ○      |        |        |        |        |        |        |          |        |        |        |
|               | RDET1003M0-BL  | 10   | 3.18 | 5   | 4.4           |        |        | ○      | ○      |        |        |        |        |        |          |        |        |        |
|               | RDET10T3M0-BL  | 10   | 3.97 | 5   | 4.4           | ○      | ○      | ○      | ○      |        |        |        |        |        |          |        |        |        |
|               | RDET1204M0-BL  | 12   | 4.76 | 6   | 4.4           |        | ○      | ○      | ○      |        |        |        |        |        |          |        |        |        |
|               | RDET1604M0-BL  | 16   | 4.76 | 8   | 5.5           |        | ●      | ○      | ●      |        |        |        |        |        |          |        |        |        |
|               | RDET0802M0-GM  | 8    | 2.38 | 4   | 2.9           | ●      | ○      | ●      | ○      | ○      |        |        |        |        |          |        |        |        |
|               | RDET0803M0-GM  | 8    | 3.18 | 4   | 2.9           |        | ○      | ○      | ○      |        |        |        |        |        |          |        |        |        |
|               | RDET1003M0-GM  | 10   | 3.18 | 5   | 4.4           |        | ○      | ○      | ○      |        |        |        |        |        |          |        |        |        |
|               | RDET10T3M0-GM  | 10   | 3.97 | 5   | 4.4           | ●      | ●      | ●      | ●      | ○      |        | ○      |        |        | ○        |        |        |        |
|               | RDET1204M0-GM  | 12   | 4.76 | 6   | 4.4           | ○      | ●      | ○      | ●      |        |        |        |        |        | ●        |        |        |        |
| RDET1604M0-GM | 16             | 4.76 | 8    | 5.5 | ○             | ●      | ○      | ●      | ○      |        |        |        |        |        |          |        |        |        |
|               | RDEW0501M0     | 5    | 1.51 | 2.5 | 2.2           | ●      | ●      | ●      | ●      | ●      |        |        |        |        |          |        |        |        |
|               | RDEW0702M0     | 7    | 2.38 | 3.5 | 2.8           | ●      | ●      | ●      | ●      | ●      |        |        |        |        |          |        |        | ●      |
|               | RDEW1003M0     | 10   | 3.18 | 5   | 4.4           | ●      |        | ●      | ○      |        |        |        |        |        |          |        |        |        |
|               | RDEW0702M0T    | 7    | 2.38 | 3.5 | 2.8           | ●      | ●      | ●      | ●      | ●      |        |        |        |        |          |        |        |        |
|               | RDEW0803M0T    | 8    | 3.18 | 4   | 2.9           | ○      | ○      | ○      | ○      | ●      |        |        |        |        |          |        |        |        |
|               | RDEW1003M0T    | 10   | 3.18 | 5   | 4.6           | ●      | ●      | ●      | ●      |        |        |        | ●      |        |          |        |        |        |
|               | RDEW10T3M0T    | 10   | 3.97 | 5   | 4.4           | ●      | ●      | ●      | ○      | ○      |        |        |        |        |          |        |        |        |
|               | RDEW1204M0T    | 12   | 4.76 | 6   | 4.4           | ●      | ●      | ●      | ●      | ○      |        |        |        |        |          |        |        |        |
|               | RDEW1604M0T    | 16   | 4.76 | 8   | 5             | ○      | ○      | ○      | ○      |        |        |        |        |        |          |        |        |        |
|               | RDEW1606M0T    | 16   | 6.35 | 8   | 5.5           |        |        |        | ○      |        |        |        |        |        |          |        |        |        |
|               | RDEW12T3M0T-BM | 12   | 3.97 | 6   | 4.4           | ○      | ●      | ●      | ●      |        |        |        |        |        |          |        |        |        |
|               | RDEW1204M0T-BM | 12   | 4.76 | 6   | 4.4           |        | ●      | ○      | ●      | ○      |        |        |        |        |          |        |        |        |
|               | RDEW1204M0T-PM | 12   | 4.82 | 6   | 4.4           | ○      | ○      | ●      | ○      |        |        |        |        |        |          |        |        |        |
|               | RDEW1605M0T-PM | 16   | 5.66 | 8   | 5.5           | ○      | ○      | ○      | ○      |        |        |        |        |        |          |        |        |        |





● Stock ○ Available Upon Order

Profile Milling

# RD









Profile Milling Inserts (Positive)



| Ordering Code   | Dimension(mm)  |    |      |    | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cermat |        |        |
|---|----------------|----|------|----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|
|   | IC             | S  | RE   | D1 | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115 |
|    | RDMT10T3M0-GM  | 10 | 3.97 | 5  | 4.4           | ●      | ●      | ●      | ●      | ●      | ○      | ○      | ●      |        | ●        |        |        |        |
|   | RDMT1204M0-GM  | 12 | 4.76 | 6  | 4.4           | ●      | ●      | ●      |        | ●      |        |        | ●      | ●      | ●        |        |        |        |
|   | RDMW1204M0T-BM | 12 | 4.76 | 6  | 4.4           | ●      | ●      | ●      | ●      | ●      |        |        | ●      | ●      |          |        |        |        |
|   | RDMW1605M0T-BM | 16 | 5.56 | 8  | 5.5           | ●      | ●      | ●      | ●      | ●      |        |        |        |        |          |        |        |        |
|  | RDMW10T3M0T    | 10 | 3.97 | 5  | 4.4           | ●      | ●      | ●      | ●      | ●      |        |        | ○      |        |          |        |        | ○      |
|   | RDMW1604M0T    | 16 | 4.76 | 8  | 5.5           | ●      | ●      | ●      | ●      | ●      |        |        | ○      |        |          |        |        |        |
|  | RDMW1204M0T-PM | 12 | 4.76 | 6  | 4.4           | ●      |        | ●      | ○      | ●      |        |        |        |        |          |        |        |        |

● Stock ○ Available Upon Order

## RD Series Geometry

| Light Cutting for General Material  | Medium Cutting for General Material  | Heavy Cutting for General Material   |   |
|---|--|--|---|
|  |   |  |  |
| BL  | GM   | None/BM/PM   |   |
|  |   |  |  |
| <p>Large rake angle design, sharp edge.</p>                                       | <p>Suitable edge width and rake angle design, has good strength and sharpness.</p> | <p>Flat design, better edge strength.</p>  |   |

Profile Milling

# MPA100

Arbor

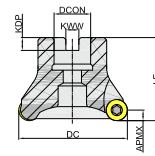


Fig1

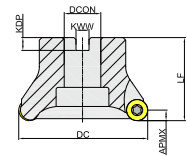


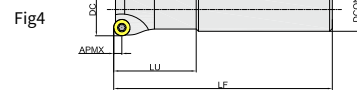
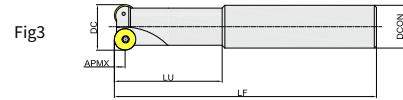
Fig2

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |    |      |     | APMX | Suitable for | Coolant | Clamp | Shape | Stock |
|---------------------|-----------|-------|---------------|------|----|------|-----|------|--------------|---------|-------|-------|-------|
|                     |           |       | DC            | DCON | LF | KWW  | KDP |      |              |         |       |       |       |
| MPA100040R05A16RD08 | 40        | 5     | 40            | 16   | 40 | 8.4  | 6.3 | 4    | RD**0803     | ×       | ×     | Fig1  | ●     |
| MPA100050R04A22RD10 | 50        | 4     | 50            | 22   | 50 | 10.4 | 6.3 | 5    | RD**10T3     | ×       | ✓     | Fig1  | ●     |
| MPA100050R04A22RD12 | 50        | 4     | 50            | 22   | 50 | 10.4 | 6.3 | 6    | RD**1204     | ×       | ✓     | Fig1  | ●     |
| MPA100050R05A22RD12 | 50        | 5     | 50            | 22   | 50 | 10.4 | 6.3 | 6    | RD**1204     | ×       | ✓     | Fig1  | ●     |
| MPA100063R04A22RD16 | 63        | 4     | 63            | 22   | 50 | 10.4 | 6.3 | 8    | RD**1604     | ×       | ×     | Fig1  | ●     |
| MPA100063R05A22RD12 | 63        | 5     | 63            | 22   | 50 | 10.4 | 6.3 | 6    | RD**1204     | ×       | ✓     | Fig1  | ●     |
| MPA100080R05A27RD16 | 80        | 5     | 80            | 27   | 50 | 12.4 | 7   | 8    | RD**1604     | ×       | ×     | Fig1  | ●     |
| MPA100100R06B32RD16 | 100       | 6     | 100           | 32   | 50 | 14.4 | 8   | 8    | RD**1604     | ×       | ×     | Fig2  | ●     |
| MPA100125R07B40RD16 | 125       | 7     | 125           | 40   | 63 | 16.4 | 9   | 8    | RD**1604     | ×       | ×     | Fig2  | ●     |

● Stock ○ Available Upon Order

# MPA100

Cylindrical Straight Type



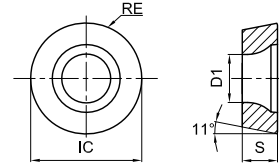
| Ordering Code        | Dia-meter | Teeth | Dimension(mm) |      |     |    | APMX | Suitable for | Coolant | Clamp | Shape | Stock |
|----------------------|-----------|-------|---------------|------|-----|----|------|--------------|---------|-------|-------|-------|
|                      |           |       | DC            | DCON | LF  | LU |      |              |         |       |       |       |
| MPA100010R02P16RD05  | 10        | 2     | 10            | 16   | 120 | 40 | 2.5  | RD**0501     | ×       | ×     | Fig3  | ●     |
| MPA100012R02P16RD05  | 12        | 2     | 12            | 16   | 120 | 40 | 2.5  | RD**0501     | ×       | ×     | Fig3  | ●     |
| MPA100016R02P16RD07  | 16        | 2     | 16            | 16   | 160 | 50 | 3.5  | RD**0702     | ×       | ×     | Fig3  | ●     |
| MPA100017R02P16RD08  | 17        | 2     | 17            | 16   | 160 | 50 | 4    | RD**0803     | ×       | ×     | Fig4  | ●     |
| MPA100020R02P20RD08  | 20        | 2     | 20            | 20   | 160 | 50 | 4    | RD**0803     | ×       | ×     | Fig3  | ●     |
| MPA100020R02P20RD10  | 20        | 2     | 20            | 20   | 160 | 50 | 5    | RD**10T3     | ×       | ✓     | Fig3  | ●     |
| MPA100025R02P20RD10  | 25        | 2     | 25            | 20   | 160 | 50 | 5    | RD**10T3     | ×       | ✓     | Fig4  | ●     |
| MPA100032R02P32RD12  | 32        | 2     | 32            | 32   | 200 | 60 | 6    | RD**1204     | ×       | ✓     | Fig3  | ●     |
| MPA100032R02P32RD16  | 32        | 3     | 32            | 32   | 200 | 65 | 8    | RD**1604     | ×       | ×     | Fig3  | ●     |
| MPA100032R03P32RD12S | 32        | 3     | 32            | 32   | 160 | 50 | 6    | RD**1204     | ×       | ✓     | Fig3  | ●     |
| MPA100032R03P32RD12  | 32        | 3     | 32            | 32   | 200 | 60 | 6    | RD**1204     | ×       | ✓     | Fig3  | ●     |
| MPA100035R02P32RD16  | 35        | 2     | 35            | 32   | 200 | 65 | 8    | RD**1604     | ×       | ×     | Fig4  | ●     |






● Stock ○ Available Upon Order

Profile Milling

# RP

Profile Milling Inserts (Positive)



| Ordering Code   | Dimension(mm)  |    |      |    | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cement |        |        |        |        |
|---|----------------|----|------|----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|
|   | IC             | S  | RE   | D1 | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115 | GN9125 | GP01TM |
|    | RPET1003M0-GL  | 10 | 3.18 | 5  | 4.4           | ○      | ○      | ○      |        |        |        |        |        |        |          |        |        |        |        |        |
|   | RPET1204M0-GL  | 12 | 4.76 | 6  | 4.4           | ○      | ○      | ○      |        |        |        |        |        |        |          |        |        |        |        |        |
|   | RPET08T2M0-GM  | 8  | 2.78 | 4  | 2.9           | ●      | ●      | ●      | ○      | ●      |        |        |        |        | ●        |        |        |        |        |        |
|   | RPET1003M0T-GM | 10 | 3.18 | 5  | 4.4           | ○      | ○      | ○      |        |        |        |        |        |        |          |        |        |        |        |        |
|   | RPET1204M0-GM  | 12 | 4.76 | 6  | 4.4           | ●      | ○      | ●      | ○      |        |        |        |        |        |          |        |        |        |        |        |
|   | RPET1204M0T-GM | 12 | 4.76 | 6  | 4.4           | ●      | ●      | ○      | ●      |        |        |        |        |        |          |        |        |        |        |        |
|   | RPET1606M0T-GM | 16 | 6.35 | 8  | 5.5           | ○      | ○      | ○      | ○      |        |        |        |        |        |          | ●      |        |        |        |        |
|   | RPET1606M0T-GH | 16 | 6.35 | 8  | 5.5           | ○      | ○      | ○      | ○      |        |        |        |        |        |          |        |        |        |        |        |
|  | RPET1606M0-SM  | 16 | 6.35 | 8  | 5.5           |        |        |        | ○      |        | ●      |        |        |        | ●        |        |        |        |        |        |
|   |                |    |      |    |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |
|  | RPEW08T2M0     | 8  | 2.78 | 4  | 2.9           | ○      |        | ○      | ○      |        |        |        |        |        |          |        |        |        |        |        |
|   | RPEW1003M0     | 10 | 3.18 | 5  | 4.4           | ○      | ○      | ○      | ○      |        |        |        |        |        |          |        |        |        |        |        |
|   | RPEW10T3M0     | 10 | 3.97 | 5  | 4.4           | ○      | ○      | ○      | ○      |        |        |        |        |        |          |        |        |        |        |        |
|  | RPEW1003M0T    | 10 | 3.18 | 5  | 4.4           | ●      | ●      | ●      | ●      |        |        |        |        |        |          |        |        |        |        |        |
|   | RPEW1204M0T    | 12 | 4.76 | 6  | 4.4           | ○      | ○      | ○      |        |        |        |        |        |        |          |        |        |        |        |        |

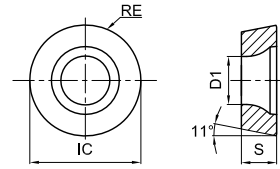
● Stock ○ Available Upon Order









Profile Milling

# RP













Profile Milling Inserts (Positive)



| Ordering Code   | Dimension(mm) |      |    |     | Coating Grade |        |        |        |        |        |        |        |        |        |        |        | Uncoated | Cement |        |
|---|---------------|------|----|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|
|   | IC            | S    | RE | D1  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 | GS4130 | GH4115 |          |        | GN9125 |
| <br>RPMT10T3M0-GM    | 10            | 3.97 | 5  | 4.4 | ●             | ●      | ●      | ●      | ●      |        |        |        |        |        |        |        |          |        | ○      |
|   |               |      |    |     |               |        |        |        |        |        |        |        |        |        |        |        |          |        |        |
| <br>RPMT1003M0T-GM  | 10            | 3.18 | 5  | 4.4 | ●             | ●      | ●      | ●      | ○      |        |        | ●      | ○      |        | ●      |        |          |        |        |
|   |               |      |    |     |               |        |        |        |        |        |        |        |        |        |        |        |          |        |        |
| <br>RPMT1204M0-GM  | 12            | 4.76 | 6  | 4.4 | ●             | ●      | ●      | ●      | ●      |        |        | ○      | ●      |        | ●      |        |          |        |        |
|   |               |      |    |     |               |        |        |        |        |        |        |        |        |        |        |        |          |        |        |
| <br>RPMT1204M0T-KM | 12            | 4.76 | 6  | 4.4 | ○             | ○      | ○      | ○      |        |        | ●      |        |        |        |        |        |          |        |        |
|   |               |      |    |     |               |        |        |        |        |        |        |        |        |        |        |        |          |        |        |
| <br>RPMW1003M0T    | 10            | 3.18 | 5  | 4.4 | ●             | ●      | ●      | ●      | ●      |        |        |        | ●      | ●      |        |        |          |        | ●      |
|   |               |      |    |     |               |        |        |        |        |        |        |        |        |        |        |        |          |        |        |
| <br>RPMW1204M0T    | 12            | 4.76 | 6  | 4.4 | ●             | ●      | ●      | ●      | ●      |        | ●      |        | ●      |        |        |        |          |        |        |
|   |               |      |    |     |               |        |        |        |        |        |        |        |        |        |        |        |          |        |        |

● Stock ○ Available Upon Order

## RP Series Geometry

| Light Cutting for General Material  | Medium Cutting for General Material   | Medium Machining of General Cast Iron   | Medium Machining of Nonferrous Metal  | Heavy Cutting for General Material  |   |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| GL  | GM  | KM  | SM  | GH  | None  |
|  |  |  |  |  |  |
| Big rake angle, sharper edge.   | Suitable edge width and rake design, has good strength and sharpness.             | Suitable edge width and rake design, has good strength and sharpness.             | Suitable edge width and rake design, has good strength and sharpness.             | Small rake angle, flat design, high edge strength.                                  |   |

Profile Milling

# MPB100

Arbor

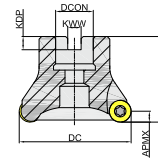


Fig1

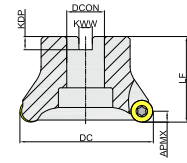


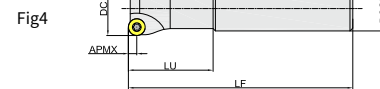
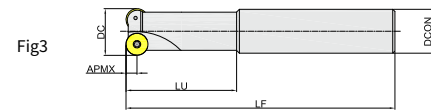
Fig2

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |    |      |     | APMX | Suitable for | Coolant | Clamp | Shape | Stock |
|---------------------|-----------|-------|---------------|------|----|------|-----|------|--------------|---------|-------|-------|-------|
|                     |           |       | DC            | DCON | LF | KWW  | KDP |      |              |         |       |       |       |
| MPB100040R04A16RP10 | 40        | 4     | 40            | 16   | 40 | 8.4  | 6.3 | 5    | RP**1003     | ×       | ✓     | Fig1  | ●     |
| MPB100040R05A16RP08 | 40        | 5     | 40            | 16   | 40 | 8.4  | 6.3 | 4    | RP**08T2     | ×       | ×     | Fig1  | ●     |
| MPB100050R04A22RP10 | 50        | 4     | 50            | 22   | 50 | 10.4 | 6.3 | 5    | RP**1003     | ×       | ✓     | Fig1  | ●     |
| MPB100050R04A22RP12 | 50        | 4     | 50            | 22   | 50 | 10.4 | 6.3 | 6    | RP**1204     | ×       | ✓     | Fig1  | ●     |
| MPB100063R04A22RP16 | 63        | 4     | 63            | 22   | 40 | 10.4 | 6.3 | 8    | RP**1606     | ×       | ×     | Fig1  | ●     |
| MPB100063R05A22RP12 | 63        | 5     | 63            | 22   | 50 | 10.4 | 6.3 | 6    | RP**1204     | ×       | ✓     | Fig1  | ●     |
| MPB100063R06A22RP12 | 63        | 6     | 63            | 22   | 50 | 10.4 | 6.3 | 6    | RP**1204     | ×       | ✓     | Fig1  | ●     |
| MPB100080R06A27RP16 | 80        | 6     | 80            | 27   | 50 | 12.4 | 7   | 8    | RP**1606     | ×       | ×     | Fig1  | ●     |
| MPB100100R07B32RP16 | 100       | 7     | 100           | 32   | 50 | 14.4 | 8   | 8    | RP**1606     | ×       | ×     | Fig2  | ●     |
| MPB100125R08B40RP16 | 125       | 8     | 125           | 40   | 63 | 16.4 | 9   | 8    | RP**1606     | ×       | ×     | Fig2  | ●     |

● Stock ○ Available Upon Order

# MPB100

Cylindrical Straight Type



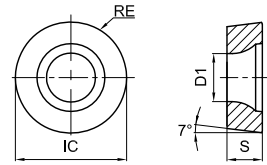
| Ordering Code        | Dia-meter | Teeth | Dimension(mm) |      |     |    | APMX | Suitable for | Coolant | Clamp | Shape | Stock |
|----------------------|-----------|-------|---------------|------|-----|----|------|--------------|---------|-------|-------|-------|
|                      |           |       | DC            | DCON | LF  | LU |      |              |         |       |       |       |
| MPB100016R02P16RP08S | 16        | 2     | 16            | 16   | 120 | 40 | 4    | RP**08T2     | ×       | ×     | Fig3  | ●     |
| MPB100016R02P16RP08  | 16        | 2     | 16            | 16   | 160 | 50 | 4    | RP**08T2     | ×       | ×     | Fig3  | ●     |
| MPB100020R02P20RP08  | 20        | 2     | 20            | 20   | 160 | 50 | 4    | RP**08T2     | ×       | ×     | Fig3  | ●     |
| MPB100020R02P20RP10  | 20        | 2     | 20            | 20   | 160 | 50 | 5    | RP**1003     | ×       | ✓     | Fig3  | ●     |
| MPB100025R02P20RP10  | 25        | 2     | 25            | 20   | 160 | 50 | 5    | RP**1003     | ×       | ✓     | Fig4  | ●     |
| MPB100025R02P20RP10L | 25        | 2     | 25            | 20   | 200 | 50 | 5    | RP**1003     | ×       | ✓     | Fig4  | ●     |
| MPB100025R02P25RP12  | 25        | 2     | 25            | 25   | 160 | 50 | 6    | RP**1204     | ×       | ✓     | Fig3  | ●     |
| MPB100025R03P25RP08  | 25        | 3     | 25            | 25   | 160 | 50 | 4    | RP**08T2     | ×       | ×     | Fig3  | ●     |
| MPB100032R02P25RP12  | 32        | 2     | 32            | 25   | 160 | 50 | 6    | RP**1204     | ×       | ✓     | Fig4  | ●     |
| MPB100032R02P25RP12L | 32        | 2     | 32            | 25   | 200 | 60 | 6    | RP**1204     | ×       | ✓     | Fig4  | ●     |
| MPB100032R03P25RP12  | 32        | 3     | 32            | 25   | 160 | 50 | 6    | RP**1204     | ×       | ✓     | Fig4  | ●     |
| MPB100040R02P32RP16  | 40        | 2     | 40            | 32   | 200 | 65 | 8    | RP**1606     | ×       | ×     | Fig4  | ●     |






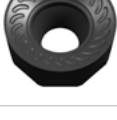



● Stock ○ Available Upon Order

Profile Milling

# RC

Profile Milling Inserts (Positive)



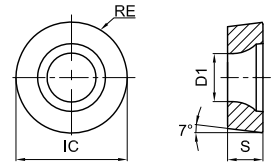
| Ordering Code  | Dimension(mm) |      |    |     | Coating Grade |        |        |        |        |        |        |        |        |        |        |        | Uncoated | Cermat |        |
|--|---------------|------|----|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|
|  | IC            | S    | RE | D1  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 | GS4130 | GH4115 |          |        | GN9125 |
|  RCET10T3M0-EM    | 10            | 3.97 | 5  | 4.4 | ●             | ○      | ●      | ○      |        |        |        |        |        |        |        |        |          |        | ○      |
|  RCET1204M0-EM   | 12            | 4.76 | 6  | 4   | ●             | ●      | ○      | ●      |        |        |        | ●      |        | ●      |        |        |          |        |        |
|  RCET1606M0-EM  | 16            | 6.35 | 8  | 5.5 | ○             | ●      | ○      | ○      |        |        | ○      | ○      |        | ○      |        |        |          |        |        |
|  RCET2006M0-EM  | 20            | 6.35 | 10 | 6.5 |               | ●      | ●      | ●      |        |        |        |        |        | ○      |        |        |          |        |        |
|  RCET1204M0T-EH | 12            | 4.76 | 6  | 4.4 | ○             | ○      | ○      |        |        |        |        |        |        |        |        |        |          |        |        |
|  RCET1606M0T-EH | 16            | 6.35 | 8  | 5.5 | ●             | ○      | ●      |        |        |        | ○      | ●      |        |        |        |        |          |        |        |
|  RCET2006M0T-EH | 20            | 6.35 | 10 | 6.5 | ●             | ○      | ●      |        |        |        |        |        |        |        |        |        |          |        |        |
|  RCET1204M0-MM  | 12            | 4.76 | 6  | 4   | ●             | ●      | ●      | ●      |        |        |        | ○      |        |        |        |        |          |        | ○      |
|  RCET1204M0-KM  | 12            | 4.76 | 6  | 4   |               |        |        |        | ○      | ○      |        |        |        |        |        |        |          |        |        |
|  RCET1606M0T-KH | 16            | 6.35 | 8  | 5.5 | ○             | ○      | ○      | ○      |        |        |        |        |        |        |        |        |          |        |        |

● Stock ○ Available Upon Order

Profile Milling

# RC

Profile Milling Inserts (Positive)













| Ordering Code  | Dimension(mm) |      |    |     | Coating Grade |        |        |        |        |        |        |        |        |        |        |        | Uncoated | Cermat |
|----------------|---------------|------|----|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|
|                | IC            | S    | RE | D1  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 | GS4130 | GH4115 |          |        |
| RCMT1606M0T-KM | 16            | 6.35 | 8  | 5.5 |               |        |        | ○      |        |        | ●      |        |        |        |        |        |          |        |
|                |               |      |    |     |               |        |        |        |        |        |        |        |        |        |        |        |          |        |
|                |               |      |    |     |               |        |        |        |        |        |        |        |        |        |        |        |          |        |



● Stock ○ Available Upon Order

## RC Series Geometry

| Medium Cutting for General Material   | Medium Cutting of Stainless Steel   | Heavy Cutting of General Material  | Heavy Cutting for General Material   |   |
|---|---|--|--|---|
|  |  |   |  |  |
| EM  | MM  | KM   | EH   | KH  |
|  |  |   |  |  |
| In general circumstances, high stability machining is realized.                   | Double rake angle design, has good strength and sharpness.                        | Double rake angle design, has vibration resistance in general machining condition. | Small rake angle and chamfer design, higher edge strength.                         |   |

Profile Milling

# MPC100

Arbor

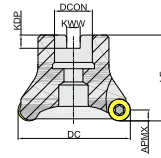


Fig1

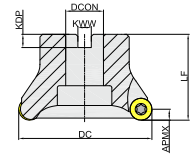


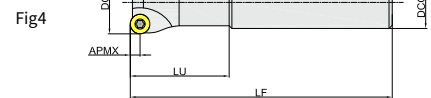
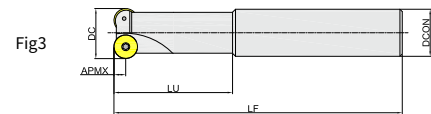
Fig2

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |    |      |     | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|------|----|------|-----|------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCON | LF | KWW  | KDP |      |              |         |       |       |
| MPC100050R04A22RC12 | 50        | 4     | 50            | 22   | 50 | 10.4 | 6.3 | 6    | RC**1204     | ×       | Fig1  | ●     |
| MPC100050R05A22RC12 | 50        | 5     | 50            | 22   | 50 | 10.4 | 6.3 | 6    | RC**1204     | ×       | Fig1  | ●     |
| MPC100063R04A22RC12 | 63        | 4     | 63            | 22   | 50 | 10.4 | 6.3 | 6    | RC**1204     | ×       | Fig1  | ●     |
| MPC100063R04A22RC16 | 63        | 4     | 63            | 22   | 50 | 10.4 | 6.3 | 8    | RC**1606     | ×       | Fig1  | ●     |
| MPC100063R05A22RC12 | 63        | 5     | 63            | 22   | 50 | 10.4 | 6.3 | 6    | RC**1204     | ×       | Fig1  | ●     |
| MPC100063R05A22RC16 | 63        | 5     | 63            | 22   | 50 | 10.4 | 6.3 | 8    | RC**1606     | ×       | Fig1  | ●     |
| MPC100063R06A22RC12 | 63        | 6     | 63            | 22   | 50 | 10.4 | 6.3 | 6    | RC**1204     | ×       | Fig1  | ●     |
| MPC100080R05A27RC16 | 80        | 5     | 80            | 27   | 50 | 12.4 | 7   | 8    | RC**1606     | ×       | Fig1  | ●     |
| MPC100080R06A27RC12 | 80        | 6     | 80            | 27   | 50 | 12.4 | 7   | 6    | RC**1204     | ×       | Fig1  | ●     |
| MPC100080R06A27RC16 | 80        | 6     | 80            | 27   | 50 | 12.4 | 7   | 8    | RC**1606     | ×       | Fig1  | ●     |
| MPC100100R06B32RC16 | 100       | 6     | 100           | 32   | 50 | 14.4 | 8   | 8    | RC**1606     | ×       | Fig2  | ●     |
| MPC100100R06B32RC20 | 100       | 6     | 100           | 32   | 50 | 14.4 | 8   | 10   | RC**2006     | ×       | Fig2  | ●     |
| MPC100125R07B40RC20 | 125       | 7     | 125           | 40   | 63 | 16.4 | 9   | 10   | RC**2006     | ×       | Fig2  | ●     |
| MPC100160R08B40RC20 | 160       | 8     | 160           | 40   | 63 | 16.4 | 9   | 10   | RC**2006     | ×       | Fig2  | ●     |

● Stock ○ Available Upon Order

# MPC100

Cylindrical Straight Type



| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |      |     |    | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|------|-----|----|------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCON | LF  | LU |      |              |         |       |       |
| MPC100020R02P20RC10 | 20        | 2     | 20            | 20   | 110 | 60 | 5    | RC**10T3     | ×       | Fig3  | ●     |
| MPC100025R02P20RC10 | 25        | 2     | 25            | 20   | 160 | 50 | 5    | RC**10T3     | ×       | Fig4  | ●     |
| MPC100032R02P25RC12 | 32        | 2     | 32            | 25   | 200 | 50 | 6    | RC**1204     | ×       | Fig4  | ●     |
| MPC100040R03P32RC12 | 40        | 3     | 40            | 32   | 200 | 50 | 6    | RC**1204     | ×       | Fig4  | ●     |

● Stock ○ Available Upon Order

## Spare Parts

| Part Name               |               | Clamp Screw   | Clamp   | Inserts Screw  | Insert Screw Wrench   |   |
|-------------------------|---------------|---|---|--|---|---|
| Inserts                 | Shape         |  |  |  |  |  |
|                         | Specification | --  | --  | SI60M2X3.7-02806   | TT06P   | --  |
| RD**05                  | Ordering Code | --  | --  | SI60M020037-02806S   | TT06PQ  | --  |
| RD**07                  | Specification | --  | --  | SI60M2.5X5-03509   | TT07P   | --  |
|                         | Ordering Code | --  | --  | SI60M025050-03509S   | TT07PQ  | --  |
| RD**08<br>RP**08        | Specification | --  | --  | SI60M2.5X6.5-03509   | TT07P   | --  |
|                         | Ordering Code | --  | --  | SI60M025065-03509S   | TT07PQ  | --  |
| RD**10<br>RP**10        | Specification | SI60M3.5X10-05510   | CAX1  | SI60M4X8.9-05313   | TT15P   | --  |
|                         | Ordering Code | SI60M035100-05510S  | CAX01RQ   | SI60M040089-05313S   | TT15PQ  | --  |
| RC**10                  | Specification | --  | --  | SI60M4X8.9-05313   | TT15P   | --  |
|                         | Ordering Code | --  | --  | SI60M040089-05313S   | TT15PQ  | --  |
| RD**12<br>RP**12        | Specification | SI60M3.5X12-05314   | CAX2  | SI60M4X8.9-05313   | TT15P   | --  |
|                         | Ordering Code | SI60M035120-05314S  | CAX02RQ   | SI60M040089-05313S   | TT15PQ  | --  |
| RC**12                  | Specification | --  | --  | SI60M3.5X8-05314   | TT15P   | --  |
|                         | Ordering Code | --  | --  | SI60M035080-05314S   | TT15PQ  | --  |
| RD**16<br>RP**16/RC**16 | Specification | --  | --  | SI60M5X10.8-07209  | TT20P   | TT20T   |
|                         | Ordering Code | --  | --  | SI60M050108-07209S   | TT20PQ  | TT20TQ  |
| RC**20                  | Specification | --  | --  | SI60M6X16-08509  | --  | TT25T   |
|                         | Ordering Code | --  | --  | SI60M060160-08509S   | --  | TT25TQ  |



## Recommended Cutting Data

| Workpiece | Hardness                              | Grade         | Cutting Speed<br>Vc(m/min) | Specifi-<br>cation | Feed Rate/Edges fz(mm) |                      |                     |                     |
|-----------|---------------------------------------|---------------|----------------------------|--------------------|------------------------|----------------------|---------------------|---------------------|
|           |                                       |               |                            |                    | Light<br>Cutting(L)    | Medium<br>Cutting(M) | Heavy<br>Cutting(H) |                     |
| P         | Soft Steel                            | ≤ HB180       | GA4325<br>GA4330           | 180<br>(140-220)   | 05                     | 0.08<br>(0.05-0.15)  | 0.1<br>(0.08-0.15)  | 0.12<br>(0.08-0.2)  |
|           |                                       |               |                            |                    | 07<br>08               | 0.08<br>(0.05-0.15)  | 0.12<br>(0.08-0.18) | 0.15<br>(0.10-0.25) |
|           |                                       |               |                            |                    | 10<br>12               | 0.15<br>(0.1-0.25)   | 0.2<br>(0.15-0.3)   | 0.25<br>(0.2-0.35)  |
|           |                                       |               |                            |                    | 16                     | 0.18<br>(0.1-0.25)   | 0.25<br>(0.15-0.35) | 0.3<br>(0.2-0.45)   |
|           |                                       |               |                            |                    | 20                     | 0.2<br>(0.12-0.25)   | 0.3<br>(0.15-0.4)   | 0.35<br>(0.2-0.45)  |
|           | Carbon Steel,<br>Alloy Steel          | HB180-<br>350 | GA4325<br>GA4330<br>GP2115 | 160<br>(120-200)   | 05                     | 0.08<br>(0.05-0.15)  | 0.1<br>(0.08-0.15)  | 0.12<br>(0.08-0.2)  |
|           |                                       |               |                            |                    | 07<br>08               | 0.08<br>(0.05-0.15)  | 0.12<br>(0.08-0.18) | 0.15<br>(0.1-0.25)  |
|           |                                       |               |                            |                    | 10<br>12               | 0.15<br>(0.1-0.25)   | 0.2<br>(0.15-0.3)   | 0.25<br>(0.2-0.35)  |
|           |                                       |               |                            |                    | 16                     | 0.18<br>(0.1-0.25)   | 0.25<br>(0.15-0.35) | 0.3<br>(0.2-0.45)   |
|           |                                       |               |                            |                    | 20                     | 0.2<br>(0.12-0.25)   | 0.3<br>(0.15-0.4)   | 0.35<br>(0.2-0.45)  |
|           | Pre-harden<br>Steel                   | HRC35-45      | GA4330<br>GA4325<br>GP2115 | 120<br>(80-160)    | 05                     | 0.08<br>(0.05-0.15)  | 0.1<br>(0.08-0.15)  | 0.12<br>(0.08-0.2)  |
|           |                                       |               |                            |                    | 07<br>08               | 0.08<br>(0.05-0.15)  | 0.12<br>(0.08-0.18) | 0.15<br>(0.1-0.25)  |
|           |                                       |               |                            |                    | 10<br>12               | 0.15<br>(0.1-0.25)   | 0.2<br>(0.15-0.3)   | 0.25<br>(0.2-0.35)  |
|           |                                       |               |                            |                    | 16                     | 0.18<br>(0.1-0.25)   | 0.25<br>(0.15-0.35) | 0.3<br>(0.2-0.45)   |
|           |                                       |               |                            |                    | 20                     | 0.2<br>(0.12-0.25)   | 0.3<br>(0.15-0.4)   | 0.35<br>(0.2-0.45)  |
| M         | Stainless<br>(Ferrite,<br>Martensite) | ≤ HB270       | GM2140<br>GM4135<br>GA4230 | 140<br>(100-180)   | 05                     | 0.08<br>(0.05-0.15)  | 0.1<br>(0.08-0.15)  | 0.12<br>(0.08-0.2)  |
|           |                                       |               |                            |                    | 07<br>08               | 0.08<br>(0.05-0.15)  | 0.12<br>(0.08-0.18) | 0.15<br>(0.1-0.25)  |
|           |                                       |               |                            |                    | 10<br>12               | 0.15<br>(0.1-0.25)   | 0.2<br>(0.15-0.3)   | 0.25<br>(0.2-0.35)  |
|           |                                       |               |                            |                    | 16                     | 0.18<br>(0.1-0.25)   | 0.25<br>(0.15-0.35) | 0.35<br>(0.2-0.45)  |
|           |                                       |               |                            |                    | 20                     | 0.2<br>(0.12-0.25)   | 0.3<br>(0.15-0.4)   | 0.35<br>(0.2-0.45)  |
|           | Stainless<br>(Austenite,<br>Diphasic) | ≤ HB270       | GM2140<br>GM4135           | 120<br>(80-160)    | 05                     | 0.08<br>(0.05-0.15)  | 0.1<br>(0.08-0.15)  | 0.12<br>(0.08-0.2)  |
|           |                                       |               |                            |                    | 07<br>08               | 0.08<br>(0.05-0.15)  | 0.12<br>(0.08-0.18) | 0.15<br>(0.1-0.25)  |
|           |                                       |               |                            |                    | 10<br>12               | 0.15<br>(0.1-0.25)   | 0.2<br>(0.15-0.3)   | 0.25<br>(0.2-0.35)  |
|           |                                       |               |                            |                    | 16                     | 0.18<br>(0.1-0.25)   | 0.25<br>(0.15-0.35) | 0.35<br>(0.2-0.45)  |
|           |                                       |               |                            |                    | 20                     | 0.2<br>(0.12-0.25)   | 0.3<br>(0.15-0.4)   | 0.35<br>(0.2-0.45)  |

## Recommended Cutting Data

| Workpiece | Hardness  | Grade    | Cutting Speed<br>Vc(m/min) | Specif-ication   | Feed Rate/Edges fz(mm) |                     |                     |                    |
|-----------|---|----------|----------------------------|------------------|------------------------|---------------------|---------------------|--------------------|
|           |   |          |                            |                  | Light Cutting(L)       | Medium Cutting(M)   | Heavy Cutting(H)    |                    |
| <b>K</b>  | Grey Cast Iron                                      | ≤ HB280  | GK2115<br>GK4125           | 180<br>(150-220) | 05                     | 0.08<br>(0.05-0.15) | 0.15<br>(0.08-0.15) | 0.12<br>(0.08-0.2) |
|           |   |          |                            |                  | 07<br>08               | 0.08<br>(0.05-0.15) | 0.12<br>(0.08-0.18) | 0.15<br>(0.1-0.25) |
|           |   |          |                            |                  | 10<br>12               | 0.15<br>(0.1-0.25)  | 0.2<br>(0.15-0.3)   | 0.25<br>(0.2-0.35) |
|           |   |          |                            |                  | 16                     | 0.18<br>(0.1-0.25)  | 0.25<br>(0.15-0.35) | 0.3<br>(0.2-0.45)  |
|           |   |          |                            |                  | 20                     | 0.2<br>(0.12-0.25)  | 0.3<br>(0.15-0.4)   | 0.35<br>(0.2-0.45) |
|           | Nodular Cast Iron,<br>Vermicular Graphite Cast Iron | ≤ HB350  | GK2115<br>GK4125           | 120<br>(100-180) | 05                     | 0.08<br>(0.05-0.15) | 0.15<br>(0.08-0.15) | 0.12<br>(0.08-0.2) |
|           |   |          |                            |                  | 07<br>08               | 0.08<br>(0.05-0.15) | 0.12<br>(0.08-0.18) | 0.15<br>(0.1-0.25) |
|           |   |          |                            |                  | 10<br>12               | 0.15<br>(0.1-0.25)  | 0.2<br>(0.15-0.3)   | 0.25<br>(0.2-0.35) |
|           |   |          |                            |                  | 16                     | 0.18<br>(0.1-0.25)  | 0.25<br>(0.15-0.35) | 0.3<br>(0.2-0.45)  |
|           |   |          |                            |                  | 20                     | 0.2<br>(0.12-0.25)  | 0.3<br>(0.15-0.4)   | 0.35<br>(0.2-0.45) |
| <b>S</b>  | Heat-resistant Alloy and Titanium Alloy             | HRC30-45 | GS4130                     | 40<br>(30-60)    | 16                     | 0.08<br>(0.05-0.15) | 0.12<br>(0.08-0.15) | -                  |
| <b>H</b>  | Hardened Steel                                      | HRC48-55 | GH4115                     | 80<br>(60-120)   | 08                     | 0.08<br>(0.05-0.15) | 0.1<br>(0.08-0.15)  | 0.12<br>(0.08-0.2) |
|           |   |          |                            |                  | 10<br>12               | 0.15<br>(0.1-0.25)  | 0.2<br>(0.15-0.3)   | 0.25<br>(0.2-0.35) |
|           |   |          |                            |                  | 16                     | 0.18<br>(0.1-0.25)  | 0.22<br>(0.15-0.35) | 0.28<br>(0.2-0.4)  |
|           |   |          |                            |                  | 20                     | 0.2<br>(0.15-0.3)   | 0.25<br>(0.15-0.35) | 0.3<br>(0.2-0.4)   |

- $RPM(\min-1) = (1000 * \text{cutting speed}) / (3.14 * \text{cutter diameter})$
- $\text{Machine feed}(\text{mm}/\text{min}) = \text{feed per tooth} * \text{flute No.} * \text{RPM}$
- Class S material are matched with SM Geometry

## RD/RP/RC Recommend Cutting Feed and Cutting Depth

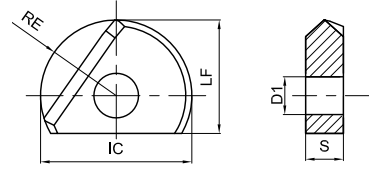
| Specification | Working Conditions | Ap(mm)              |                     |                     |                     |                     |                     |                     |                     |                    |
|---------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|
|               |                    | 0.1                 | 0.5                 | 1                   | 1.5                 | 2                   | 2.5                 | 3                   | 4                   | 5                  |
| 05            | Medium Maching (M) | 0.35<br>(0.22-0.63) | 0.17<br>(0.08-0.26) | 0.12<br>(0.06-0.21) | 0.1<br>(0.05-0.17)  | -                   | -                   | -                   | -                   | -                  |
|               | Heavy Maching (H)  | 0.45<br>(0.29-0.95) | 0.2<br>(0.12-0.38)  | 0.16<br>(0.09-0.28) | 0.14<br>(0.07-0.25) | -                   | -                   | -                   | -                   | -                  |
| 07<br>08      | Medium Maching (M) | 0.59<br>(0.23-0.9)  | 0.27<br>(0.1-0.41)  | 0.2<br>(0.08-0.3)   | 0.17<br>(0.06-0.26) | 0.15<br>(0.03-0.23) | -                   | -                   | -                   | -                  |
|               | Heavy Maching (H)  | 0.68<br>(0.32-1.13) | 0.31<br>(0.14-0.52) | 0.23<br>(0.11-0.38) | 0.19<br>(0.09-0.32) | 0.17<br>(0.08-0.29) | -                   | -                   | -                   | -                  |
| 10            | Light Maching (L)  | 0.75<br>(0.25-0.9)  | 0.34<br>(0.11-0.41) | 0.25<br>(0.08-0.3)  | 0.21<br>(0.07-0.25) | 0.19<br>(0.06-0.23) | 0.17<br>(0.05-0.21) | -                   | -                   | -                  |
|               | Medium Maching (M) | 0.9<br>(0.25-1.26)  | 0.41<br>(0.11-0.57) | 0.30<br>(0.08-0.42) | 0.25<br>(0.07-0.35) | 0.23<br>(0.06-0.31) | 0.21<br>(0.05-0.28) | -                   | -                   | -                  |
|               | Heavy Maching (H)  | 1.01<br>(0.35-1.51) | 0.46<br>(0.16-0.69) | 0.33<br>(0.12-0.5)  | 0.28<br>(0.1-0.42)  | 0.25<br>(0.09-0.38) | 0.23<br>(0.08-0.35) | -                   | -                   | -                  |
| 12            | Light Maching (L)  | 0.83<br>(0.28-1.1)  | 0.38<br>(0.13-0.5)  | 0.27<br>(0.09-0.36) | 0.23<br>(0.08-0.3)  | 0.2<br>(0.07-0.27)  | 0.18<br>(0.06-0.25) | 0.17<br>(0.06-0.23) | -                   | -                  |
|               | Medium Maching (M) | 0.99<br>(0.28-1.38) | 0.45<br>(0.13-0.63) | 0.33<br>(0.09-0.45) | 0.27<br>(0.08-0.38) | 0.24<br>(0.07-0.34) | 0.22<br>(0.06-0.31) | 0.21<br>(0.06-0.29) | -                   | -                  |
|               | Heavy Maching (H)  | 1.1<br>(0.39-1.65)  | 0.5<br>(0.18-0.75)  | 0.36<br>(0.13-0.54) | 0.3<br>(0.11-0.45)  | 0.27<br>(0.09-0.4)  | 0.25<br>(0.08-0.37) | 0.23<br>(0.08-0.35) | -                   | -                  |
| 16            | Light Maching (L)  | 1.14<br>(0.32-1.59) | 0.52<br>(0.14-0.72) | 0.37<br>(0.1-0.52)  | 0.31<br>(0.09-0.43) | 0.27<br>(0.08-0.38) | 0.25<br>(0.07-0.35) | 0.23<br>(0.06-0.32) | 0.21<br>(0.06-0.29) | -                  |
|               | Medium Maching (M) | 1.27<br>(0.32-1.9)  | 0.57<br>(0.14-0.86) | 0.41<br>(0.1-0.62)  | 0.34<br>(0.09-0.51) | 0.30<br>(0.08-0.45) | 0.28<br>(0.07-0.41) | 0.26<br>(0.06-0.38) | 0.23<br>(0.06-0.35) | -                  |
|               | Heavy Maching (H)  | 1.59<br>(0.44-2.54) | 0.72<br>(0.20-1.15) | 0.52<br>(0.14-0.83) | 0.43<br>(0.12-0.69) | 0.38<br>(0.11-0.6)  | 0.35<br>(0.1-0.54)  | 0.32<br>(0.09-0.51) | 0.29<br>(0.08-0.46) | -                  |
| 20            | Heavy Maching (H)  | 2.14<br>(0.59-3.49) | 0.97<br>(0.25-1.60) | 0.71<br>(0.18-1.17) | 0.58<br>(0.15-0.96) | 0.5<br>(0.14-0.81)  | 0.46<br>(0.13-0.73) | 0.42<br>(0.12-0.68) | 0.38<br>(0.11-0.61) | 0.34<br>(0.1-0.55) |

Note: Remark: During round Insert application, in general, the ap should less than 25%IC. Otherwise, we suggest to us Kr=45 SNUE/SEET series insert.

Profile Milling

# QTD

Ballnose Milling Insert



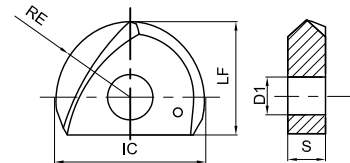
| Ordering Code | Dimension(mm) |    |      |     |   | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cermat |        |        |
|---------------|---------------|----|------|-----|---|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|
|               | RE            | IC | LF   | D1  | S | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115 |
| QTD1203       | 6             | 12 | 10   | 3.5 | 3 | ●             |        |        |        |        |        |        |        |        |        |          |        | ●      |        |
| QTD1604       | 8             | 16 | 12   | 4   | 4 | ●             |        |        |        |        |        |        |        |        |        |          |        | ●      |        |
| QTD2005       | 10            | 20 | 15   | 5   | 5 | ●             |        |        |        |        |        |        |        |        |        |          |        | ●      |        |
| QTD2506       | 12.5          | 25 | 18.5 | 6   | 6 | ●             |        |        |        |        |        |        |        |        |        |          |        | ●      |        |
| QTD3007       | 15            | 30 | 22.5 | 8   | 7 | ●             |        |        |        |        |        |        |        |        |        |          |        | ●      |        |
| QTD3207       | 16            | 32 | 23.5 | 8   | 7 | ●             |        |        |        |        |        |        |        |        |        |          |        | ●      |        |



● Stock ○ Available Upon Order

# QTD-S-T

Curved Edge in Ballnose Milling Insert



| Ordering Code | Dimension(mm) |    |      |     |   | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cermat |        |        |
|---------------|---------------|----|------|-----|---|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|
|               | RE            | IC | LF   | D1  | S | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115 |
| QTD1203-S-T   | 6             | 12 | 10   | 3.5 | 3 |               |        |        |        |        |        |        |        |        |        |          |        | ●      |        |
| QTD1604-S-T   | 8             | 16 | 12   | 4   | 4 |               |        |        |        |        |        |        |        |        |        |          |        | ●      |        |
| QTD2005-S-T   | 10            | 20 | 15   | 5   | 5 |               |        |        |        |        |        |        |        |        |        |          |        | ●      |        |
| QTD2506-S-T   | 12.5          | 25 | 18.5 | 6   | 6 |               |        |        |        |        |        |        |        |        |        |          |        | ●      |        |
| QTD3007-S-T   | 15            | 30 | 22.5 | 8   | 7 |               |        |        |        |        |        |        |        |        |        |          |        | ●      |        |
| QTD3207-S-T   | 16            | 32 | 23.5 | 8   | 7 |               |        |        |        |        |        |        |        |        |        |          |        | ●      |        |



● Stock ○ Available Upon Order

## Profile Milling

# MBA100

Cylindrical Straight Type

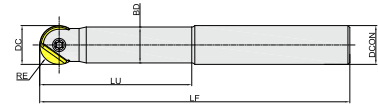


Fig1

| Ordering Code        | Dia-meter | Teeth | Dimension(mm) |      |      |     |     |       | Suitable for       | Coolant | Shape | Stock |
|----------------------|-----------|-------|---------------|------|------|-----|-----|-------|--------------------|---------|-------|-------|
|                      |           |       | DC            | DCON | BD   | LF  | LU  | RE    |                    |         |       |       |
| MBA100012R01P12QT12S | 12        | 1     | 12            | 12   | 10.5 | 90  | 30  | 6     | QTD1203            | ×       | Fig1  | ●     |
| MBA100012R01P12QT12  | 12        | 1     | 12            | 12   | 10.5 | 120 | 60  | 6     | QTD1203            | ×       | Fig1  | ●     |
| MBA100012R01P12QT12L | 12        | 1     | 12            | 12   | 10.5 | 150 | 90  | 6     | QTD1203            | ×       | Fig1  | ●     |
| MBA100016R01P16QT16S | 16        | 1     | 16            | 16   | 14.5 | 100 | 35  | 8     | QTD1604            | ×       | Fig1  | ●     |
| MBA100016R01P16QT16  | 16        | 1     | 16            | 16   | 14.5 | 135 | 70  | 8     | QTD1604            | ×       | Fig1  | ●     |
| MBA100016R01P16QT16L | 16        | 1     | 16            | 16   | 14.5 | 170 | 100 | 8     | QTD1604            | ×       | Fig1  | ●     |
| MBA100020R01P20QT20S | 20        | 1     | 20            | 20   | 18.5 | 110 | 45  | 10    | QTD2005            | ×       | Fig1  | ●     |
| MBA100020R01P20QT20  | 20        | 1     | 20            | 20   | 18.5 | 160 | 80  | 10    | QTD2005            | ×       | Fig1  | ●     |
| MBA100020R01P20QT20L | 20        | 1     | 20            | 20   | 18.5 | 210 | 135 | 10    | QTD2005            | ×       | Fig1  | ●     |
| MBA100025R01P25QT25S | 25        | 1     | 25            | 25   | 23   | 125 | 50  | 12.5  | QTD2506            | ×       | Fig1  | ●     |
| MBA100025R01P25QT25  | 25        | 1     | 25            | 25   | 23   | 180 | 100 | 12.5  | QTD2506            | ×       | Fig1  | ●     |
| MBA100025R01P25QT25L | 25        | 1     | 25            | 25   | 23   | 235 | 150 | 12.5  | QTD2506            | ×       | Fig1  | ●     |
| MBA100030R01P32QT30S | 30/32     | 1     | 30/32         | 32   | 28.5 | 150 | 60  | 15/16 | QTD3007<br>QTD3207 | ×       | Fig1  | ●     |
| MBA100030R01P32QT30  | 30/32     | 1     | 30/32         | 32   | 28.5 | 200 | 120 | 15/16 | QTD3007<br>QTD3207 | ×       | Fig1  | ●     |
| MBA100030R01P32QT30L | 30/32     | 1     | 30/32         | 32   | 28.5 | 270 | 180 | 15/16 | QTD3007<br>QTD3207 | ×       | Fig1  | ●     |

● Stock ○ Available Upon Order

## Profile Milling

**MBA100**

Taper Joint Cylindrical Straight Shank

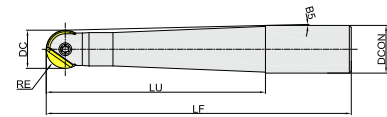


Fig2

| Ordering Code         | Dia-<br>meter | Teeth | Dimension(mm) |      |     |     |       |      | Suitable<br>for    | Coolant | Shape | Stock |
|-----------------------|---------------|-------|---------------|------|-----|-----|-------|------|--------------------|---------|-------|-------|
|                       |               |       | DC            | DCON | LF  | LU  | RE    | B5   |                    |         |       |       |
| MBA100012R01P16TQT12L | 12            | 1     | 12            | 16   | 145 | 85  | 6     | 1.5° | QTD1203            | ×       | Fig2  | ●     |
| MBA100016R01P20TQT16L | 16            | 1     | 16            | 20   | 166 | 100 | 8     | 1°   | QTD1604            | ×       | Fig2  | ●     |
| MBA100020R01P25TQT20L | 20            | 1     | 20            | 25   | 191 | 115 | 10    | 1.5° | QTD2005            | ×       | Fig2  | ●     |
| MBA100025R01P32TQT25L | 25            | 1     | 25            | 32   | 215 | 135 | 12.5  | 1.5° | QTD2506            | ×       | Fig2  | ○     |
| MBA100030R01P32TQT30L | 30/32         | 1     | 30/32         | 32   | 240 | 160 | 15/16 | 0.5° | QTD3007<br>QTD3207 | ×       | Fig2  | ●     |

● Stock ○ Available Upon Order

Profile Milling

# MBA100

Indexable Milling Cutter with Threaded Interface

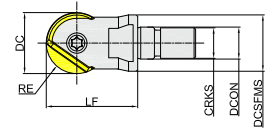

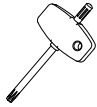
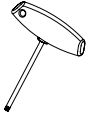


Fig3

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |        |      |    |       |      | Suitable for       | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|--------|------|----|-------|------|--------------------|---------|-------|-------|
|                     |           |       | DC            | DCSFMS | DCON | LF | RE    | CRKS |                    |         |       |       |
| MBA100012R01M06QT12 | 12        | 1     | 12            | 11.5   | 6.5  | 20 | 6     | M6   | QTD1203            | ×       | Fig3  | ●     |
| MBA100016R01M08QT16 | 16        | 1     | 16            | 15     | 8.5  | 23 | 8     | M8   | QTD1604            | ×       | Fig3  | ●     |
| MBA100020R01M10QT20 | 20        | 1     | 20            | 18.5   | 10.5 | 30 | 10    | M10  | QTD2005            | ×       | Fig3  | ●     |
| MBA100025R01M12QT25 | 25        | 1     | 25            | 24     | 12.5 | 35 | 12.5  | M12  | QTD2506            | ×       | Fig3  | ●     |
| MBA100030R01M16QT30 | 30/32     | 1     | 30/32         | 29     | 17   | 43 | 15/16 | M16  | QTD3007<br>QTD3207 | ×       | Fig3  | ●     |

● Stock ○ Available Upon Order

## Spare Parts

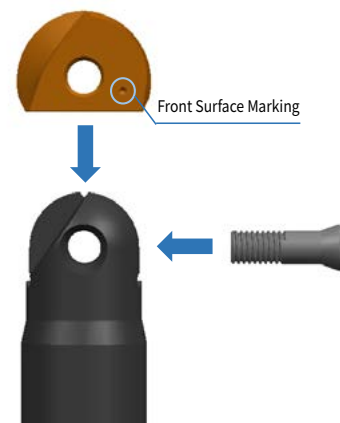
| Part Name |               | Inserts Screw   | Insert Screw Wrench  |   |
|-----------|---------------|---|--|---|
| Inserts   | Shape         |  |  |  |
|           | Specification | SBM3.5X9.5  | TT10K  | --  |
| QTD1203   | Ordering Code | SBM035095Q  | TT10KQ   | --  |
| QTD1604   | Specification | SBM4.0X13.5   | TT15K  | --  |
|           | Ordering Code | SBM040135Q  | TT15KQ   | --  |
| QTD2005   | Specification | SBM5.0X16.5   | TT20K  | --  |
|           | Ordering Code | SBM050165Q  | TT20KQ   | --  |
| QTD2506   | Specification | SBM6.0X20   | TT20K  | --  |
|           | Ordering Code | SBM060200Q  | TT20KQ   | --  |
| QTD3007   | Specification | SBM8.0X25   | --   | TT30T   |
|           | Ordering Code | SBM080250Q  | --   | TT30TQ  |
| QTD3207   | Specification | SBM8.0X25   | --   | TT30T   |
|           | Ordering Code | SBM080250Q  | --   | TT30TQ  |

## Recommended Cutting Data

| Workpiece | Hardness   | Grade     | Cutting Speed<br>Vc(m/min) | Ap<br>(mm)       | Ae<br>(mm) | Feed Rate/Edges fz (mm) |         |         |         |         |         |         |
|-----------|--|-----------|----------------------------|------------------|------------|-------------------------|---------|---------|---------|---------|---------|---------|
|           |  |           |                            |                  |            | Diameter: ΦD(mm)        |         |         |         |         |         |         |
|           |  |           |                            |                  |            | 12                      | 16      | 20      | 25      | 30      | 32      |         |
| <b>P</b>  | Soft Steel                                       | ≤ HB180   | GA4225                     | 400<br>(360-440) | 0.3-0.6    | D/40                    | 0.3-0.6 | 0.3-0.6 | 0.5-0.8 | 0.5-0.8 | 0.7-1.0 | 0.7-1.0 |
|           | Carbon Steel, Alloy Steel                        | HB180-350 | GA4225                     | 350<br>(310-390) | 0.3-0.6    | D/40                    | 0.3-0.6 | 0.3-0.6 | 0.5-0.8 | 0.5-0.8 | 0.7-1.0 | 0.7-1.0 |
|           | Pre-hardened Steel                               | HRC35-45  | GA4225                     | 350<br>(310-390) | 0.3-0.6    | D/40                    | 0.3-0.6 | 0.3-0.6 | 0.5-0.8 | 0.5-0.8 | 0.7-1.0 | 0.7-1.0 |
| <b>K</b>  | Grey Cast Iron                                   | ≤ HB280   | GH4115                     | 450<br>(410-190) | 0.3-0.6    | D/50                    | 0.2-0.5 | 0.2-0.5 | 0.4-0.7 | 0.4-0.7 | 0.7-1.0 | 0.7-1.0 |
|           | Nodular Cast Iron, Vermicular Graphite Cast Iron | ≤ HB350   | GH4115                     | 350<br>(310-390) | 0.2-0.5    | D/40                    | 0.1-0.4 | 0.1-0.4 | 0.3-0.6 | 0.3-0.6 | 0.5-0.8 | 0.5-0.8 |
| <b>H</b>  | Hardened Steel<br>Quenched Steel                 | HRC48-55  | GH4115                     | 150<br>(110-190) | 0.1-0.3    | D/50                    | 0.1-0.4 | 0.1-0.4 | 0.2-0.5 | 0.2-0.5 | 0.2-0.5 | 0.2-0.5 |

## Insert Installation Procedure:

- ① Using an air gun to clean the insert locating surface
- ② Using a wrench to lock the screw, and do not press the plug-in during the locking.
- ③ Using a wrench to lock the screw, and do not press the inserts during the locking.
- ④ End of setup.

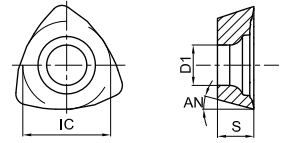



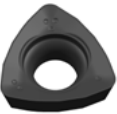

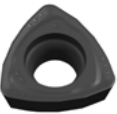
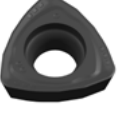
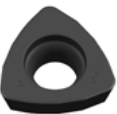


High Feed Milling

# UD/UP









3 Edges High Feed Milling



| Ordering Code   | Dimension(mm) |      |     |     | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cermat |        |        |
|---|---------------|------|-----|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|
|   | IC            | S    | AN  | D1  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115 |
| <br>UPET170520-PM    | 13            | 5.56 | 11° | 5.5 | ●             | ●      |        |        |        |        |        | ○      |        |        |          |        |        |        |
|   |               |      |     |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |
| <br>UDET080308-MM   | 6.8           | 3.18 | 15° | 2.8 | ●             | ●      |        |        |        |        |        | ●      |        |        |          |        |        |        |
|   |               |      |     |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |
| <br>UDET12T312-MM   | 9.6           | 3.97 | 15° | 4.4 | ●             | ●      |        |        |        |        |        |        |        |        |          |        |        |        |
|   |               |      |     |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |
| <br>UDMT080308T-MH | 6.8           | 3.18 | 15° | 2.8 | ●             | ●      |        |        |        |        |        |        |        |        |          |        |        |        |
|   |               |      |     |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |
| <br>UDMT12T312T-MH | 9.6           | 3.97 | 15° | 4.4 | ●             | ●      |        |        |        |        |        |        |        |        |          |        |        |        |
|   |               |      |     |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |
| <br>UDMW12T312T    | 9.6           | 3.97 | 15° | 4.4 | ●             | ●      |        |        |        |        |        | ●      |        |        |          |        |        |        |
|   |               |      |     |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |

● Stock ○ Available Upon Order

## UD/UP Series Geometry

| Medium Cutting of Steel   | Medium Cutting of Stainless Steel   | Rough Cutting of Stainless Steel   | Rough Cutting of General Material   |
|---|---|--|---|
|  |  |  |  |
| PM  | MM  | MH   | None  |
|  |  |  |  |
| Chamfered cutting edge with rake angle, it is suitable for medium cutting.        | Large rake angle makes cutting edge more sharply.                                 | Smaller rake angle makes strong cutting edge.                                      | Flat insert design makes strongest cutting edge.                                    |

High Feed Milling

# MKA110

Arbor

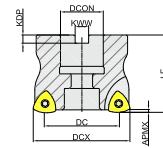


Fig1

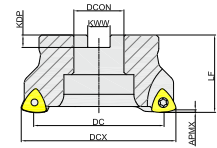


Fig2

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |      |    |      |     | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-----|------|----|------|-----|------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCX | DCON | LF | KWW  | KDP |      |              |         |       |       |
| MKA110040R05A16UD08 | 40        | 5     | 32            | 40  | 16   | 40 | 8.4  | 5.6 | 1    | UD**0803     | ×       | Fig1  | ●     |
| MKA110050R04A22UD12 | 50        | 4     | 39            | 50  | 22   | 40 | 10.4 | 6.3 | 1.5  | UD**12T3     | ×       | Fig1  | ●     |
| MKA110050R06A22UD08 | 50        | 6     | 42            | 50  | 22   | 40 | 10.4 | 6.3 | 1    | UD**0803     | ×       | Fig1  | ●     |
| MKA110063R04A22UP17 | 63        | 4     | 43            | 63  | 22   | 50 | 10.4 | 6.3 | 2    | UP**1705     | ×       | Fig1  | ●     |
| MKA110063R05A22UD12 | 63        | 5     | 52            | 63  | 22   | 50 | 10.4 | 6.3 | 1.5  | UD**12T3     | ×       | Fig1  | ●     |
| MKA110063R05A22UP17 | 63        | 5     | 43            | 63  | 22   | 40 | 10.4 | 6.3 | 2    | UP**1705     | ✓       | Fig1  | ●     |
| MKA110080R05A27UP17 | 80        | 5     | 60            | 80  | 27   | 50 | 12.4 | 7   | 2    | UP**1705     | ×       | Fig1  | ●     |
| MKA110080R06A27UP17 | 80        | 6     | 60            | 80  | 27   | 50 | 12.4 | 7   | 2    | UP**1705     | ×       | Fig1  | ●     |
| MKA110100R06B32UP17 | 100       | 6     | 80            | 100 | 32   | 50 | 14.4 | 8   | 2    | UP**1705     | ×       | Fig2  | ●     |

● Stock ○ Available Upon Order

# MKA110

Cylindrical Straight Type

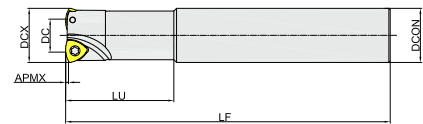


Fig3

| Ordering Code        | Dia-meter | Teeth | Dimension(mm) |     |      |     |    | APMX | Suitable for | Coolant | Shape | Stock |
|----------------------|-----------|-------|---------------|-----|------|-----|----|------|--------------|---------|-------|-------|
|                      |           |       | DC            | DCX | DCON | LF  | LU |      |              |         |       |       |
| MKA110020R02P20UD08S | 20        | 2     | 12            | 20  | 20   | 120 | 40 | 1    | UD**0803     | ×       | Fig3  | ●     |
| MKA110020R02P20UD08  | 20        | 2     | 12            | 20  | 20   | 160 | 50 | 1    | UD**0803     | ×       | Fig3  | ●     |
| MKA110020R02P20UD08L | 20        | 2     | 12            | 20  | 20   | 200 | 65 | 1    | UD**0803     | ×       | Fig3  | ●     |
| MKA110025R02P25UD08S | 25        | 2     | 17            | 25  | 20   | 120 | 40 | 1    | UD**0803     | ×       | Fig3  | ●     |
| MKA110025R02P25UD08  | 25        | 2     | 17            | 25  | 25   | 160 | 50 | 1    | UD**0803     | ×       | Fig3  | ●     |
| MKA110025R02P25UD12  | 25        | 2     | 14            | 25  | 25   | 160 | 50 | 1.5  | UD**12T3     | ×       | Fig3  | ●     |
| MKA110025R03P25UD08  | 25        | 3     | 17            | 25  | 25   | 160 | 40 | 1    | UD**0803     | ×       | Fig3  | ●     |
| MKA110030R03P32UD12  | 30        | 3     | 19            | 30  | 32   | 200 | 50 | 1.5  | UD**12T3     | ×       | Fig3  | ●     |
| MKA110032R03P32UD12  | 32        | 3     | 21            | 32  | 32   | 200 | 50 | 1.5  | UD**12T3     | ×       | Fig3  | ●     |
| MKA110035R03P32UD12  | 35        | 3     | 24            | 35  | 32   | 200 | 50 | 1.5  | UD**12T3     | ×       | Fig3  | ●     |
| MKA110035R05P32UD08  | 35        | 5     | 27            | 35  | 32   | 200 | 50 | 1    | UD**0803     | ×       | Fig3  | ●     |

● Stock ○ Available Upon Order

High Feed Milling

# MKA110

Indexable Milling Cutter with Threaded Interface

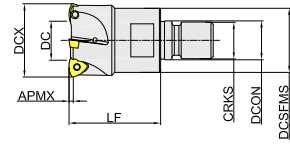


Fig4

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |        |      |    |      |     | APMX     | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-----|--------|------|----|------|-----|----------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCX | DCSFMS | DCON | LF | CRKS |     |          |              |         |       |       |
| MKA110020R02M10UD08 | 20        | 2     | 12            | 20  | 18     | 10.5 | 30 | M10  | 1   | UD**0803 | ✓            | Fig4    | ●     |       |
| MKA110025R03M12UD08 | 25        | 3     | 17            | 25  | 23     | 12.5 | 35 | M12  | 1   | UD**0803 | ✓            | Fig4    | ●     |       |
| MKA110032R03M16UD08 | 32        | 3     | 24            | 32  | 28     | 17   | 40 | M16  | 1   | UD**0803 | ✓            | Fig4    | ●     |       |
| MKA110032R03M16UD12 | 32        | 3     | 21            | 32  | 28     | 17   | 40 | M16  | 1.5 | UD**12T3 | ✓            | Fig4    | ●     |       |
| MKA110032R04M16UD08 | 32        | 4     | 24            | 32  | 28     | 17   | 40 | M16  | 1   | UD**0803 | ✓            | Fig4    | ●     |       |
| MKA110035R05M16UD08 | 35        | 5     | 27            | 35  | 29     | 17   | 40 | M16  | 1   | UD**0803 | ✓            | Fig4    | ●     |       |

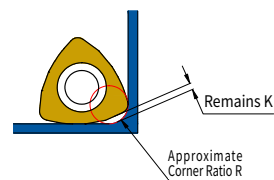
● Stock ○ Available Upon Order

## Spare Parts

| Part Name |               | Inserts Screw                        | Insert Screw Wrench |        |
|-----------|---------------|--------------------------------------|---------------------|--------|
| Inserts   | Shape         |                                      |                     |        |
|           | UD**0803      | Specification<br>SI60M2.5X6.5-03610I | TI07P               | --     |
|           | Ordering Code | SI60M025065-03610IS                  | TI07PB              | --     |
| UD**12T3  | Specification | SI60M4.0X8.5-05609I                  | TI15P               | TI15T  |
|           | Ordering Code | SI60M040085-05609IB                  | TI15PB              | TI15TB |
| UP**1705  | Specification | SI60M5.0X10.8-07214I                 | TI20P               | TI20T  |
|           | Ordering Code | SI60M050108-07214IB                  | TI20PQ              | TI20TB |

## Parameters for Programing

| Specification | Approximate Corner Ratio R(mm) | Remains K(mm) |
|---------------|--------------------------------|---------------|
| UD**0803      | 1.8                            | 0.6           |
| UD**12T3      | 2.6                            | 0.9           |
| UP**1705      | 3.5                            | 1.0           |



## The Relationship of Recommended Feed and Depth of UD/UP inserts

| Specification | Feed Rate/Edges fz (mm) | Ap(mm) |                  |                  |                  |
|---------------|-------------------------|--------|------------------|------------------|------------------|
|               |                         | 0.5    | 1                | 1.5              | 2                |
| 08            | 0.8<br>(0.6-1.2)        |        | 0.5<br>(0.4-0.8) | -                | -                |
| 12            | 1.5<br>(1.0-2.0)        |        | 1.2<br>(0.8-1.5) | 0.8<br>(0.6-1.2) | -                |
| 17            | 2<br>(1.8-2.5)          |        | 1.5<br>(1.0-2.0) | 1.2<br>(0.8-1.5) | 0.8<br>(0.6-1.2) |

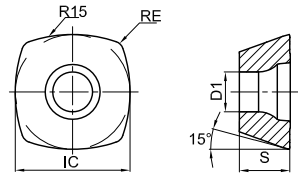
## Recommended Cutting Data




| Workpiece | Hardness   | Grade     | Specification              | Ap (mm)  | Cutting Speed Vc(m/min) | Feed Rate/Edges fz(mm) |                    |                  |
|-----------|--|-----------|----------------------------|----------|-------------------------|------------------------|--------------------|------------------|
|           |  |           |                            |          |                         | Medium Machining(M)    | Heavy Machining(H) |                  |
| <b>P</b>  | Soft Steel                                       | ≤ HB180   | GA4225<br>GA4230           | UD**0803 | 0.5                     | 180<br>(140-220)       | 1.2<br>(0.8-1.5)   | 1.5<br>(1.0-2.0) |
|           |  |           |                            | UD**12T3 | 0.7                     |                        |                    |                  |
|           |  |           |                            | UP**1705 | 1                       |                        |                    |                  |
|           | Carbon Steel, Alloy Steel                        | HB180-350 | GA4225<br>GA4230<br>GP2115 | UD**0803 | 0.5                     | 150<br>(110-190)       | 1.0<br>(0.8-1.2)   | 1.2<br>(1.0-1.4) |
|           |  |           |                            | UD**12T3 | 0.7                     |                        |                    |                  |
|           |  |           |                            | UP**1705 | 1                       |                        |                    |                  |
|           | Pre-harden Steel                                 | HRC35-45  | GA4230<br>GA4225<br>GP2115 | UD**0803 | 0.5                     | 120<br>(80-160)        | 1.0<br>(0.8-1.2)   | 1.2<br>(1.0-1.4) |
|           |  |           |                            | UD**12T3 | 0.7                     |                        |                    |                  |
|           |  |           |                            | UP**1705 | 1                       |                        |                    |                  |
| <b>M</b>  | Stainless (Ferrite, Martensite)                  | ≤ HB270   | GM2140<br>GA4230           | UD**0803 | 0.5                     | 120<br>(80-160)        | 0.8<br>(0.6-1.0)   | 1.0<br>(0.8-1.2) |
|           |  |           |                            | UD**12T3 | 0.7                     |                        |                    |                  |
|           |  |           |                            | UP**1705 | 1                       |                        |                    |                  |
|           | Stainless (Austenite, Diphasic)                  | ≤ HB270   | GM2140                     | UD**0803 | 0.5                     | 100<br>(60-140)        | 0.6<br>(0.4-0.8)   | 0.8<br>(0.6-1.0) |
|           |  |           |                            | UD**12T3 | 0.7                     |                        |                    |                  |
|           |  |           |                            | UP**1705 | 1                       |                        |                    |                  |
| <b>K</b>  | Grey Cast Iron                                   | ≤ HB280   | GK2115<br>GK4125           | UD**0803 | 0.5                     | 180<br>(110-220)       | 1.2<br>(0.8-1.5)   | 1.5<br>(1.0-2.0) |
|           |  |           |                            | UD**12T3 | 0.7                     |                        |                    |                  |
|           |  |           |                            | UP**1705 | 1                       |                        |                    |                  |
|           | Nodular Cast Iron, Vermicular Graphite Cast Iron | ≤ HB350   | GK4125<br>GK2115           | UD**0803 | 0.5                     | 120<br>(80-160)        | 1.2<br>(0.8-1.5)   | 1.5<br>(1.0-2.0) |
|           |  |           |                            | UD**12T3 | 0.7                     |                        |                    |                  |
|           |  |           |                            | UP**1705 | 1                       |                        |                    |                  |
| <b>S</b>  | Heat-resistant Alloy and Titanium Alloy          | HRC30-45  | GS4130                     | UD**0803 | 0.5                     | 40<br>(30-60)          | 0.3<br>(0.15-0.4)  | 0.4<br>(0.2-0.6) |
|           |  |           |                            | UD**12T3 | 0.7                     |                        |                    |                  |
|           |  |           |                            | UP**1705 | 1                       |                        |                    |                  |

High Feed Milling

# SDMT

Four-edge High Feed Milling Inserts









| Ordering Code   | Dimension(mm)   |        |      |     | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cement |        |        |
|---|-----------------|--------|------|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|
|   | IC              | S      | D1   | RE  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115 |
|    | SDMT120512-GM   | 12.7   | 5.56 | 4.4 | 1.2           | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        |        |        |        |
|   | SDMT150512-GM   | 15.875 | 5.56 | 5.5 | 1.2           | ●      | ●      | ●      | ○      |        |        |        |        | ●      |          |        |        |        |
|   | SDMT120512-GH   | 12.7   | 5.56 | 4.4 | 1.2           | ●      | ●      | ●      | ●      | ●      |        |        | ●      |        |          |        |        |        |
|   | SDMT150512-GH   | 15.875 | 5.56 | 5.5 | 1.2           | ●      | ●      | ●      | ●      |        |        |        |        | ●      |          |        |        |        |
|  | ★ SDMT09T307-SM | 9      | 3.50 | 3.5 | 0.7           |        |        |        | ○      |        | ●      | ●      |        |        | ●        |        |        |        |
|   | ★ SDMT120512-SM | 12.7   | 5.56 | 4.4 | 1.2           |        |        |        | ○      |        | ●      | ●      |        |        | ●        |        |        |        |

Note:  
★ SM geometry only match with MKM113 series cutter.

● Stock ○ Available Upon Order

### SDMT Series Geometry

| Medium Cutting for General Material   | Heavy Cutting for General Material  | Medium Cutting of Nonferrous  |
|---|---|---|
|  |  |  |
| GM  | GH  | SM  |
|  |  |  |
| <p>Chamfered cutting edge with rake angle, it is suitable for medium.</p>         | <p>Cutting force with special rake angle, it is suitable for heavy cutting.</p>   | <p>Gradually changing rake angle, it is suitable for medium machining.</p>          |

High Feed Milling

# MKB113

Arbor

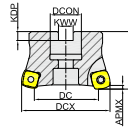
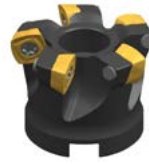


Fig1

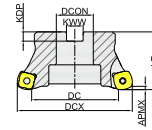


Fig2

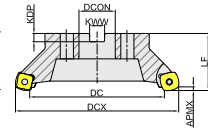


Fig3

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |      |    |      |     | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-----|------|----|------|-----|------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCX | DCON | LF | KWW  | KDP |      |              |         |       |       |
| MKB113050R04A22SD12 | 50        | 4     | 34            | 50  | 22   | 40 | 10.4 | 6.3 | 2    | SDMT1205     | ×       | Fig1  | ●     |
| MKB113052R05A22SD12 | 52        | 4     | 36            | 52  | 22   | 40 | 10.4 | 6.3 | 2    | SDMT1205     | ×       | Fig1  | ●     |
| MKB113063R04A22SD12 | 63        | 4     | 47            | 63  | 22   | 40 | 10.4 | 6.3 | 2    | SDMT1205     | ×       | Fig1  | ●     |
| MKB113063R04A22SD15 | 63        | 4     | 42            | 63  | 22   | 40 | 10.4 | 6.3 | 3    | SDMT1505     | ×       | Fig1  | ●     |
| MKB113063R05A22SD12 | 63        | 5     | 47            | 63  | 22   | 40 | 10.4 | 6.3 | 2    | SDMT1205     | ×       | Fig1  | ●     |
| MKB113080R05A27SD12 | 80        | 5     | 64            | 80  | 27   | 50 | 12.4 | 7   | 2    | SDMT1205     | ×       | Fig1  | ●     |
| MKB113080R05A27SD15 | 80        | 5     | 59            | 80  | 27   | 50 | 12.4 | 7   | 3    | SDMT1505     | ×       | Fig1  | ●     |
| MKB113080R06A27SD12 | 80        | 6     | 64            | 80  | 27   | 50 | 12.4 | 7   | 2    | SDMT1205     | ×       | Fig1  | ●     |
| MKB113100R06B32SD12 | 100       | 6     | 84            | 100 | 32   | 50 | 14.4 | 8   | 2    | SDMT1205     | ×       | Fig2  | ●     |
| MKB113100R06A32SD15 | 100       | 6     | 79            | 100 | 32   | 50 | 14.4 | 8   | 3    | SDMT1505     | ✓       | Fig1  | ●     |
| MKB113100R06B32SD15 | 100       | 6     | 79            | 100 | 32   | 50 | 14.4 | 8   | 3    | SDMT1505     | ×       | Fig2  | ●     |
| MKB113100R07B32SD12 | 100       | 7     | 84            | 100 | 32   | 50 | 14.4 | 8   | 2    | SDMT1205     | ×       | Fig2  | ●     |
| MKB113125R07B40SD15 | 125       | 7     | 104           | 125 | 40   | 63 | 16.4 | 9   | 3    | SDMT1505     | ×       | Fig2  | ●     |
| MKB113160R09C40SD12 | 160       | 9     | 144           | 160 | 40   | 63 | 16.4 | 9   | 3    | SDMT1205     | ×       | Fig3  | ●     |

● Stock ○ Available Upon Order



High Feed Milling

# MKB113

Cylindrical Straight Type

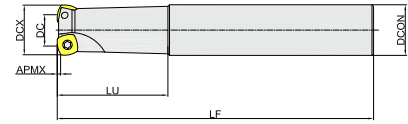


Fig4

| Ordering Code        | Dia-meter | Teeth | Dimension(mm) |     |      |     |    | APMX | Suitable for | Coolant | Shape | Stock |
|----------------------|-----------|-------|---------------|-----|------|-----|----|------|--------------|---------|-------|-------|
|                      |           |       | DC            | DCX | DCON | LF  | LU |      |              |         |       |       |
| MKB113032R02P32SD12S | 32        | 2     | 16            | 32  | 32   | 160 | 70 | 2    | SDMT1205     | ×       | Fig4  | ●     |
| MKB113032R02P32SD12  | 32        | 2     | 16            | 32  | 32   | 200 | 70 | 2    | SDMT1205     | ×       | Fig4  | ●     |
| MKB113035R03P32SD12  | 35        | 3     | 19            | 35  | 32   | 200 | 70 | 2    | SDMT1205     | ×       | Fig4  | ●     |
| MKB113040R03P32SD12  | 40        | 3     | 24            | 40  | 32   | 200 | 70 | 2    | SDMT1205     | ×       | Fig4  | ●     |

● Stock ○ Available Upon Order

High Feed Milling

# MKB113

Replaceable Cutter Head

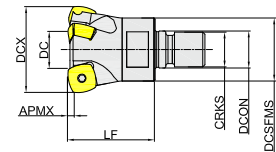


Fig5

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |        |      |    |      | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-----|--------|------|----|------|------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCX | DCSFMS | DCON | LF | CRKS |      |              |         |       |       |
| MKB113032R02M16SD12 | 32        | 2     | 16            | 32  | 28     | 17   | 40 | M16  | 2    | SDMT1205     | ✓       | Fig5  | ●     |
| MKB113032R03M16SD12 | 32        | 3     | 16            | 32  | 28     | 17   | 40 | M16  | 2    | SDMT1205     | ✓       | Fig5  | ●     |
| MKB113035R03M16SD12 | 35        | 3     | 19            | 35  | 29     | 17   | 40 | M16  | 2    | SDMT1205     | ✓       | Fig5  | ●     |
| MKB113040R03M16SD12 | 40        | 3     | 24            | 40  | 29     | 17   | 43 | M16  | 2    | SDMT1205     | ✓       | Fig5  | ●     |

● Stock ○ Available Upon Order

## High Feed Milling

# MKM113

Arbor

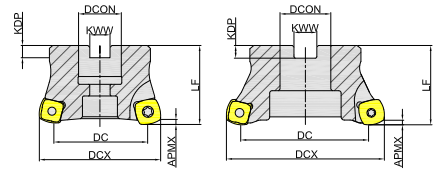


Fig1

Fig2

| Ordering Code       | Dia-<br>meter | Teeth | Dimension(mm) |     |      |    |      |     | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|---------------|-------|---------------|-----|------|----|------|-----|------|--------------|---------|-------|-------|
|                     |               |       | DC            | DCX | DCON | LF | KWW  | KDP |      |              |         |       |       |
| MKM113040R05A16SD09 | 40            | 5     | 25            | 40  | 16   | 40 | 8.4  | 5.6 | 1    | SDMT09T3     | ✓       | Fig1  | ●     |
| MKM113042R05A22SD09 | 42            | 5     | 27            | 42  | 22   | 40 | 10.4 | 6.3 | 1    | SDMT09T3     | ✓       | Fig1  | ●     |
| MKM113050R05A22SD12 | 50            | 5     | 27            | 50  | 22   | 40 | 10.4 | 6.3 | 2    | SDMT1205     | ✓       | Fig1  | ●     |
| MKM113050R06A22SD09 | 50            | 6     | 35            | 50  | 22   | 40 | 10.4 | 6.3 | 1    | SDMT09T3     | ✓       | Fig1  | ●     |
| MKM113050R07A22SD09 | 50            | 7     | 35            | 50  | 22   | 40 | 10.4 | 6.3 | 1    | SDMT09T3     | ✓       | Fig1  | ●     |
| MKM113052R05A22SD09 | 52            | 5     | 37            | 52  | 22   | 40 | 10.4 | 6.3 | 1    | SDMT09T3     | ✓       | Fig1  | ●     |
| MKM113052R05A22SD12 | 52            | 5     | 29            | 52  | 22   | 40 | 10.4 | 6.3 | 2    | SDMT1205     | ✓       | Fig1  | ●     |
| MKM113052R07A22SD09 | 52            | 7     | 37            | 52  | 22   | 40 | 10.4 | 6.3 | 1    | SDMT09T3     | ✓       | Fig1  | ●     |
| MKM113063R05A22SD09 | 63            | 5     | 48            | 63  | 22   | 40 | 10.4 | 6.3 | 1    | SDMT09T3     | ✓       | Fig1  | ●     |
| MKM113063R06A22SD12 | 63            | 6     | 40            | 63  | 22   | 40 | 10.4 | 6.3 | 2    | SDMT1205     | ✓       | Fig1  | ●     |
| MKM113063R08A22SD09 | 63            | 8     | 48            | 63  | 22   | 40 | 10.4 | 6.3 | 1    | SDMT09T3     | ✓       | Fig1  | ●     |
| MKM113063R09A22SD09 | 63            | 9     | 48            | 63  | 22   | 40 | 10.4 | 6.3 | 1    | SDMT09T3     | ✓       | Fig1  | ●     |
| MKM113080R06A27SD12 | 80            | 6     | 56            | 80  | 27   | 50 | 12.4 | 7   | 2    | SDMT1205     | ✓       | Fig1  | ○     |
| MKM113080R08A27SD12 | 80            | 8     | 56            | 80  | 27   | 50 | 12.4 | 7   | 2    | SDMT1205     | ✓       | Fig1  | ○     |
| MKM113100R10B32SD12 | 100           | 10    | 75            | 100 | 32   | 50 | 14.4 | 8   | 2    | SDMT1205     | ✓       | Fig2  | ○     |
| MKM113125R11B40SD12 | 125           | 11    | 100           | 125 | 40   | 63 | 16.4 | 9   | 2    | SDMT1205     | ✓       | Fig2  | ○     |

● Stock ○ Available Upon Order

High Feed Milling

# MKM113

Cylindrical Straight Type

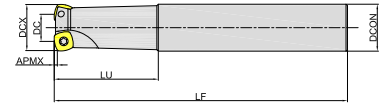


Fig3

| Ordering Code        | Dia-meter | Teeth | Dimension(mm) |     |      |     |     | APMX | Suitable for | Coolant | Shape | Stock |
|----------------------|-----------|-------|---------------|-----|------|-----|-----|------|--------------|---------|-------|-------|
|                      |           |       | DC            | DCX | DCON | LF  | LU  |      |              |         |       |       |
| MKM113025R03P25SD09  | 25        | 3     | 9             | 25  | 25   | 110 | 60  | 1    | SDMT09T3     | ✓       | Fig3  | ●     |
| MKM113025R03P25SD09L | 25        | 3     | 9             | 25  | 25   | 200 | 50  | 1    | SDMT09T3     | ✓       | Fig3  | ●     |
| MKM113032R02P32SD12L | 32        | 2     | 11            | 32  | 32   | 250 | 70  | 2    | SDMT1205     | ✓       | Fig3  | ●     |
| MKM113032R03P32SD12L | 32        | 3     | 11            | 32  | 32   | 250 | 70  | 2    | SDMT1205     | ✓       | Fig3  | ●     |
| MKM113032R04P32SD09  | 32        | 4     | 17            | 32  | 32   | 190 | 140 | 1    | SDMT09T3     | ✓       | Fig3  | ●     |
| MKM113032R05P32SD09  | 32        | 5     | 17            | 32  | 32   | 190 | 140 | 1    | SDMT09T3     | ✓       | Fig3  | ●     |
| MKM113035R05P32SD09  | 35        | 5     | 20            | 35  | 35   | 190 | 140 | 1    | SDMT09T3     | ✓       | Fig3  | ●     |

● Stock ○ Available Upon Order

# MKM113

Indexable Milling Cutter with Threaded Interface

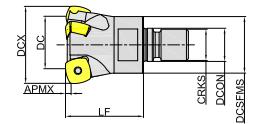

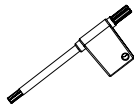



Fig4

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |      |        |    |      | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-----|------|--------|----|------|------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCX | DCON | DCSFMS | LF | CRKS |      |              |         |       |       |
| MKM113025R03M12SD09 | 25        | 3     | 9             | 25  | 12.5 | 21     | 33 | M12  | 1    | SDMT09T3     | ✓       | Fig4  | ●     |
| MKM113032R02M16SD12 | 32        | 2     | 11            | 32  | 17   | 29     | 40 | M16  | 2    | SDMT1205     | ✓       | Fig4  | ●     |
| MKM113032R03M16SD12 | 32        | 3     | 11            | 32  | 17   | 29     | 40 | M16  | 2    | SDMT1205     | ✓       | Fig4  | ●     |
| MKM113032R04M16SD09 | 32        | 4     | 17            | 32  | 17   | 29     | 40 | M16  | 1    | SDMT09T3     | ✓       | Fig4  | ●     |
| MKM113032R05M16SD09 | 32        | 5     | 17            | 32  | 17   | 29     | 40 | M16  | 1    | SDMT09T3     | ✓       | Fig4  | ●     |
| MKM113035R03M16SD12 | 35        | 3     | 14            | 35  | 17   | 29     | 40 | M16  | 2    | SDMT1205     | ✓       | Fig4  | ●     |
| MKM113035R04M16SD09 | 35        | 4     | 20            | 35  | 17   | 29     | 40 | M16  | 1    | SDMT09T3     | ✓       | Fig4  | ●     |
| MKM113035R05M16SD09 | 35        | 5     | 20            | 35  | 17   | 29     | 40 | M16  | 1    | SDMT09T3     | ✓       | Fig4  | ●     |
| MKM113042R04M16SD12 | 42        | 4     | 21            | 42  | 17   | 39     | 52 | M16  | 2    | SDMT1205     | ✓       | Fig4  | ●     |

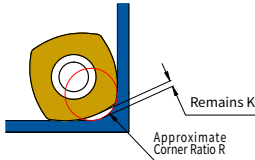
● Stock ○ Available Upon Order

## Spare Parts

| Part Name     |               | Inserts Screw   | Insert Screw Wrench  |   |
|---------------|---------------|---|--|---|
| Inserts       | Shape         |  |  |  |
|               | Specification | SI60M3.0X7.2-04210I   | TI09P  | -   |
| SDMT09T308-SM | Ordering Code | SI60M030072-04210IS   | TI09PB   | -   |
| SDMT1205      | Specification | SI60M4.0X10.0-05510I  | TI15P  | TI15T   |
|               | Ordering Code | SI60M040100-05510IS   | TI15PB   | TI15TB  |
| SDMT120512-SM | Specification | SI60M4.0X11.1-05520I  | TI15P  | TI15T   |
|               | Ordering Code | SI60M040111-05520IQ   | TI15PQ   | TI15TB  |
| SDMT1505      | Specification | SI60M5.0X10.8-07214I  | TI20P  | TI20T   |
|               | Ordering Code | SI60M050108-07214IB   | TI20PB   | TI20TB  |

## Parameters for Programing

| Specification | Approximate Corner Ratio R(mm) | Remains K(mm) |
|---------------|--------------------------------|---------------|
| SDMT09T308-SM | 1.7                            | 0.8           |
| SDMT120512-SM | 2.1                            | 0.7           |
| SDMT1205      | 3.7                            | 0.9           |
| SDMT1505      | 5.0                            | 1.0           |



## The Relationship of Recommended Feed and Depth of SDMT Inserts

| Feed Rate/Edges fz (mm) | Ap(mm)           |                  |                  |                  |                  |                  |
|-------------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|                         | 0.5              | 1                | 1.5              | 2                | 2.5              | 3                |
| SDMT09T3                | 0.8<br>(0.6-1.2) | 1.2<br>(0.8-1.5) | -                | -                | -                | -                |
| SDMT1205                | 1.8<br>(1.5-2.0) | 1.5<br>(1.0-1.8) | 1.0<br>(0.6-1.5) | 0.8<br>(0.4-1.0) | -                | -                |
| SDMT1505                | 2.0<br>(1.8-3.0) | 1.8<br>(1.5-2.0) | 1.5<br>(1.0-1.8) | 1.0<br>(0.6-1.5) | 0.8<br>(0.4-1.0) | 0.6<br>(0.4-0.8) |

## Recommended Cutting Data

| Workpiece | Hardness  | Grade     | Specification              | Ap (mm)  | Cutting Speed Vc(m/min) | Feed Rate/Edges fz(mm) |                    |                  |
|-----------|---|-----------|----------------------------|----------|-------------------------|------------------------|--------------------|------------------|
|           |   |           |                            |          |                         | Medium Machining(M)    | Heavy Machining(H) |                  |
| <b>P</b>  | Soft Steel  | ≤ HB180   | GA4325<br>GA4330           | SDMT09T3 | 0.5                     | 180<br>(140-220)       | 0.8<br>(0.6-1.2)   | 1.2<br>(0.8-1.5) |
|           |   |           |                            | SDMT1205 | 1                       |                        | 1.2<br>(0.8-1.5)   | 1.5<br>(1.0-2.0) |
|           |   |           |                            | SDMT1505 | 1.5                     |                        | 1.2<br>(0.8-1.5)   | 1.5<br>(1.0-2.0) |
|           | Carbon Steel,<br>Alloy Steel                              | HB180-350 | GA4325<br>GA4330<br>GP2115 | SDMT09T3 | 0.5                     | 150<br>(110-190)       | 0.8<br>(0.6-1.2)   | 1.2<br>(0.8-1.5) |
|           |   |           |                            | SDMT1205 | 1                       |                        | 1.2<br>(0.8-1.5)   | 1.2<br>(0.8-1.5) |
|           |   |           |                            | SDMT1505 | 1.5                     |                        | 1.2<br>(0.8-1.5)   | 1.5<br>(1.0-2.0) |
|           | Pre-harden<br>Steel                                       | HRC35-45  | GA4330<br>GA4325<br>GP2115 | SDMT09T3 | 0.5                     | 120<br>(80-160)        | 0.8<br>(0.6-1.2)   | 1.2<br>(0.8-1.5) |
|           |   |           |                            | SDMT1205 | 1                       |                        | 1.0<br>(0.6-1.2)   | 1.2<br>(0.8-1.5) |
|           |   |           |                            | SDMT1505 | 1.5                     |                        | 1.0<br>(0.6-1.2)   | 1.2<br>(0.8-1.5) |
| <b>M</b>  | Stainless<br>(Ferrite,<br>Martensite)                     | ≤ HB270   | GM2140<br>GM4135<br>GA4230 | SDMT09T3 | 0.5                     | 120<br>(80-160)        | 0.8<br>(0.6-1.2)   | 1.2<br>(0.8-1.5) |
|           |   |           |                            | SDMT1205 | 1                       |                        | 0.8<br>(0.6-1.0)   | 1.0<br>(0.8-1.2) |
|           |   |           |                            | SDMT1505 | 1.5                     |                        | 0.8<br>(0.6-1.0)   | 1.0<br>(0.8-1.2) |
|           | Stainless<br>(Austenite,<br>Diphasic)                     | ≤ HB270   | GM2140<br>GM4135           | SDMT09T3 | 0.5                     | 100<br>(60-140)        | 0.8<br>(0.6-1.2)   | 1.2<br>(0.8-1.5) |
|           |   |           |                            | SDMT1205 | 1                       |                        | 0.8<br>(0.6-1.0)   | 1.0<br>(0.8-1.2) |
|           |   |           |                            | SDMT1505 | 1.5                     |                        | 0.8<br>(0.6-1.0)   | 1.0<br>(0.8-1.2) |
| <b>K</b>  | Grey Cast Iron  | ≤ HB280   | GK2115<br>GK4125           | SDMT09T3 | 0.5                     | 180<br>(140-220)       | 0.8<br>(0.6-1.2)   | 1.2<br>(0.8-1.5) |
|           |   |           |                            | SDMT1205 | 1                       |                        | 1.2<br>(0.8-1.5)   | 1.5<br>(1.0-2.0) |
|           |   |           |                            | SDMT1505 | 1.5                     |                        | 1.2<br>(0.8-1.5)   | 1.5<br>(1.0-2.0) |
|           | Nodular Cast<br>Iron, Vermicular<br>Graphite Cast<br>Iron | ≤ HB350   | GK4125<br>GK2115           | SDMT09T3 | 0.5                     | 120<br>(80-160)        | 0.8<br>(0.6-1.2)   | 1.2<br>(0.8-1.5) |
|           |   |           |                            | SDMT1205 | 1                       |                        | 1.2<br>(0.8-1.5)   | 1.5<br>(1.0-2.0) |
|           |   |           |                            | SDMT1505 | 1.5                     |                        | 1.2<br>(0.8-1.5)   | 1.5<br>(1.0-2.0) |
| <b>S</b>  | Heat-resistant<br>Alloy and<br>Titanium Alloy             | HRC30-45  | GS4130                     | SDMT09T3 | 0.5                     | 40<br>(30-60)          | 0.4<br>(0.3-0.7)   | 0.6<br>(0.4-1.0) |
|           |   |           |                            | SDMT1205 | 1                       |                        | 0.5<br>(0.3-0.8)   | 0.7<br>(0.4-1.1) |
|           |   |           |                            | SDMT1505 | 1.5                     |                        | 0.5<br>(0.3-0.8)   | 0.7<br>(0.4-1.1) |



Slotting Milling

# MSA(104~108)

Arbor

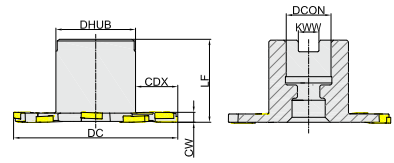

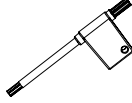


Fig1

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |    |      |     |    |      |      | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|----|------|-----|----|------|------|--------------|---------|-------|-------|
|                     |           |       | DC            | CW | DCON | CDX | LF | DHUB | KWW  |              |         |       |       |
| MSA104100R10A27SN12 | 100       | 10    | 100           | 4  | 27   | 23  | 50 | 48   | 12.4 | SNEX1202     | ×       | Fig1  | ●     |
| MSA105100R10A27SN12 | 100       | 10    | 100           | 5  | 27   | 23  | 50 | 48   | 12.4 | SNEX1203     | ×       | Fig1  | ●     |
| MSA106100R10A27SN12 | 100       | 10    | 100           | 6  | 27   | 23  | 50 | 48   | 12.4 | SNEX12T3     | ×       | Fig1  | ●     |
| MSA107100R10A27SN12 | 100       | 10    | 100           | 7  | 27   | 23  | 50 | 48   | 12.4 | SNEX1204     | ×       | Fig1  | ●     |
| MSA108100R10A27SN12 | 100       | 10    | 100           | 8  | 27   | 23  | 50 | 48   | 12.4 | SNEX12T4     | ×       | Fig1  | ●     |

● Stock ○ Available Upon Order

## Spare Parts

| Part Name |               | Inserts Screw   | Insert Screw Wrench   |
|-----------|---------------|---|---|
| Inserts   | Shape         |  |  |
|           | Specification | SI90M4.0X3.2-06003IF  | TI08P   |
| SNEX1202  | Ordering Code | SI90M040032-06003IFQ  | TI08PQ  |
|           | Specification | SI90M4.0X4.2-06003IF  | TI08P   |
| SNEX1203  | Ordering Code | SI90M040042-06003IFQ  | TI08PQ  |
|           | Specification | SI90M4.0X5.1-06003IF  | TI08P   |
| SNEX12T3  | Ordering Code | SI90M040051-06003IFQ  | TI08PQ  |
|           | Specification | SI90M4.0X6.1-06003IF  | TI08P   |
| SNEX1204  | Ordering Code | SI90M040061-06003IFQ  | TI08PQ  |
|           | Specification | SI90M4.0X7.1-06003IF  | TI08P   |
| SNEX12T4  | Ordering Code | SI90M040071-06003IFQ  | TI08PQ  |

## Recommended Cutting Data

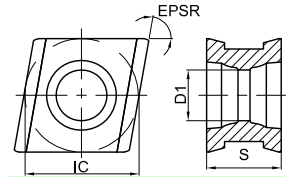
|          | Workpiece  | Hardness  | Grade            | Specification | Cutting Speed<br>Vc(m/min) | Feed Rate/Edges                  |
|----------|--|-----------|------------------|---------------|----------------------------|----------------------------------|
|          |  |           |                  |               |                            | fz(mm)<br>Medium<br>Machining(M) |
| <b>P</b> | Soft Steel   | ≤ HB180   | GA4225<br>GA4230 | SNEX12        | 180<br>(140-220)           | 0.1<br>(0.05-0.15)               |
|          | Carbon Steel,<br>Alloy Steel                           | HB180-350 | GA4225<br>GA4230 | SNEX12        | 160<br>(120-200)           | 0.08<br>(0.05-0.12)              |
|          | Pre-harden Steel                                       | HRC35-45  | GA4225<br>GA4230 | SNEX12        | 140<br>(100-180)           | 0.06<br>(0.04-0.1)               |
| <b>M</b> | Stainless (Ferrite,<br>Martensite)                     | ≤ HB270   | GM2140<br>GA4230 | SNEX12        | 120<br>(80-160)            | 0.08<br>(0.05-0.12)              |
|          | Stainless<br>(Austenite,<br>Diphasic)                  | ≤ HB270   | GA4230<br>GM2140 | SNEX12        | 100<br>(60-140)            | 0.06<br>(0.04-0.1)               |
| <b>K</b> | Grey Cast Iron   | ≤ HB280   | GK2115<br>GK4125 | SNEX12        | 200<br>(160-240)           | 0.1<br>(0.02-0.15)               |
|          | Nodular Cast<br>Iron, Vermicular<br>Graphite Cast Iron | ≤ HB350   | GK4125<br>GK2115 | SNEX12        | 120<br>(80-160)            | 0.08<br>(0.05-0.12)              |





Slotting Milling

# CNEU

Medium Slot Width and Three-edge Milling Inserts



| Ordering Code   | Dimension(mm) |      |   |     | Coating Grade |        |        |        |        |        |        |        |        |        |        |        | Uncoated | Cermet |        |
|---|---------------|------|---|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|
|   | IC            | EPSR | S | D1  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 | GS4130 | GH4115 |          |        | GN9125 |
| <br>CNEU070508-PM  | 7.6           | 80°  | 5 | 3.4 | ●             | ●      |        |        |        |        |        |        | ●      |        |        |        |          |        |        |
|   |               |      |   |     |               |        |        |        |        |        |        |        |        |        |        |        |          |        |        |
|   |               |      |   |     |               |        |        |        |        |        |        |        |        |        |        |        |          |        |        |
| <br>CNEU070508-KM | 7.6           | 80°  | 5 | 3.4 |               | ●      |        |        |        |        |        |        | ●      |        |        |        |          |        |        |
|   |               |      |   |     |               |        |        |        |        |        |        |        |        |        |        |        |          |        |        |
|   |               |      |   |     |               |        |        |        |        |        |        |        |        |        |        |        |          |        |        |

● Stock ○ Available Upon Order

## Slotting Milling

**MSA(110~113)**

Arbor

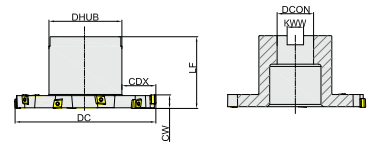


Fig1

| Ordering Code       | Dia-<br>meter | Teeth | Dimension(mm) |    |      |      |    |      |      | Suitable for | Coolant | Shape | Stock |
|---------------------|---------------|-------|---------------|----|------|------|----|------|------|--------------|---------|-------|-------|
|                     |               |       | DC            | CW | DCON | CDX  | LF | DHUB | KWW  |              |         |       |       |
| MSA110080R06B27CN07 | 80            | 6     | 80            | 10 | 27   | 14   | 50 | 48   | 12.4 | CNEU0705     | ×       | Fig1  | ●     |
| MSA110100R08B32CN07 | 100           | 8     | 100           | 10 | 32   | 19   | 50 | 58   | 14.4 | CNEU0705     | ×       | Fig1  | ●     |
| MSA110125R10B32CN07 | 125           | 10    | 125           | 10 | 32   | 29.5 | 63 | 64   | 14.4 | CNEU0705     | ×       | Fig1  | ●     |
| MSA110160R12B40CN07 | 160           | 12    | 160           | 10 | 40   | 43   | 63 | 70   | 16.4 | CNEU0705     | ×       | Fig1  | ●     |
| MSA111080R06B27CN07 | 80            | 6     | 80            | 11 | 27   | 14   | 50 | 48   | 12.4 | CNEU0705     | ×       | Fig1  | ●     |
| MSA111100R08B32CN07 | 100           | 8     | 100           | 11 | 32   | 19   | 50 | 58   | 14.4 | CNEU0705     | ×       | Fig1  | ●     |
| MSA111125R10B32CN07 | 125           | 10    | 125           | 11 | 32   | 29.5 | 63 | 64   | 14.4 | CNEU0705     | ×       | Fig1  | ●     |
| MSA111160R12B40CN07 | 160           | 12    | 160           | 11 | 40   | 43   | 63 | 70   | 16.4 | CNEU0705     | ×       | Fig1  | ●     |
| MSA112080R06B27CN07 | 80            | 6     | 80            | 12 | 27   | 14   | 50 | 48   | 12.4 | CNEU0705     | ×       | Fig1  | ●     |
| MSA112100R08B32CN07 | 100           | 8     | 100           | 12 | 32   | 19   | 50 | 58   | 14.4 | CNEU0705     | ×       | Fig1  | ●     |
| MSA112125R10B32CN07 | 125           | 10    | 125           | 12 | 32   | 29.5 | 63 | 64   | 14.4 | CNEU0705     | ×       | Fig1  | ●     |
| MSA112160R12B40CN07 | 160           | 12    | 160           | 12 | 40   | 43   | 63 | 70   | 16.4 | CNEU0705     | ×       | Fig1  | ●     |
| MSA113080R06B27CN07 | 80            | 6     | 80            | 13 | 27   | 14   | 50 | 48   | 12.4 | CNEU0705     | ×       | Fig1  | ●     |
| MSA113100R08B32CN07 | 100           | 8     | 100           | 13 | 32   | 19   | 50 | 58   | 14.4 | CNEU0705     | ×       | Fig1  | ●     |
| MSA113125R10B32CN07 | 125           | 10    | 125           | 13 | 32   | 29.5 | 63 | 64   | 14.4 | CNEU0705     | ×       | Fig1  | ●     |
| MSA113160R12B40CN07 | 160           | 12    | 160           | 13 | 40   | 43   | 63 | 70   | 16.4 | CNEU0705     | ×       | Fig1  | ●     |

● Stock ○ Available Upon Order

Slotting Milling

# MSA(110~113)

Shell

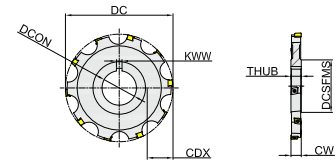

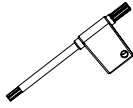


Fig2

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |    |      |     |      |        |     | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|----|------|-----|------|--------|-----|--------------|---------|-------|-------|
|                     |           |       | DC            | CW | DCON | CDX | THUB | DCSFMS | KWW |              |         |       |       |
| MSA110080R06K27CN07 | 80        | 6     | 80            | 10 | 27   | 19  | 10   | 40     | 7   | CNEU0705     | ×       | Fig2  | ●     |
| MSA110100R08K27CN07 | 100       | 8     | 100           | 10 | 27   | 26  | 10   | 46     | 7   | CNEU0705     | ×       | Fig2  | ●     |
| MSA110125R10K40CN07 | 125       | 10    | 125           | 10 | 40   | 34  | 10   | 55     | 10  | CNEU0705     | ×       | Fig2  | ●     |
| MSA110160R12K40CN07 | 160       | 12    | 160           | 10 | 40   | 51  | 10   | 55     | 10  | CNEU0705     | ×       | Fig2  | ●     |
| MSA111080R06K27CN07 | 80        | 6     | 80            | 11 | 27   | 19  | 11   | 40     | 7   | CNEU0705     | ×       | Fig2  | ●     |
| MSA111100R08K27CN07 | 100       | 8     | 100           | 11 | 27   | 26  | 11   | 46     | 7   | CNEU0705     | ×       | Fig2  | ●     |
| MSA111125R10K40CN07 | 125       | 10    | 125           | 11 | 40   | 34  | 11   | 55     | 10  | CNEU0705     | ×       | Fig2  | ●     |
| MSA111160R12K40CN07 | 160       | 12    | 160           | 11 | 40   | 51  | 11   | 55     | 10  | CNEU0705     | ×       | Fig2  | ●     |
| MSA112080R06K27CN07 | 80        | 6     | 80            | 12 | 27   | 19  | 12   | 40     | 7   | CNEU0705     | ×       | Fig2  | ●     |
| MSA112100R08K27CN07 | 100       | 8     | 100           | 12 | 27   | 26  | 12   | 46     | 7   | CNEU0705     | ×       | Fig2  | ●     |
| MSA112125R10K40CN07 | 125       | 10    | 125           | 12 | 40   | 34  | 12   | 55     | 10  | CNEU0705     | ×       | Fig2  | ●     |
| MSA112160R12K40CN07 | 160       | 12    | 160           | 12 | 40   | 51  | 12   | 55     | 10  | CNEU0705     | ×       | Fig2  | ●     |
| MSA113080R06K27CN07 | 80        | 6     | 80            | 13 | 27   | 19  | 13   | 40     | 7   | CNEU0705     | ×       | Fig2  | ●     |
| MSA113100R08K27CN07 | 100       | 8     | 100           | 13 | 27   | 26  | 13   | 46     | 7   | CNEU0705     | ×       | Fig2  | ●     |
| MSA113125R10K40CN07 | 125       | 10    | 125           | 13 | 40   | 34  | 13   | 55     | 10  | CNEU0705     | ×       | Fig2  | ●     |
| MSA113160R12K40CN07 | 160       | 12    | 160           | 13 | 40   | 51  | 13   | 55     | 10  | CNEU0705     | ×       | Fig2  | ●     |

● Stock ○ Available Upon Order

## Spare Parts

| Part Name |               | Inserts Screw   | Insert Screw Wrench   |
|-----------|---------------|---|---|
| CNEU0705  | Shape         |  |  |
|           | Specification | SI60M3.0X9.0-04205  | TT09P   |
|           | Ordering Code | SI60M030090-04205S  | TT09PQ  |

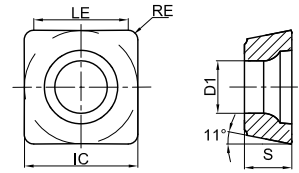
## Recommended Cutting Data



|          | Workpiece  | Hardness  | Grade            | Specification | Cutting Speed<br>Vc(m/min) | Feed Rate/Edges                  |
|----------|--|-----------|------------------|---------------|----------------------------|----------------------------------|
|          |  |           |                  |               |                            | fz(mm)<br>Medium<br>Machining(M) |
| <b>P</b> | Soft Steel   | ≤ HB180   | GA4225<br>GA4230 | CNEU0705      | 180<br>(140-220)           | 0.1<br>(0.05-0.15)               |
|          | Carbon Steel,<br>Alloy Steel                           | HB180-350 | GA4225<br>GA4230 | CNEU0705      | 160<br>(120-200)           | 0.08<br>(0.05-0.12)              |
|          | Pre-harden Steel                                       | HRC35-45  | GA4225<br>GA4230 | CNEU0705      | 140<br>(120-180)           | 0.06<br>(0.04-0.1)               |
| <b>M</b> | Stainless (Ferrite,<br>Martensite)                     | ≤ HB270   | GM2140<br>GA4230 | CNEU0705      | 120<br>(80-160)            | 0.08<br>(0.05-0.12)              |
|          | Stainless<br>(Austenite,<br>Diphasic)                  | ≤ HB270   | GA4230<br>GM2140 | CNEU0705      | 100<br>(60-140)            | 0.06<br>(0.04-0.1)               |
| <b>K</b> | Grey Cast Iron   | ≤ HB280   | GK2115<br>GK4125 | CNEU0705      | 200<br>(160-240)           | 0.1<br>(0.02-0.15)               |
|          | Nodular Cast<br>Iron, Vermicular<br>Graphite Cast Iron | ≤ HB350   | GK4125<br>GK2115 | CNEU0705      | 120<br>(80-160)            | 0.08<br>(0.05-0.12)              |

Chamfer Milling

# SPMT

Chamfer Milling Insert



| Ordering Code   | Dimension(mm) |      |     |      |     | Coating Grade |        |        |        |        |        |        |        |        |        | Uncoated | Cermat |        |        |        |        |
|---|---------------|------|-----|------|-----|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|
|   | IC            | LE   | RE  | S    | D1  | GA4225        | GA4230 | GA4325 | GA4330 | GP4225 | GP2115 | GM4135 | GM2140 | GK4125 | GK2115 |          |        | GS4130 | GH4115 | GN9125 | GP01TM |
| <br>SPMT09T308-CM  | 9.53          | 7.93 | 0.8 | 3.97 | 4.4 | ●             | ●      |        |        |        |        |        |        | ●      | ●      |          |        |        |        |        |        |
|   |               |      |     |      |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |
|   |               |      |     |      |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |
| <br>SPMT120408-CM | 12.7          | 11.1 | 0.8 | 4.76 | 5.5 | ●             | ●      |        |        |        |        |        |        | ●      | ●      |          |        |        |        |        |        |
|   |               |      |     |      |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |
|   |               |      |     |      |     |               |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |

● Stock ○ Available Upon Order

Chamfer Milling

# MCA130

Side Clamp Type

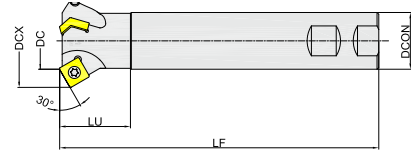


Fig1

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |      |     |    | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-----|------|-----|----|------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCX | DCON | LF  | LU |      |              |         |       |       |
| MCA130025R02W25SP09 | 25        | 2     | 25            | 40  | 25   | 120 | 40 | 3    | SPMT09T3     | ×       | Fig1  | ●     |
| MCA130032R03W32SP12 | 32        | 3     | 32            | 52  | 32   | 180 | 40 | 4.5  | SPMT1204     | ×       | Fig1  | ●     |

● Stock ○ Available Upon Order

# MCA145

Side Clamp Type

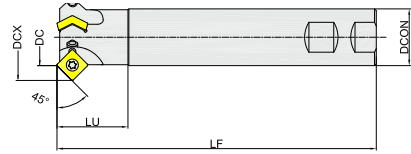


Fig2

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |      |     |    | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-----|------|-----|----|------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCX | DCON | LF  | LU |      |              |         |       |       |
| MCA145025R02W25SP09 | 25        | 2     | 25            | 37  | 25   | 120 | 40 | 5    | SPMT09T3     | ×       | Fig2  | ●     |
| MCA145032R03W32SP12 | 32        | 3     | 32            | 49  | 32   | 180 | 40 | 7    | SPMT1204     | ×       | Fig2  | ●     |

● Stock ○ Available Upon Order

# MCA160

Side Clamp Type

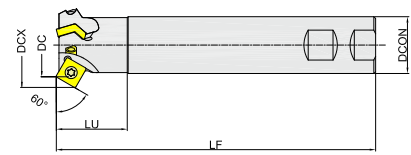

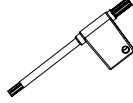


Fig3

| Ordering Code       | Dia-meter | Teeth | Dimension(mm) |     |      |     |    | APMX | Suitable for | Coolant | Shape | Stock |
|---------------------|-----------|-------|---------------|-----|------|-----|----|------|--------------|---------|-------|-------|
|                     |           |       | DC            | DCX | DCON | LF  | LU |      |              |         |       |       |
| MCA160025R02W25SP09 | 25        | 2     | 25            | 34  | 25   | 120 | 40 | 6    | SPMT09T3     | ×       | Fig3  | ●     |
| MCA160036R03W32SP12 | 36        | 3     | 36            | 48  | 32   | 180 | 40 | 8    | SPMT1204     | ×       | Fig3  | ●     |

● Stock ○ Available Upon Order

## Spare Parts

| Part Name |               | Inserts Screw   | Insert Screw Wrench   |
|-----------|---------------|---|---|
| Inserts   | Shape         |  |  |
|           | SPMT09T3      |   |   |
|           | Specification | SI60M4.0X8.9-05313S   | TT15P   |
|           | Ordering Code | SI60M040089-05313S  | TT15PQ  |
|           | SPMT1204      |   |   |
|           | Specification | SI60M5.0X10.8-07209S  | TT20P   |
|           | Ordering Code | SI60M050108-07209S  | TT20PQ  |

## Recommended Cutting Data

|          | Workpiece  | Hardness      | Grade                      | Specification | Cutting Speed<br>Vc(m/min) | Feed Rate/Edges<br>fz(mm) |
|----------|--|---------------|----------------------------|---------------|----------------------------|---------------------------|
|          |  |               |                            |               |                            | Medium<br>Machining(M)    |
| <b>P</b> | Soft Steel   | ≤ HB180       | GA4225<br>GA4230           | SPMT09T3      | 180<br>(140-220)           | 0.2<br>(0.15-0.25)        |
|          |  |               |                            | SPMT1204      | 180<br>(140-220)           | 0.25<br>(0.2-0.3)         |
|          | Carbon Steel,<br>Alloy Steel                           | HB180-<br>350 | GA4225<br>GA4230<br>GP2115 | SPMT09T3      | 160<br>(120-200)           | 0.2<br>(0.15-0.25)        |
|          |  |               |                            | SPMT1204      | 160<br>(120-200)           | 0.25<br>(0.2-0.3)         |
|          | Pre-harden Steel                                       | HRC35-45      | GA4230<br>GA4225<br>GP2115 | SPMT09T3      | 120<br>(80-160)            | 0.15<br>(0.1-0.2)         |
|          |  |               |                            | SPMT1204      | 120<br>(80-160)            | 0.2<br>(0.15-0.25)        |
| <b>M</b> | Stainless (Ferrite,<br>Martensite)                     | ≤ HB270       | GM2140<br>GA4230           | SPMT09T3      | 120<br>(80-160)            | 0.15<br>(0.1-0.2)         |
|          |  |               |                            | SPMT1204      | 120<br>(80-160)            | 0.2<br>(0.15-0.25)        |
|          | Stainless<br>(Austenite,<br>Diphasic)                  | ≤ HB270       | GM2140                     | SPMT09T3      | 100<br>(60-140)            | 0.15<br>(0.1-0.2)         |
|          |  |               |                            | SPMT1204      | 100<br>(60-140)            | 0.2<br>(0.15-0.25)        |
| <b>K</b> | Grey Cast Iron   | ≤ HB280       | GK2115<br>GK4125           | SPMT09T3      | 160<br>(120-200)           | 0.2<br>(0.15-0.25)        |
|          |  |               |                            | SPMT1204      | 160<br>(120-200)           | 0.25<br>(0.15-0.3)        |
|          | Nodular Cast<br>Iron, Vermicular<br>Graphite Cast Iron | ≤ HB350       | GK4125<br>GK2115           | SPMT09T3      | 140<br>(100-180)           | 0.15<br>(0.1-0.2)         |
|          |  |               |                            | SPMT1204      | 140<br>(100-180)           | 0.2<br>(0.15-0.25)        |

B

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# SOLID CARBIDE ENDMILLS





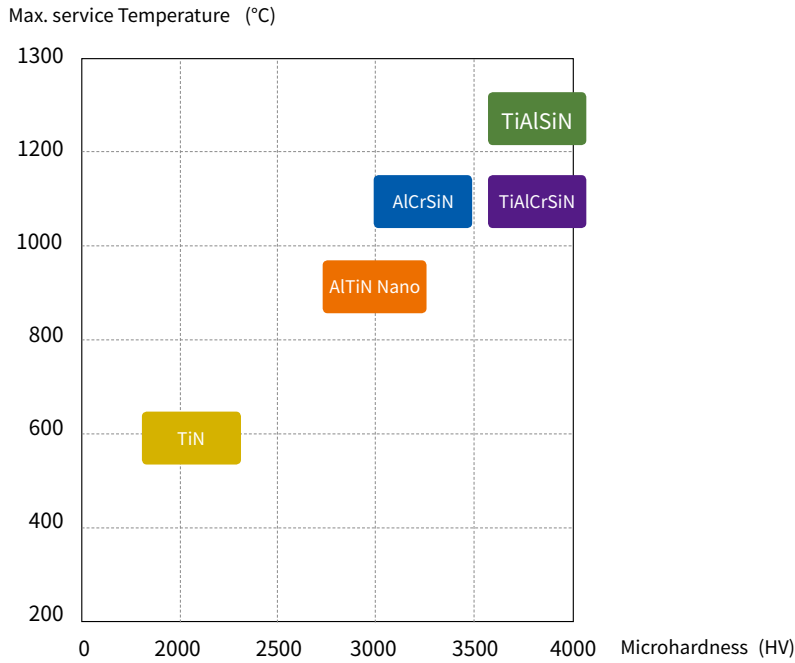
## GESAC Coating

### Coating Characteristic

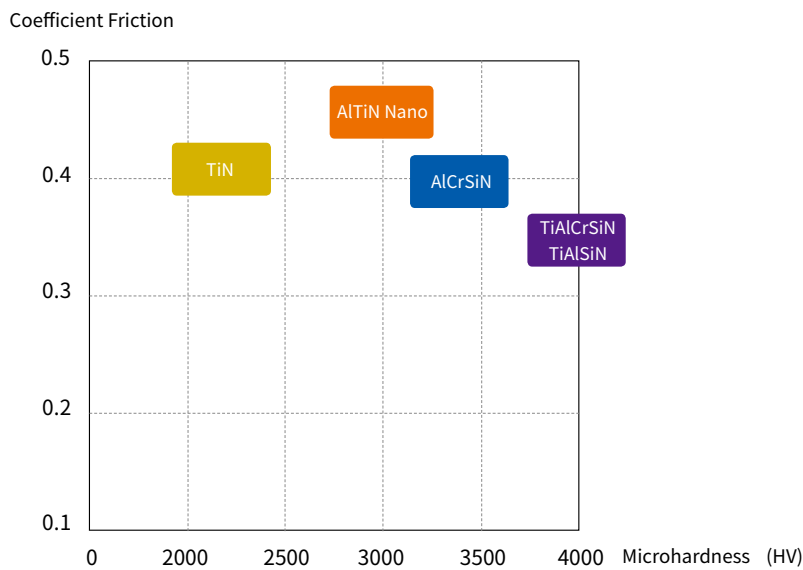
| Coatings                         | Microhardness (HV0.05) | Coefficient Friction | Max. service Temperature (°C) | Characteristic and Application  |
|----------------------------------|------------------------|----------------------|-------------------------------|---|
| AlCrN                            | 3200                   | 0.45                 | 1100                          | High oxidation resistance, extremely good of high temperature abrasion resistance, suitable for ordinary steel, low hardness of die steel or titanium alloy dry milling.  |
| AlCrSiN                          | 3300                   | 0.4                  | 1100                          | Specially designed for milling, high oxidation resistance, good balance of abrasion resistance and toughness, versatility is extremely high, suitable for ordinary steel under HRC55, die steel and titanium alloy milling. |
| TiAlN                            | 2900                   | 0.35                 | 900                           | Super-high micro hardness and fine-grain, suitable for stainless steel, some high hard steel drying cutting and titanium alloy milling.   |
| AlTiN Nano                       | 3000                   | 0.45                 | 900                           | Extremely crystal texture control, good balance of micro hardness and toughness, universal milling and drilling coatings, suitable for stainless steel, high hard steel moderately high speed and high feed cutting.        |
| AlCrN/TiSiN                      | 3100                   | 0.35                 | 1100                          | High oxidation resistance, good hot hardness, good toughness, and super-smooth surface, suitable for stainless steel and cast iron drilling.  |
| AlTiN/TiSiN Multilayer           | 3300                   | 0.35                 | 1100                          | Super high thermal-stability, super toughness, bit general coating, especially suitable for ordinary steel drilling.  |
| TiAlCrSiN                        | 4000                   | 0.35                 | 1100                          | High micro hardness, high oxidation resistance and hot hardness, suitable for high hard steel above 55HRC milling.  |
| TiAlSiN                          | 4000                   | 0.35                 | 1200                          | High micro hardness, high oxidation resistance and hot hardness, suitable for high hard steel above 55-65HRC milling.   |
| Normal diamond coating           | 8500                   | -                    | 700                           | High hardness, thermal conductivity and wear resistance, suitable for graphite machining.   |
| Ultra-fine grain diamond coating | 8000                   | -                    | 700                           | Smooth surface, good self-lubricity, hardness, thermal conductivity and wear resistance, suitable for nonferrous materials, carbon fiber composite machining, etc.  |

### Position of Main PVD Nano-structure Coating

PVD coating provides for superior control of coating grain size (from 10nm to 500nm), achieves excellent hardness, good oxidation resistant, and improved reduction of the coefficient of friction.



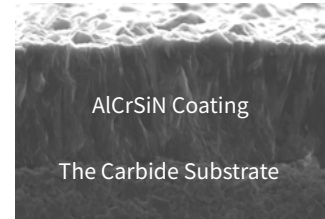
Microhardness and Max. Service Temperature



Microhardness and Coefficient of Friction

## Universal High Performance Coating AlCrSiN

- Productivity increase due to significantly higher cutting speed and feed for application in a wide range of materials. Significantly enhance productivity.
- Particular design of structure brings good balance between toughness, thermo-shock stability and residual stress.



SEM Photograph of Coating

## High Hardness Coating TiAlSiN

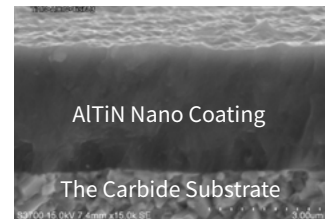
- Micro hardness up to 4000HV, with good wear resistance.
- Special transition layer design to ensure the high bonding strength between high hardness coating and substrate, adhesion of up to 100N.
- Nano composite coating design, have super strong oxidation resistance, oxidation starts at temperatures as high as 1200°C, high temperature stability.



SEM Photograph of Coating

## Nano Coating AlTiN

- High aluminum content provides excellent hot hardness and oxidation resistance.
- Special method optimizes the structure of coating, significantly improve stability, reducing the number of surface droplet.



SEM Photograph of Coating

## Ultra-Fine Grain Diamond Coating

- High purity diamond coating, with hardness up to 80GPa.
- Ultra smooth and shiny surface, low coefficient friction.
- Suitable for finish machining nonferrous materials, such as graphite, aluminum, carbon fiber, ceramic, etc.



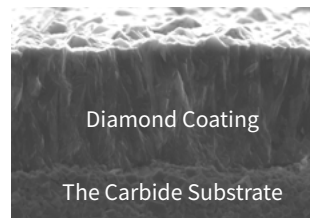
SEM Photograph of Coating



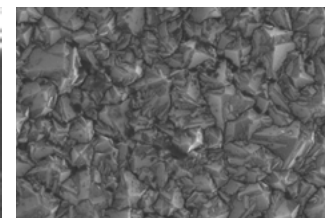
Surface Morphology

## Normal diamond coating

- High purity diamond coating, with hardness up to 80GPa.
- High wear-resisting diamond coating, with extremely high hardness and strongly wear resistance.
- Suitable for graphite machining.





































SEM Photograph of Coating

















Surface Morphology

## Guidelines to Icons

|   | Mark  | Description   |
|---|---|---|
| Shank   |    | ISO Standard Shank h5   |
|   |    | ISO Standard Shank h6   |
| Coating   |    | AlCrN Coating   |
|   |    | AlCrSiN Coating   |
|   |    | AlTiN Coating   |
|   |    | Nano Coating AlTiN  |
|   |   | AlCrN/TiSiN Coating   |
|   |  | Nano Coating AlTiN/TiSiN  |
|   |  | TiAlCrSiN Coating   |
|   |  | TiAlSiN Coating   |
|   |  | Normal Diamond Coating  |
|   |  | Ultra-Fine Grain Diamond Coating  |
|   | Cutting Condition   |  |
|  |   | Slot Milling  |
|  |   | For Profile Milling   |
|  |   | Spiral Milling  |
|  |   | Trochoidal Milling  |

|               | Mark  | Description    |
|---------------|---|----------------|
| Helix         |    | 28° Helix      |
|               |    | 30° Helix      |
|               |    | 35° Helix      |
|               |    | 38° Helix      |
|               |    | 40° Helix      |
|               |    | 45° Helix      |
|               |   | Variable Helix |
|               |  | Variable Helix |
|               |  | Variable Helix |
|               |  | Variable Helix |
| No. of Flutes |  | 1 Flute        |
|               |  | 2 Flutes       |
|               |  | 3 Flutes       |
|               |  | 4 Flutes       |
|               |  | 5 Flutes       |
|               |  | 6 Flutes       |
|               |  | 12 Flutes      |

|                    | Mark  | Description                                  |
|--------------------|---|--|
| Endteeth Type      |    | Square End                                   |
|                    |    | Corner Radius                                |
|                    |    | Ballnose                                     |
|                    |    | Square End with Chamfer                      |
|                    |    | Chamfer                                      |
| Helix              |    | -20° Helix                                   |
|                    |   | 15° Helix                                    |
|                    |  | 20° Helix                                    |
| Workpiece Material |  | Steels                                       |
|                    |  | Stainless Steels                             |
|                    |  | Cast Iron                                    |
|                    |  | Non-ferrous Materials                        |
|                    |  | Heat-resistant Super Alloys, Titanium Alloys |
|                    |  | High Hardened Materials                      |

## Solid Carbide Endmills Identification System

UP210 -

①

| Workingpiece                | ①Code of Series | Series Description   |
|-----------------------------|-----------------|--|
| Steel, Cast Iron            | UP210           | General Machining Series( $\leq$ 48HRC)                          |
|                             | SP210           | High Efficiency Machining Series( $\leq$ 48HRC)                  |
|                             | PP300           | <b>NEW</b> High Efficiency Machining Series ( $\leq$ 48HRC)      |
|                             | UPN210          | General Rough Machining Series( $\leq$ 48HRC)                    |
|                             | UPR210          | General Rough Machining Series( $\leq$ 48HRC)                    |
|                             | UPR300          | General Rough Machining Series( $\leq$ 48HRC)                    |
| Stainless Steel             | US200           | General Machining Series for Stainless Steel                     |
|                             | US260           | <b>NEW</b> General Machining Series for Stainless Steel          |
|                             | SS600           | <b>NEW</b> High Strength Machining Series                        |
| Aluminium Alloy             | UA100           | General Machining Series for Aluminum                            |
|                             | SA100           | High Efficiency Machining Series for Aluminum                    |
|                             | SA210           | <b>NEW</b> Rough Machining Series for Aluminum                   |
|                             | SA300           | High Speed Machining Series for Aluminum                         |
|                             | DNM100          | <b>NEW</b> PCD Round-head Endmill                                |
| Graphite                    | SG200           | High Speed Machining for Graphite                                |
| Composite Materials         | SD200           | General Machining for Composite Material                         |
| Heat Resistant Super Alloys | SN200           | High Efficiency Machining Series for Heat Resistant Super Alloys |
|                             | STB200          | <b>NEW</b> Taper Ball Endmill for Heat Resistant Super Alloys    |
| Titanium Alloys             | ST210           | High Performance Machining Series for Titanium Alloys            |
| High Hardened Material      | FH200-H         | High Feed Machining Series for Hardened Steels (35-65HRC)        |



②

| ②Endteeth Type |                         |
|----------------|-------------------------|
| S              | Square                  |
| B              | Ballnose                |
| R              | Cornor Radius           |
| C              | Square End with Chamfer |

③

| ③Length of Flute |             |
|------------------|-------------|
| N                | Reduce Neck |
| H                | Long Shank  |
| L                | Long Flute  |
| S                | Short Flute |
| Blank            | Standard    |

④

| ④No. of Flutes |   |
|----------------|---|
|                | 2 |
|                | 3 |
|                | 4 |
|                | 6 |

⑤

| ⑤Diameter |     |
|-----------|-----|
| 0.6mm     | 006 |
| 6mm       | 060 |
| 10mm      | 100 |

⑥

| ⑥Code Characteristic |   |
|----------------------|---|
| 1                    | Square End\<br>Ballnose:<br>a. Neck Length<br>b. Flute Length<br>6-06 10-10 |
| 2                    | Cornor Radius:<br>r0.2-02<br>r1-10  |
| 3                    | Chamfered<br>Corner:<br>C0.03-03<br>C0.13-13                                |

## Solid Carbide Endmills Identification System

## SPM200 -



| Workingpiece   | ①Code of Series | Series Description  |
|--|-----------------|---|
| Steel, Cast Iron, Copper Alloy, High Hardened Material | SPM200          | High Efficient Micro Diameter Machining Series ( $\leq 55\text{HRC}$ )                          |
| High Hardened Material                                 | SH260-H         | General Machining Series for High Hardened Material (30-60HRC)                                  |
|  | SH360           | <b>NEW</b> Machining Series for High Hardened Material (45-65HRC)                               |
|  | SHM200          | <b>NEW</b> High Efficient Micro Diameter Machining Series for High Hardened Material (45-65HRC) |

## SG200-M -



| Workingpiece | ①Code of Series | Series Description               |
|--------------|-----------------|----------------------------------|
| Graphite     | SG200-M         | High Speed Machining of Graphite |

# R N 2 - 1 - 4 - 0.1 - V

| ②              |                  | ③                |                | ④               |       | ⑤         |       | ⑥  |       | ⑦                      |  | ⑧                  |  |
|----------------|------------------|------------------|----------------|-----------------|-------|-----------|-------|--|-------|------------------------|--|--------------------|--|
| ②Endteeth Type |                  | ③Length of Flute |                | ④ No. of Flutes |       | ⑤Diameter |       | ⑥Eigenvalues<br>neck length/shank<br>length/flute length |       | ⑦Corner<br>Radius      |  | ⑧Coating<br>symbol |  |
| S              | Square           | N                | Reduce         | 2               | 0.6mm | 0.6       | 0.5mm | 0.5  | 0.5mm | 0.5                    |  |                    |  |
| B              | Ballnose         | H                | Long<br>Shank  | 3               | 6mm   | 6         | 1mm   | 1  | 1mm   | 1                      |  |                    |  |
| R              | Corner<br>Radius | L                | Long<br>Flute  | 4               |       |           | 10mm  | 10   | None  | No<br>Corner<br>Radius |  |                    |  |
|                |                  | S                | Short<br>Flute | 6               |       |           | 100mm | 100  |       |                        |  |                    |  |
|                |                  | Blank            | Standard       |                 |       |           |       |  |       |                        |  |                    |  |

# R N 4 - 1 - 4 - 0.1 - 50


| ②              |                  | ③                                     |                | ④               |       | ⑤         |       | ⑥  |       | ⑦                      |      | ⑧             |    |
|----------------|------------------|---------------------------------------|----------------|-----------------|-------|-----------|-------|--|-------|------------------------|------|---------------|----|
| ②Endteeth Type |                  | ③Length of<br>FluteLength of<br>Flute |                | ④ No. of Flutes |       | ⑤Diameter |       | ⑥Eigenvalues<br>neck length/shank<br>length/flute length |       | ⑦Corner<br>Radius      |      | ⑧Total Length |    |
| S              | Square           | N                                     | Reduce         | 2               | 0.6mm | 0.6       | 0.5mm | 0.5  | 0.5mm | 0.5                    | 50mm |               | 50 |
| B              | Ballnose         | H                                     | Long<br>Shank  | 3               | 6mm   | 6         | 1mm   | 1  | 1mm   | 1                      |      |               |    |
| R              | Corner<br>Radius | L                                     | Long<br>Flute  | 4               |       |           | 10mm  | 10   | None  | No<br>Corner<br>Radius |      |               |    |
|                |                  | S                                     | Short<br>Flute | 6               |       |           | 100mm | 100  |       |                        |      |               |    |
|                |                  | Blank                                 | Standard       |                 |       |           |       |  |       |                        |      |               |    |



# Solid Carbide Endmills Identification System

SM200 -



| Workpiece                | ①Code of Series | Series Description   |
|--------------------------|-----------------|--|
| Zirconia&Titanium Alloys | SM200           |  Endmills for Denture |

# RO - 2 - 0.6 - 6 - 50 - d4

②      ③      ④      ⑤      ⑥      ⑦

| ③ No. of Flutes |   |
|-----------------|---|
| 2               | 2 |
| 3               | 3 |

| ④ Diameter |     |
|------------|-----|
| 0.6mm      | 0.6 |
| 6mm        | 6   |

| ⑤ Neck length |     |
|---------------|-----|
| 0.5mm         | 0.5 |
| 1mm           | 1   |
| 10mm          | 10  |

| ⑥ Overall Length |    |
|------------------|----|
| 50mm             | 50 |
| 60mm             | 60 |

| ② Compatible Device Code |                          |
|--------------------------|--------------------------|
| RO                       | Roland                   |
| VH                       | VHF                      |
| WI                       | Willand                  |
| IM                       | IMES-ICORE               |
| ZI                       | Conze                    |
| AR                       | ARUM                     |
| XT                       | Xiangtong                |
| KL                       | Collard                  |
| TP                       | Titanium Alloy Machining |

| ⑦ Shank Length |    |
|----------------|----|
| 4mm            | d4 |
| 6mm            | d6 |

## Application Summary Of Solid Carbide Endmills

| ISO Material Group | MC GESAC         | General Machining                                       | Roughing                      | High Efficiency Machining  | High Speed Machining         | Micro Machining     |                     |                              |
|--------------------|------------------|---|-------------------------------|----------------------------|------------------------------|---------------------|---------------------|------------------------------|
| <b>P</b>           | 1<br>2<br>3<br>4 | Carbon Steel, Alloy Steel (<35HRC)                      | UP210                         | UPN210<br>UPR210<br>UPR300 | SP210<br>PP300<br><b>NEW</b> | SPM200              |                     |                              |
|                    | 5                | Alloy Steel (35-48HRC)                                  |                               |                            |                              |                     |                     |                              |
|                    | 6                | PH, Ferritic, Martensitic Steel (<35HRC)                |                               |                            |                              |                     |                     |                              |
| <b>M</b>           | 1<br>2<br>3      | Stainless Steel   | US200                         | US260<br><b>NEW</b>        | SS600<br><b>NEW</b>          | SPM200              |                     |                              |
| <b>K</b>           | 1<br>2           | Grey Cast Iron, Nodular Cast Iron (<32HRC)              | UP210                         | UPN210<br>UPR210<br>UPR300 | SP210<br>PP300<br><b>NEW</b> | SPM200              |                     |                              |
|                    | 3                | High-alloy Cast Iron (35-45HRC)                         |                               |                            |                              |                     |                     |                              |
| <b>N</b>           | 1<br>2           | Rough Aluminium Alloys/Cast Aluminium Alloys (Si ≤ 12%) | UA100<br>DNM100<br><b>NEW</b> |                            | SA210<br><b>NEW</b>          | SA300               | SPM200              |                              |
|                    | 3                | Cast Aluminium Alloys (Si > 12%)                        | DNM100<br><b>NEW</b>          |                            |                              |                     |                     |                              |
|                    | 4                | Copper Alloys (<200HB)                                  | UA100<br>DNM100<br><b>NEW</b> |                            | SA210<br><b>NEW</b>          |                     |                     |                              |
|                    | 5                | Graphite, Composite Material                            | SD200<br>DNM100<br><b>NEW</b> |                            |                              |                     |                     | SG200<br>SM200<br><b>NEW</b> |
| <b>S</b>           | 1<br>2<br>3      | Heat-resistant Alloys (<450HB)                          | SN200<br>STB200<br><b>NEW</b> |                            |                              | SM200<br><b>NEW</b> | SPM200              |                              |
|                    | 4                | Titanium Alloys (<400HB)                                | ST210                         |                            |                              |                     |                     |                              |
| <b>H</b>           | 1                | Hardened Steel (45-55HRC)                               | SH260-H                       |                            |                              | FH200-H             | SH360<br><b>NEW</b> | SHM200<br><b>NEW</b>         |
|                    | 2                | Hardened Steel (55-60HRC)                               |                               |                            |                              |                     |                     |                              |
|                    | 3<br>4           | Hardened Steel (>60HRC)                                 |                               |                            |                              |                     |                     |                              |

## Series Introduction

### ▼ UP210 Endmills for General Machining of Steel

- Suitable for steels & cast iron ( $\leq 48\text{HRC}$ ).
- High performance AlCr series coating with high temperature resistance and high wear resistance.
- Adapt to oil mist, water, oil, air cooling and other cooling conditions.



### ▼ SP210 Endmills for High Efficiency Machining of Steel

- Suitable for high efficiency efficient machining of steels & cast iron ( $\leq 48\text{HRC}$ ).
- Variable helix angle and unequal flute pitch with excellent anti-vibration capacity.
- Applicable to high efficiency efficient machining of large cutting depth ( $a_p$ ), large cutting width ( $a_e$ ) (Machine with good rigidity).



### ▲ PP300 Endmills for High Efficiency Machining of Steel

- Suitable for Side Milling, Slotting etc., with high metal removal rate machining steels & cast iron.
- Variable helix angle and unequal flute pitch with excellent anti-vibration capacity
- Applicable to high efficiency efficient machining of large cutting depth ( $a_p$ ), large cutting width ( $a_e$ ) (Machine with good rigidity).



### ▲ UPN210 Endmills for General Rough Machining of Steel

- Suitable for steels & cast iron semi-finishing and rough milling, with high metal removal rate
- GU cemented carbide substrate with high performance AlCrSiN nano-coating, to realize perfect match both high wear resistance and toughness.
- With special chip-breaking design, make short chips in the course of processing, smooth chip removal, realized high quality stable machining
- Special R type groove design, ensure good chip evacuation.

## Series Introduction

### ▼ UPR210 Waveform Endmill for Steel

- Suitable for roughing machining of steels & cast iron ( $\leq 48\text{HRC}$ ), with high metal removal rate.
- GU cemented carbide substrate with high performance AlCrSiN nano-coating, to realize perfect match both high wear resistance and toughness.
- $45^\circ$  helix angle and special U type groove design, realize smoothly cutting.
- Adopt the standard waveform tooth design, make short chips during processing. Excellent chip removal performance, realized high quality and stable processing.



### ▼ UPR300 Waveform Endmills for Steel

- Suitable for roughing machining at big cutting depth ( $a_p$ ), big cutting width ( $a_e$ ) of steels & cast iron ( $\leq 48\text{HRC}$ ), with high metal removal rate.
- Adopts dense tooth type and waveform tooth design, produced ultra-fine chip when processing, Excellent chip removal, low resistance cutting performance, low machine load.
- Special edge processing, effectively improve the tool's collapse resistance and wear resistance during rough machine process.



### ▲ US200 Endmills for General Machining of Stainless Steel

- Suitable for general machining of stainless steel ( $< 280\text{HB}$ ).
- Special edge design, effectively solve the crumbs.
- Water, oil cooling as the best cooling method.



### ▲ US260 Endmills for General Machining of Stainless Steel

- Suitable for 3C industry parts machining, such as rough to finishing of stainless Steel ( $< 380\text{HB}$ )
- Updating cemented carbide substrate with high performance nano-coating, to realize perfect match both high wear resistance and toughness
- Suitable for high feed rate machining, face milling, side milling, slotting ( $a_p \leq 0.1D$ )
- Oil or water cooling will be preferred.

## Series Introduction



### ▲ PCD Ball-head Endmills In DNM100 Standard

- Using composite materials with good wear resistance and unique cutting edge treatment to ensure the quality and long life.
- Suitable for Aluminum alloy ,Graphite, Composite material in rough-finishing,semi-finishing and



### ▲ SS600 Endmills for High Efficiency Milling of Stainless Steel

- Suitable for processing high strength steel, precipitation hardening stainless steel, titanium alloy, etc.
- Excellent slot milling performance, high cutting edge strength and anti-collapse edge.
- Unequal spiral and unequal graduation design, stable cutting process.
- Parabolic chip flute design with excellent chip removal ability.

### ▼ UA100 Endmills for General Machining of Aluminum Alloy

- Suitable for aluminum alloy ( $Si \leq 12\%$ ) and copper alloy ( $< 200HB$ ) general processing.
- Special edge design, reduces vibration, effectively solve the crumbs.
- Water cooling is the best cooling method.





## Series Introduction



### ▲ SA100 Endmills for High Efficiency Milling of Aluminum Alloy

- Suitable for high efficiency rough milling and semi-finishing of aluminum alloy ( $Si \leq 12\%$ )
- This product has unique groove design and rake face polishing process, which could enhance chip removal performance and meet the needs of high efficient processing
- Applicable for high efficiency machining at large cutting depth (ap), large cutting width (ae), high material removal rate

### ▼ SA210 Endmills for Rough Finish of Aluminum Alloy

- Adopting the waveform endmill suitable for machining Aluminum Alloy.
- Variable helix angle and unequal flute pitch with excellent anti-vibration capacity.
- Dynamic Balance Performance N=30000RPM G=3.0.



### ▼ SA300 Endmills for High Efficient Machining of Aluminium Alloy

- It is suitable for high speed machining of aviation aluminum alloy materials.
- The combination of special design and sophisticated manufacturing, the dynamic balance performance of the tool  $n = 25000 \text{ RPM}$ ,  $G=2.5$ .
- Ultra-fine grained cemented carbide with super wear resistance and high toughness.
- Unique sharp cutting edge design, light and smooth cutting, improve machining efficiency and workpiece surface quality.



## Series Introduction



### ▲ SG200 Endmills for Machining of Graphite

- Diamond coating and enhanced adhesion between coating and substrate provide high adhesion and tool toughness.
- High-purity diamond coating film with good wear resistance ensures long-life processing.
- Suitable for semi-finishing and finishing of graphite workpieces, such as graphite electrode and graphite products. Air cooling is recommended.



### ▲ SD200 High performance Endmills for composite material

- Suitable for aerospace Carbon fiber composite material side and groove milling
- Using diamond coating to improve tool life
- The left and right interleaved edge design can effectively suppress the flanging and delamination of the workpiece

### ▼ SG200-M Endmills for Graphite Mold

- High-purity diamond coating, suitable for processing all kinds of high and low hardness graphite, with superior wear resistance
- Special pretreatment, ensures good surface quality.
- Suitable for 3C electronics industry 3D curved glass graphite mould, with high precision, specialized processing. Air cooling is recommended.



### ▼ SN200 Endmills for High Efficient Machining of Heat Resistant Alloys

- Suitable for high temperature alloys (Inconel 718, GH 4169, etc.) and stainless steel materials.
- High performance treatment, the unique inserts design ensures high rigidity and excellent vibration resistance.
- Special circumferential treatment can increase the strength of cutting edge and ensure the quality of cutting surface.





## Series Introduction

### ▼ STB200 Endmills with Taper and Ballnose

- Suitable for semi-finishing and finishing of blisk and Vane.
- Taper design benefit the overhang machining.
- Updating cemented carbide substrate with high performance nano-coating, to realize high wear resistance and reduce Vibration.
- High profile accuracy, with radius accuracy 0.01, taper accuracy 0.3.



### ▼ SM200 Endmills for Denture

- High-precision dimensional tolerance design to ensure the accuracy of denture processing.
- Sharp cutting edge design produces excellent product surface quality.
- Advanced coating technology, high tool wear resistance.
- Suitable for processing zirconia, titanium alloy, cobalt chromium alloy and other processing in the dental industry.



### ▲ ST210 Endmills for High Performance Machining of Titanium Alloys

- Suitable for high performance machining of titanium alloys (TA7、TC4、TC18) and stainless steel.
- Unequal division, unequal helix, effectively improved anti-vibration performance, higher surface quality.
- Eccentric arc relief angle design improves edge strength and guarantees surface quality.
- Special body for hard working materials, ensures longer tool life.



### ▲ SH260-H Endmills General-Purpose for Hardened Steels

- Suitable for Semi-Finishing and Finishing of 30~60HRC Hardened Steels;
- Super Fine Carbide substrate with high strength and toughness combined with special high hard coating significantly lengthens tool life.
- Unique groove structure realizes excellent machining for harden steels materials.
- Air and oil mist cooling are the best cooling methods.

## Series Introduction

### ▼ SH360 Endmills for High Speed Machining of Hardened Steels

- Suitable for finishing and semi-finishing of 45 ~ 65 HRC high hardness materials.
- The substrate material with high strength and toughness is matched with the newly developed coating with high hardness, which can effectively extend service life of cutting tools.
- Unique groove structure, achieving excellent processing of high hardness steel.
- It is recommended to use oil cooling or oil mist.



### ▼ FH200-H Endmills for High Feed Processing of Hardened Steels

- Dedicated to high feed rough machining of 35-65HRC high hardness material
- Special-purpose tool type design realizes thin cutting effect, high feed machining, improves the processing efficiency.
- Latest Super Fine Carbide substrate with hard coating ensures high wear-resistance and high thermal stability under various working conditions.



### ▲ SHM200 Endmills of Micro Diameter for Deep Machining

- Adopt GU ultra-fine grain substrate+TiAlSiN high performance nano coating.
- Special angle and reduced neck design.
- High precision edge diameter precision, high precision head contour, high precision cutter Handle (H5).
- Suitable for hardened steel, pre-hardened steel and other materials (hardness HRC $\leq$ 65) . Precise deep hole machining.



### ▲ SPM200 Endmills of Micro Diameter for Deep Machining



- Suitable for deep groove micromachining of carbon steel, alloy steel, hardened steel, copper, aluminum alloy and other materials ( $\leq$ HRC55) in the precision mould industry.
- High precision of edge diameter, ball head contour, R arc contour and shank( h5);
- The high performance AlCrSiN nano-coating with high heat resistance and resistance
- Special angle and space avoidance design

## Endmill Catalog (by series)

| Suitable Material | No. of Flutes | End Teeth Type | Coating | Description | Type | Diameter Range | Dimension Page | Cutting Parameters Page |
|-------------------|---------------|----------------|---------|-------------|------|----------------|----------------|-------------------------|
|-------------------|---------------|----------------|---------|-------------|------|----------------|----------------|-------------------------|





















































### UP210



|                              |   |   |   |  |           |            |     |     |
|------------------------------|---|---|---|--|-----------|------------|-----|-----|
| Stainless Steel<br>Cast Iron |    |    |    | 2 Flutes, Stub Length                             | UP210-SS2 | D1 ~ D20   | 206 | 475 |
|                              |    |    |    | 2 Flutes, Standard Length                         | UP210-S2  | D1 ~ D20   | 207 | 475 |
|                              |    |    |    | 2 Flutes, with Long Flute Length                  | UP210-SL2 | D2 ~ D20   | 209 | 475 |
|                              |   |   |   | 2 Flutes, with Long Shank Length                 | UP210-SH2 | D2 ~ D20   | 210 | 475 |
|                              |  |  |  | 3 Flutes, Standard Length                       | UP210-S3  | D2 ~ D25   | 211 | 475 |
|                              |  |  |  | 4 Flutes, Stub Length                           | UP210-SS4 | D1 ~ D20   | 212 | 476 |
|                              |  |  |  | 4 Flutes, Standard Length                       | UP210-S4  | D1 ~ D20   | 213 | 476 |
|                              |  |  |  | 4 Flutes, with Long Flute Length                | UP210-SL4 | D1 ~ D20   | 215 | 476 |
|                              |  |  |  | 4 Flutes, with Long Shank Length                | UP210-SH4 | D2 ~ D20   | 217 | 476 |
|                              |  |  |  | 4 Flutes, acute angle                           | UP210-SC4 | D4 ~ D20   | 218 | 476 |
|                              |  |  |  | 4 Flutes, 45° Helix                             | UP210-S4A | D4 ~ D20   | 219 | 476 |
|                              |  |  |  | 6 Flutes, Standard Length                       | UP210-S6  | D6 ~ D20   | 220 | 476 |
|                              |  |  |  | 2 Flutes, Corner Radius                         | UP210-R2  | D1 ~ D20   | 221 | 477 |
|                              |  |  |  | 2 Flutes Corner Radius, with Long Shank Length  | UP210-RH2 | D4 ~ D20   | 224 | 477 |
|                              |  |  |  | 4 Flutes, Corner Radius                         | UP210-R4  | D1 ~ D20   | 226 | 476 |
|                              |  |  |  | 4 Flutes Corner Radius, with Long Shank Length  | UP210-RH4 | D3 ~ D20   | 228 | 476 |
|                              |  |  |  | 4 Flutes, 45° Helix                             | UP210-R4A | D4 ~ D20   | 231 | 476 |
|                              |  |  |  | 2 Flutes, Ballnose                              | UP210-B2  | D0.8 ~ D20 | 233 | 478 |
|                              |  |  |  | 2 Flutes Ballnose, with Long Shank Length       | UP210-BH2 | D2 ~ D20   | 235 | 478 |

 most suitable  suitable



## Endmill Catalog (by series)

| Suitable Material            | No. of Flutes   | End Teeth Type  | Coating   | Description  | Type  | Diameter Range | Dimension Page | Cutting Parameters Page |     |
|------------------------------|---|---|---|--|---|----------------|----------------|-------------------------|-----|
| <b>UP210</b>                 |   |   |   |  |   |                |                |                         |     |
|                              |    |    |    | 4 Flutes, Ballnose   |    | UP210-B4       | D2 ~ D20       | 237                     | 478 |
|                              |    |    |    | 4 Flutes, 60° Chamfer Endmills                                   |    | UP210-L60      | D4 ~ D20       | 238                     | 479 |
|                              |    |    |    | 4 Flutes, 90° Chamfer Endmills                                   |    | UP210-L90      | D4 ~ D20       | 239                     | 479 |
|                              |   |   |   | 4 Flutes, 120° Chamfer Endmills                                  |   | UP210-L120     | D4 ~ D20       | 240                     | 479 |
| <b>SP210</b>                 |   |   |   |  |   |                |                |                         |     |
| Stainless Steel<br>Cast Iron |  |  |  | 3 Flutes, with Variable Helix                                    |  | SP210-S3       | D2.5 ~ D20     | 241                     | 479 |
|                              |  |  |  | 3 Flutes, Variable Helix with Chamfer                            |  | SP210-C3       | D6 ~ D16       | 242                     | 479 |
|                              |  |  |  | 4 Flutes, with Variable Helix                                    |  | SP210-S4       | D2 ~ D20       | 243                     | 480 |
|                              |  |  |  | 4 Flutes, Variable Helix with Chamfer                            |  | SP210-C4       | D3 ~ D20       | 244                     | 480 |
|                              |  |  |  | 4 Flutes, Variable Helix with Chamfer and with Reduced Neck      |  | SP210-CN4      | D3 ~ D20       | 246                     | 480 |
|                              |  |  |  | 4 Flutes Corner Radius, with Variable Helix                      |  | SP210-R4       | D3 ~ D16       | 247                     | 480 |
|                              |  |  |  | 4 Flute Corner Radius, with Long Shank Length and Variable Helix |  | SP210-RH4      | D4 ~ D12       | 249                     | 480 |
|                              |  |  |  | 2 Flutes, Ballnose   |  | SP210-B2       | D1 ~ D12       | 250                     | 481 |
|                              |  |  |  | 2 Flutes Ballnose, with Long Shank Length                        |  | SP210-BH2      | D4 ~ D12       | 251                     | 481 |



































































 most suitable  suitable



| Workpiece Material  |             |                 |           |                  |               |                               |                             |                 |                |                |                |
|---------------------|-------------|-----------------|-----------|------------------|---------------|-------------------------------|-----------------------------|-----------------|----------------|----------------|----------------|
| P                   |             | M               | K         | N                |               |                               | S                           | H               |                |                |                |
| 1 2 3 4             | 5 6         | 1 2 3           | 1 2 3     | 1 2 3            | 4             | 5                             | 1 2 3                       | 4               | 1              | 2              | 3 4            |
| Carbon Steel, Alloy | Alloy Steel | Stainless Steel | Cast Iron | Aluminium Alloys | Copper Alloys | Graphite, Composite Materials | Heat Resistant Super Alloys | Titanium Alloys | Hardened Steel | Hardened Steel | Hardened Steel |
| < 35HRC             | ≤ 48HRC     |                 |           |                  |               |                               |                             |                 | 45-55HRC       | 55-60HRC       | > 60HRC        |

|  |   |   |   |   |   |   |  |  |  |  |  |
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|  | ⊙ | ⊙ | ○ | ⊙ |   |   |  |  |  |  |  |
|  | ⊙ | ○ | ○ | ⊙ | ○ | ○ |  |  |  |  |  |
|  | ⊙ | ○ | ○ | ⊙ | ○ | ○ |  |  |  |  |  |
|  | ⊙ | ○ | ○ | ⊙ | ○ | ○ |  |  |  |  |  |

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|  | ⊙ | ⊙ | ○ | ⊙ |  |  |  |  |  |  |  |
|  | ⊙ | ⊙ | ○ | ⊙ |  |  |  |  |  |  |  |
|  | ⊙ | ⊙ | ○ | ⊙ |  |  |  |  |  |  |  |
|  | ⊙ | ⊙ | ○ | ⊙ |  |  |  |  |  |  |  |
|  | ⊙ | ⊙ | ○ | ⊙ |  |  |  |  |  |  |  |
|  | ⊙ | ⊙ | ○ | ⊙ |  |  |  |  |  |  |  |
|  | ⊙ | ⊙ | ○ | ⊙ |  |  |  |  |  |  |  |

## Endmill Catalog (by series)

| Suitable Material               | No. of Flutes   | End Teeth Type  | Coating   | Description   | Type  | Diameter Range  | Dimension Page | Cutting Parameters Page |     |
|---------------------------------|---|---|---|---|---|-----------------|----------------|-------------------------|-----|
| <b>PP300</b>                    |   |   |   |   |   |                 |                |                         |     |
| Stainless Steel<br>Cast Iron    |    |    |    | 2 Flutes, Square with Chamfer    |    | PP300-C2        | D2 ~ D12       | 252                     | 482 |
|                                 |    |    |    | 3 Flutes, Variable Helix with Chamfer                                      |    | PP300-C3        | D3 ~ D20       | 253                     | 483 |
|                                 |    |    |    | 4 Flutes, Variable Helix with Chamfer                                      |    | PP300-C4        | D3 ~ D20       | 254                     | 484 |
|                                 |  |  |  | 4/5 Flutes, Variable Helix with Radius                                   |  | PP300-SPEED-3D  | D6 ~ D20       | 256                     | 485 |
|                                 |  |  |  | 4/5 Flutes, Variable Helix with Radius                                   |  | PP300-SPEED-3DN | D6 ~ D20       | 257                     | 485 |
|                                 |  |  |  | 4/5 Flutes, Variable Helix with Radius                                   |  | PP300-SPEED-5D  | D6 ~ D20       | 258                     | 485 |
|                                 |  |  |  | 4 Flutes, Corner Radius, Variable Helix                                  |  | PP300-R4        | D4 ~ D20       | 255                     | 484 |
| <b>UPN210</b>                   |   |   |   |   |   |                 |                |                         |     |
|                                 |  |  |  | 4 Flutes, with Roughing Geometry   |  | UPN210-S4       | D6 ~ D20       | 259                     | 487 |
| <b>UPR210</b>                   |   |   |   |   |   |                 |                |                         |     |
|                                 |  |  |  | 4 Flutes Square, with Roughing Geometry                                  |  | UPR210-S4       | D6 ~ D20       | 260                     | 486 |
| <b>UPR300</b>                   |   |   |   |   |   |                 |                |                         |     |
|                                 |  |  |  | 3/4 Flutes Square, with Roughing Geometry                                |  | UPR300-S3/S4    | D6 ~ D20       | 261                     | 488 |
| <b>SPM200</b>                   |   |   |   |   |   |                 |                |                         |     |
| Stainless Steel<br>Cast Iron    |  |  |  | 2 Flutes, Standard Length Endmills of Micro Diameter for Deep Machining  |  | SPM200-SN2      | D0.1 ~ D6      | 408                     | 519 |
| Copper Alloys<br>Hardened Steel |  |  |  | 2 Flutes, Corner Radius Endmills of Micro Diameter for Deep Machining    |  | SPM200-RN2      | D0.2 ~ D6      | 414                     | 529 |
|                                 |  |  |  | 4 Flutes, Corner Radius Endmills of Micro Diameter for Deep Machining    |  | SPM200-RN4      | D1 ~ D6        | 428                     | 551 |
|                                 |  |  |  | 2 Flutes, Ballnose Endmills of Micro Diameter for Deep Machining         |  | SPM200-BN2      | D0.1 ~ D6      | 434                     | 556 |

 most suitable  suitable









## Endmill Catalog (by series)



| Suitable Material | No. of Flutes | End Teeth Type | Coating | Description | Type | Diameter Range | Dimension Page | Cutting Parameters Page |
|-------------------|---------------|----------------|---------|-------------|------|----------------|----------------|-------------------------|
|-------------------|---------------|----------------|---------|-------------|------|----------------|----------------|-------------------------|

### US200

|                 |   |   |       |  |           |            |     |     |
|-----------------|---|---|-------|--|-----------|------------|-----|-----|
| Stainless steel |    |    | TiAlN | 2 Flutes, Standard Length           | US200-S2  | D0.5 ~ D20 | 262 | 490 |
|                 |    |    | TiAlN | 4 Flutes, Stub Length               | US200-SS4 | D2 ~ D20   | 263 | 491 |
|                 |    |    | TiAlN | 4 Flutes, Standard Length           | US200-S4  | D1 ~ D22   | 264 | 491 |
|                 |  |  | TiAlN | 4 Flutes, with Long Shank Length  | US200-SN4 | D2 ~ D20   | 265 | 491 |
|                 |  |  | TiAlN | 2 Flutes, Corner Radius           | US200-R2  | D3 ~ D16   | 266 | 490 |
|                 |  |  | TiAlN | 3 Flutes, Corner Radius           | US200-R3  | D2 ~ D20   | 267 | 490 |
|                 |  |  | TiAlN | 4 Flutes, Corner Radius           | US200-R4  | D2 ~ D20   | 268 | 491 |
|                 |  |  | TiAlN | 2 Flutes, Standard Length         | US200-B2  | D1 ~ D16   | 269 | 491 |
|                 |  |  | TiAlN | 4 Flutes, Standard Length         | US200-B4  | D1 ~ D20   | 270 | 491 |

### US260

|   |   |       |  |              |             |     |     |
|---|---|-------|--|--------------|-------------|-----|-----|
|  |  | TiAlN | 2 Flutes, Standard Length/Stub Length  <b>NEW</b> | US260-S2/SS2 | D0.5 ~ D0.8 | 271 | 492 |
|  |  | TiAlN | 4 Flutes, Standard Length  <b>NEW</b>             | US260-SS4A   | D1 ~ D12    | 272 | 492 |
|  |  | TiAlN | 4 Flutes, Stub Length  <b>NEW</b>                 | US260-SS4B   | D1 ~ D6     | 273 | 492 |
|  |  | TiAlN | 4 Flutes, Standard Length  <b>NEW</b>             | US260-S4A    | D1 ~ D16    | 274 | 492 |
|  |  | TiAlN | 4 Flutes, Stub Length  <b>NEW</b>                 | US260-S4B    | D1 ~ D6     | 275 | 492 |
|  |  | TiAlN | 4 Flutes, Corner Radius  <b>NEW</b>               | US260-RS4    | D1 ~ D10    | 276 | 493 |
|  |  | TiAlN | 4 Flutes, Corner Radius  <b>NEW</b>               | US260-R4     | D1.5 ~ D6   | 277 | 493 |











































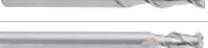




















 most suitable  suitable



| Workpiece Material  |             |                 |           |                  |               |                               |                             |                 |                |                |                |  |
|---------------------|-------------|-----------------|-----------|------------------|---------------|-------------------------------|-----------------------------|-----------------|----------------|----------------|----------------|--|
| P                   |             | M               | K         | N                |               |                               | S                           |                 | H              |                |                |  |
| 1 2 3 4             | 5 6         | 1 2 3           | 1 2 3     | 1 2 3            | 4             | 5                             | 1 2 3                       | 4               | 1              | 2              | 3 4            |  |
| Carbon Steel, Alloy | Alloy Steel | Stainless Steel | Cast Iron | Aluminium Alloys | Copper Alloys | Graphite, Composite Materials | Heat Resistant Super Alloys | Titanium Alloys | Hardened Steel | Hardened Steel | Hardened Steel |  |
| < 35HRC             | ≤ 48HRC     |                 |           |                  |               |                               |                             |                 | 45-55HRC       | 55-60HRC       | > 60HRC        |  |

|  |   |   |   |   |  |  |  |   |   |  |  |  |
|--|---|---|---|---|--|--|--|---|---|--|--|--|
|  | ○ | ○ | ◎ | ○ |  |  |  | ○ | ○ |  |  |  |
|  | ○ | ○ | ◎ | ○ |  |  |  | ○ | ○ |  |  |  |
|  | ○ | ○ | ◎ | ○ |  |  |  | ○ | ○ |  |  |  |
|  | ○ | ○ | ◎ | ○ |  |  |  | ○ | ○ |  |  |  |
|  | ○ | ○ | ◎ | ○ |  |  |  | ○ | ○ |  |  |  |
|  | ○ | ○ | ◎ | ○ |  |  |  | ○ | ○ |  |  |  |
|  | ○ | ○ | ◎ | ○ |  |  |  | ○ | ○ |  |  |  |
|  | ○ | ○ | ◎ | ○ |  |  |  | ○ | ○ |  |  |  |
|  | ○ | ○ | ◎ | ○ |  |  |  | ○ | ○ |  |  |  |

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|  | ○ | ○ | ◎ | ○ |  |  |  | ○ | ○ |  |  |  |
|  | ○ | ○ | ◎ | ○ |  |  |  | ○ | ○ |  |  |  |
|  | ○ | ○ | ◎ | ○ |  |  |  | ○ | ○ |  |  |  |
|  | ○ | ○ | ◎ | ○ |  |  |  | ○ | ○ |  |  |  |
|  | ○ | ○ | ◎ | ○ |  |  |  | ○ | ○ |  |  |  |
|  | ○ | ○ | ◎ | ○ |  |  |  | ○ | ○ |  |  |  |
|  | ○ | ○ | ◎ | ○ |  |  |  | ○ | ○ |  |  |  |
|  | ○ | ○ | ◎ | ○ |  |  |  | ○ | ○ |  |  |  |

## Endmill Catalog (by series)

| Suitable Material | No. of Flutes   | Endteeth Type   | Coating   | Description  | Type  | Diameter Range | Dimension Page | Cutting Parameters Page |     |
|-------------------|---|---|---|--|---|----------------|----------------|-------------------------|-----|
| <b>SS600</b>      |   |   |   |  |   |                |                |                         |     |
| Stainless steel   |    |    |  | 4 Flutes, Standard Length                         |    | SS600-S4       | D2 ~ D20       | 278                     | 494 |
|                   |    |    |  | 4 Flutes, Corner Radius                           |    | SS600-R4       | D2 ~ D20       | 279                     | 494 |
|                   |    |    |  | 4 Flutes, Ballnose                                |    | SS600-B4       | D6 ~ D20       | 281                     | 494 |
| <b>UA100</b>      |   |   |   |  |   |                |                |                         |     |
| Aluminium Alloys  |  |  |   | 2 Flutes, Standard Length                       |  | UA100-S2       | D1 ~ D20       | 282                     | 495 |
|                   |  |  |   | 2 Flutes, with Long Flute Length                |  | UA100-SL2      | D2 ~ D20       | 283                     | 495 |
|                   |  |  |   | 2 Flutes, with Long Shank Length                |  | UA100-SH2      | D2 ~ D20       | 284                     | 495 |
|                   |  |  |   | 3 Flutes, Standard Length                       |  | UA100-S3       | D1 ~ D20       | 285                     | 496 |
|                   |  |  |   | 3 Flutes, with Long Flute Length                |  | UA100-SL3      | D2 ~ D20       | 286                     | 496 |
|                   |  |  |   | 3 Flutes, with Long Shank Length                |  | UA100-SH3      | D2 ~ D20       | 287                     | 496 |
|                   |  |  |   | 2 Flutes, Corner Radius                         |  | UA100-R2       | D1 ~ D20       | 288                     | 495 |
|                   |  |  |   | 2 Flutes Corner Radius, with Long Shank Length  |  | UA100-RH2      | D6 ~ D20       | 291                     | 495 |
|                   |  |  |   | 3 Flutes, Corner Radius                         |  | UA100-R3       | D1 ~ D20       | 293                     | 496 |
|                   |  |  |   | 3 Flutes Corner Radius, with Long Shank Length  |  | UA100-RH3      | D6 ~ D20       | 296                     | 496 |
|                   |  |  |   | 2 Flutes, Ballnose                              |  | UA100-B2       | D1 ~ D16       | 298                     | 497 |
| <b>SA100</b>      |   |   |   |  |   |                |                |                         |     |
|                   |  |  |   | 3 Flutes, Standard Length                       |  | SA100-S3       | D3 ~ D12       | 299                     | 497 |

 most suitable  suitable








































| Workpiece Material  |             |                 |           |                  |               |                               |                             |                 |                |                |                |
|---------------------|-------------|-----------------|-----------|------------------|---------------|-------------------------------|-----------------------------|-----------------|----------------|----------------|----------------|
| P                   |             | M               | K         | N                |               |                               | S                           |                 | H              |                |                |
| 1 2 3 4             | 5 6         | 1 2 3           | 1 2 3     | 1 2 3            | 4             | 5                             | 1 2 3                       | 4               | 1              | 2              | 3 4            |
| Carbon Steel, Alloy | Alloy Steel | Stainless Steel | Cast Iron | Aluminium Alloys | Copper Alloys | Graphite, Composite Materials | Heat Resistant Super Alloys | Titanium Alloys | Hardened Steel | Hardened Steel | Hardened Steel |
| < 35HRC             | ≤ 48HRC     |                 |           |                  |               |                               |                             |                 | 45-55HRC       | 55-60HRC       | > 60HRC        |



|  |   |   |   |   |  |  |  |   |   |  |  |  |
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|  | ⊙ | ⊙ | ⊙ | ⊙ |  |  |  | ○ | ⊙ |  |  |  |
|  | ⊙ | ⊙ | ⊙ | ⊙ |  |  |  | ○ | ⊙ |  |  |  |
|  | ⊙ | ⊙ | ⊙ | ⊙ |  |  |  | ○ | ⊙ |  |  |  |

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|  |  |  |  |  | ⊙ | ⊙ |  |  |  |  |  |  |
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|--|--|--|--|--|---|---|--|--|--|--|--|--|

## Endmill Catalog (by series)








| Suitable Material                  | No. of Flutes   | End Teeth Type  | Coating | Description  | Type  | Diameter Range | Dimension Page | Cutting Parameters Page |     |
|------------------------------------|---|---|---------|--|---|----------------|----------------|-------------------------|-----|
| <b>SA210</b>                       |   |   |         |  |   |                |                |                         |     |
|                                    |    |    |         | 3 Flutes Corner Radius, with Reduced Neck <b>NEW</b> |    | SA210-WR       | D16 ~ D25      | 300                     | 498 |
|                                    |    |    |         | 3 Flutes Corner Radius, with Reduced Neck <b>NEW</b> |    | SA210-NR       | D6 ~ D20       | 301                     | 498 |
| <b>SA300</b>                       |   |   |         |  |   |                |                |                         |     |
| Aluminium Alloys                   |   |   |         | 3 Flutes, Standard Length                            |   | SA300-S3       | D6 ~ D20       | 302                     | 499 |
|                                    |  |  |         | 2 Flutes, Corner Radius, Reduced Neck                |  | SA300-RN2      | D6 ~ D32       | 303                     | 499 |
|                                    |  |  |         | 3 Flutes, Corner Radius, Reduced Neck                |  | SA300-RN3      | D6 ~ D32       | 307                     | 491 |
|                                    |  |  |         | 2 Flutes, Ballnose, Reduced Neck                     |  | SA300-BN2      | D6 ~ D20       | 311                     | 499 |
| <b>DNM100</b>                      |   |   |         |  |   |                |                |                         |     |
| Copper-aluminum graphite composite |  |  |         | 1 Flute, Corner Radius <b>NEW</b>                    |  | DNM100-RS1     | D2 ~ D4        | 312                     | 500 |
|                                    |  |  |         | 2 Flutes, Corner Radius <b>NEW</b>                   |  | DNM100-RS2     | D4 ~ D10       | 313                     | 500 |
|                                    |  |  |         | 3 Flutes, Corner Radius <b>NEW</b>                   |  | DNM100-RS3     | D10 ~ D16      | 314                     | 500 |
| <b>SG200</b>                       |   |   |         |  |   |                |                |                         |     |
| Graphite                           |  |  | U-DIA   | 2 Flutes, Standard Length                            |  | SG200-S2       | D0.4 ~ D12     | 315                     | 501 |
|                                    |  |  | U-DIA   | 2 Flutes, with Reduced Neck                          |  | SG200-SN2      | D1 ~ D12       | 316                     | 501 |
|                                    |  |  | U-DIA   | 3 Flutes, Standard Length                            |  | SG200-S3       | D1 ~ D12       | 317                     | 501 |
|                                    |  |  | U-DIA   | 4 Flutes, Standard Length                            |  | SG200-S4       | D2 ~ D12       | 318                     | 501 |



 most suitable  suitable

| Workpiece Material  |             |                 |           |                  |               |                               |                             |                 |                |                |                |
|---------------------|-------------|-----------------|-----------|------------------|---------------|-------------------------------|-----------------------------|-----------------|----------------|----------------|----------------|
| P                   |             | M               | K         | N                |               |                               | S                           | H               |                |                |                |
| 1 2 3 4             | 5 6         | 1 2 3           | 1 2 3     | 1 2 3            | 4             | 5                             | 1 2 3                       | 4               | 1              | 2              | 3 4            |
| Carbon Steel, Alloy | Alloy Steel | Stainless Steel | Cast Iron | Aluminium Alloys | Copper Alloys | Graphite, Composite Materials | Heat Resistant Super Alloys | Titanium Alloys | Hardened Steel | Hardened Steel | Hardened Steel |
| < 35HRC             | ≤ 48HRC     |                 |           |                  |               |                               |                             |                 | 45-55HRC       | 55-60HRC       | > 60HRC        |

|  |  |  |  |   |   |   |  |  |  |  |  |
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|  |  |  |  | ○ | ○ |   |  |  |  |  |  |
|  |  |  |  | ○ | ○ |   |  |  |  |  |  |
|  |  |  |  | ○ | ○ |   |  |  |  |  |  |
|  |  |  |  | ○ | ○ |   |  |  |  |  |  |
|  |  |  |  | ○ | ○ | ○ |  |  |  |  |  |
|  |  |  |  | ○ | ○ | ○ |  |  |  |  |  |
|  |  |  |  | ○ | ○ | ○ |  |  |  |  |  |
|  |  |  |  | ○ | ○ | ○ |  |  |  |  |  |
|  |  |  |  | ○ | ○ | ○ |  |  |  |  |  |
|  |  |  |  | ○ | ○ | ○ |  |  |  |  |  |

## Endmill Catalog (by series)

| Suitable Material   | No. of Flutes   | Endteeth Type   | Coating   | Description                                    | Type  | Diameter Range  | Dimension Page | Cutting Parameters Page |     |
|---|---|---|---|--|---|---|----------------|-------------------------|-----|
| Graphite  |    |    | U-DIA   | 4 Flutes, Corner Radius                        |    | SG200-R4  | D2 ~ D12       | 319                     | 501 |
|   |    |    | U-DIA   | 4 Flutes, Corner Radius With Reduced Neck      |    | SG200-RN4   | D2 ~ D12       | 320                     | 501 |
|   |    |    | U-DIA   | 2 Flutes, Ballnose                             |    | SG200-B2  | D0.5 ~ D12     | 321                     | 502 |
|   |   |   | U-DIA   | 2 Flutes, Ballnose, With Reduced Neck          |    | SG200-BN2   | D0.5 ~ D12     | 322                     | 502 |
|   | <b>SG200-M</b>  |   |   |  |   |   |                |                         |     |
|   |  |  | N-DIA   | 4 Flutes, Corner Radius, With Reduced Neck     |  | SG200-M-RN4   | D1 ~ D10       | 324                     | 502 |
|   |  |  | N-DIA   | 2 Flutes, Ballnose                             |  | SG200-M-B2  | D0.4 ~ D6      | 325                     | 502 |
|   |  |  | N-DIA   | 2 Flutes, Ballnose, With Reduced Neck          |  | SG200-M-BN2   | D0.5 ~ D6      | 326                     | 502 |
|   | <b>ST210</b>  |   |   |  |   |   |                |                         |     |
|   | Titanium Alloys   |  |  | AlCrN  | 4 Flutes, Standard Length   |  | ST210-S4       | D2 ~ D20                | 327 |
|  |   |  | AlCrN   | 4 Flutes, Corner Radius                        |  | ST210-R4  | D2 ~ D20       | 328                     | 503 |
|  |   |  | AlCrN   | 4 Flutes, Corner Radius With Reduced Neck      |  | ST210-RN4   | D6 ~ D20       | 330                     | 503 |
|  |   |  | AlCrN   | 5 Flutes, Long Flute Length With Corner Radius |  | ST210-RL5   | D16 ~ D25      | 333                     | 504 |
|  |   |  | AlCrN   | 4 Flutes, Ballnose                             |  | ST210-B4  | D2 ~ D20       | 334                     | 504 |

 most suitable  suitable

| Workpiece Material  |             |                 |           |                  |               |                               |                             |                 |                |                |                |  |
|---------------------|-------------|-----------------|-----------|------------------|---------------|-------------------------------|-----------------------------|-----------------|----------------|----------------|----------------|--|
| P                   |             | M               | K         | N                |               |                               | S                           | H               |                |                |                |  |
| 1 2 3 4             | 5 6         | 1 2 3           | 1 2 3     | 1 2 3            | 4             | 5                             | 1 2 3                       | 4               | 1              | 2              | 3 4            |  |
| Carbon Steel, Alloy | Alloy Steel | Stainless Steel | Cast Iron | Aluminium Alloys | Copper Alloys | Graphite, Composite Materials | Heat Resistant Super Alloys | Titanium Alloys | Hardened Steel | Hardened Steel | Hardened Steel |  |
| < 35HRC             | ≤ 48HRC     |                 |           |                  |               |                               |                             |                 | 45-55HRC       | 55-60HRC       | > 60HRC        |  |
|                     |             |                 |           | ○                | ○             | ◎                             |                             |                 |                |                |                |  |
|                     |             |                 |           | ○                | ○             | ◎                             |                             |                 |                |                |                |  |
|                     |             |                 |           | ○                | ○             | ◎                             |                             |                 |                |                |                |  |
|                     |             |                 |           | ○                | ○             | ◎                             |                             |                 |                |                |                |  |
|                     |             |                 |           |                  |               | ◎                             |                             |                 |                |                |                |  |
|                     |             |                 |           |                  |               | ◎                             |                             |                 |                |                |                |  |
|                     |             |                 |           |                  |               | ◎                             |                             |                 |                |                |                |  |
|                     |             | ○               | ○         | ○                |               |                               |                             | ◎               |                |                |                |  |
|                     |             | ○               | ○         | ○                |               |                               |                             | ◎               |                |                |                |  |
| ○                   | ○           | ○               |           |                  |               |                               |                             | ◎               |                |                |                |  |
| ○                   | ○           | ○               |           |                  |               |                               |                             | ◎               |                |                |                |  |
| ○                   | ○           | ○               |           |                  |               |                               |                             | ◎               |                |                |                |  |



## Endmill Catalog (by series)

















| Suitable Material       | No. of Flutes | Endteeth Type | Coating | Description                                | Type | Diameter Range | Dimension Page | Cutting Parameters Page |     |
|-------------------------|---------------|---------------|---------|--|------|----------------|----------------|-------------------------|-----|
| <b>SM200</b>            |               |               |         |  |      |                |                |                         |     |
| Zirconia Titanium Alloy |               |               | AlCrN   | 2 Flutes, Ballnose, Reduced Neck           |      | SM200-TP2      | R0.5 ~ R1.5    | 335                     | 505 |
|                         |               |               | N-DIA   | 2 Flutes/ 3 Flutes, Ballnose, Reduced Neck |      | SM200-RO2/RO3  | R0.3 ~ R1.5    | 336                     | 505 |
|                         |               |               | N-DIA   | 2 Flutes/ 3 Flutes, Ballnose, Reduced Neck |      | SM200-VH2/VH3  | R0.3 ~ R1      | 337                     | 505 |
|                         |               |               | N-DIA   | 2 Flutes/ 3 Flutes, Ballnose, Reduced Neck |      | SM200-WI2/WI3  | R0.3 ~ R1.25   | 338                     | 505 |
|                         |               |               | N-DIA   | 2 Flutes/ 3 Flutes, Ballnose, Reduced Neck |      | SM200-IM2/IM3  | R0.3 ~ R1.25   | 339                     | 505 |
|                         |               |               | AlCrN   | 2 Flutes/ 3 Flutes, Ballnose, Reduced Neck |      | SM200-ZI2/ZI3  | R0.25 ~ R1.5   | 341                     | 505 |
|                         |               |               | N-DIA   | 2 Flutes/ 3 Flutes, Ballnose, Reduced Neck |      | SM200-AM2/AM3  | R0.3 ~ R1.25   | 343                     | 506 |
|                         |               |               | N-DIA   | 2 Flutes/ 3 Flutes, Ballnose, Reduced Neck |      | SM200-AR2/AR3  | R0.3 ~ R1.5    | 344                     | 506 |
|                         |               |               | AlCrN   | 2 Flutes/ 3 Flutes, Ballnose, Reduced Neck |      | SM200-KL2      | R0.3 ~ R1      | 346                     | 505 |
|                         |               |               | N-DIA   | 2 Flutes, Ballnose, Reduced Neck           |      | SM200-XT2      | R0.3 ~ R1.5    | 347                     | 506 |



most suitable suitable

| Workpiece Material  |             |                 |           |                  |               |                               |                             |                 |                |                |                |
|---------------------|-------------|-----------------|-----------|------------------|---------------|-------------------------------|-----------------------------|-----------------|----------------|----------------|----------------|
| P                   |             | M               | K         | N                |               |                               | S                           | H               |                |                |                |
| 1 2 3 4             | 5 6         | 1 2 3           | 1 2 3     | 1 2 3            | 4             | 5                             | 1 2 3                       | 4               | 1              | 2              | 3 4            |
| Carbon Steel, Alloy | Alloy Steel | Stainless Steel | Cast Iron | Aluminium Alloys | Copper Alloys | Graphite, Composite Materials | Heat Resistant Super Alloys | Titanium Alloys | Hardened Steel | Hardened Steel | Hardened Steel |
| < 35HRC             | ≤ 48HRC     |                 |           |                  |               |                               |                             |                 | 45-55HRC       | 55-60HRC       | > 60HRC        |

|  |  |  |  |  |  |  |   |   |   |  |  |
|--|--|--|--|--|--|--|---|---|---|--|--|
|  |  |  |  |  |  |  |   | ⊙ |   |  |  |
|  |  |  |  |  |  |  | ⊙ |   |   |  |  |
|  |  |  |  |  |  |  | ⊙ |   |   |  |  |
|  |  |  |  |  |  |  | ⊙ |   |   |  |  |
|  |  |  |  |  |  |  | ⊙ |   |   |  |  |
|  |  |  |  |  |  |  | ⊙ |   | ⊙ |  |  |
|  |  |  |  |  |  |  | ⊙ |   |   |  |  |
|  |  |  |  |  |  |  | ⊙ |   | ⊙ |  |  |
|  |  |  |  |  |  |  | ⊙ |   |   |  |  |
|  |  |  |  |  |  |  | ⊙ |   | ⊙ |  |  |

## Endmill Catalog (by series)

| Suitable Material           | No. of Flutes   | Endteeth Coating Type   | Description  | Type         | Diameter Range | Dimension Page | Cutting Parameters Page |
|-----------------------------|---|---|--|--------------|----------------|----------------|-------------------------|
| <b>SN200</b>                |   |   |  |              |                |                |                         |
| Heat Resistant Super Alloys |    |  AITiN       | 4 Flutes, Corner Radius                         | SN200-R4     | D1 ~ D20       | 349            | 507                     |
|                             |    |  AITiN       | 4 Flutes, Corner Radius With Long Shank Length  | SN200-RH4    | D8 ~ D16       | 352            | 507                     |
|                             |    |  AITiN       | 4 Flutes, Ballnose                              | SN200-B4     | D2 ~ D12       | 353            | 508                     |
|                             |   |  AITiN      | 4 Flutes, Ballnose With Long Shank Length     | SN200-BH4    | D8 ~ D12       | 354            | 508                     |
| <b>STB200</b>               |   |   |  |              |                |                |                         |
|                             |  |  AICrN     | 4 Flutes, Ballnose, Taper Flute  <b>NEW</b>   | STB200-B4    | D3 ~ D8        | 355            | 500                     |
| <b>SD200</b>                |   |   |  |              |                |                |                         |
| Composite Materials         |  |  U-DIA     | 12 Flutes, Ling tooth                         | SD200-CN     | D2 ~ D12       | 356            | 509                     |
| <b>SH260-H</b>              |   |   |  |              |                |                |                         |
| Hardened Steel              |  |  TIAiC/SiN | 2 Flutes, Standard Length                     | SH260-S2-H   | D1 ~ D12       | 357            | 510                     |
|                             |  |  TIAiC/SiN | 2 Flutes, Standard With Reduced Neck          | SH260-SN2-H  | D1 ~ D6        | 358            | 510                     |
|                             |  |  TIAiC/SiN | 4 Flute, Standard Length                      | SH260-S4-H   | D1 ~ D20       | 360            | 511                     |
|                             |  |  TIAiC/SiN | 4 Flutes, 45° Helix                           | SH260-S4A-H  | D1 ~ D20       | 361            | 11                      |
|                             |  |  TIAiC/SiN | 4 Flutes, with Long Shank Length              | SH260-SH4-H  | D1 ~ D20       | 362            | 511                     |
|                             |  |  TIAiC/SiN | 4 Flutes, 45° Helix, Long Shank Length        | SH260-SH4A   | D3-D20         | 363            | 511                     |
|                             |  |  TIAiC/SiN | 4 Flutes, Standard End With Reduced Neck      | SH260-SN4-H  | D1 ~ D12       | 364            | 511                     |
|                             |  |  TIAiC/SiN | 4 Flutes, Long Flute Length                   | SH260-SL4-H  | D1 ~ D16       | 365            | 511                     |
|                             |  |  TIAiC/SiN | 4 Flutes, 45° Helix, Long Flute Length        | SH260-SL4A-H | D4-D20         | 366            | 511                     |

 most suitable  suitable

| Workpiece Material  |             |                 |           |                  |               |                               |                             |                 |                |                |                |
|---------------------|-------------|-----------------|-----------|------------------|---------------|-------------------------------|-----------------------------|-----------------|----------------|----------------|----------------|
| P                   |             | M               | K         | N                |               |                               | S                           |                 | H              |                |                |
| 1 2 3 4             | 5 6         | 1 2 3           | 1 2 3     | 1 2 3            | 4             | 5                             | 1 2 3                       | 4               | 1              | 2              | 3 4            |
| Carbon Steel, Alloy | Alloy Steel | Stainless Steel | Cast Iron | Aluminium Alloys | Copper Alloys | Graphite, Composite Materials | Heat Resistant Super Alloys | Titanium Alloys | Hardened Steel | Hardened Steel | Hardened Steel |
| < 35HRC             | ≤ 48HRC     |                 |           |                  |               |                               |                             |                 | 45-55HRC       | 55-60HRC       | > 60HRC        |

|  |   |   |   |  |  |  |   |   |   |   |   |
|--|---|---|---|--|--|--|---|---|---|---|---|
|  | ○ | ○ | ○ |  |  |  |   | ◎ | ○ |   |   |
|  | ○ | ○ | ○ |  |  |  |   | ◎ | ○ |   |   |
|  | ○ | ○ | ○ |  |  |  |   | ◎ | ○ |   |   |
|  | ○ | ○ | ○ |  |  |  |   | ◎ | ○ |   |   |
|  | ○ | ○ | ◎ |  |  |  |   | ◎ | ◎ |   |   |
|  |   |   |   |  |  |  | ◎ |   |   |   |   |
|  | ○ | ◎ |   |  |  |  |   |   | ◎ | ◎ | ○ |
|  | ○ | ◎ |   |  |  |  |   |   | ◎ | ◎ | ○ |
|  | ○ | ◎ |   |  |  |  |   |   | ◎ | ◎ | ○ |
|  | ○ | ◎ |   |  |  |  |   |   | ◎ | ◎ | ○ |
|  | ○ | ◎ |   |  |  |  |   |   | ◎ | ◎ | ○ |
|  | ○ | ◎ |   |  |  |  |   |   | ◎ | ◎ | ○ |
|  | ○ | ◎ |   |  |  |  |   |   | ◎ | ◎ | ○ |
|  | ○ | ◎ |   |  |  |  |   |   | ◎ | ◎ | ○ |
|  | ○ | ◎ |   |  |  |  |   |   | ◎ | ◎ | ○ |
|  | ○ | ◎ |   |  |  |  |   |   | ◎ | ◎ | ○ |

## Endmill Catalog (by series)

| Suitable Material | No. of Flutes | End Teeth Type | Coating | Description  | Type         | Diameter Range | Dimension Page | Cutting Parameters Page |  |
|-------------------|---------------|----------------|---------|--|--------------|----------------|----------------|-------------------------|--|
| Hardened Steel    |               |                |         | 6 Flutes, Standard Length                                  | SH300-S6-H   | D6 ~ D20       | 367            | 511                     |  |
|                   |               |                |         | 6 Flutes, Long Shank Length                                | SH300-SH6-H  | D6 ~ D20       | 368            | 511                     |  |
|                   |               |                |         | 6 Flutes, Long Flute Length                                | SH300-SL6-H  | D6 ~ D20       | 369            | 511                     |  |
|                   |               |                |         | 2 Flutes, Corner Radius                                    | SH300-R2-H   | D1 ~ D6        | 370            | 510                     |  |
|                   |               |                |         | 2 Flutes, Corner Radius, With Reduced Neck                 | SH300-RN2-H  | D1 ~ D6        | 371            | 510                     |  |
|                   |               |                |         | 4 Flutes, Corner Radius                                    | SH300-R4-H   | D1 ~ D12       | 373            | 511                     |  |
|                   |               |                |         | 4 Flutes, Corner Radius, 45° Helix                         | SH260-R4A-H  | D1-D12         | 376            | 511                     |  |
|                   |               |                |         | 4 Flutes, Corner Radius, With Long Shank Length            | SH260-RH4-H  | D2.5 ~ D12     | 378            | 511                     |  |
|                   |               |                |         | 4 Flutes, Corner Radius, With Long Flute Length            | SH260-RL4A-H | D6-D12         | 382            | 511                     |  |
|                   |               |                |         | 4 Flutes, Corner Radius, 45° Helix, With Long Shank Length | SH260-RH4A-H | D4-D12         | 380            | 511                     |  |
|                   |               |                |         | 4 Flutes Corner Radius, With Reduced Neck                  | SH260-RN4-H  | D1 ~ D12       | 383            | 511                     |  |
|                   |               |                |         | 2 Flutes, Ballnose   | SH260-B2-H   | D1 ~ D16       | 385            | 512                     |  |
|                   |               |                |         | 2 Flutes Ballnose, with Long Shank Length                  | SH260-BH2-H  | D2 ~ D12       | 386            | 512                     |  |
|                   |               |                |         | 2 Flutes, Ballnose, With Reduced Neck                      | SH260-BN2-H  | D1 ~ D12       | 388            | 512                     |  |
|                   | <b>SH360</b>  |                |         |  |              |                |                |                         |  |
|                   |               |                |         | 2 Flutes, Standard Length <b>NEW</b>                       | SH360-S2     | D1-D12         | 390            | 513                     |  |
|                   |               |                |         | 4 Flutes, 45° Helix <b>NEW</b>                             | SH360-S4A    | D1-D20         | 391            | 514                     |  |
|                   |               |                |         | 4 Flutes, 45° Helix <b>NEW</b>                             | SH360-SH4A   | D1-D20         | 392            | 514                     |  |
|                   |               |                |         | 6 Flutes, Standard Length <b>NEW</b>                       | SH360-S6     | D6-D20         | 393            | 514                     |  |

most suitable suitable

| Workpiece Material  |             |                 |           |                  |               |                               |                             |                 |                |                |                |
|---------------------|-------------|-----------------|-----------|------------------|---------------|-------------------------------|-----------------------------|-----------------|----------------|----------------|----------------|
| P                   |             | M               | K         | N                |               |                               | S                           |                 | H              |                |                |
| 1 2 3 4             | 5 6         | 1 2 3           | 1 2 3     | 1 2 3            | 4             | 5                             | 1 2 3                       | 4               | 1              | 2              | 3 4            |
| Carbon Steel, Alloy | Alloy Steel | Stainless Steel | Cast Iron | Aluminium Alloys | Copper Alloys | Graphite, Composite Materials | Heat Resistant Super Alloys | Titanium Alloys | Hardened Steel | Hardened Steel | Hardened Steel |
| < 35HRC             | ≤ 48HRC     |                 |           |                  |               |                               |                             |                 | 45-55HRC       | 55-60HRC       | > 60HRC        |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
|                     | ○           |                 |           |                  |               |                               |                             |                 | ○              | ⊙              | ⊙              |
|                     | ○           |                 |           |                  |               |                               |                             |                 | ○              | ⊙              | ⊙              |
|                     | ○           |                 |           |                  |               |                               |                             |                 | ○              | ⊙              | ⊙              |
|                     | ○           |                 |           |                  |               |                               |                             |                 | ○              | ⊙              | ⊙              |

## Endmill Catalog (by series)

| Suitable Material | No. of Flutes | Endteeth Type | Coating | Description | Type | Diameter Range | Dimension Page | Cutting Parameters Page |
|-------------------|---------------|---------------|---------|-------------|------|----------------|----------------|-------------------------|
|-------------------|---------------|---------------|---------|-------------|------|----------------|----------------|-------------------------|

### SH360

|  |  |         |   |  |           |        |     |     |
|--|--|---------|---|--|-----------|--------|-----|-----|
|  |  | TIAISIN | 6 Flutes, Long Flute length <b>NEW</b>                |  | SH360-SL6 | D6-D20 | 394 | 514 |
|  |  | TIAISIN | 4 Flutes, Corner Radius <b>NEW</b>                    |  | SH360-R4  | D1-D12 | 395 | 514 |
|  |  | TIAISIN | 4 Flutes, Corner Radius, Long Shank length <b>NEW</b> |  | SH360-RH4 | D4-D12 | 397 | 514 |
|  |  | TIAISIN | 2 Flutes, Ballnose <b>NEW</b>                         |  | SH360-B2  | D1-D20 | 398 | 515 |
|  |  | TIAISIN | 2 Flutes, Ballnose, Long Shank length <b>NEW</b>      |  | SH360-BH2 | D4-D20 | 399 | 515 |
|  |  | TIAISIN | 4 Flutes, Ballnose <b>NEW</b>                         |  | SH360-B4  | D3-D16 | 400 | 515 |
|  |  | TIAISIN | 4 Flutes, Ballnose, Long Shank length <b>NEW</b>      |  | SH360-BH4 | D3-D16 | 401 | 515 |

### FH200-H

|                |  |  |         |  |  |             |          |     |     |
|----------------|--|--|---------|--|--|-------------|----------|-----|-----|
| Hardened Steel |  |  | TIAISIN | 4 Flutes, Corner Radius                    |  | FH200-R4-H  | D1 ~ D12 | 402 | 517 |
|                |  |  | TIAISIN | 4 Flutes, Corner Radius, Reduced Neck      |  | FH200-RN4-H | D8 ~ D12 | 404 | 517 |
|                |  |  | TIAISIN | 6 Flutes, Corner Radius                    |  | FH200-R6-H  | D6~D20   | 405 | 517 |
|                |  |  | TIAISIN | 6 Flutes, Corner Radius, Long Shank length |  | FH200-RH6-H | D6~D20   | 406 | 517 |
|                |  |  | TIAISIN | 6 Flutes, Corner radius, Reduced Neck      |  | FH200-RN6-H | D6~D20   | 407 | 517 |

### SHM200

|  |  |         |  |  |            |           |     |     |
|--|--|---------|--|--|------------|-----------|-----|-----|
|  |  | TIAISIN | 2 Flutes, Ballnose, Reduced Neck <b>NEW</b>      |  | SHM200-BN2 | D0.1-D6.0 | 468 | 556 |
|  |  | TIAISIN | 2 Flutes, Reduced Neck <b>NEW</b>                |  | SHM200-SN2 | D0.1-D6.0 | 442 | 519 |
|  |  | TIAISIN | 2 Flutes, Corner Radius, Reduced Neck <b>NEW</b> |  | SHM200-RN2 | D0.2-D6.0 | 448 | 529 |
|  |  | TIAISIN | 4 Flutes, Corner Radius, Reduced Neck <b>NEW</b> |  | SHM200-RN4 | D1-D6.0   | 462 | 551 |

most suitable suitable

| Workpiece Material  |             |                 |           |                  |               |                               |                             |                 |                |                |                |
|---------------------|-------------|-----------------|-----------|------------------|---------------|-------------------------------|-----------------------------|-----------------|----------------|----------------|----------------|
| P                   |             | M               | K         | N                |               |                               | S                           | H               |                |                |                |
| 1 2 3 4             | 5 6         | 1 2 3           | 1 2 3     | 1 2 3            | 4             | 5                             | 1 2 3                       | 4               | 1              | 2              | 3 4            |
| Carbon Steel, Alloy | Alloy Steel | Stainless Steel | Cast Iron | Aluminium Alloys | Copper Alloys | Graphite, Composite Materials | Heat Resistant Super Alloys | Titanium Alloys | Hardened Steel | Hardened Steel | Hardened Steel |
| < 35HRC             | ≤ 48HRC     |                 |           |                  |               |                               |                             |                 | 45-55HRC       | 55-60HRC       | > 60HRC        |












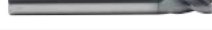


























|  |  |   |  |  |  |  |  |  |  |   |   |   |
|--|--|---|--|--|--|--|--|--|--|---|---|---|
|  |  | ○ |  |  |  |  |  |  |  | ○ | ⊙ | ⊙ |
|  |  | ○ |  |  |  |  |  |  |  | ○ | ⊙ | ⊙ |
|  |  | ○ |  |  |  |  |  |  |  | ○ | ⊙ | ⊙ |
|  |  | ○ |  |  |  |  |  |  |  | ○ | ⊙ | ⊙ |
|  |  | ○ |  |  |  |  |  |  |  | ○ | ⊙ | ⊙ |
|  |  | ○ |  |  |  |  |  |  |  | ○ | ⊙ | ⊙ |
|  |  | ○ |  |  |  |  |  |  |  | ○ | ⊙ | ⊙ |
|  |  | ○ |  |  |  |  |  |  |  | ○ | ⊙ | ⊙ |



|  |  |   |  |  |  |  |  |  |  |   |   |   |
|--|--|---|--|--|--|--|--|--|--|---|---|---|
|  |  | ⊙ |  |  |  |  |  |  |  | ⊙ | ⊙ | ⊙ |
|  |  | ⊙ |  |  |  |  |  |  |  | ⊙ | ⊙ | ⊙ |
|  |  | ⊙ |  |  |  |  |  |  |  | ⊙ | ⊙ | ⊙ |
|  |  | ⊙ |  |  |  |  |  |  |  | ⊙ | ⊙ | ⊙ |
|  |  | ⊙ |  |  |  |  |  |  |  | ⊙ | ⊙ | ⊙ |

|  |  |   |  |  |  |  |  |  |  |   |   |   |
|--|--|---|--|--|--|--|--|--|--|---|---|---|
|  |  | ○ |  |  |  |  |  |  |  | ○ | ⊙ | ⊙ |
|  |  | ○ |  |  |  |  |  |  |  | ○ | ⊙ | ⊙ |
|  |  | ○ |  |  |  |  |  |  |  | ○ | ⊙ | ⊙ |
|  |  | ○ |  |  |  |  |  |  |  | ○ | ⊙ | ⊙ |


















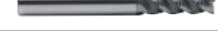






























## Endmill Catalog (by flute)



| No. of Flutes   | Coating | Description   | Type      | Diameter Range | Dimension Page | Cutting Parameters Page |
|---|---------|---|-----------|----------------|----------------|-------------------------|
| <b>Square</b>   |         |   |           |                |                |                         |
|    | AlCrSiN | 2 Flutes, Stub Length                                  | UP210-SS2 | D1 ~ D16       | 206            | 475                     |
|    | AlCrSiN | 2 Flutes, Standard Length                              | UP210-S2  | D1 ~ D20       | 207            | 475                     |
|    | AlCrSiN | 2 Flutes, Long Flute Length                            | UP210-SL2 | D2 ~ D20       | 209            | 475                     |
|   | AlCrSiN | 2 Flutes, Long Shank Length                          | UP210-SH2 | D2 ~ D20       | 210            | 475                     |
|  | AlCrSiN | 3 Flutes, Standard Length                            | UP210-S3  | D2 ~ D25       | 211            | 475                     |
|  | AlCrSiN | 4 Flutes, Stub Length                                | UP210-SS4 | D1 ~ D20       | 212            | 476                     |
|  | AlCrSiN | 4 Flutes, Standard Length                            | UP210-S4  | D1 ~ D20       | 213            | 476                     |
|  | AlCrSiN | 4 Flutes, Long Flute Length                          | UP210-SL4 | D1 ~ D20       | 215            | 476                     |
|  | AlCrSiN | 4 Flutes, Long Shank Length                          | UP210-SH4 | D2 ~ D20       | 217            | 476                     |
|  | AlCrSiN | 4 Flutes, Acute Angle                                | UP210-SC4 | D4 ~ D20       | 218            | 476                     |
|  | AlCrSiN | 4 Flutes, 45° Helix                                  | UP210-S4A | D4 ~ D20       | 219            | 476                     |
|  | AlCrSiN | 6 Flutes, Standard Length                            | UP210-S6  | D6 ~ D20       | 220            | 476                     |
|  | AlCrSiN | 3 Flutes, Variable Helix                             | SP210-S3  | D2.5 ~ D20     | 241            | 479                     |
|  | AlCrSiN | 3 Flutes, Variable Helix with Chamfer                | SP210-C3  | D6 ~ D20       | 242            | 479                     |
|  | AlCrSiN | 4 Flutes, Variable Helix                             | SP210-S4  | D2 ~ D20       | 243            | 480                     |
|  | AlCrSiN | 4 Flutes, Variable Helix with Chamfer                | SP210-C4  | D3 ~ D25       | 244            | 480                     |
|  | AlCrSiN | 4 Flutes, Reduced Neck, Variable Helix with Chamfer  | SP210-CN4 | D3 ~ D20       | 246            | 480                     |
|  | AlCrSiN | 2 Flutes, Square with Chamfer                        | PP300-C2  | D2 ~ D12       | 252            | 482                     |
|  | AlCrSiN | 3 Flutes, Variable Helix with Chamfer                | PP300-C3  | D3 ~ D20       | 253            | 483                     |

 most suitable  suitable





































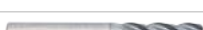









## Endmill Catalog (by flute)



| No.of Flutes  | Coating | Description  | Type  | Diameter Range  | Dimension Page | Cutting Parameters Page |
|---|---------|--|---|-----------------|----------------|-------------------------|
| <b>Square</b>   |         |  |   |                 |                |                         |
|    | AICrSiN | 4 Flutes, Variable Helix with Chamfer     |    | PP300-C4        | D3 ~ D20       | 254 484                 |
|    | AICrSiN | 4/5 Flutes, Variable Helix with Radius    |    | PP300-SPEED-3D  | D6 ~ D20       | 256 485                 |
|    | AICrSiN | 4/5 Flutes, Variable Helix with Radius    |    | PP300-SPEED-3DN | D6 ~ D20       | 257 485                 |
|   | AICrSiN | 4/5 Flutes, Variable Helix with Radius  |  | PP300-SPEED-5D  | D6 ~ D20       | 258 485                 |
|  | AICrSiN | 4 Flutes, Roughing Geometry  |  | UPN210-S4       | D6 ~ D20       | 259 487                 |
|  | AICrSiN | 4 Flutes, Roughing Geometry  |  | UPR210-S4       | D6 ~ D20       | 260 486                 |
|  | AICrSiN | 3/4 Flutes, Roughing Geometry  |  | UPR300-S3/S4    | D6 ~ D20       | 261 488                 |
|  | AICrSiN | 2 Flutes, Long Reduced Neck  |  | SPM200-SN2      | D0.1 ~ D6      | 408 519                 |
|  | TiAlSiN | 2 Flutes, Long Reduced Neck             |  | SHM200-SN2      | D0.1 ~ D6      | 442 519                 |
|  | AlTiN   | 2 Flutes, Standard Length  |  | US200-S2        | D0.5 ~ D20     | 262 490                 |
|  | AlTiN   | 4 Flutes, Stub Length  |  | US200-SS4       | D2 ~ D20       | 263 491                 |
|  | AlTiN   | 4 Flutes, Standard Length  |  | US200-S4        | D1 ~ D20       | 264 491                 |
|  | AlTiN   | 4 Flutes, Long Reduced Neck  |  | US200-SN4       | D2 ~ D12       | 265 491                 |
|  | AlTiN   | 2 Flutes, Standard Length/Stub Length   |  | US260-S2/SS2    | D0.5 ~ D0.8    | 271 492                 |
|  | AlTiN   | 4 Flutes, Standard Length               |  | US260-SS4A      | D1 ~ D12       | 272 492                 |
|  | AlTiN   | 4 Flutes, Stub Length                   |  | US260-SS4B      | D1 ~ D6        | 273 492                 |
|  | AlTiN   | 4 Flutes, Standard Length               |  | US260-S4A       | D1 ~ D16       | 274 492                 |
|  | AlTiN   | 4 Flutes, Stub Length                   |  | US260-S4B       | D1 ~ D6        | 275 492                 |

 most suitable  suitable







































## Endmill Catalog (by flute)



| No. of Flutes   | Coating   | Description   | Type  | Diameter Range | Dimension Page | Cutting Parameters Page |
|---|---|---|---|----------------|----------------|-------------------------|
| <b>Square</b>   |   |   |   |                |                |                         |
|    |    | 4 Flutes, Standard Length  |    | SS600-S4       | D2 ~ D20       | 278 494                 |
|    |   | 3 Flutes, Standard Length   |    | SA300-S3       | D6 ~ D20       | 302 499                 |
|    |   | 2 Flutes, Standard Length   |    | UA100-S2       | D1 ~ D12       | 282 495                 |
|   |   | 2 Flutes, Long Flute Length   |   | UA100-SL2      | D2 ~ D12       | 283 495                 |
|  |   | 2 Flutes, Long Shank Length   |  | UA100-SH2      | D2 ~ D12       | 284 495                 |
|  |   | 3 Flutes, Standard Length   |  | UA100-S3       | D2 ~ D20       | 285 496                 |
|  |   | 3 Flutes, Long Flute Length   |  | UA100-SL3      | D2 ~ D20       | 286 496                 |
|  |   | 3 Flutes, Long Shank Length   |  | UA100-SH3      | D2 ~ D20       | 287 496                 |
|  |   | 3 Flutes, Standard Length   |  | SA100-S3       | D3 ~ D12       | 299 497                 |
|  |  | 2 Flutes, Standard Length   |  | SG200-S2       | D0.4 ~ D12     | 315 501                 |
|  |  | 2 Flutes, Reduced Neck  |  | SG200-SN2      | D1 ~ D12       | 316 501                 |
|  |  | 3 Flutes, Standard Length   |  | SG200-S3       | D1 ~ D12       | 317 501                 |
|  |  | 4 Flutes, Standard Length   |  | SG200-S4       | D2 ~ D12       | 318 501                 |
|  |  | 4 Flutes, Standard Length   |  | ST210-S4       | D2 ~ D20       | 327 503                 |
|  |  | 2 Flutes, Standard Length   |  | SH260-S2-H     | D1 ~ D12       | 357 510                 |
|  |  | 2 Flutes, Reduced Neck  |  | SH260-SN2-H    | D1 ~ D6        | 358 510                 |
|  |  | 4 Flutes, Standard Length   |  | SH260-S4-H     | D1 ~ D20       | 360 511                 |

 most suitable  suitable

| Workpiece Material  |             |                 |           |                  |               |                               |                             |                 |                |                |                |
|---------------------|-------------|-----------------|-----------|------------------|---------------|-------------------------------|-----------------------------|-----------------|----------------|----------------|----------------|
| P                   |             | M               | K         | N                |               |                               | S                           | H               |                |                |                |
| 1 2 3 4             | 5 6         | 1 2 3           | 1 2 3     | 1 2 3            | 4             | 5                             | 1 2 3                       | 4               | 1              | 2              | 3 4            |
| Carbon Steel, Alloy | Alloy Steel | Stainless Steel | Cast Iron | Aluminium Alloys | Copper Alloys | Graphite, Composite Materials | Heat Resistant Super Alloys | Titanium Alloys | Hardened Steel | Hardened Steel | Hardened Steel |
| < 35HRC             | ≤ 48HRC     |                 |           |                  |               |                               |                             |                 | 45-55HRC       | 55-60HRC       | > 60HRC        |
| ⊙                   | ⊙           | ⊙               | ⊙         |                  |               |                               | ○                           | ⊙               |                |                |                |
|                     |             |                 |           | ⊙                | ⊙             |                               |                             |                 |                |                |                |
|                     |             |                 |           | ⊙                | ⊙             |                               |                             |                 |                |                |                |
|                     |             |                 |           | ⊙                | ⊙             |                               |                             |                 |                |                |                |
|                     |             |                 |           | ⊙                | ⊙             |                               |                             |                 |                |                |                |
|                     |             |                 |           | ⊙                | ⊙             |                               |                             |                 |                |                |                |
|                     |             |                 |           | ⊙                | ⊙             |                               |                             |                 |                |                |                |
|                     |             |                 |           | ⊙                | ⊙             |                               |                             |                 |                |                |                |
|                     |             |                 |           | ○                | ○             | ⊙                             |                             |                 |                |                |                |
|                     |             |                 |           | ○                | ○             | ⊙                             |                             |                 |                |                |                |
|                     |             |                 |           | ○                | ○             | ⊙                             |                             |                 |                |                |                |
|                     |             |                 |           | ○                | ○             | ⊙                             |                             |                 |                |                |                |
|                     |             |                 |           |                  |               |                               |                             | ⊙               |                |                |                |
| ○                   | ○           | ○               |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |
| ○                   | ⊙           |                 |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ○              |

## Endmill Catalog (by flute)

| No. of Flutes   | Coating   | Description  | Type         | Diameter Range | Dimension Page | Cutting Parameters Page |
|---|-----------|--|--------------|----------------|----------------|-------------------------|
| <b>Square</b>   |           |  |              |                |                |                         |
|    | TiAlC/SiN | 4 Flutes, 45° Helix                           | SH260-S4A    | D1 ~ D20       | 361            | 511                     |
|    | TiAlC/SiN | 4 Flutes, Long Shank Length                   | SH260-SH4-H  | D1 ~ D20       | 362            | 511                     |
|    | TiAlC/SiN | 4 Flutes, 45° Helix, Long Shank Length        | SH260-SH4A-H | D3 ~ D20       | 363            | 511                     |
|   | TiAlC/SiN | 4 Flutes, Reduced Neck                       | SH260-SN4-H  | D1 ~ D12       | 364            | 511                     |
|  | TiAlC/SiN | 4 Flutes, Long Flute Length                 | SH260-SL4-H  | D1 ~ D16       | 365            | 511                     |
|  | TiAlC/SiN | 4 Flutes, 45° Helix, Long Flute Length      | SH260-SL4A-H | D4 ~ D20       | 366            | 511                     |
|  | TiAlC/SiN | 6 Flutes, Standard Length                   | SH260-S6-H   | D6 ~ D20       | 367            | 511                     |
|  | TiAlC/SiN | 6 Flutes, Long Shank Length                 | SH260-SH6-H  | D6 ~ D20       | 368            | 511                     |
|  | TiAlC/SiN | 6 Flutes, Long Flute Length                 | SH260-SL6-H  | D6 ~ D20       | 369            | 511                     |
|  | TiAlSiN   | 2 Flutes, Standard Length                   | SH360-S2     | D1-D12         | 390            | 513                     |
|  | TiAlSiN   | 4 Flutes, 45° Helix                         | SH360-S4A    | D1-D20         | 391            | 514                     |
|  | TiAlSiN   | 4 Flutes, 45° Helix                         | SH360-SH4A   | D1-D20         | 392            | 514                     |
|  | TiAlSiN   | 6 Flutes, Standard Length                   | SH360-S6     | D6-D20         | 393            | 514                     |
|  | TiAlSiN   | 6 Flutes, Long Flute Length                 | SH360-SL6    | D6-D20         | 394            | 514                     |
| <b>Corner Radius</b>  |           |  |              |                |                |                         |
|  | AlC/SiN   | 2 Flutes, Corner Radius                     | UP210-R2     | D1 ~ D20       | 221            | 477                     |
|  | AlC/SiN   | 2 Flutes, Corner Radius, Long Shank Length  | UP210-RH2    | D4 ~ D20       | 224            | 477                     |
|  | AlC/SiN   | 4 Flutes, Corner Radius                     | UP210-R4     | D1 ~ D20       | 226            | 476                     |
|  | AlC/SiN   | 4 Flutes, Corner Radius, Long Shank Length  | UP210-RH4    | D3 ~ D20       | 229            | 476                     |

 most suitable  suitable

| Workpiece Material  |             |                 |           |                  |               |                               |                             |                 |                |                |                |
|---------------------|-------------|-----------------|-----------|------------------|---------------|-------------------------------|-----------------------------|-----------------|----------------|----------------|----------------|
| P                   |             | M               | K         | N                |               |                               | S                           | H               |                |                |                |
| 1 2 3 4             | 5 6         | 1 2 3           | 1 2 3     | 1 2 3            | 4             | 5                             | 1 2 3                       | 4               | 1              | 2              | 3 4            |
| Carbon Steel, Alloy | Alloy Steel | Stainless Steel | Cast Iron | Aluminium Alloys | Copper Alloys | Graphite, Composite Materials | Heat Resistant Super Alloys | Titanium Alloys | Hardened Steel | Hardened Steel | Hardened Steel |
| < 35HRC             | ≤ 48HRC     |                 |           |                  |               |                               |                             |                 | 45-55HRC       | 55-60HRC       | > 60HRC        |
|                     | ○           | ○               |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
|                     | ○           | ○               |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
|                     | ○           | ○               |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
|                     | ○           | ○               |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
|                     | ○           | ○               |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
|                     | ○           | ○               |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
|                     | ○           | ○               |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
|                     | ○           | ○               |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
|                     | ○           | ○               |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
|                     |             | ○               |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
|                     |             | ○               |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
|                     |             | ○               |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
|                     |             | ○               |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
|                     |             | ○               |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
|                     |             | ○               |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
|                     |             | ○               |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
|                     | ○           | ○               | ○         | ○                |               |                               |                             |                 |                |                |                |
|                     | ○           | ○               | ○         | ○                |               |                               |                             |                 |                |                |                |
|                     | ○           | ○               | ○         | ○                |               |                               |                             |                 |                |                |                |
|                     | ○           | ○               | ○         | ○                |               |                               |                             |                 |                |                |                |



## Endmill Catalog (by flute)

| No. of Flutes        | Coating | Description  | Type       | Diameter Range | Dimension Page | Cutting Parameters Page |
|----------------------|---------|--|------------|----------------|----------------|-------------------------|
| <b>Corner Radius</b> |         |  |            |                |                |                         |
| 4                    | AlCrSiN | 4 Flutes, Corner Radius, 45 ° Helix                                | UP210-R4A  | D4 ~ D20       | 231            | 476                     |
| 4                    | AlCrSiN | 4 Flutes, Corner Radius, with Variable Helix                       | SP210-R4   | D3 ~ D16       | 247            | 480                     |
| 4                    | AlCrSiN | 4 Flutes, Corner Radius, with Long Shank Length and Variable Helix | SP210-RH4  | D4 ~ D12       | 249            | 480                     |
| 4                    | AlCrSiN | 4 Flutes, Corner Radius, Variable Helix <b>NEW</b>                 | PP300-R4   | D4 ~ D20       | 255            | 484                     |
| 2                    | AlCrSiN | 2 Flutes, Corner Radius, Reduced Neck                              | SPM200-RN2 | D0.2 ~ D6      | 414            | 530                     |
| 4                    | AlCrSiN | 4 Flutes, Corner Radius, Reduced Neck                              | SPM200-RN4 | D1 ~ D6        | 428            | 551                     |
| 2                    | TiAlSiN | 2 Flutes, Corner Radius, Reduced Neck <b>NEW</b>                   | SHM200-RN2 | D0.2 ~ D6.0    | 448            | 529                     |
| 4                    | TiAlSiN | 4 Flutes, Corner Radius, Reduced Neck <b>NEW</b>                   | SHM200-RN4 | D1 ~ D6.0      | 462            | 551                     |
| 2                    | AlTiN   | 2 Flutes, Corner Radius  | US200-R2   | D3 ~ D16       | 266            | 490                     |
| 3                    | AlTiN   | 3 Flutes, Corner Radius  | US200-R3   | D2 ~ D20       | 267            | 490                     |
| 4                    | AlTiN   | 4 Flutes, Corner Radius  | US200-R4   | D2 ~ D20       | 268            | 491                     |
| 4                    | AlTiN   | 4 Flutes, Corner Radius, Stub Length <b>NEW</b>                    | US260-RS4  | D1 ~ D10       | 276            | 493                     |
| 4                    | AlTiN   | 4 Flutes, Corner Radius <b>NEW</b>                                 | US260-R4   | D1.5 ~ D6      | 277            | 493                     |
| 4                    | AlTiN   | 4 Flutes, Corner Radius <b>NEW</b>                                 | SS600-R4   | D2 ~ D20       | 279            | 494                     |
| 2                    |         | 2 Flutes, Corner Radius  | UA100-R2   | D6 ~ D20       | 288            | 495                     |
| 2                    |         | 2 Flutes, Corner Radius, Long Shank Length                         | UA100-RH2  | D1 ~ D20       | 291            | 495                     |
| 3                    |         | 3 Flutes, Corner Radius  | UA100-R3   | D1 ~ D20       | 293            | 496                     |
| 3                    |         | 3 Flutes, Corner Radius, Long Shank Length                         | UA100-RH3  | D1 ~ D20       | 296            | 496                     |
| 3                    |         | 3 Flutes, Corner Radius, Reduced Neck <b>NEW</b>                   | SA210-WR   | D16 ~ D25      | 300            | 498                     |








⊙ most suitable ○ suitable

| Workpiece Material  |             |                 |           |                  |               |                               |                             |                 |                |                |                |
|---------------------|-------------|-----------------|-----------|------------------|---------------|-------------------------------|-----------------------------|-----------------|----------------|----------------|----------------|
| P                   |             | M               | K         | N                |               |                               | S                           | H               |                |                |                |
| 1 2 3 4             | 5 6         | 1 2 3           | 1 2 3     | 1 2 3            | 4             | 5                             | 1 2 3                       | 4               | 1              | 2              | 3 4            |
| Carbon Steel, Alloy | Alloy Steel | Stainless Steel | Cast Iron | Aluminium Alloys | Copper Alloys | Graphite, Composite Materials | Heat Resistant Super Alloys | Titanium Alloys | Hardened Steel | Hardened Steel | Hardened Steel |
| < 35HRC             | ≤ 48HRC     |                 |           |                  |               |                               |                             |                 | 45-55HRC       | 55-60HRC       | > 60HRC        |
| ○                   | ○           | ○               | ○         |                  |               |                               |                             |                 |                |                |                |
| ○                   | ○           | ○               | ○         |                  |               |                               |                             |                 |                |                |                |
| ○                   | ○           | ○               | ○         |                  |               |                               |                             |                 |                |                |                |
| ○                   | ○           | ○               | ○         |                  |               |                               |                             |                 |                |                |                |
| ○                   | ○           | ○               | ○         | ○                | ○             |                               | ○                           | ○               | ○              |                |                |
| ○                   | ○           | ○               | ○         | ○                | ○             |                               | ○                           | ○               | ○              |                |                |
|                     | ○           |                 |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
|                     | ○           |                 |           |                  |               |                               |                             |                 | ○              | ○              | ○              |
| ○                   | ○           | ○               | ○         |                  |               |                               | ○                           | ○               |                |                |                |
| ○                   | ○           | ○               | ○         |                  |               |                               | ○                           | ○               |                |                |                |
| ○                   | ○           | ○               | ○         |                  |               |                               | ○                           | ○               |                |                |                |
| ○                   | ○           | ○               | ○         |                  |               |                               | ○                           | ○               |                |                |                |
| ○                   | ○           | ○               | ○         |                  |               |                               | ○                           | ○               |                |                |                |
| ○                   | ○           | ○               | ○         |                  |               |                               | ○                           | ○               |                |                |                |
|                     |             |                 |           | ○                | ○             |                               |                             |                 |                |                |                |
|                     |             |                 |           | ○                | ○             |                               |                             |                 |                |                |                |
|                     |             |                 |           | ○                | ○             |                               |                             |                 |                |                |                |
|                     |             |                 |           | ○                | ○             |                               |                             |                 |                |                |                |
|                     |             |                 |           | ○                | ○             |                               |                             |                 |                |                |                |

## Endmill Catalog (by flute)

| No. of Flutes | Coating | Description | Type | Diameter Range | Dimension Page | Cutting Parameters Page |
|---------------|---------|-------------|------|----------------|----------------|-------------------------|
|---------------|---------|-------------|------|----------------|----------------|-------------------------|

### Corner Radius

|   |       |                                       |   |            |           |     |     |
|---|-------|---------------------------------------|---|------------|-----------|-----|-----|
|    |       | 3 Flutes, Corner Radius <b>NEW</b>    |    | SA210-NR   | D6 ~ D20  | 301 | 498 |
|    |       | 2 Flutes, Corner Radius, Reduced Neck |    | SA300-RN2  | D6 ~ D32  | 303 | 499 |
|    |       | 3 Flutes, Corner Radius, Reduced Neck |    | SA300-RN3  | D6 ~ D32  | 307 | 499 |
|   |       | 1 Flute, Corner Radius <b>NEW</b>     |   | DNM100-RS1 | D2 ~ D4   | 312 | 500 |
|  |       | 2 Flutes, Corner Radius <b>NEW</b>    |  | DNM100-RS2 | D4 ~ D10  | 313 | 500 |
|  |       | 3 Flutes, Corner Radius <b>NEW</b>    |  | DNM100-RS3 | D10 ~ D16 | 314 | 500 |
|  | U-DIA | 4 Flutes, Corner Radius               |  | SG200-R4   | D2 ~ D12  | 319 | 501 |
|  | U-DIA | 4 Flutes, Corner Radius, Reduced Neck |  | SG200-RN4  | D2 ~ D12  | 320 | 501 |

### Corner Radius

|   |           |  |   |             |           |     |     |
|---|-----------|--|---|-------------|-----------|-----|-----|
|  | N-DIA     | 4 Flutes, Corner Radius, Reduced Neck      |  | SG200-M-RN4 | D1 ~ D10  | 324 | 502 |
|  | AlTiN     | 4 Flutes, Corner Radius                    |  | SN200-R4    | D1 ~ D20  | 349 | 507 |
|  | AlTiN     | 4 Flutes, Corner Radius, Long Shank Length |  | SN200-RH4   | D8 ~ D16  | 352 | 507 |
|  | AlCrN     | 4 Flutes, Corner Radius                    |  | ST210-R4    | D2 ~ D20  | 328 | 503 |
|  | AlCrN     | 4 Flutes, Corner Radius, Reduced Neck      |  | ST210-RN4   | D6 ~ D20  | 330 | 507 |
|  | AlCrN     | 5 Flutes, Corner Radius, Long Flute Length |  | ST210-RL5   | D16 ~ D25 | 333 | 504 |
|  | TiAlC/SiN | 2 Flutes, Corner Radius                    |  | SH260-R2-H  | D1 ~ D6   | 370 | 510 |
|  | TiAlC/SiN | 2 Flutes, Corner Radius, Reduced Neck      |  | SH260-RN2-H | D1 ~ D6   | 371 | 510 |



























 most suitable  suitable










## Endmill Catalog (by flute)

| No. of Flutes | Coating | Description | Type | Diameter Range | Dimension Page | Cutting Parameters Page |
|---------------|---------|-------------|------|----------------|----------------|-------------------------|
|---------------|---------|-------------|------|----------------|----------------|-------------------------|

### Corner Radius

|   |           |   |   |              |            |     |     |
|---|-----------|---|---|--------------|------------|-----|-----|
|    | TiAlC/SiN | 4 Flutes, Corner Radius                               |    | SH260-R4-H   | D1 ~ D12   | 373 | 511 |
|    | TiAlC/SiN | 4 Flutes, Corner Radius, 45° Helix                    |    | SH260-R4A-H  | D1 ~ D12   | 376 | 511 |
|    | TiAlC/SiN | 4 Flutes, Corner Radius, Long Shank Length            |    | SH260-RH4-H  | D2.5 ~ D12 | 378 | 511 |
|   | TiAlC/SiN | 4 Flutes, Corner Radius, Long Flute Length            |   | SH260-RL4A-H | D6-D12     | 382 | 511 |
|  | TiAlC/SiN | 4 Flutes, Corner Radius, 45° Helix, Long Shank Length |  | SH260-RH4A-H | D4 ~ D12   | 380 | 511 |
|  | TiAlC/SiN | 4 Flutes, Corner Radius, Reduced Neck                 |  | SH260-RN4-H  | D1 ~ D12   | 383 | 511 |
|  | TiAlSiN   | 4 Flutes, Corner Radius                               |  | SH360-R4     | D1 ~ D12   | 395 | 514 |
|  | TiAlSiN   | 4 Flutes, Corner Radius, Long Shank Length            |  | SH360-RH4    | D4 ~ D12   | 397 | 506 |
|  | TiAlC/SiN | 4 Flutes, Corner Radius                               |  | FH200-R4-H   | D1 ~ D12   | 402 | 517 |
|  | TiAlC/SiN | 4 Flutes, Corner Radius, Reduced Neck                 |  | FH200-RN4-H  | D8 ~ D12   | 404 | 517 |
|  | TiAlC/SiN | 6 Flutes, Corner Radius                               |  | FH200-R6-H   | D6 ~ D20   | 405 | 517 |
|  | TiAlC/SiN | 6 Flutes, Corner Radius, Long Shank Length            |  | FH200-RH6-H  | D6 ~ D20   | 406 | 517 |
|  | TiAlC/SiN | 6 Flutes, Corner Radius, Reduced Neck                 |  | FH200-RN6-H  | D6 ~ D20   | 407 | 517 |

### Ballnose

|   |         |   |   |            |            |     |     |
|---|---------|---|---|------------|------------|-----|-----|
|  | AlCrSiN | 2 Flutes, Ballnose                          |  | UP210-B2   | D0.8 ~ D20 | 233 | 478 |
|  | AlCrSiN | 2 Flutes, Ballnose, Long Shank Length       |  | UP210-BH2  | D2 ~ D20   | 235 | 478 |
|  | AlCrSiN | 4 Flutes, Ballnose                          |  | UP210-B4   | D2 ~ D20   | 237 | 478 |
|  | AlCrSiN | 2 Flutes, Ballnose                          |  | SP210-B2   | D1 ~ D12   | 250 | 481 |
|  | AlCrSiN | 2 Flutes, Ballnose, Long Shank Length       |  | SP210-BH2  | D4 ~ D12   | 251 | 481 |
|  | AlCrSiN | 2 Flutes, Ballnose, Reduced Neck            |  | SPM200-BN2 | D0.1 ~ D6  | 434 | 556 |
|  | TiAlSiN | 2 Flutes, Ballnose, Reduced Neck <b>NEW</b> |  | SHM200-BN2 | D0.1 ~ D6  | 468 | 556 |

most suitable
  suitable

| Workpiece Material  |             |                 |           |                  |               |                               |                             |                 |                |                |                |
|---------------------|-------------|-----------------|-----------|------------------|---------------|-------------------------------|-----------------------------|-----------------|----------------|----------------|----------------|
| P                   |             | M               | K         | N                |               |                               | S                           |                 | H              |                |                |
| 1 2 3 4             | 5 6         | 1 2 3           | 1 2 3     | 1 2 3            | 4             | 5                             | 1 2 3                       | 4               | 1              | 2              | 3 4            |
| Carbon Steel, Alloy | Alloy Steel | Stainless Steel | Cast Iron | Aluminium Alloys | Copper Alloys | Graphite, Composite Materials | Heat Resistant Super Alloys | Titanium Alloys | Hardened Steel | Hardened Steel | Hardened Steel |
| < 35HRC             | ≤ 48HRC     |                 |           |                  |               |                               |                             |                 | 45-55HRC       | 55-60HRC       | > 60HRC        |
|                     | ○           | ◎               |           |                  |               |                               |                             |                 | ◎              | ◎              | ○              |
|                     | ○           | ◎               |           |                  |               |                               |                             |                 | ◎              | ◎              | ○              |
|                     | ○           | ◎               |           |                  |               |                               |                             |                 | ◎              | ◎              | ○              |
|                     | ○           | ◎               |           |                  |               |                               |                             |                 | ◎              | ◎              | ○              |
|                     | ○           | ◎               |           |                  |               |                               |                             |                 | ◎              | ◎              | ○              |
|                     | ○           | ◎               |           |                  |               |                               |                             |                 | ◎              | ◎              | ○              |
|                     |             | ○               |           |                  |               |                               |                             |                 | ○              | ◎              | ◎              |
|                     |             | ○               |           |                  |               |                               |                             |                 | ○              | ◎              | ◎              |
|                     |             | ◎               |           |                  |               |                               |                             |                 | ◎              | ◎              | ◎              |
|                     |             | ◎               |           |                  |               |                               |                             |                 | ◎              | ◎              | ◎              |
|                     |             | ◎               |           |                  |               |                               |                             |                 | ◎              | ◎              | ◎              |
|                     |             | ◎               |           |                  |               |                               |                             |                 | ◎              | ◎              | ◎              |
|                     |             | ◎               |           |                  |               |                               |                             |                 | ◎              | ◎              | ◎              |
|                     |             | ◎               |           |                  |               |                               |                             |                 | ◎              | ◎              | ◎              |
|                     | ◎           | ◎               | ○         | ◎                |               |                               |                             |                 |                |                |                |
|                     | ◎           | ◎               | ○         | ◎                |               |                               |                             |                 |                |                |                |
|                     | ◎           | ◎               | ○         | ◎                |               |                               |                             |                 |                |                |                |
|                     | ◎           | ◎               | ○         | ◎                |               |                               |                             |                 |                |                |                |
|                     | ◎           | ◎               | ○         | ◎                |               |                               |                             |                 |                |                |                |
|                     | ◎           | ◎               | ○         | ◎                | ○             | ◎                             |                             | ○               | ○              | ◎              |                |
|                     |             | ○               |           |                  |               |                               |                             |                 | ○              | ◎              | ◎              |

## Endmill Catalog (by flute)

| No. of Flutes | Coating | Description | Type | Diameter Range | Dimension Page | Cutting Parameters Page |
|---------------|---------|-------------|------|----------------|----------------|-------------------------|
|---------------|---------|-------------|------|----------------|----------------|-------------------------|

### Ballnose

|   |       |   |   |               |              |     |     |
|---|-------|---|---|---------------|--------------|-----|-----|
|    | AITIN | 2 Flutes, Ballnose                                    |    | US200-B2      | D1 ~ D20     | 269 | 491 |
|    | AITIN | 4 Flutes, Ballnose                                    |    | US200-B4      | D2 ~ D12     | 270 | 491 |
|    | AITIN | 4 Flutes, Ballnose <b>NEW</b>                         |    | SS600-B4      | D6 ~ D20     | 281 | 494 |
|   |       | 2 Flutes, Ballnose                                    |   | UA100-B2      | D1 ~ D12     | 298 | 497 |
|  |       | 2 Flutes, Ballnose, Reduced Neck                      |  | SA300-BN2     | D6 ~ D20     | 311 | 499 |
|  | U-DIA | 2 Flutes, Ballnose                                    |  | SG200-B2      | D0.5 ~ D12   | 321 | 502 |
|  | U-DIA | 2 Flutes, Ballnose, Reduced Neck                      |  | SG200-BN2     | D0.5 ~ D12   | 322 | 502 |
|  | N-DIA | 2 Flutes, Ballnose                                    |  | SG200-M-B2    | D0.4 ~ D6    | 325 | 502 |
|  | N-DIA | 2 Flutes, Ballnose, Reduced Neck                      |  | SG200-M-BN2   | D0.5 ~ D6    | 326 | 502 |
|  | AlCrN | 2 Flutes, Ballnose, Reduced Neck <b>NEW</b>           |  | SM200-TP2     | R0.5 ~ R1.5  | 335 | 505 |
|  | N-DIA | 2 Flutes/ 3 Flutes, Ballnose, Reduced Neck <b>NEW</b> |  | SM200-RO2/RO3 | R0.3 ~ R1.5  | 336 | 505 |
|  | N-DIA | 2 Flutes/ 3 Flutes, Ballnose, Reduced Neck <b>NEW</b> |  | SM200-VH2/VH3 | R0.3 ~ R1    | 337 | 505 |
|  | N-DIA | 2 Flutes/ 3 Flutes, Ballnose, Reduced Neck <b>NEW</b> |  | SM200-WI2/WI3 | R0.3 ~ R1.25 | 338 | 505 |
|  | N-DIA | 2 Flutes/ 3 Flutes, Ballnose, Reduced Neck <b>NEW</b> |  | SM200-IM2/IM3 | R0.3 ~ R1.25 | 339 | 505 |
|  | AlCrN |   |  |               |              |     |     |
|  | N-DIA | 2 Flutes/ 3 Flutes, Ballnose, Reduced Neck <b>NEW</b> |  | SM200-ZI2/ZI3 | R0.25 ~ R1.5 | 341 | 505 |
|  | AlCrN |   |  |               |              |     |     |

most suitable   
  suitable







## Endmill Catalog (by flute)

| No. of Flutes | Coating | Description | Type | Diameter Range | Dimension Page | Cutting Parameters Page |
|---------------|---------|-------------|------|----------------|----------------|-------------------------|
|---------------|---------|-------------|------|----------------|----------------|-------------------------|











### Ballnose

|   |           |   |   |               |              |     |     |
|---|-----------|---|---|---------------|--------------|-----|-----|
|    | N-DIA     | 2 Flutes/ 3 Flutes, Ballnose, Reduced Neck <b>NEW</b> |    | SM200-AM2/AM3 | R0.3 ~ R1.25 | 343 | 506 |
|    | N-DIA     | 2 Flutes/ 3 Flutes, Ballnose, Reduced Neck <b>NEW</b> |    | SM200-AR2/AR3 | R0.3 ~ R1.5  | 344 | 506 |
|   | AlCrN     |   |   |               |              |     |     |
|  | N-DIA     | 2 Flutes, Ballnose, Reduced Neck <b>NEW</b>           |  | SM200-KL2     | R0.3 ~ R1    | 346 | 505 |
|  | AlCrN     | 2 Flutes, Ballnose, Reduced Neck <b>NEW</b>           |  | SM200-XT2     | R0.3 ~ R1.5  | 347 | 504 |
|  | N-DIA     |   |  |               |              |     |     |
|  | AlTiN     | 4 Flutes, Ballnose                                    |  | SN200-B4      | D2 ~ D12     | 353 | 508 |
|  | AlTiN     | 4 Flutes, Ballnose, Long Shank Length                 |  | SN200-BH4     | D8 ~ D12     | 354 | 508 |
|  | AlTiN     | 4 Flutes, Ballnose, Taper Flute <b>NEW</b>            |  | STB200-B4     | D3 ~ D8      | 355 | 508 |
|  | AlCrN     | 4 Flutes, Ballnose                                    |  | ST210-B4      | D2 ~ D20     | 334 | 504 |
|  | TiAlC/SiN | 2 Flutes, Ballnose                                    |  | SH260-B2-H    | D1 ~ D16     | 385 | 512 |
|  | TiAlC/SiN | 2 Flutes, Ballnose, Long Shank Length                 |  | SH260-BH2-H   | D2 ~ D12     | 378 | 512 |
|  | TiAlC/SiN | 2 Flutes, Ballnose, Reduced Neck                      |  | SH260-BN2-H   | D1 ~ D12     | 388 | 512 |
|  | TiAlSiN   | 2 Flutes, Ballnose <b>NEW</b>                         |  | SH360-B2      | D1 ~ D20     | 398 | 515 |
|  | TiAlSiN   | 2 Flutes, Ballnose, Long Shank Length <b>NEW</b>      |  | SH360-BH2     | D4 ~ D20     | 399 | 515 |
|  | TiAlSiN   | 4 Flutes, Ballnose <b>NEW</b>                         |  | SH360-B4      | D3 ~ D16     | 400 | 515 |
|  | TiAlSiN   | 4 Flutes, Ballnose, Long Shank Length <b>NEW</b>      |  | SH360-BH4     | D3 ~ D16     | 401 | 515 |

 most suitable  suitable

| Workpiece Material  |             |                 |           |                  |               |                               |                             |                 |                |                |                |
|---------------------|-------------|-----------------|-----------|------------------|---------------|-------------------------------|-----------------------------|-----------------|----------------|----------------|----------------|
| P                   |             | M               | K         | N                |               |                               | S                           | H               |                |                |                |
| 1 2 3 4             | 5 6         | 1 2 3           | 1 2 3     | 1 2 3            | 4             | 5                             | 1 2 3                       | 4               | 1              | 2              | 3 4            |
| Carbon Steel, Alloy | Alloy Steel | Stainless Steel | Cast Iron | Aluminium Alloys | Copper Alloys | Graphite, Composite Materials | Heat Resistant Super Alloys | Titanium Alloys | Hardened Steel | Hardened Steel | Hardened Steel |
| < 35HRC             | ≤ 48HRC     |                 |           |                  |               |                               |                             |                 | 45-55HRC       | 55-60HRC       | > 60HRC        |
|                     |             |                 |           |                  |               | ⊙                             |                             |                 |                |                |                |
|                     |             |                 |           |                  |               | ⊙                             |                             | ⊙               |                |                |                |
|                     |             |                 |           |                  |               | ⊙                             |                             |                 |                |                |                |
|                     |             |                 |           |                  |               | ⊙                             |                             | ⊙               |                |                |                |
|                     | ⊙           | ⊙               | ⊙         |                  |               |                               | ⊙                           | ⊙               |                |                |                |
|                     | ⊙           | ⊙               | ⊙         |                  |               |                               |                             | ⊙               |                |                |                |
|                     | ⊙           | ⊙               | ⊙         |                  |               |                               |                             | ⊙               |                |                |                |
|                     | ⊙           | ⊙               |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ⊙              |
|                     | ⊙           | ⊙               |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ⊙              |
|                     | ⊙           | ⊙               |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ⊙              |
|                     |             | ⊙               |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ⊙              |
|                     |             | ⊙               |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ⊙              |
|                     |             | ⊙               |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ⊙              |
|                     |             | ⊙               |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ⊙              |
|                     |             | ⊙               |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ⊙              |
|                     |             | ⊙               |           |                  |               |                               |                             |                 | ⊙              | ⊙              | ⊙              |

## Endmill Catalog (by flute)

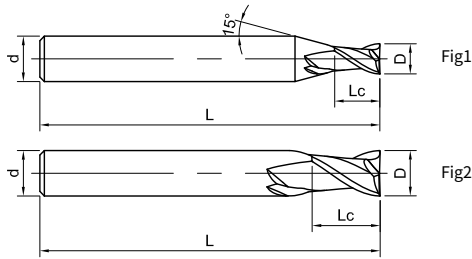
| No. of Flutes  | Coating  | Description                     | Type   | Diameter Range | Dimension Page | Cutting Parameters Page |
|--|--|---------------------------------|--|----------------|----------------|-------------------------|
| <b>Other</b>   |  |                                 |  |                |                |                         |
|   |   | 4 Flutes, 60° Chamfer Endmills  |   | UP210-L60      | D4 ~ D20       | 238 479                 |
|   |   | 4 Flutes, 90° Chamfer Endmills  |   | UP210-L90      | D4 ~ D20       | 239 479                 |
|   |   | 4 Flutes, 120° Chamfer Endmills |   | UP210-L120     | D4 ~ D20       | 240 479                 |
|  |  | 12 Flutes, Ling tooth           |  | SD200-CN       | D2 ~ D12       | 356 509                 |

most suitable    suitable

| Workpiece Material  |             |                 |           |                  |               |                               |                             |                 |                |                |                |  |
|---------------------|-------------|-----------------|-----------|------------------|---------------|-------------------------------|-----------------------------|-----------------|----------------|----------------|----------------|--|
| P                   |             | M               | K         | N                |               |                               | S                           | H               |                |                |                |  |
| 1 2 3 4             | 5 6         | 1 2 3           | 1 2 3     | 1 2 3            | 4             | 5                             | 1 2 3                       | 4               | 1              | 2              | 3 4            |  |
| Carbon Steel, Alloy | Alloy Steel | Stainless Steel | Cast Iron | Aluminium Alloys | Copper Alloys | Graphite, Composite Materials | Heat Resistant Super Alloys | Titanium Alloys | Hardened Steel | Hardened Steel | Hardened Steel |  |
| < 35HRC             | ≤ 48HRC     |                 |           |                  |               |                               |                             |                 | 45-55HRC       | 55-60HRC       | > 60HRC        |  |
| ⊙                   | ○           | ○               | ⊙         | ○                | ○             |                               |                             |                 |                |                |                |  |
| ⊙                   | ○           | ○               | ⊙         | ○                | ○             |                               |                             |                 |                |                |                |  |
| ⊙                   | ○           | ○               | ⊙         | ○                | ○             |                               |                             |                 |                |                |                |  |
|                     |             |                 |           |                  |               | ⊙                             |                             |                 |                |                |                |  |

# UP210-SS2

2 Flutes, Stub Length



Please refer to page 149

| Ordering Code   | D   | Lc | L   | d  | Figure No. | Stock |
|-----------------|-----|----|-----|----|------------|-------|
| UP210-SS2-01002 | 1   | 2  | 50  | 4  | 1          | ●     |
| UP210-SS2-01502 | 1.5 | 2  | 50  | 4  | 1          | ●     |
| UP210-SS2-02003 | 2   | 3  | 50  | 4  | 1          | ●     |
| UP210-SS2-02504 | 2.5 | 4  | 50  | 4  | 1          | ○     |
| UP210-SS2-03005 | 3   | 5  | 50  | 4  | 1          | ●     |
| UP210-SS2-04006 | 4   | 6  | 50  | 4  | 2          | ●     |
| UP210-SS2-05008 | 5   | 8  | 50  | 6  | 1          | ●     |
| UP210-SS2-06009 | 6   | 9  | 50  | 6  | 2          | ●     |
| UP210-SS2-07010 | 7   | 10 | 60  | 8  | 1          | ●     |
| UP210-SS2-08012 | 8   | 12 | 60  | 8  | 2          | ●     |
| UP210-SS2-10015 | 10  | 15 | 75  | 10 | 2          | ●     |
| UP210-SS2-12018 | 12  | 18 | 75  | 12 | 2          | ●     |
| UP210-SS2-14021 | 14  | 21 | 100 | 14 | 2          | ○     |
| UP210-SS2-16024 | 16  | 24 | 100 | 16 | 2          | ●     |
| UP210-SS2-18027 | 18  | 27 | 100 | 18 | 2          | ○     |
| UP210-SS2-20030 | 20  | 30 | 100 | 20 | 2          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P475

# UP210-S2

2 Flutes, Standard Length

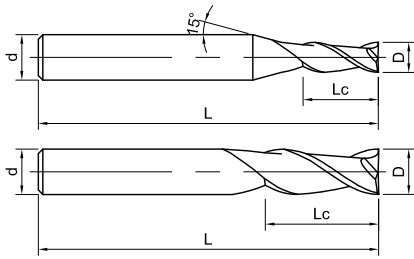


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D   | Lc | L  | d | Figure No. | Stock |
|----------------|-----|----|----|---|------------|-------|
| UP210-S2-01003 | 1   | 3  | 50 | 4 | 1          | ●     |
| UP210-S2-01504 | 1.5 | 4  | 50 | 4 | 1          | ●     |
| UP210-S2-02006 | 2   | 6  | 50 | 4 | 1          | ●     |
| UP210-S2-02506 | 2.5 | 6  | 50 | 4 | 1          | ●     |
| UP210-S2-02508 | 2.5 | 8  | 50 | 4 | 1          | ●     |
| UP210-S2-03009 | 3   | 9  | 50 | 4 | 1          | ●     |
| UP210-S2-63009 | 3   | 9  | 50 | 6 | 1          | ●     |
| UP210-S2-03509 | 3.5 | 9  | 50 | 4 | 1          | ●     |
| UP210-S2-63509 | 3.5 | 9  | 50 | 6 | 1          | ●     |
| UP210-S2-04011 | 4   | 11 | 50 | 4 | 2          | ●     |
| UP210-S2-64011 | 4   | 11 | 50 | 6 | 1          | ●     |
| UP210-S2-04511 | 4.5 | 11 | 50 | 6 | 1          | ●     |
| UP210-S2-04513 | 4.5 | 13 | 50 | 6 | 1          | ●     |
| UP210-S2-05013 | 5   | 13 | 50 | 6 | 1          | ●     |
| UP210-S2-05516 | 5.5 | 16 | 50 | 6 | 1          | ●     |
| UP210-S2-06016 | 6   | 16 | 50 | 6 | 2          | ●     |
| UP210-S2-06516 | 6.5 | 16 | 60 | 8 | 1          | ●     |
| UP210-S2-07020 | 7   | 20 | 60 | 8 | 1          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P475

# UP210-S2

2 Flutes, Standard Length

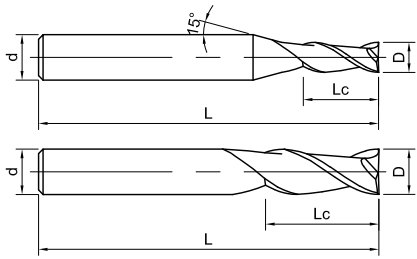


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code  | D    | Lc | L   | d  | Figure No. | Stock |
|----------------|------|----|-----|----|------------|-------|
| UP210-S2-07520 | 7.5  | 20 | 60  | 8  | 1          | ●     |
| UP210-S2-08020 | 8    | 20 | 60  | 8  | 2          | ●     |
| UP210-S2-08523 | 8.5  | 23 | 75  | 10 | 1          | ○     |
| UP210-S2-09023 | 9    | 23 | 75  | 10 | 1          | ●     |
| UP210-S2-09525 | 9.5  | 25 | 75  | 10 | 1          | ●     |
| UP210-S2-10025 | 10   | 25 | 75  | 10 | 2          | ●     |
| UP210-S2-10526 | 10.5 | 26 | 75  | 12 | 1          | ●     |
| UP210-S2-11028 | 11   | 28 | 75  | 12 | 1          | ●     |
| UP210-S2-12030 | 12   | 30 | 75  | 12 | 2          | ●     |
| UP210-S2-13032 | 13   | 32 | 100 | 14 | 1          | ●     |
| UP210-S2-14034 | 14   | 34 | 100 | 14 | 2          | ●     |
| UP210-S2-15036 | 15   | 36 | 100 | 16 | 1          | ●     |
| UP210-S2-16036 | 16   | 36 | 100 | 16 | 2          | ●     |
| UP210-S2-17040 | 17   | 40 | 100 | 20 | 1          | ●     |
| UP210-S2-18040 | 18   | 40 | 100 | 18 | 2          | ●     |
| UP210-S2-19040 | 19   | 40 | 100 | 20 | 1          | ○     |
| UP210-S2-20045 | 20   | 45 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

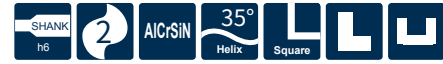
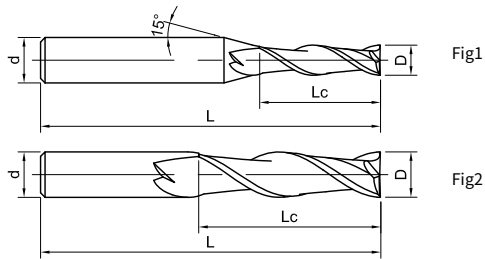
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P475

# UP210-SL2

2 Flutes, Long Flute Length



Please refer to page 149

| Ordering Code   | D  | Lc | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|----|------------|-------|
| UP210-SL2-02015 | 2  | 15 | 75  | 4  | 1          | ●     |
| UP210-SL2-03025 | 3  | 25 | 75  | 4  | 1          | ●     |
| UP210-SL2-04030 | 4  | 30 | 75  | 4  | 2          | ●     |
| UP210-SL2-05030 | 5  | 30 | 75  | 6  | 1          | ●     |
| UP210-SL2-06035 | 6  | 35 | 75  | 6  | 2          | ●     |
| UP210-SL2-08040 | 8  | 40 | 100 | 8  | 2          | ●     |
| UP210-SL2-10045 | 10 | 45 | 100 | 10 | 2          | ●     |
| UP210-SL2-12050 | 12 | 50 | 100 | 12 | 2          | ●     |
| UP210-SL2-14055 | 14 | 55 | 100 | 14 | 2          | ●     |
| UP210-SL2-16060 | 16 | 60 | 150 | 16 | 2          | ●     |
| UP210-SL2-18065 | 18 | 65 | 150 | 18 | 2          | ●     |
| UP210-SL2-20070 | 20 | 70 | 150 | 20 | 2          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

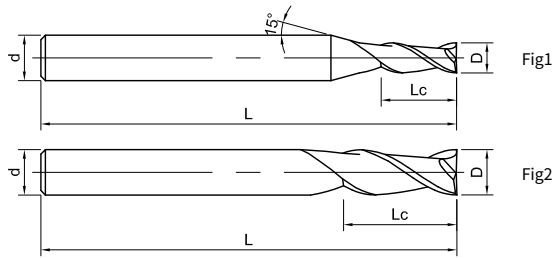
○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P475



# UP210-SH2

2 Flutes, Long Shank Length



Please refer to page 149

| Ordering Code   | D  | Lc | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|----|------------|-------|
| UP210-SH2-02006 | 2  | 6  | 75  | 4  | 1          | ●     |
| UP210-SH2-03009 | 3  | 9  | 75  | 4  | 1          | ●     |
| UP210-SH2-63012 | 3  | 12 | 75  | 6  | 1          | ●     |
| UP210-SH2-04011 | 4  | 11 | 75  | 4  | 2          | ●     |
| UP210-SH2-05020 | 5  | 20 | 75  | 6  | 1          | ●     |
| UP210-SH2-06020 | 6  | 20 | 100 | 6  | 2          | ●     |
| UP210-SH2-08025 | 8  | 25 | 100 | 8  | 2          | ●     |
| UP210-SH2-10030 | 10 | 30 | 100 | 10 | 2          | ●     |
| UP210-SH2-12035 | 12 | 35 | 100 | 12 | 2          | ●     |
| UP210-SH2-14036 | 14 | 36 | 150 | 14 | 2          | ○     |
| UP210-SH2-15035 | 15 | 35 | 150 | 16 | 1          | ○     |
| UP210-SH2-16036 | 16 | 36 | 150 | 16 | 2          | ●     |
| UP210-SH2-18045 | 18 | 45 | 150 | 18 | 2          | ○     |
| UP210-SH2-20045 | 20 | 45 | 150 | 20 | 2          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

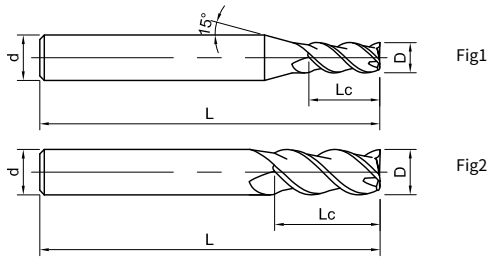
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P475

# UP210-S3

3 Flutes, Standard Length



Please refer to page 149

| Ordering Code  | D   | Lc | L   | d  | Figure No. | Stock |
|----------------|-----|----|-----|----|------------|-------|
| UP210-S3-02006 | 2   | 6  | 50  | 4  | 1          | ●     |
| UP210-S3-03009 | 3   | 9  | 50  | 4  | 1          | ●     |
| UP210-S3-04011 | 4   | 11 | 50  | 4  | 2          | ●     |
| UP210-S3-05013 | 5   | 13 | 50  | 6  | 1          | ●     |
| UP210-S3-06016 | 6   | 16 | 50  | 6  | 2          | ●     |
| UP210-S3-06516 | 6.5 | 16 | 60  | 8  | 1          | ●     |
| UP210-S3-08020 | 8   | 20 | 60  | 8  | 2          | ●     |
| UP210-S3-10025 | 10  | 25 | 75  | 10 | 2          | ●     |
| UP210-S3-12030 | 12  | 30 | 75  | 12 | 2          | ●     |
| UP210-S3-14032 | 14  | 32 | 100 | 14 | 2          | ○     |
| UP210-S3-16036 | 16  | 36 | 100 | 16 | 2          | ●     |
| UP210-S3-18040 | 18  | 40 | 100 | 18 | 2          | ○     |
| UP210-S3-20045 | 20  | 45 | 100 | 20 | 2          | ●     |
| UP210-S3-25050 | 25  | 50 | 100 | 25 | 2          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P475

# UP210-SS4

4 Flutes, Stub Length

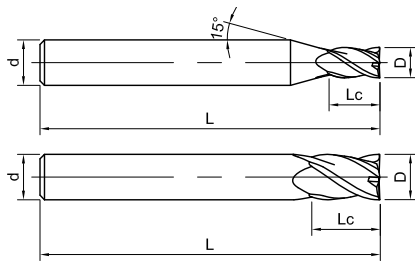


Fig1

Fig2



Please refer to page 149

| Ordering Code   | D   | Lc | L   | d  | Figure No. | Stock |
|-----------------|-----|----|-----|----|------------|-------|
| UP210-SS4-01002 | 1   | 2  | 50  | 4  | 1          | ●     |
| UP210-SS4-01502 | 1.5 | 2  | 50  | 4  | 1          | ●     |
| UP210-SS4-02003 | 2   | 3  | 50  | 4  | 1          | ●     |
| UP210-SS4-02504 | 2.5 | 4  | 50  | 4  | 1          | ○     |
| UP210-SS4-03005 | 3   | 5  | 50  | 4  | 1          | ●     |
| UP210-SS4-04006 | 4   | 6  | 50  | 4  | 2          | ●     |
| UP210-SS4-05008 | 5   | 8  | 50  | 6  | 1          | ●     |
| UP210-SS4-06009 | 6   | 9  | 50  | 6  | 2          | ●     |
| UP210-SS4-07010 | 7   | 10 | 60  | 8  | 1          | ●     |
| UP210-SS4-08012 | 8   | 12 | 60  | 8  | 2          | ●     |
| UP210-SS4-10015 | 10  | 15 | 75  | 10 | 2          | ●     |
| UP210-SS4-12018 | 12  | 18 | 75  | 12 | 2          | ●     |
| UP210-SS4-14021 | 14  | 21 | 100 | 14 | 2          | ●     |
| UP210-SS4-16024 | 16  | 24 | 100 | 16 | 2          | ●     |
| UP210-SS4-18027 | 18  | 27 | 100 | 18 | 2          | ○     |
| UP210-SS4-20030 | 20  | 30 | 100 | 20 | 2          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P476

# UP210-S4

4 Flutes, Standard Length

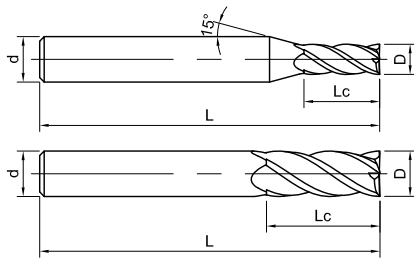


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D   | Lc | L  | d | Figure No. | Stock |
|----------------|-----|----|----|---|------------|-------|
| UP210-S4-01003 | 1   | 3  | 50 | 4 | 1          | ●     |
| UP210-S4-61003 | 1   | 3  | 50 | 6 | 1          | ●     |
| UP210-S4-01505 | 1.5 | 5  | 50 | 4 | 1          | ●     |
| UP210-S4-61505 | 1.5 | 5  | 50 | 6 | 1          | ●     |
| UP210-S4-02006 | 2   | 6  | 50 | 4 | 1          | ●     |
| UP210-S4-62006 | 2   | 6  | 50 | 6 | 1          | ●     |
| UP210-S4-02508 | 2.5 | 8  | 50 | 4 | 1          | ●     |
| UP210-S4-62508 | 2.5 | 8  | 50 | 6 | 1          | ●     |
| UP210-S4-03009 | 3   | 9  | 50 | 4 | 1          | ●     |
| UP210-S4-63009 | 3   | 9  | 50 | 6 | 1          | ●     |
| UP210-S4-03511 | 3.5 | 11 | 50 | 4 | 1          | ●     |
| UP210-S4-63509 | 3.5 | 9  | 50 | 6 | 1          | ●     |
| UP210-S4-04011 | 4   | 11 | 50 | 4 | 2          | ●     |
| UP210-S4-64011 | 4   | 11 | 50 | 6 | 1          | ●     |
| UP210-S4-04511 | 4.5 | 11 | 50 | 6 | 1          | ●     |
| UP210-S4-05013 | 5   | 13 | 50 | 6 | 1          | ●     |
| UP210-S4-05516 | 5.5 | 16 | 50 | 6 | 1          | ●     |
| UP210-S4-06016 | 6   | 16 | 50 | 6 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P476

# UP210-S4

4 Flutes, Standard Length

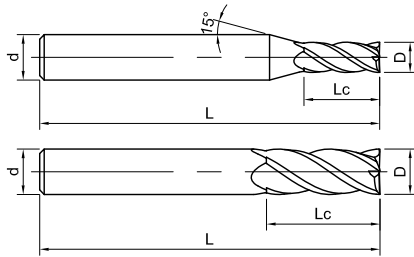


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code  | D   | Lc | L   | d  | Figure No. | Stock |
|----------------|-----|----|-----|----|------------|-------|
| UP210-S4-06516 | 6.5 | 16 | 60  | 8  | 1          | ●     |
| UP210-S4-07020 | 7   | 20 | 60  | 8  | 1          | ●     |
| UP210-S4-07520 | 7.5 | 20 | 60  | 8  | 1          | ●     |
| UP210-S4-08020 | 8   | 20 | 60  | 8  | 2          | ●     |
| UP210-S4-08523 | 8.5 | 23 | 75  | 10 | 1          | ●     |
| UP210-S4-09023 | 9   | 23 | 75  | 10 | 1          | ●     |
| UP210-S4-09525 | 9.5 | 25 | 75  | 10 | 1          | ●     |
| UP210-S4-10025 | 10  | 25 | 75  | 10 | 2          | ●     |
| UP210-S4-11028 | 11  | 28 | 75  | 12 | 1          | ●     |
| UP210-S4-12030 | 12  | 30 | 75  | 12 | 2          | ●     |
| UP210-S4-13032 | 13  | 32 | 100 | 14 | 1          | ●     |
| UP210-S4-14034 | 14  | 34 | 100 | 14 | 2          | ●     |
| UP210-S4-15036 | 15  | 36 | 100 | 16 | 1          | ●     |
| UP210-S4-16036 | 16  | 36 | 100 | 16 | 2          | ●     |
| UP210-S4-17038 | 17  | 38 | 100 | 18 | 1          | ○     |
| UP210-S4-18045 | 18  | 45 | 100 | 18 | 2          | ●     |
| UP210-S4-20045 | 20  | 45 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

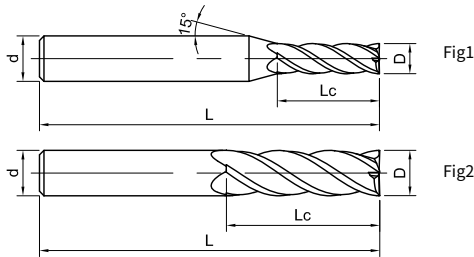
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P476

# UP210-SL4

4 Flutes, Long Flute Length



Please refer to page 149

| Ordering Code    | D | Lc | L   | d | Figure No. | Stock |
|------------------|---|----|-----|---|------------|-------|
| UP210-SL4-01004  | 1 | 4  | 50  | 4 | 1          | ●     |
| UP210-SL4-02010  | 2 | 10 | 50  | 4 | 1          | ●     |
| UP210-SL4-03015  | 3 | 15 | 60  | 4 | 1          | ●     |
| UP210-SL4-63015  | 3 | 15 | 60  | 6 | 1          | ●     |
| UP210-SL4-04020  | 4 | 20 | 60  | 4 | 2          | ●     |
| UP210-SL4-64020  | 4 | 20 | 75  | 6 | 1          | ●     |
| UP210-SL4-04030  | 4 | 30 | 75  | 4 | 2          | ●     |
| UP210-SL4-05025  | 5 | 25 | 75  | 6 | 1          | ●     |
| UP210-SL4-05030  | 5 | 30 | 75  | 6 | 1          | ●     |
| UP210-SL4-06020  | 6 | 20 | 50  | 6 | 2          | ●     |
| UP210-SL4-06030  | 6 | 30 | 75  | 6 | 2          | ●     |
| UP210-SL4-06035  | 6 | 35 | 75  | 6 | 2          | ●     |
| UP210-SL4-06035A | 6 | 35 | 100 | 6 | 2          | ●     |
| UP210-SL4-08025  | 8 | 25 | 75  | 8 | 2          | ●     |
| UP210-SL4-08035  | 8 | 35 | 100 | 8 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

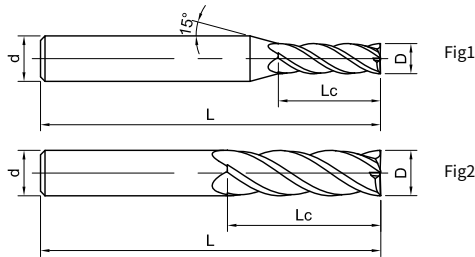
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P476

# UP210-SL4

4 Flutes, Long Flute Length



Please refer to page 149

» Continuation

| Ordering Code   | D  | Lc | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|----|------------|-------|
| UP210-SL4-08040 | 8  | 40 | 100 | 8  | 2          | ●     |
| UP210-SL4-10035 | 10 | 35 | 75  | 10 | 2          | ●     |
| UP210-SL4-10045 | 10 | 45 | 100 | 10 | 2          | ●     |
| UP210-SL4-10050 | 10 | 50 | 100 | 10 | 2          | ●     |
| UP210-SL4-12045 | 12 | 45 | 100 | 12 | 2          | ●     |
| UP210-SL4-12050 | 12 | 50 | 100 | 12 | 2          | ●     |
| UP210-SL4-14045 | 14 | 45 | 100 | 14 | 2          | ●     |
| UP210-SL4-16050 | 16 | 50 | 150 | 16 | 2          | ●     |
| UP210-SL4-16060 | 16 | 60 | 150 | 16 | 2          | ●     |
| UP210-SL4-16065 | 16 | 65 | 120 | 16 | 2          | ●     |
| UP210-SL4-16070 | 16 | 70 | 150 | 16 | 2          | ●     |
| UP210-SL4-18070 | 18 | 70 | 150 | 18 | 2          | ○     |
| UP210-SL4-20070 | 20 | 70 | 150 | 20 | 2          | ●     |
| UP210-SL4-20080 | 20 | 80 | 150 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

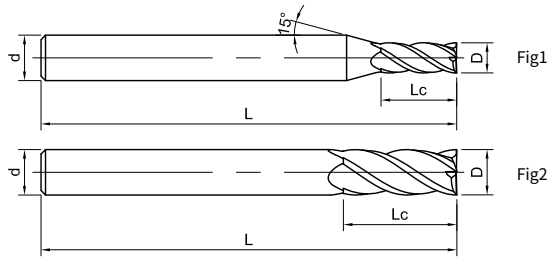
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P476

# UP210-SH4

4 Flutes, Long Shank Length



Please refer to page 149

| Ordering Code    | D  | Lc | L   | d  | Figure No. | Stock |
|------------------|----|----|-----|----|------------|-------|
| UP210-SH4-02010  | 2  | 10 | 75  | 4  | 1          | ●     |
| UP210-SH4-03012  | 3  | 12 | 75  | 4  | 1          | ●     |
| UP210-SH4-03012A | 3  | 12 | 100 | 4  | 1          | ○     |
| UP210-SH4-04011  | 4  | 11 | 75  | 4  | 2          | ●     |
| UP210-SH4-04011A | 4  | 11 | 100 | 4  | 2          | ●     |
| UP210-SH4-04015  | 4  | 15 | 75  | 4  | 2          | ●     |
| UP210-SH4-05020  | 5  | 20 | 75  | 6  | 1          | ●     |
| UP210-SH4-06016  | 6  | 16 | 75  | 6  | 2          | ●     |
| UP210-SH4-06020  | 6  | 20 | 75  | 6  | 2          | ●     |
| UP210-SH4-06020A | 6  | 20 | 100 | 6  | 2          | ●     |
| UP210-SH4-08020  | 8  | 20 | 100 | 8  | 2          | ●     |
| UP210-SH4-08025  | 8  | 25 | 100 | 8  | 2          | ●     |
| UP210-SH4-10030  | 10 | 30 | 100 | 10 | 2          | ●     |
| UP210-SH4-10035  | 10 | 35 | 100 | 10 | 2          | ●     |
| UP210-SH4-12035  | 12 | 35 | 100 | 12 | 2          | ●     |
| UP210-SH4-14036  | 14 | 36 | 150 | 14 | 2          | ○     |
| UP210-SH4-16036  | 16 | 36 | 150 | 16 | 2          | ●     |
| UP210-SH4-18045  | 18 | 45 | 150 | 18 | 2          | ○     |
| UP210-SH4-20045  | 20 | 45 | 150 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P476



# UP210-SC4

4 Flutes, Acute Angle

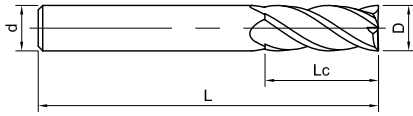


Fig1



Please refer to page 149

| Ordering Code   | D  | Lc | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|----|------------|-------|
| UP210-SC4-04011 | 4  | 11 | 50  | 4  | 1          | ●     |
| UP210-SC4-06016 | 6  | 16 | 50  | 6  | 1          | ●     |
| UP210-SC4-08020 | 8  | 20 | 60  | 8  | 1          | ●     |
| UP210-SC4-10025 | 10 | 25 | 75  | 10 | 1          | ●     |
| UP210-SC4-12030 | 12 | 30 | 75  | 12 | 1          | ●     |
| UP210-SC4-16036 | 16 | 36 | 100 | 16 | 1          | ○     |
| UP210-SC4-20045 | 20 | 45 | 100 | 20 | 1          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P476

# UP210-S4A

4 Flutes, 45° Helix

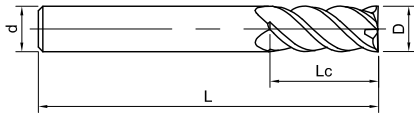


Fig1



Please refer to page 149

| Ordering Code   | D  | Lc | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|----|------------|-------|
| UP210-S4A-04011 | 4  | 11 | 50  | 4  | 1          | ●     |
| UP210-S4A-06016 | 6  | 16 | 50  | 6  | 1          | ●     |
| UP210-S4A-08020 | 8  | 20 | 60  | 8  | 1          | ●     |
| UP210-S4A-10025 | 10 | 25 | 75  | 10 | 1          | ●     |
| UP210-S4A-12030 | 12 | 30 | 75  | 12 | 1          | ●     |
| UP210-S4A-16036 | 16 | 36 | 100 | 16 | 1          | ○     |
| UP210-S4A-20045 | 20 | 45 | 100 | 20 | 1          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

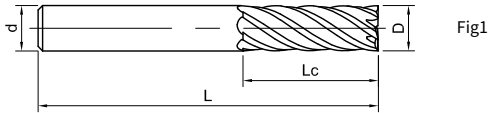
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P476

# UP210-S6

6 Flutes, Standard Length



Please refer to page 149

| Ordering Code  | D  | Lc | L   | d  | Figure No. | Stock |
|----------------|----|----|-----|----|------------|-------|
| UP210-S6-06015 | 6  | 15 | 50  | 6  | 1          | ●     |
| UP210-S6-08020 | 8  | 20 | 60  | 8  | 1          | ●     |
| UP210-S6-10025 | 10 | 25 | 75  | 10 | 1          | ●     |
| UP210-S6-12030 | 12 | 30 | 75  | 12 | 1          | ●     |
| UP210-S6-14032 | 14 | 32 | 100 | 14 | 1          | ○     |
| UP210-S6-16036 | 16 | 36 | 100 | 16 | 1          | ●     |
| UP210-S6-18040 | 18 | 40 | 100 | 18 | 1          | ○     |
| UP210-S6-20045 | 20 | 45 | 100 | 20 | 1          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

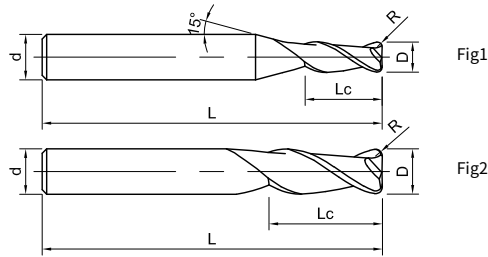
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P476

# UP210-R2

2 Flutes, Corner Radius



Please refer to page 149

| Ordering Code  | D   | Lc | R   | L  | d | Figure No. | Stock |
|----------------|-----|----|-----|----|---|------------|-------|
| UP210-R2-01002 | 1   | 3  | 0.2 | 50 | 4 | 1          | ●     |
| UP210-R2-01502 | 1.5 | 5  | 0.2 | 50 | 4 | 1          | ○     |
| UP210-R2-02002 | 2   | 6  | 0.2 | 50 | 4 | 1          | ●     |
| UP210-R2-03002 | 3   | 9  | 0.2 | 50 | 4 | 1          | ●     |
| UP210-R2-63002 | 3   | 9  | 0.2 | 50 | 6 | 1          | ●     |
| UP210-R2-63003 | 3   | 9  | 0.3 | 50 | 6 | 1          | ●     |
| UP210-R2-03005 | 3   | 9  | 0.5 | 50 | 4 | 1          | ●     |
| UP210-R2-63005 | 3   | 9  | 0.5 | 50 | 6 | 1          | ●     |
| UP210-R2-04002 | 4   | 11 | 0.2 | 50 | 4 | 2          | ○     |
| UP210-R2-64002 | 4   | 11 | 0.2 | 50 | 6 | 1          | ●     |
| UP210-R2-04003 | 4   | 11 | 0.3 | 50 | 4 | 2          | ●     |
| UP210-R2-64003 | 4   | 11 | 0.3 | 50 | 6 | 1          | ●     |
| UP210-R2-04005 | 4   | 11 | 0.5 | 50 | 4 | 2          | ●     |
| UP210-R2-64005 | 4   | 11 | 0.5 | 50 | 6 | 1          | ●     |
| UP210-R2-04010 | 4   | 11 | 1   | 50 | 4 | 2          | ●     |
| UP210-R2-05002 | 5   | 13 | 0.2 | 50 | 6 | 1          | ●     |
| UP210-R2-05003 | 5   | 13 | 0.3 | 50 | 6 | 1          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

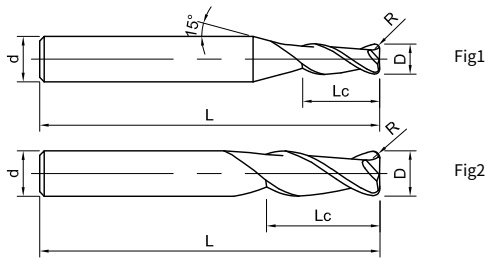
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P469

# UP210-R2

2 Flutes Corner Radius



Please refer to page 149

» Continuation

| Ordering Code  | D  | Lc | R   | L  | d  | Figure No. | Stock |
|----------------|----|----|-----|----|----|------------|-------|
| UP210-R2-05005 | 5  | 13 | 0.5 | 50 | 6  | 1          | ●     |
| UP210-R2-05010 | 5  | 13 | 1   | 50 | 6  | 1          | ●     |
| UP210-R2-06005 | 6  | 16 | 0.5 | 50 | 6  | 2          | ●     |
| UP210-R2-06010 | 6  | 16 | 1   | 50 | 6  | 2          | ●     |
| UP210-R2-06015 | 6  | 16 | 1.5 | 50 | 6  | 2          | ●     |
| UP210-R2-06020 | 6  | 16 | 2   | 50 | 6  | 2          | ●     |
| UP210-R2-08003 | 8  | 20 | 0.3 | 60 | 8  | 2          | ○     |
| UP210-R2-08005 | 8  | 20 | 0.5 | 60 | 8  | 2          | ●     |
| UP210-R2-08010 | 8  | 20 | 1   | 60 | 8  | 2          | ●     |
| UP210-R2-08015 | 8  | 20 | 1.5 | 60 | 8  | 2          | ●     |
| UP210-R2-08020 | 8  | 20 | 2   | 60 | 8  | 2          | ○     |
| UP210-R2-10003 | 10 | 25 | 0.3 | 75 | 10 | 2          | ○     |
| UP210-R2-10005 | 10 | 25 | 0.5 | 75 | 10 | 2          | ●     |
| UP210-R2-10010 | 10 | 25 | 1   | 75 | 10 | 2          | ●     |
| UP210-R2-10015 | 10 | 25 | 1.5 | 75 | 10 | 2          | ●     |
| UP210-R2-10020 | 10 | 25 | 2   | 75 | 10 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

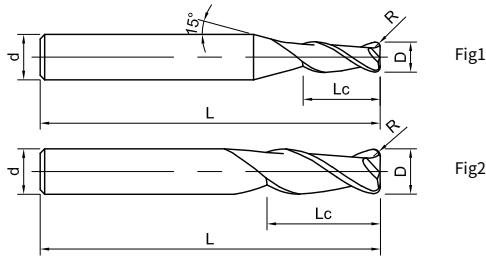
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ◎  | ◎                                      | ○               | ◎         |                     |               |          |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P469

# UP210-R2

2 Flutes Corner Radius



Please refer to page 149

» Continuation

| Ordering Code  | D  | Lc | R   | L   | d  | Figure No. | Stock |
|----------------|----|----|-----|-----|----|------------|-------|
| UP210-R2-10030 | 10 | 25 | 3   | 75  | 10 | 2          | ●     |
| UP210-R2-12005 | 12 | 30 | 0.5 | 75  | 12 | 2          | ●     |
| UP210-R2-12010 | 12 | 30 | 1   | 75  | 12 | 2          | ●     |
| UP210-R2-12015 | 12 | 30 | 1.5 | 75  | 12 | 2          | ●     |
| UP210-R2-12020 | 12 | 30 | 2   | 75  | 12 | 2          | ●     |
| UP210-R2-12030 | 12 | 30 | 3   | 75  | 12 | 2          | ●     |
| UP210-R2-14010 | 14 | 32 | 1   | 100 | 14 | 2          | ○     |
| UP210-R2-14020 | 14 | 32 | 2   | 100 | 14 | 2          | ○     |
| UP210-R2-16005 | 16 | 36 | 0.5 | 100 | 16 | 2          | ○     |
| UP210-R2-16010 | 16 | 36 | 1   | 100 | 16 | 2          | ●     |
| UP210-R2-16020 | 16 | 36 | 2   | 100 | 16 | 2          | ●     |
| UP210-R2-16030 | 16 | 36 | 3   | 100 | 16 | 2          | ●     |
| UP210-R2-18010 | 18 | 40 | 1   | 100 | 18 | 2          | ○     |
| UP210-R2-18020 | 18 | 40 | 2   | 100 | 18 | 2          | ○     |
| UP210-R2-20010 | 20 | 45 | 1   | 100 | 20 | 2          | ○     |
| UP210-R2-20020 | 20 | 45 | 2   | 100 | 20 | 2          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

## Workpiece Material

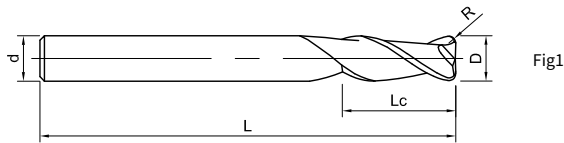
| P  |  | M               | K         | N                   |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ◎  | ◎                                      | ○               | ◎         |                     |               |          |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P469

# UP210-RH2

2 Flutes Corner Radius, with Long Shank Length



Please refer to page 149

| Ordering Code   | D  | Lc | R   | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|-----|----|------------|-------|
| UP210-RH2-04005 | 4  | 11 | 0.5 | 75  | 4  | 1          | ○     |
| UP210-RH2-06005 | 6  | 16 | 0.5 | 75  | 6  | 2          | ●     |
| UP210-RH2-06010 | 6  | 16 | 1   | 75  | 6  | 2          | ●     |
| UP210-RH2-06015 | 6  | 16 | 1.5 | 75  | 6  | 2          | ●     |
| UP210-RH2-08005 | 8  | 20 | 0.5 | 100 | 8  | 2          | ●     |
| UP210-RH2-08010 | 8  | 20 | 1   | 100 | 8  | 2          | ●     |
| UP210-RH2-08015 | 8  | 20 | 1.5 | 100 | 8  | 2          | ●     |
| UP210-RH2-10005 | 10 | 25 | 0.5 | 100 | 10 | 2          | ●     |
| UP210-RH2-10010 | 10 | 25 | 1   | 100 | 10 | 2          | ●     |
| UP210-RH2-10015 | 10 | 25 | 1.5 | 100 | 10 | 2          | ●     |
| UP210-RH2-10020 | 10 | 25 | 2   | 100 | 10 | 2          | ○     |
| UP210-RH2-12005 | 12 | 30 | 0.5 | 100 | 12 | 2          | ●     |
| UP210-RH2-12010 | 12 | 30 | 1   | 100 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

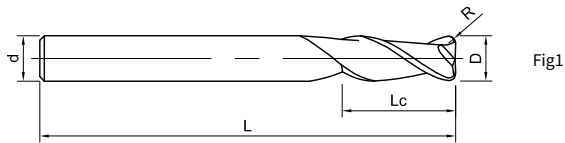
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P469

# UP210-RH2

2 Flutes Corner Radius, with Long Shank Length



Please refer to page 149

» Continuation

| Ordering Code   | D  | Lc | R   | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|-----|----|------------|-------|
| UP210-RH2-12015 | 12 | 30 | 1.5 | 100 | 12 | 2          | ●     |
| UP210-RH2-12020 | 12 | 30 | 2   | 100 | 12 | 2          | ●     |
| UP210-RH2-14010 | 14 | 36 | 1   | 150 | 14 | 2          | ○     |
| UP210-RH2-14020 | 14 | 36 | 2   | 150 | 14 | 2          | ○     |
| UP210-RH2-16005 | 16 | 36 | 0.5 | 150 | 16 | 2          | ●     |
| UP210-RH2-16010 | 16 | 36 | 1   | 150 | 16 | 2          | ●     |
| UP210-RH2-16015 | 16 | 36 | 1.5 | 150 | 16 | 2          | ●     |
| UP210-RH2-16020 | 16 | 36 | 2   | 150 | 16 | 2          | ●     |
| UP210-RH2-18010 | 18 | 45 | 1   | 150 | 18 | 2          | ○     |
| UP210-RH2-18020 | 18 | 45 | 2   | 150 | 18 | 2          | ○     |
| UP210-RH2-20010 | 20 | 45 | 1   | 150 | 20 | 2          | ○     |
| UP210-RH2-20020 | 20 | 45 | 2   | 150 | 20 | 2          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ◎  | ◎                                      | ○               | ◎         |                     |               |          |

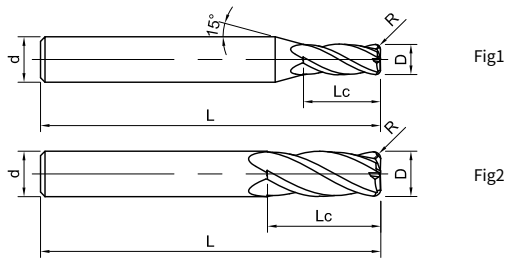
◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P469



# UP210-R4

4 Flutes Corner Radius



Please refer to page 149

| Ordering Code   | D   | Lc | R   | L  | d | Figure No. | Stock |
|-----------------|-----|----|-----|----|---|------------|-------|
| UP210-R4-01002  | 1   | 3  | 0.2 | 50 | 4 | 1          | ○     |
| UP210-R4-01502  | 1.5 | 5  | 0.2 | 50 | 4 | 1          | ●     |
| UP210-R4-02002  | 2   | 6  | 0.2 | 50 | 4 | 1          | ●     |
| UP210-R4-03002  | 3   | 9  | 0.2 | 50 | 4 | 1          | ●     |
| UP210-R4-03003  | 3   | 9  | 0.3 | 50 | 4 | 1          | ●     |
| UP210-R4-03005  | 3   | 9  | 0.5 | 50 | 4 | 1          | ●     |
| UP210-R4-04002  | 4   | 11 | 0.2 | 50 | 4 | 2          | ●     |
| UP210-R4-04003  | 4   | 11 | 0.3 | 50 | 4 | 2          | ●     |
| UP210-R4-04005  | 4   | 11 | 0.5 | 50 | 4 | 2          | ●     |
| UP210-R4-04010  | 4   | 11 | 1   | 50 | 4 | 2          | ●     |
| UP210-R4-04510  | 4.5 | 12 | 1   | 50 | 6 | 1          | ●     |
| UP210-R4-05002  | 5   | 13 | 0.2 | 50 | 6 | 1          | ●     |
| UP210-R4-05005  | 5   | 13 | 0.5 | 50 | 6 | 1          | ●     |
| UP210-R4-05010  | 5   | 13 | 1   | 50 | 6 | 1          | ●     |
| UP210-R4-05015  | 5   | 13 | 1.5 | 50 | 6 | 1          | ○     |
| UP210-R4-06002  | 6   | 16 | 0.2 | 50 | 6 | 2          | ●     |
| UP210-R4-06005  | 6   | 16 | 0.5 | 50 | 6 | 2          | ●     |
| UP210-R4-06005A | 6   | 16 | 0.5 | 60 | 6 | 2          | ●     |
| UP210-R4-06010  | 6   | 16 | 1   | 50 | 6 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                 |                                  |                 |           |                  |               |          |
|------------------------------------|----------------------------------|-----------------|-----------|------------------|---------------|----------|
| P                                  |                                  | M               | K         | N                |               |          |
| 1234                               | 5                                | 123             | 123       | 123              | 4             | 5        |
| Carbon Steel, Alloy Steel (<35HRC) | Alloy Steel, Tool Steel (<48HRC) | Stainless Steel | Cast Iron | Aluminium Alloys | Copper Alloys | Graphite |
| ○                                  | ○                                | ○               | ○         |                  |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P476

# UP210-R4

4 Flutes Corner Radius

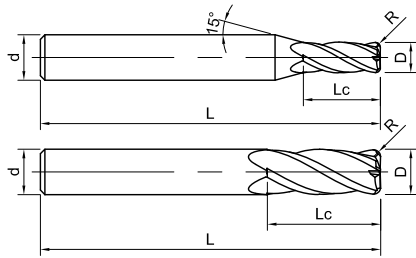


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code   | D  | Lc | R   | L  | d  | Figure No. | Stock |
|-----------------|----|----|-----|----|----|------------|-------|
| UP210-R4-06015  | 6  | 16 | 1.5 | 50 | 6  | 2          | ●     |
| UP210-R4-08003  | 8  | 20 | 0.3 | 60 | 8  | 2          | ●     |
| UP210-R4-08005  | 8  | 20 | 0.5 | 60 | 8  | 2          | ●     |
| UP210-R4-08005A | 8  | 20 | 0.5 | 75 | 8  | 2          | ●     |
| UP210-R4-08010  | 8  | 20 | 1   | 60 | 8  | 2          | ●     |
| UP210-R4-08010A | 8  | 20 | 1   | 75 | 8  | 2          | ●     |
| UP210-R4-08015  | 8  | 20 | 1.5 | 60 | 8  | 2          | ●     |
| UP210-R4-08020  | 8  | 20 | 2   | 60 | 8  | 2          | ●     |
| UP210-R4-10002  | 10 | 25 | 0.2 | 75 | 10 | 2          | ●     |
| UP210-R4-10003  | 10 | 25 | 0.3 | 75 | 10 | 2          | ●     |
| UP210-R4-10005  | 10 | 25 | 0.5 | 75 | 10 | 2          | ●     |
| UP210-R4-10010  | 10 | 25 | 1   | 75 | 10 | 2          | ●     |
| UP210-R4-10015  | 10 | 25 | 1.5 | 75 | 10 | 2          | ●     |
| UP210-R4-10020  | 10 | 25 | 2   | 75 | 10 | 2          | ●     |
| UP210-R4-10025  | 10 | 25 | 2.5 | 75 | 10 | 2          | ●     |
| UP210-R4-10030  | 10 | 25 | 3   | 75 | 10 | 2          | ○     |
| UP210-R4-12005  | 12 | 30 | 0.5 | 75 | 12 | 2          | ●     |
| UP210-R4-12010  | 12 | 30 | 1   | 75 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ◎  | ◎                                      | ○               | ◎         |                     |               |          |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P476

# UP210-R4

4 Flutes Corner Radius

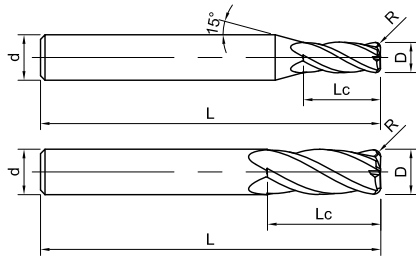


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code  | D  | Lc | R   | L   | d  | Figure No. | Stock |
|----------------|----|----|-----|-----|----|------------|-------|
| UP210-R4-12015 | 12 | 30 | 1.5 | 75  | 12 | 2          | ●     |
| UP210-R4-12020 | 12 | 30 | 2   | 75  | 12 | 2          | ●     |
| UP210-R4-12025 | 12 | 30 | 2.5 | 75  | 12 | 2          | ●     |
| UP210-R4-12030 | 12 | 30 | 3   | 75  | 12 | 2          | ●     |
| UP210-R4-14010 | 14 | 32 | 1   | 100 | 14 | 2          | ●     |
| UP210-R4-14020 | 14 | 32 | 2   | 100 | 14 | 2          | ●     |
| UP210-R4-16005 | 16 | 36 | 0.5 | 100 | 16 | 2          | ●     |
| UP210-R4-16010 | 16 | 36 | 1   | 100 | 16 | 2          | ●     |
| UP210-R4-16020 | 16 | 36 | 2   | 100 | 16 | 2          | ●     |
| UP210-R4-16030 | 16 | 36 | 3   | 100 | 16 | 2          | ●     |
| UP210-R4-18010 | 18 | 40 | 1   | 100 | 18 | 2          | ○     |
| UP210-R4-18020 | 18 | 40 | 2   | 100 | 18 | 2          | ○     |
| UP210-R4-20010 | 20 | 45 | 1   | 100 | 20 | 2          | ●     |
| UP210-R4-20020 | 20 | 45 | 2   | 100 | 20 | 2          | ●     |
| UP210-R4-20030 | 20 | 45 | 3   | 100 | 20 | 2          | ●     |
| UP210-R4-20040 | 20 | 45 | 4   | 100 | 20 | 2          | ●     |
| UP210-R4-20050 | 20 | 45 | 5   | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

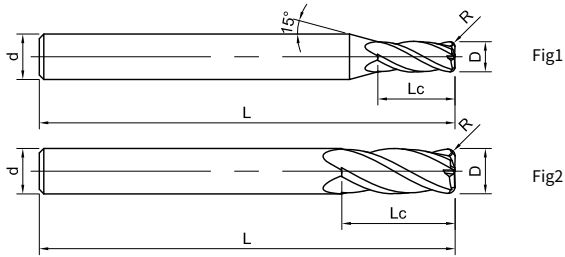
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P476

# UP210-RH4

4 Flutes Corner Radius, with Long Shank Length



Please refer to page 149

| Ordering Code    | D  | Lc | R   | L   | d  | Figure No. | Stock |
|------------------|----|----|-----|-----|----|------------|-------|
| UP210-RH4-03005  | 3  | 9  | 0.5 | 75  | 4  | 1          | ○     |
| UP210-RH4-04005  | 4  | 11 | 0.5 | 75  | 4  | 2          | ●     |
| UP210-RH4-06005  | 6  | 16 | 0.5 | 75  | 6  | 2          | ●     |
| UP210-RH4-06005A | 6  | 20 | 0.5 | 100 | 6  | 2          | ●     |
| UP210-RH4-06010  | 6  | 16 | 1   | 75  | 6  | 2          | ●     |
| UP210-RH4-06010A | 6  | 16 | 1   | 100 | 6  | 2          | ●     |
| UP210-RH4-06015  | 6  | 16 | 1.5 | 75  | 6  | 2          | ○     |
| UP210-RH4-08005  | 8  | 20 | 0.5 | 100 | 8  | 2          | ●     |
| UP210-RH4-08010  | 8  | 20 | 1   | 100 | 8  | 2          | ●     |
| UP210-RH4-08015  | 8  | 20 | 1.5 | 100 | 8  | 2          | ●     |
| UP210-RH4-08020  | 8  | 20 | 2   | 100 | 8  | 2          | ●     |
| UP210-RH4-10005  | 10 | 25 | 0.5 | 100 | 10 | 2          | ●     |
| UP210-RH4-10010  | 10 | 25 | 1   | 100 | 10 | 2          | ●     |
| UP210-RH4-10015  | 10 | 25 | 1.5 | 100 | 10 | 2          | ●     |
| UP210-RH4-10020  | 10 | 25 | 2   | 100 | 10 | 2          | ●     |
| UP210-RH4-12005  | 12 | 30 | 0.5 | 100 | 12 | 2          | ●     |
| UP210-RH4-12010  | 12 | 30 | 1   | 100 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

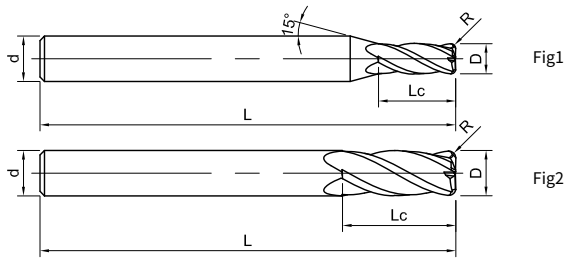
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P476

# UP210-RH4

4 Flutes Corner Radius, with Long Shank Length



Please refer to page 149

» Continuation

| Ordering Code   | D  | Lc | R   | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|-----|----|------------|-------|
| UP210-RH4-12015 | 12 | 30 | 1.5 | 100 | 12 | 2          | ●     |
| UP210-RH4-12020 | 12 | 30 | 2   | 100 | 12 | 2          | ●     |
| UP210-RH4-12030 | 12 | 30 | 3   | 100 | 12 | 2          | ●     |
| UP210-RH4-14010 | 14 | 36 | 1   | 150 | 14 | 2          | ○     |
| UP210-RH4-14020 | 14 | 36 | 2   | 150 | 14 | 2          | ○     |
| UP210-RH4-16005 | 16 | 36 | 0.5 | 150 | 16 | 2          | ○     |
| UP210-RH4-16010 | 16 | 36 | 1   | 150 | 16 | 2          | ●     |
| UP210-RH4-16015 | 16 | 36 | 1.5 | 150 | 16 | 2          | ○     |
| UP210-RH4-16020 | 16 | 36 | 2   | 150 | 16 | 2          | ○     |
| UP210-RH4-16030 | 16 | 36 | 3   | 150 | 16 | 2          | ○     |
| UP210-RH4-18010 | 18 | 45 | 1   | 150 | 18 | 2          | ○     |
| UP210-RH4-18020 | 18 | 45 | 2   | 150 | 18 | 2          | ○     |
| UP210-RH4-20010 | 20 | 45 | 1   | 150 | 20 | 2          | ○     |
| UP210-RH4-20020 | 20 | 45 | 2   | 150 | 20 | 2          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

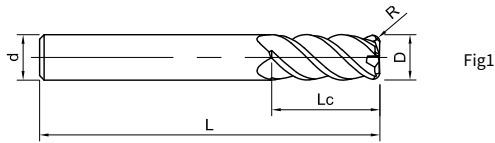
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P476

# UP210-R4A

4 Flutes, Corner Radius-45°Helix



Please refer to page 149

| Ordering Code   | D  | Lc | R   | L  | d  | Figure No. | Stock |
|-----------------|----|----|-----|----|----|------------|-------|
| UP210-R4A-04005 | 4  | 11 | 0.5 | 50 | 4  | 1          | ●     |
| UP210-R4A-04010 | 4  | 11 | 1   | 50 | 4  | 1          | ●     |
| UP210-R4A-06005 | 6  | 16 | 0.5 | 50 | 6  | 1          | ●     |
| UP210-R4A-06010 | 6  | 16 | 1   | 50 | 6  | 1          | ●     |
| UP210-R4A-06015 | 6  | 16 | 1.5 | 50 | 6  | 1          | ○     |
| UP210-R4A-08003 | 8  | 20 | 0.3 | 60 | 8  | 1          | ●     |
| UP210-R4A-08005 | 8  | 20 | 0.5 | 60 | 8  | 1          | ●     |
| UP210-R4A-08010 | 8  | 20 | 1   | 60 | 8  | 1          | ●     |
| UP210-R4A-08015 | 8  | 20 | 1.5 | 60 | 8  | 1          | ○     |
| UP210-R4A-08020 | 8  | 20 | 2   | 60 | 8  | 1          | ○     |
| UP210-R4A-10002 | 10 | 25 | 0.2 | 75 | 10 | 1          | ●     |
| UP210-R4A-10005 | 10 | 25 | 0.5 | 75 | 10 | 1          | ●     |
| UP210-R4A-10010 | 10 | 25 | 1   | 75 | 10 | 1          | ●     |
| UP210-R4A-10015 | 10 | 25 | 1.5 | 75 | 10 | 1          | ○     |
| UP210-R4A-10020 | 10 | 25 | 2   | 75 | 10 | 1          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P476

# UP210-R4A

4 Flutes, Corner Radius-45°Helix

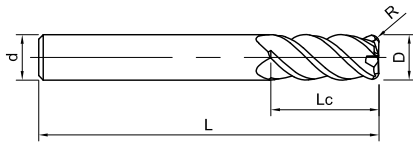


Fig1



Please refer to page 149

» Continuation

| Ordering Code   | D  | Lc | R   | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|-----|----|------------|-------|
| UP210-R4A-10025 | 10 | 25 | 2.5 | 75  | 10 | 2          | ○     |
| UP210-R4A-10030 | 10 | 25 | 3   | 75  | 10 | 2          | ○     |
| UP210-R4A-12005 | 12 | 30 | 0.5 | 75  | 12 | 2          | ●     |
| UP210-R4A-12010 | 12 | 30 | 1   | 75  | 12 | 2          | ●     |
| UP210-R4A-12015 | 12 | 30 | 1.5 | 75  | 12 | 2          | ○     |
| UP210-R4A-12020 | 12 | 30 | 2   | 75  | 12 | 2          | ○     |
| UP210-R4A-12025 | 12 | 30 | 2.5 | 75  | 12 | 2          | ○     |
| UP210-R4A-12030 | 12 | 30 | 3   | 75  | 12 | 2          | ○     |
| UP210-R4A-16005 | 16 | 36 | 0.5 | 100 | 16 | 2          | ○     |
| UP210-R4A-16010 | 16 | 36 | 1   | 100 | 16 | 2          | ○     |
| UP210-R4A-16020 | 16 | 36 | 2   | 100 | 16 | 2          | ○     |
| UP210-R4A-16030 | 16 | 36 | 3   | 100 | 16 | 2          | ○     |
| UP210-R4A-20010 | 20 | 45 | 1   | 100 | 20 | 2          | ○     |
| UP210-R4A-20020 | 20 | 45 | 2   | 100 | 20 | 2          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P476

# UP210-B2

2 Flutes, Ballnose

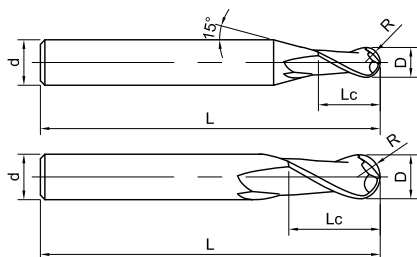


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D   | R    | Lc  | L  | d | Figure No. | Stock |
|----------------|-----|------|-----|----|---|------------|-------|
| UP210-B2-00801 | 0.8 | 0.4  | 1.6 | 50 | 4 | 1          | ●     |
| UP210-B2-00901 | 0.9 | 0.45 | 1.8 | 50 | 4 | 1          | ●     |
| UP210-B2-01002 | 1   | 0.5  | 2   | 50 | 4 | 1          | ●     |
| UP210-B2-61002 | 1   | 0.5  | 2   | 50 | 6 | 1          | ●     |
| UP210-B2-01503 | 1.5 | 0.75 | 3   | 50 | 4 | 1          | ●     |
| UP210-B2-61503 | 1.5 | 0.75 | 3   | 50 | 6 | 1          | ●     |
| UP210-B2-02004 | 2   | 1    | 4   | 50 | 4 | 1          | ●     |
| UP210-B2-62004 | 2   | 1    | 4   | 50 | 6 | 1          | ●     |
| UP210-B2-02505 | 2.5 | 1.25 | 5   | 50 | 4 | 1          | ●     |
| UP210-B2-03006 | 3   | 1.5  | 6   | 50 | 4 | 1          | ●     |
| UP210-B2-63006 | 3   | 1.5  | 6   | 50 | 6 | 1          | ●     |
| UP210-B2-04008 | 4   | 2    | 8   | 50 | 4 | 2          | ●     |
| UP210-B2-64008 | 4   | 2    | 8   | 50 | 6 | 1          | ●     |
| UP210-B2-05010 | 5   | 2.5  | 10  | 50 | 6 | 1          | ●     |

● Stock ○ Available upon Order

| R           | Tol         |
|-------------|-------------|
| R ≤ 1.5     | 0<br>-0.01  |
| 1.5 < R < 3 | 0<br>-0.015 |
| R ≥ 12      | 0<br>-0.02  |

Unit (mm)

| Workpiece Material                 |                                  |                 |           |                  |               |          |
|------------------------------------|----------------------------------|-----------------|-----------|------------------|---------------|----------|
| P                                  |                                  | M               | K         | N                |               |          |
| 1234                               | 5                                | 123             | 123       | 123              | 4             | 5        |
| Carbon Steel, Alloy Steel (<35HRC) | Alloy Steel, Tool Steel (<48HRC) | Stainless Steel | Cast Iron | Aluminium Alloys | Copper Alloys | Graphite |
| ○                                  | ○                                | ○               | ○         |                  |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P478



# UP210-B2

2 Flutes, Ballnose

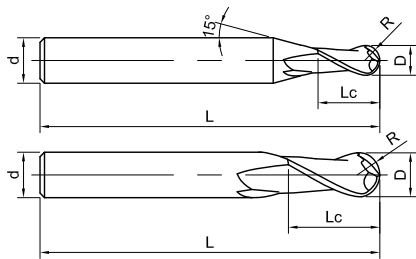


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code   | D   | R    | Lc | L   | d  | Figure No. | Stock |
|-----------------|-----|------|----|-----|----|------------|-------|
| UP210-B2-05510  | 5.5 | 2.75 | 10 | 50  | 6  | 1          | ○     |
| UP210-B2-06012  | 6   | 3    | 12 | 50  | 6  | 2          | ●     |
| UP210-B2-06012A | 6   | 3    | 12 | 60  | 6  | 2          | ●     |
| UP210-B2-07014  | 7   | 3.5  | 14 | 60  | 8  | 1          | ●     |
| UP210-B2-08014  | 8   | 4    | 14 | 60  | 8  | 2          | ●     |
| UP210-B2-09016  | 9   | 4.5  | 16 | 75  | 10 | 1          | ●     |
| UP210-B2-10018  | 10  | 5    | 18 | 75  | 10 | 2          | ●     |
| UP210-B2-11020  | 11  | 5.5  | 20 | 75  | 12 | 1          | ●     |
| UP210-B2-12022  | 12  | 6    | 22 | 75  | 12 | 2          | ●     |
| UP210-B2-13026  | 13  | 6.5  | 26 | 90  | 14 | 1          | ○     |
| UP210-B2-14026  | 14  | 7    | 26 | 90  | 14 | 2          | ●     |
| UP210-B2-15030  | 15  | 7.5  | 30 | 100 | 16 | 1          | ●     |
| UP210-B2-16030  | 16  | 8    | 30 | 100 | 16 | 2          | ●     |
| UP210-B2-18034  | 18  | 9    | 34 | 100 | 18 | 2          | ○     |
| UP210-B2-20038  | 20  | 10   | 38 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| R           | Tol         |
|-------------|-------------|
| R ≤ 1.5     | 0<br>-0.01  |
| 1.5 < R < 3 | 0<br>-0.015 |
| R ≥ 3       | 0<br>-0.02  |

Unit (mm)

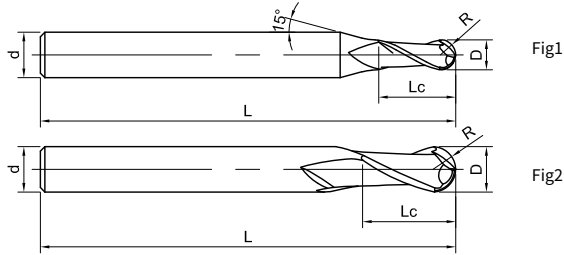
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P478

# UP210-BH2

2 Flutes Ballnose, with Long Shank Length



Please refer to page 149

| Ordering Code    | D   | R    | Lc | L   | d  | Figure No. | Stock |
|------------------|-----|------|----|-----|----|------------|-------|
| UP210-BH2-61002  | 1   | 0.5  | 2  | 75  | 6  | 1          | ●     |
| UP210-BH2-61503  | 1.5 | 0.75 | 3  | 75  | 6  | 1          | ●     |
| UP210-BH2-02004  | 2   | 1    | 4  | 75  | 4  | 1          | ●     |
| UP210-BH2-62004  | 2   | 1    | 4  | 75  | 6  | 1          | ●     |
| UP210-BH2-03006  | 3   | 1.5  | 6  | 75  | 4  | 1          | ●     |
| UP210-BH2-63006  | 3   | 1.5  | 6  | 75  | 6  | 1          | ●     |
| UP210-BH2-04008  | 4   | 2    | 8  | 75  | 4  | 2          | ●     |
| UP210-BH2-64008  | 4   | 2    | 8  | 75  | 6  | 1          | ●     |
| UP210-BH2-05010  | 5   | 2.5  | 10 | 75  | 6  | 1          | ●     |
| UP210-BH2-06012  | 6   | 3    | 12 | 75  | 6  | 2          | ●     |
| UP210-BH2-06012A | 6   | 3    | 12 | 100 | 6  | 2          | ○     |
| UP210-BH2-07014  | 7   | 3.5  | 14 | 100 | 8  | 1          | ○     |
| UP210-BH2-08014  | 8   | 4    | 14 | 100 | 8  | 2          | ●     |
| UP210-BH2-09016  | 9   | 4.5  | 16 | 100 | 10 | 1          | ○     |
| UP210-BH2-10018  | 10  | 5    | 18 | 100 | 10 | 2          | ●     |

● Stock ○ Available upon Order

| R             | Tol                                       |
|---------------|---|
| $R \leq 1.5$  | $\begin{matrix} 0 \\ -0.01 \end{matrix}$  |
| $1.5 < R < 3$ | $\begin{matrix} 0 \\ -0.015 \end{matrix}$ |
| $R \geq 3$    | $\begin{matrix} 0 \\ -0.02 \end{matrix}$  |

Unit (mm)

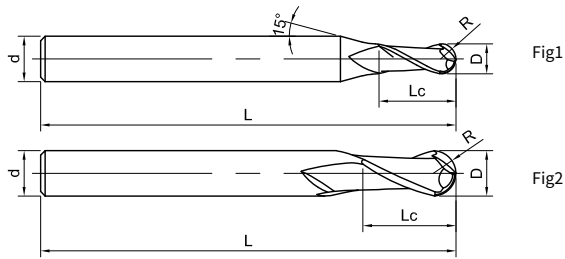
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P478

# UP210-BH2

2 Flutes Ballnose, with Long Shank Length



Please refer to page 149

» Continuation

| Ordering Code    | D  | R   | Lc | L   | d  | Figure No. | Stock |
|------------------|----|-----|----|-----|----|------------|-------|
| UP210-BH2-10018A | 10 | 5   | 18 | 150 | 10 | 2          | ●     |
| UP210-BH2-11020  | 11 | 5.5 | 20 | 100 | 12 | 1          | ○     |
| UP210-BH2-10018A | 10 | 5   | 18 | 150 | 10 | 2          | ●     |
| UP210-BH2-12022  | 12 | 6   | 22 | 100 | 12 | 2          | ●     |
| UP210-BH2-12022A | 12 | 6   | 22 | 150 | 12 | 2          | ●     |
| UP210-BH2-14026  | 14 | 7   | 26 | 150 | 14 | 2          | ○     |
| UP210-BH2-16030  | 16 | 8   | 30 | 150 | 16 | 2          | ●     |
| UP210-BH2-18034  | 18 | 9   | 34 | 150 | 18 | 2          | ○     |
| UP210-BH2-20038  | 20 | 10  | 38 | 150 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| R             | Tol                                       |
|---------------|---|
| $R \leq 1.5$  | $\begin{matrix} 0 \\ -0.01 \end{matrix}$  |
| $1.5 < R < 3$ | $\begin{matrix} 0 \\ -0.015 \end{matrix}$ |
| $R \geq 3$    | $\begin{matrix} 0 \\ -0.02 \end{matrix}$  |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P478

# UP210-B4

4 Flutes, Ballnose

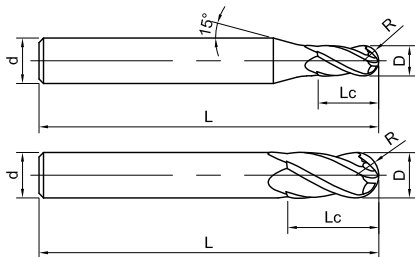


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D   | R    | Lc | L   | d  | Figure No. | Stock |
|----------------|-----|------|----|-----|----|------------|-------|
| UP210-B4-02004 | 2   | 1    | 4  | 50  | 4  | 1          | ●     |
| UP210-B4-62004 | 2   | 1    | 4  | 50  | 6  | 1          | ●     |
| UP210-B4-02505 | 2.5 | 1.25 | 5  | 50  | 4  | 1          | ○     |
| UP210-B4-03006 | 3   | 1.5  | 6  | 50  | 4  | 1          | ●     |
| UP210-B4-63006 | 3   | 1.5  | 6  | 50  | 6  | 1          | ●     |
| UP210-B4-04008 | 4   | 2    | 8  | 50  | 4  | 2          | ●     |
| UP210-B4-64008 | 4   | 2    | 8  | 50  | 6  | 1          | ●     |
| UP210-B4-05010 | 5   | 2.5  | 10 | 50  | 6  | 1          | ●     |
| UP210-B4-06012 | 6   | 3    | 12 | 50  | 6  | 2          | ●     |
| UP210-B4-07014 | 7   | 3.5  | 14 | 60  | 8  | 1          | ●     |
| UP210-B4-08014 | 8   | 4    | 14 | 60  | 8  | 2          | ●     |
| UP210-B4-09016 | 9   | 4.5  | 16 | 75  | 10 | 1          | ○     |
| UP210-B4-10018 | 10  | 5    | 18 | 75  | 10 | 2          | ●     |
| UP210-B4-11020 | 11  | 5.5  | 20 | 75  | 12 | 1          | ●     |
| UP210-B4-12022 | 12  | 6    | 22 | 75  | 12 | 2          | ●     |
| UP210-B4-14024 | 14  | 7    | 24 | 75  | 14 | 2          | ●     |
| UP210-B4-16030 | 16  | 8    | 30 | 100 | 16 | 2          | ●     |
| UP210-B4-18034 | 18  | 9    | 34 | 100 | 18 | 2          | ○     |
| UP210-B4-20038 | 20  | 10   | 38 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| R           | Tol         |
|-------------|-------------|
| R ≤ 1.5     | 0<br>-0.01  |
| 1.5 < R < 3 | 0<br>-0.015 |
| R ≥ 3       | 0<br>-0.02  |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P478

# UP210-L60

4 Flutes, 60° Chamfer Endmills

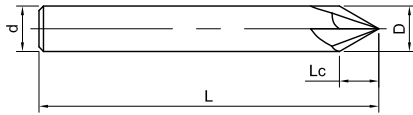


Fig1



Please refer to page 149

| Ordering Code   | D  | Lc   | L   | d  | Figure No. | Stock |
|-----------------|----|------|-----|----|------------|-------|
| UP210-L60-04060 | 4  | 3.5  | 50  | 4  | 1          | ●     |
| UP210-L60-06060 | 6  | 5.2  | 50  | 6  | 1          | ●     |
| UP210-L60-08060 | 8  | 7    | 60  | 8  | 1          | ●     |
| UP210-L60-10060 | 10 | 8.7  | 75  | 10 | 1          | ●     |
| UP210-L60-12060 | 12 | 10.4 | 75  | 12 | 1          | ●     |
| UP210-L60-16060 | 16 | 13.9 | 100 | 16 | 1          | ●     |
| UP210-L60-20060 | 20 | 17.4 | 100 | 20 | 1          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         | ○                   | ○             |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P479

# UP210-L90

4 Flutes, 90° Chamfer Endmills

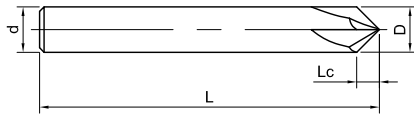


Fig1



Please refer to page 149

| Ordering Code   | D  | Lc | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|----|------------|-------|
| UP210-L90-04090 | 4  | 2  | 50  | 4  | 1          | ●     |
| UP210-L90-06090 | 6  | 3  | 50  | 6  | 1          | ●     |
| UP210-L90-08090 | 8  | 4  | 60  | 8  | 1          | ●     |
| UP210-L90-10090 | 10 | 5  | 75  | 10 | 1          | ●     |
| UP210-L90-12090 | 12 | 6  | 75  | 12 | 1          | ●     |
| UP210-L90-16090 | 16 | 8  | 100 | 16 | 1          | ●     |
| UP210-L90-20090 | 20 | 10 | 100 | 20 | 1          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         | ○                   | ○             |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P479

# UP210-L120

4 Flutes, 120° Chamfer Endmills

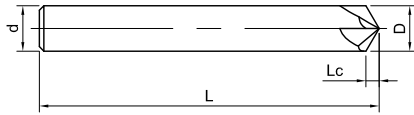


Fig1



Please refer to page 149

| Ordering Code    | D  | Lc  | L   | d  | Figure No. | Stock |
|------------------|----|-----|-----|----|------------|-------|
| UP210-L120-04120 | 4  | 1.2 | 50  | 4  | 1          | ●     |
| UP210-L120-06120 | 6  | 1.8 | 50  | 6  | 1          | ●     |
| UP210-L120-08120 | 8  | 2.4 | 60  | 8  | 1          | ●     |
| UP210-L120-10120 | 10 | 2.9 | 75  | 10 | 1          | ●     |
| UP210-L120-12120 | 12 | 3.5 | 75  | 12 | 1          | ●     |
| UP210-L120-16120 | 16 | 4.6 | 100 | 16 | 1          | ●     |
| UP210-L120-20120 | 20 | 5.8 | 100 | 20 | 1          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

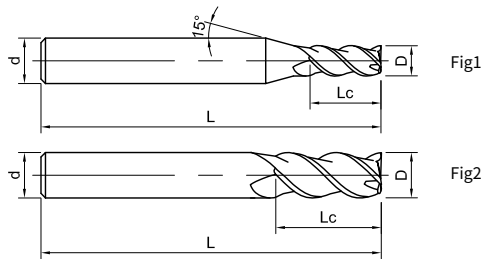
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         | ○                   | ○             |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P479

# SP210-S3

3 Flutes, with Variable Helix



Please refer to page 149

| Ordering Code  | D   | Lc | L   | d  | Figure No. | Stock |
|----------------|-----|----|-----|----|------------|-------|
| SP210-S3-02508 | 2.5 | 8  | 50  | 4  | 1          | ●     |
| SP210-S3-03009 | 3   | 9  | 50  | 4  | 1          | ●     |
| SP210-S3-04011 | 4   | 11 | 50  | 4  | 2          | ●     |
| SP210-S3-05013 | 5   | 13 | 50  | 6  | 1          | ●     |
| SP210-S3-06016 | 6   | 16 | 50  | 6  | 2          | ●     |
| SP210-S3-08020 | 8   | 20 | 60  | 8  | 2          | ●     |
| SP210-S3-09025 | 9   | 25 | 75  | 10 | 1          | ●     |
| SP210-S3-10025 | 10  | 25 | 75  | 10 | 2          | ●     |
| SP210-S3-12030 | 12  | 30 | 75  | 12 | 2          | ●     |
| SP210-S3-16036 | 16  | 36 | 100 | 16 | 2          | ●     |
| SP210-S3-20045 | 20  | 45 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

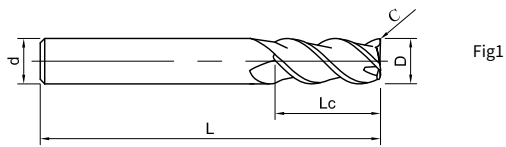
○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P479



# SP210-C3

3 Flutes, Variable Helix with Chamfer



Please refer to page 149

| Ordering Code  | D  | Lc | C   | L   | d  | Figure No. | Stock |
|----------------|----|----|-----|-----|----|------------|-------|
| SP210-C3-06020 | 6  | 16 | 0.2 | 50  | 6  | 1          | ●     |
| SP210-C3-08020 | 8  | 20 | 0.2 | 60  | 8  | 1          | ●     |
| SP210-C3-10030 | 10 | 25 | 0.3 | 75  | 10 | 1          | ●     |
| SP210-C3-12030 | 12 | 30 | 0.3 | 75  | 12 | 1          | ●     |
| SP210-C3-16030 | 16 | 36 | 0.3 | 100 | 16 | 1          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P479

# SP210-S4

4 Flutes, with Variable Helix

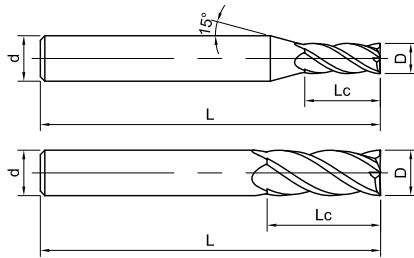


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D   | Lc | L   | d  | Figure No. | Stock |
|----------------|-----|----|-----|----|------------|-------|
| SP210-S4-02006 | 2   | 6  | 50  | 4  | 1          | ●     |
| SP210-S4-62006 | 2   | 6  | 50  | 6  | 1          | ○     |
| SP210-S4-02508 | 2.5 | 8  | 50  | 4  | 1          | ●     |
| SP210-S4-03009 | 3   | 9  | 50  | 4  | 1          | ●     |
| SP210-S4-63009 | 3   | 9  | 50  | 6  | 1          | ●     |
| SP210-S4-04011 | 4   | 11 | 50  | 4  | 2          | ●     |
| SP210-S4-64011 | 4   | 11 | 50  | 6  | 1          | ○     |
| SP210-S4-05013 | 5   | 13 | 50  | 6  | 1          | ●     |
| SP210-S4-05516 | 5.5 | 16 | 50  | 6  | 1          | ○     |
| SP210-S4-06016 | 6   | 16 | 50  | 6  | 2          | ●     |
| SP210-S4-07020 | 7   | 20 | 60  | 8  | 1          | ●     |
| SP210-S4-08020 | 8   | 20 | 60  | 8  | 2          | ●     |
| SP210-S4-08025 | 8   | 25 | 60  | 8  | 2          | ●     |
| SP210-S4-10025 | 10  | 25 | 75  | 10 | 2          | ●     |
| SP210-S4-12030 | 12  | 30 | 75  | 12 | 2          | ●     |
| SP210-S4-14034 | 14  | 34 | 100 | 14 | 2          | ○     |
| SP210-S4-16036 | 16  | 36 | 100 | 16 | 2          | ●     |
| SP210-S4-20045 | 20  | 45 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

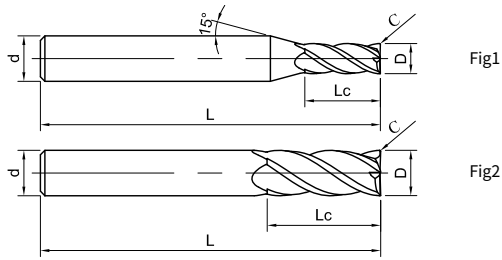
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P480

# SP210-C4

4 Flutes, Variable Helix with Chamfer and with Reduced Neck



Please refer to page 149

| Ordering Code  | D  | Lc | C    | L  | d  | Figure No. | Stock |
|----------------|----|----|------|----|----|------------|-------|
| SP210-C4-03003 | 3  | 9  | 0.03 | 50 | 4  | 1          | ●     |
| SP210-C4-03013 | 3  | 9  | 0.13 | 50 | 4  | 1          | ●     |
| SP210-C4-63008 | 3  | 8  | 0.15 | 57 | 6  | 1          | ●     |
| SP210-C4-64011 | 4  | 11 | 0.18 | 57 | 6  | 1          | ●     |
| SP210-C4-04004 | 4  | 11 | 0.04 | 50 | 4  | 2          | ●     |
| SP210-C4-04018 | 4  | 11 | 0.18 | 50 | 4  | 2          | ●     |
| SP210-C4-05005 | 5  | 13 | 0.05 | 50 | 6  | 1          | ●     |
| SP210-C4-05013 | 5  | 13 | 0.15 | 57 | 6  | 1          | ●     |
| SP210-C4-05020 | 5  | 13 | 0.2  | 50 | 6  | 1          | ●     |
| SP210-C4-06006 | 6  | 16 | 0.06 | 50 | 6  | 2          | ●     |
| SP210-C4-06013 | 6  | 13 | 0.2  | 57 | 6  | 2          | ○     |
| SP210-C4-06020 | 6  | 16 | 0.2  | 50 | 6  | 2          | ●     |
| SP210-C4-06040 | 6  | 16 | 0.4  | 50 | 6  | 2          | ●     |
| SP210-C4-08008 | 8  | 20 | 0.08 | 60 | 8  | 2          | ●     |
| SP210-C4-08019 | 8  | 19 | 0.2  | 63 | 8  | 2          | ○     |
| SP210-C4-08020 | 8  | 20 | 0.2  | 60 | 8  | 2          | ●     |
| SP210-C4-10010 | 10 | 25 | 0.1  | 75 | 10 | 2          | ●     |
| SP210-C4-10022 | 10 | 22 | 0.3  | 72 | 10 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

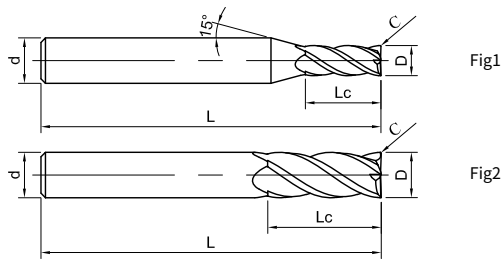
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P480

# SP210-C4

4 Flutes, Variable Helix with Chamfer and with Reduced Neck



Please refer to page 149

» Continuation

| Ordering Code  | D  | Lc | C    | L   | d  | Figure No. | Stock |
|----------------|----|----|------|-----|----|------------|-------|
| SP210-C4-10030 | 10 | 25 | 0.3  | 75  | 10 | 2          | ●     |
| SP210-C4-12012 | 12 | 30 | 0.12 | 75  | 12 | 2          | ●     |
| SP210-C4-12026 | 12 | 26 | 0.3  | 83  | 12 | 2          | ○     |
| SP210-C4-12030 | 12 | 30 | 0.3  | 75  | 12 | 2          | ●     |
| SP210-C4-16015 | 16 | 36 | 0.15 | 100 | 16 | 2          | ●     |
| SP210-C4-16040 | 16 | 36 | 0.4  | 100 | 16 | 2          | ○     |
| SP210-C4-18015 | 18 | 45 | 0.15 | 100 | 18 | 2          | ●     |
| SP210-C4-20015 | 20 | 45 | 0.15 | 100 | 20 | 2          | ●     |
| SP210-C4-20050 | 20 | 45 | 0.5  | 100 | 20 | 2          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

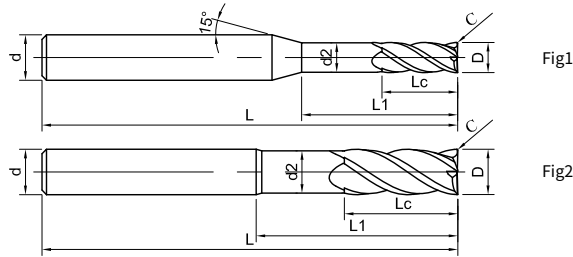
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P480

# SP210-CN4

4 Flutes, Variable Helix with Chamfer and with Reduced Neck



Please refer to page 149

| Ordering Code   | D  | Lc | C    | d2  | L1 | L   | d  | Figure No. | Stock |
|-----------------|----|----|------|-----|----|-----|----|------------|-------|
| SP210-CN4-03013 | 3  | 10 | 0.13 | 2.9 | 18 | 75  | 4  | 1          | ○     |
| SP210-CN4-04018 | 4  | 12 | 0.18 | 3.8 | 20 | 75  | 4  | 2          | ●     |
| SP210-CN4-05020 | 5  | 15 | 0.2  | 4.8 | 35 | 75  | 6  | 1          | ○     |
| SP210-CN4-06020 | 6  | 16 | 0.2  | 5.8 | 24 | 100 | 6  | 2          | ●     |
| SP210-CN4-08020 | 8  | 20 | 0.2  | 7.5 | 30 | 100 | 8  | 2          | ●     |
| SP210-CN4-10030 | 10 | 25 | 0.3  | 9.5 | 40 | 150 | 10 | 2          | ●     |
| SP210-CN4-12030 | 12 | 30 | 0.3  | 11  | 40 | 150 | 12 | 2          | ●     |
| SP210-CN4-16040 | 16 | 36 | 0.4  | 15  | 50 | 150 | 16 | 2          | ○     |
| SP210-CN4-20050 | 20 | 45 | 0.5  | 19  | 60 | 150 | 20 | 2          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P480

# SP210-R4

4 Flutes, with Variable Helix

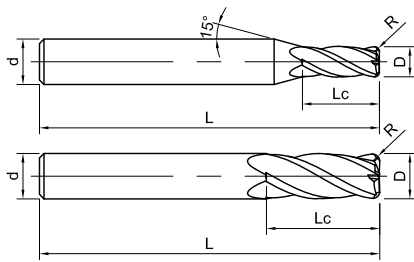
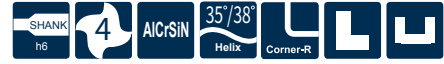


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D | Lc | R   | L  | d | Figure No. | Stock |
|----------------|---|----|-----|----|---|------------|-------|
| SP210-R4-02005 | 2 | 6  | 0.5 | 50 | 4 | 1          | ●     |
| SP210-R4-03002 | 3 | 9  | 0.2 | 50 | 4 | 1          | ●     |
| SP210-R4-03003 | 3 | 9  | 0.3 | 50 | 4 | 1          | ●     |
| SP210-R4-03005 | 3 | 9  | 0.5 | 50 | 4 | 1          | ●     |
| SP210-R4-04003 | 4 | 11 | 0.3 | 50 | 4 | 2          | ●     |
| SP210-R4-04005 | 4 | 11 | 0.5 | 50 | 4 | 2          | ●     |
| SP210-R4-04010 | 4 | 11 | 1   | 50 | 4 | 2          | ●     |
| SP210-R4-05003 | 5 | 13 | 0.3 | 50 | 6 | 1          | ○     |
| SP210-R4-05005 | 5 | 13 | 0.5 | 50 | 6 | 1          | ●     |
| SP210-R4-05010 | 5 | 13 | 1   | 50 | 6 | 1          | ●     |
| SP210-R4-06003 | 6 | 16 | 0.3 | 50 | 6 | 2          | ●     |
| SP210-R4-06005 | 6 | 16 | 0.5 | 50 | 6 | 2          | ●     |
| SP210-R4-06010 | 6 | 16 | 1   | 50 | 6 | 2          | ●     |
| SP210-R4-06015 | 6 | 16 | 1.5 | 50 | 6 | 2          | ●     |
| SP210-R4-06020 | 6 | 16 | 2   | 50 | 6 | 2          | ●     |
| SP210-R4-08005 | 8 | 20 | 0.5 | 60 | 8 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P480

# SP210-R4

4 Flutes, with Variable Helix

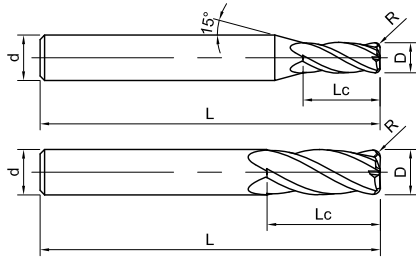


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code  | D  | Lc | R   | L   | d  | Figure No. | Stock |
|----------------|----|----|-----|-----|----|------------|-------|
| SP210-R4-08010 | 8  | 20 | 1.0 | 60  | 8  | 2          | ●     |
| SP210-R4-08015 | 8  | 20 | 1.5 | 60  | 8  | 2          | ●     |
| SP210-R4-08020 | 8  | 20 | 2   | 60  | 8  | 2          | ●     |
| SP210-R4-10005 | 10 | 25 | 0.5 | 75  | 10 | 2          | ●     |
| SP210-R4-10010 | 10 | 25 | 1   | 75  | 10 | 2          | ●     |
| SP210-R4-10015 | 10 | 25 | 1.5 | 75  | 10 | 2          | ●     |
| SP210-R4-10020 | 10 | 25 | 2   | 75  | 10 | 2          | ●     |
| SP210-R4-10030 | 10 | 25 | 3   | 75  | 10 | 2          | ●     |
| SP210-R4-12005 | 12 | 30 | 0.5 | 75  | 12 | 2          | ●     |
| SP210-R4-12010 | 12 | 30 | 1   | 75  | 12 | 2          | ●     |
| SP210-R4-12015 | 12 | 30 | 1.5 | 75  | 12 | 2          | ●     |
| SP210-R4-12020 | 12 | 30 | 2   | 75  | 12 | 2          | ●     |
| SP210-R4-12030 | 12 | 30 | 3   | 75  | 12 | 2          | ●     |
| SP210-R4-14020 | 14 | 32 | 2   | 75  | 14 | 2          | ●     |
| SP210-R4-16020 | 16 | 36 | 2   | 100 | 16 | 2          | ○     |
| SP210-R4-16030 | 16 | 36 | 3   | 100 | 16 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

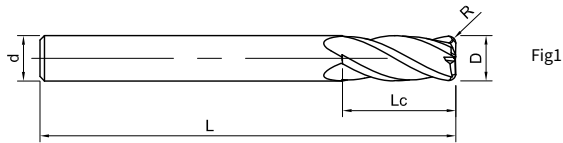
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P480

# SP210-RH4

4 Flutes, with Long Shank Length, Variable Helix



Please refer to page 149

| Ordering Code    | D  | Lc | R   | L   | d  | Figure No. | Stock |
|------------------|----|----|-----|-----|----|------------|-------|
| SP210-RH4-04005  | 4  | 11 | 0.5 | 75  | 4  | 1          | ●     |
| SP210-RH4-06005  | 6  | 15 | 0.5 | 75  | 6  | 1          | ●     |
| SP210-RH4-08005  | 8  | 20 | 0.5 | 100 | 8  | 1          | ●     |
| SP210-RH4-08005A | 8  | 20 | 0.5 | 75  | 8  | 1          | ●     |
| SP210-RH4-08010  | 8  | 20 | 1   | 100 | 8  | 1          | ●     |
| SP210-RH4-08010A | 8  | 20 | 1   | 75  | 8  | 1          | ●     |
| SP210-RH4-10005  | 10 | 25 | 0.5 | 100 | 10 | 1          | ●     |
| SP210-RH4-10010  | 10 | 25 | 1   | 100 | 10 | 1          | ●     |
| SP210-RH4-12005  | 12 | 30 | 0.5 | 100 | 12 | 1          | ●     |
| SP210-RH4-12010  | 12 | 30 | 1   | 100 | 12 | 1          | ●     |
| SP210-RH4-12030  | 12 | 30 | 3   | 100 | 12 | 1          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P480



# SP210-B2

2 Flutes, Ballnose

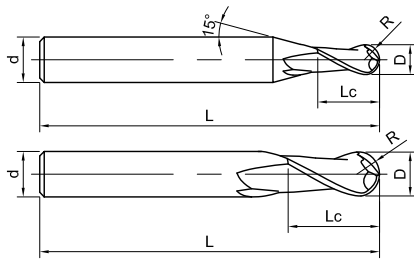


Fig1

Fig2



Please refer to page 149

| Ordering Code   | D   | R    | Lc | L  | d  | Figure No. | Stock |
|-----------------|-----|------|----|----|----|------------|-------|
| SP210-B2-01002  | 1   | 0.5  | 2  | 50 | 4  | 1          | ●     |
| SP210-B2-61002  | 1   | 0.5  | 2  | 50 | 6  | 1          | ●     |
| SP210-B2-01503  | 1.5 | 0.75 | 3  | 50 | 4  | 1          | ●     |
| SP210-B2-61503  | 1.5 | 0.75 | 3  | 50 | 6  | 1          | ●     |
| SP210-B2-02004  | 2   | 1    | 4  | 50 | 4  | 1          | ●     |
| SP210-B2-62004  | 2   | 1    | 4  | 50 | 6  | 1          | ●     |
| SP210-B2-02505  | 2.5 | 1.25 | 5  | 50 | 4  | 1          | ●     |
| SP210-B2-03006  | 3   | 1.5  | 6  | 50 | 4  | 1          | ●     |
| SP210-B2-63006  | 3   | 1.5  | 6  | 50 | 6  | 1          | ●     |
| SP210-B2-03506  | 3.5 | 1.75 | 6  | 50 | 8  | 1          | ●     |
| SP210-B2-04008  | 4   | 2    | 8  | 50 | 4  | 2          | ●     |
| SP210-B2-05010  | 5   | 2.5  | 10 | 50 | 6  | 1          | ●     |
| SP210-B2-06012  | 6   | 3    | 12 | 50 | 6  | 2          | ●     |
| SP210-B2-06012A | 6   | 3    | 12 | 60 | 6  | 2          | ●     |
| SP210-B2-08014  | 8   | 4    | 14 | 60 | 8  | 2          | ●     |
| SP210-B2-10018  | 10  | 5    | 18 | 75 | 10 | 2          | ●     |
| SP210-B2-11020  | 11  | 5.5  | 20 | 75 | 12 | 1          | ●     |
| SP210-B2-12022  | 12  | 6    | 22 | 75 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| R           | Tol         |
|-------------|-------------|
| R ≤ 1.5     | 0<br>-0.01  |
| 1.5 < R < 3 | 0<br>-0.015 |
| R ≥ 3       | 0<br>-0.02  |

Unit (mm)

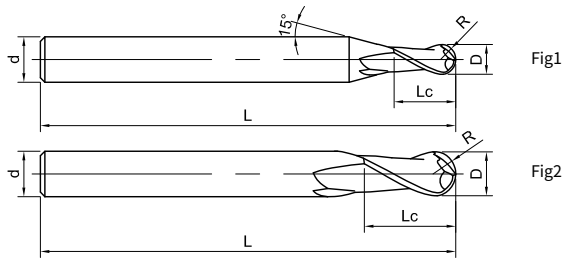
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P481

# SP210-BH2

2 Flutes Ballnose, with Long Shank length



Please refer to page 149

| Ordering Code    | D   | R    | Lc | L   | d  | Figure No. | Stock |
|------------------|-----|------|----|-----|----|------------|-------|
| SP210-BH2-61002  | 1   | 0.5  | 2  | 75  | 6  | 1          | ●     |
| SP210-BH2-61503  | 1.5 | 0.75 | 3  | 75  | 6  | 1          | ●     |
| SP210-BH2-02004  | 2   | 1    | 4  | 75  | 4  | 1          | ●     |
| SP210-BH2-62004  | 2   | 1    | 4  | 75  | 6  | 1          | ●     |
| SP210-BH2-63006  | 3   | 1.5  | 6  | 75  | 6  | 1          | ●     |
| SP210-BH2-04008  | 4   | 2    | 8  | 75  | 4  | 2          | ●     |
| SP210-BH2-04008A | 4   | 2    | 8  | 100 | 4  | 2          | ●     |
| SP210-BH2-64008  | 4   | 2    | 8  | 75  | 6  | 1          | ●     |
| SP210-BH2-06012  | 6   | 3    | 12 | 75  | 6  | 2          | ●     |
| SP210-BH2-06012A | 6   | 3    | 12 | 100 | 6  | 2          | ●     |
| SP210-BH2-08014  | 8   | 4    | 14 | 75  | 8  | 2          | ●     |
| SP210-BH2-08014A | 8   | 4    | 14 | 100 | 8  | 2          | ●     |
| SP210-BH2-10018  | 10  | 5    | 18 | 100 | 10 | 2          | ●     |
| SP210-BH2-12022  | 12  | 6    | 22 | 100 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| R             | Tol             |
|---------------|-----------------|
| $R \leq 1.5$  | $0$<br>$-0.01$  |
| $1.5 < R < 3$ | $0$<br>$-0.015$ |
| $R \geq 3$    | $0$<br>$-0.02$  |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P481

# PP300-C2 NEW

2 Flutes Square (chamfer on tip)

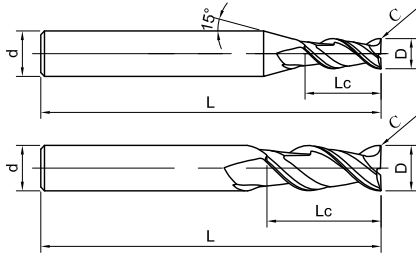


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D  | Lc | C    | L  | d  | Figure No. | Stock |
|----------------|----|----|------|----|----|------------|-------|
| PP300-C2-02002 | 2  | 6  | 0.02 | 50 | 4  | 1          | ○     |
| PP300-C2-03003 | 3  | 9  | 0.03 | 50 | 4  | 1          | ○     |
| PP300-C2-04004 | 4  | 11 | 0.04 | 50 | 4  | 2          | ●     |
| PP300-C2-05005 | 5  | 13 | 0.05 | 50 | 6  | 1          | ○     |
| PP300-C2-06006 | 6  | 16 | 0.06 | 50 | 6  | 2          | ●     |
| PP300-C2-08008 | 8  | 20 | 0.08 | 60 | 8  | 2          | ●     |
| PP300-C2-10010 | 10 | 25 | 0.10 | 75 | 10 | 2          | ●     |
| PP300-C2-12012 | 12 | 30 | 0.12 | 75 | 12 | 2          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| <b>P</b>                                 |  | <b>M</b>        | <b>K</b>  | <b>N</b>            |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P482

# PP300-C3 NEW

3 Flutes Square, with variable helix (chamfer on tip)

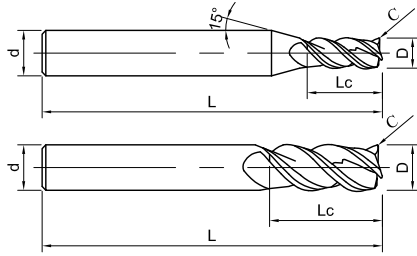


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D  | Lc | C    | L   | d  | Figure No. | Stock |
|----------------|----|----|------|-----|----|------------|-------|
| PP300-C3-63003 | 3  | 9  | 0.03 | 50  | 6  | 1          | ●     |
| PP300-C3-04004 | 4  | 11 | 0.04 | 50  | 4  | 2          | ●     |
| PP300-C3-64004 | 4  | 11 | 0.04 | 50  | 6  | 1          | ●     |
| PP300-C3-05005 | 5  | 13 | 0.05 | 50  | 6  | 1          | ●     |
| PP300-C3-06006 | 6  | 16 | 0.06 | 50  | 6  | 2          | ●     |
| PP300-C3-08008 | 8  | 20 | 0.08 | 60  | 8  | 2          | ●     |
| PP300-C3-10010 | 10 | 25 | 0.10 | 75  | 10 | 2          | ●     |
| PP300-C3-12012 | 12 | 30 | 0.12 | 75  | 12 | 2          | ●     |
| PP300-C3-16015 | 16 | 36 | 0.15 | 100 | 16 | 2          | ○     |
| PP300-C3-20015 | 20 | 45 | 0.15 | 100 | 20 | 2          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P483

# PP300-C4 NEW

4 Flutes Square, with variable helix (chamfer on tip)

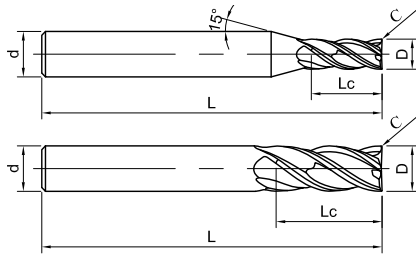


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D  | Lc | C    | L   | d  | Figure No. | Stock |
|----------------|----|----|------|-----|----|------------|-------|
| PP300-C4-63003 | 3  | 9  | 0.03 | 50  | 6  | 1          | ○     |
| PP300-C4-04004 | 4  | 11 | 0.04 | 50  | 4  | 2          | ●     |
| PP300-C4-64004 | 4  | 11 | 0.04 | 50  | 6  | 1          | ●     |
| PP300-C4-05005 | 5  | 13 | 0.05 | 50  | 6  | 1          | ●     |
| PP300-C4-06006 | 6  | 16 | 0.06 | 50  | 6  | 2          | ●     |
| PP300-C4-08008 | 8  | 20 | 0.08 | 60  | 8  | 2          | ●     |
| PP300-C4-10010 | 10 | 25 | 0.10 | 75  | 10 | 2          | ●     |
| PP300-C4-12012 | 12 | 30 | 0.12 | 75  | 12 | 2          | ●     |
| PP300-C4-16015 | 16 | 36 | 0.15 | 100 | 16 | 2          | ●     |
| PP300-C4-20015 | 20 | 45 | 0.15 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P484

# PP300-R4 NEW

4 Flutes Corner Radius, with variable helix

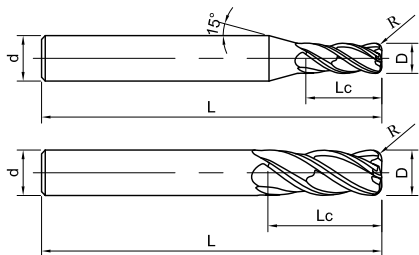


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D  | Lc | R   | L   | d  | Figure No. | Stock |
|----------------|----|----|-----|-----|----|------------|-------|
| PP300-R4-04005 | 4  | 11 | 0.5 | 50  | 4  | 2          | ●     |
| PP300-R4-05005 | 5  | 13 | 0.5 | 50  | 6  | 1          | ○     |
| PP300-R4-06005 | 6  | 16 | 0.5 | 50  | 6  | 2          | ●     |
| PP300-R4-06010 | 6  | 16 | 1   | 50  | 6  | 2          | ●     |
| PP300-R4-08005 | 8  | 20 | 0.5 | 60  | 8  | 2          | ●     |
| PP300-R4-08010 | 8  | 20 | 1   | 60  | 8  | 2          | ●     |
| PP300-R4-10005 | 10 | 25 | 0.5 | 75  | 10 | 2          | ●     |
| PP300-R4-10010 | 10 | 25 | 1   | 75  | 10 | 2          | ●     |
| PP300-R4-10015 | 10 | 25 | 1.5 | 75  | 10 | 2          | ○     |
| PP300-R4-10020 | 10 | 25 | 2   | 75  | 10 | 2          | ●     |
| PP300-R4-10030 | 10 | 25 | 3   | 75  | 10 | 2          | ○     |
| PP300-R4-12005 | 12 | 30 | 0.5 | 75  | 12 | 2          | ●     |
| PP300-R4-12010 | 12 | 30 | 1   | 75  | 12 | 2          | ●     |
| PP300-R4-12015 | 12 | 30 | 1.5 | 75  | 12 | 2          | ○     |
| PP300-R4-12020 | 12 | 30 | 2   | 75  | 12 | 2          | ○     |
| PP300-R4-12030 | 12 | 30 | 3   | 75  | 12 | 2          | ○     |
| PP300-R4-16010 | 16 | 36 | 1   | 100 | 16 | 2          | ●     |
| PP300-R4-16020 | 16 | 36 | 2   | 100 | 16 | 2          | ●     |
| PP300-R4-20010 | 20 | 45 | 1   | 100 | 20 | 2          | ●     |
| PP300-R4-20020 | 20 | 45 | 2   | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

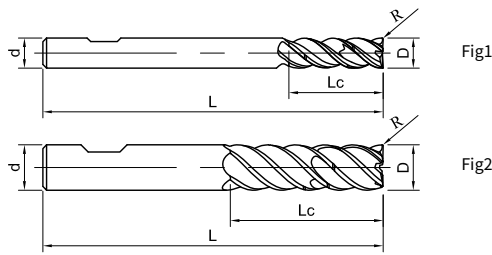
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P484

# PP300-SPEED-3D NEW

4/5 Flutes Square, with variable helix (round corner on tip)



Please refer to page 149

| Ordering Code        | D  | Z | Lc | R    | L   | d  | Figure No. | Stock |
|----------------------|----|---|----|------|-----|----|------------|-------|
| PP300-SPEED-3D-06020 | 6  | 4 | 20 | 0.1  | 57  | 6  | 1          | ○     |
| PP300-SPEED-3D-08026 | 8  | 4 | 26 | 0.1  | 63  | 8  | 1          | ○     |
| PP300-SPEED-3D-10032 | 10 | 5 | 32 | 0.1  | 72  | 10 | 2          | ●     |
| PP300-SPEED-3D-12038 | 12 | 5 | 38 | 0.12 | 83  | 12 | 2          | ●     |
| PP300-SPEED-3D-14044 | 14 | 5 | 44 | 0.15 | 100 | 14 | 2          | ○     |
| PP300-SPEED-3D-16052 | 16 | 5 | 52 | 0.15 | 115 | 16 | 2          | ○     |
| PP300-SPEED-3D-20062 | 20 | 5 | 62 | 0.2  | 131 | 20 | 2          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 10 | 0<br>-0.04 |
| D > 10 | 0<br>-0.05 |

Unit (mm)

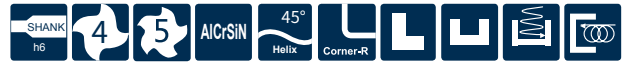
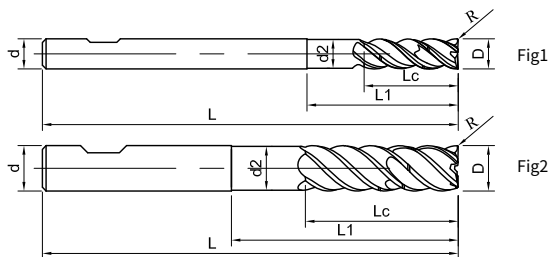
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P485

# PP300-SPEED-3DN NEW

4/5 Flutes Square, with variable helix (round corner on tip)



Please refer to page 149

| Ordering Code         | D  | Z | Lc | R    | L1  | d2   | L   | d  | Figure No. | Stock |
|-----------------------|----|---|----|------|-----|------|-----|----|------------|-------|
| PP300-SPEED-3DN-06020 | 6  | 4 | 20 | 0.1  | 32  | 5.8  | 75  | 6  | 1          | ○     |
| PP300-SPEED-3DN-08026 | 8  | 4 | 26 | 0.1  | 42  | 7.8  | 85  | 8  | 1          | ○     |
| PP300-SPEED-3DN-10032 | 10 | 5 | 32 | 0.1  | 52  | 9.8  | 100 | 10 | 2          | ●     |
| PP300-SPEED-3DN-12038 | 12 | 5 | 38 | 0.12 | 62  | 11.8 | 110 | 12 | 2          | ●     |
| PP300-SPEED-3DN-14044 | 14 | 5 | 44 | 0.15 | 72  | 13.8 | 125 | 14 | 2          | ○     |
| PP300-SPEED-3DN-16052 | 16 | 5 | 52 | 0.15 | 82  | 15.7 | 140 | 16 | 2          | ○     |
| PP300-SPEED-3DN-20062 | 20 | 5 | 62 | 0.2  | 102 | 19.7 | 165 | 20 | 2          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 10 | 0<br>-0.04 |
| D > 10 | 0<br>-0.05 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

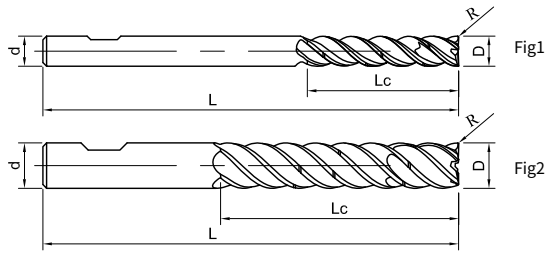
○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P485



# PP300-SPEED-5D NEW

4/5 Flutes Square, with variable helix (round corner on tip)



Please refer to page 149

| Ordering Code         | D  | Z | Lc  | R    | L   | d  | Figure No. | Stock |
|-----------------------|----|---|-----|------|-----|----|------------|-------|
| PP300-SPEED-5D-06032  | 6  | 4 | 32  | 0.1  | 75  | 6  | 1          | ○     |
| PP300-SPEED-5D-08042  | 8  | 4 | 42  | 0.1  | 85  | 8  | 1          | ●     |
| PP300-SPEED-5D-10052  | 10 | 5 | 52  | 0.1  | 100 | 10 | 2          | ●     |
| PP300-SPEED-5D-12062  | 12 | 5 | 62  | 0.12 | 110 | 12 | 2          | ●     |
| PP300-SPEED-5D-14072  | 14 | 5 | 72  | 0.15 | 125 | 14 | 2          | ○     |
| PP300-SPEED-5D-16082  | 16 | 5 | 82  | 0.15 | 140 | 16 | 2          | ●     |
| PP300-SPEED-5D-200102 | 20 | 5 | 102 | 0.2  | 165 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 10 | 0<br>-0.04 |
| D > 10 | 0<br>-0.05 |

Unit (mm)

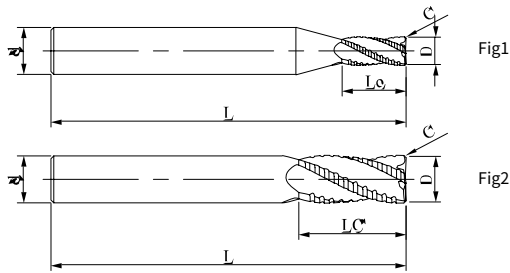
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         |                     |               |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P485

# UPN210-S4

4 Flutes Square for roughing process



Please refer to page 149

| Ordering Code   | D  | Lc | C   | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|-----|----|------------|-------|
| UPN210-S4-06016 | 6  | 16 | 0.2 | 50  | 6  | 2          | ●     |
| UPN210-S4-08020 | 8  | 20 | 0.2 | 60  | 8  | 2          | ●     |
| UPN210-S4-10025 | 10 | 25 | 0.3 | 75  | 10 | 2          | ●     |
| UPN210-S4-12030 | 12 | 30 | 0.3 | 75  | 12 | 2          | ●     |
| UPN210-S4-16036 | 16 | 36 | 0.4 | 100 | 16 | 2          | ●     |
| UPN210-S4-20045 | 20 | 45 | 0.5 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.03 |
| 6 < D ≤ 10 | 0<br>-0.04 |
| D > 10     | 0<br>-0.05 |

Unit (mm)

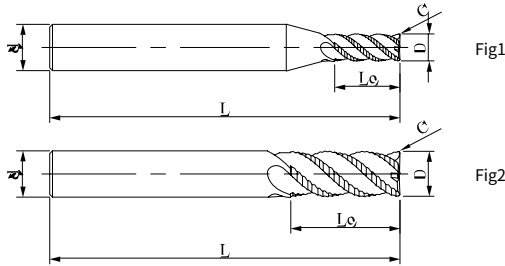
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         | ○                   | ○             |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P487

# UPR210-S4

4 Flutes Square for roughing process



Please refer to page 149

| Ordering Code   | D  | Lc | C   | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|-----|----|------------|-------|
| UPN210-S4-06016 | 6  | 16 | 0.2 | 50  | 6  | 2          | ●     |
| UPN210-S4-08020 | 8  | 20 | 0.2 | 60  | 8  | 2          | ●     |
| UPN210-S4-10025 | 10 | 25 | 0.3 | 75  | 10 | 2          | ●     |
| UPN210-S4-12030 | 12 | 30 | 0.3 | 75  | 12 | 2          | ●     |
| UPN210-S4-16036 | 16 | 36 | 0.4 | 100 | 16 | 2          | ●     |
| UPN210-S4-20045 | 20 | 45 | 0.5 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.03 |
| 6 < D ≤ 10 | 0<br>-0.04 |
| D > 10     | 0<br>-0.05 |

Unit (mm)

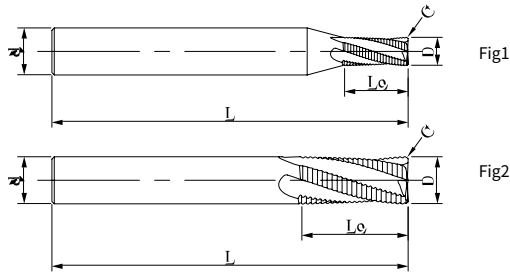
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
| ○  | ○                                      | ○               | ○         | ○                   | ○             |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P486

# UPR300-S3/S4

3/4 Flutes Square for roughing process



Please refer to page 149

| Ordering Code   | D  | Lc | C   | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|-----|----|------------|-------|
| UPR300-S3-06016 | 6  | 16 | 0.2 | 50  | 6  | 2          | ●     |
| UPR300-S3-08020 | 8  | 20 | 0.2 | 60  | 8  | 2          | ●     |
| UPR210-S4-10025 | 10 | 25 | 0.3 | 75  | 10 | 2          | ●     |
| UPR210-S4-12030 | 12 | 30 | 0.3 | 75  | 12 | 2          | ●     |
| UPR210-S4-16036 | 16 | 36 | 0.4 | 100 | 16 | 2          | ●     |
| UPR210-S4-20045 | 20 | 45 | 0.5 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.03 |
| 6 < D ≤ 10 | 0<br>-0.04 |
| D > 10     | 0<br>-0.05 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                               |                             |
|--|--|-----------------|-----------|-------------------------------|-----------------------------|
| P  |  | M               | K         | H                             |                             |
| 1234                                     | 5                                      | 123             | 123       | 1                             | 23                          |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Hardened Steels<br>(45-55HRC) | Hardened Steels<br>(>55HRC) |
| ○  | ○                                      | ○               | ○         | ○                             |                             |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P488

# US200-S2

2 Flutes Square

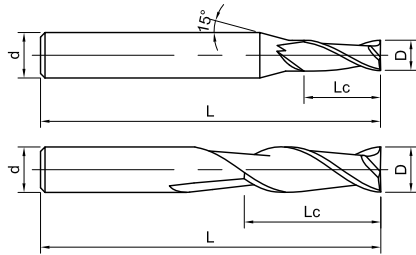


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D   | Lc | L   | d  | Figure No. | Stock |
|----------------|-----|----|-----|----|------------|-------|
| US200-S2-00501 | 0.5 | 1  | 50  | 4  | 1          | ●     |
| US200-S2-00802 | 0.8 | 2  | 50  | 4  | 1          | ●     |
| US200-S2-01003 | 1   | 3  | 50  | 4  | 1          | ●     |
| US200-S2-01504 | 1.5 | 4  | 50  | 4  | 1          | ●     |
| US200-S2-02006 | 2   | 6  | 50  | 4  | 1          | ●     |
| US200-S2-02508 | 2.5 | 8  | 50  | 4  | 1          | ●     |
| US200-S2-63008 | 3   | 8  | 50  | 6  | 1          | ●     |
| US200-S2-03009 | 3   | 9  | 50  | 4  | 1          | ●     |
| US200-S2-03510 | 3.5 | 10 | 50  | 4  | 1          | ●     |
| US200-S2-04011 | 4   | 11 | 50  | 4  | 2          | ●     |
| US200-S2-64011 | 4   | 11 | 50  | 6  | 1          | ●     |
| US200-S2-05013 | 5   | 13 | 50  | 6  | 1          | ●     |
| US200-S2-06016 | 6   | 16 | 50  | 6  | 2          | ●     |
| US200-S2-08020 | 8   | 20 | 60  | 8  | 2          | ●     |
| US200-S2-10025 | 10  | 25 | 75  | 10 | 2          | ●     |
| US200-S2-12030 | 12  | 30 | 75  | 12 | 2          | ●     |
| US200-S2-16036 | 16  | 36 | 100 | 16 | 2          | ●     |
| US200-S2-20045 | 20  | 45 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                          |                 |
|--|--|-----------------|-----------|--------------------------|-----------------|
| P  |  | M               | K         | S                        |                 |
| 1234                                     | 5                                      | 123             | 123       | 123                      | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Heat-resistant<br>Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○         | ○                        | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P490

# US200-SS4

4 Flutes Square with short flute

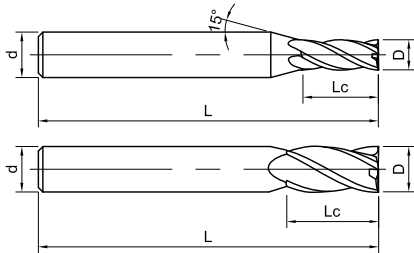


Fig1

Fig2



Please refer to page 149

| Ordering Code   | D  | Lc | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|----|------------|-------|
| US200-SS4-02004 | 2  | 4  | 50  | 4  | 1          | ●     |
| US200-SS4-03004 | 3  | 4  | 50  | 4  | 1          | ●     |
| US200-SS4-04006 | 4  | 6  | 50  | 4  | 2          | ●     |
| US200-SS4-06009 | 6  | 9  | 50  | 6  | 2          | ●     |
| US200-SS4-08010 | 8  | 10 | 60  | 8  | 2          | ●     |
| US200-SS4-10012 | 10 | 12 | 75  | 10 | 2          | ●     |
| US200-SS4-12016 | 12 | 16 | 75  | 12 | 2          | ●     |
| US200-SS4-14020 | 14 | 20 | 75  | 14 | 2          | ●     |
| US200-SS4-16024 | 16 | 24 | 100 | 16 | 2          | ●     |
| US200-SS4-18027 | 18 | 27 | 100 | 18 | 2          | ●     |
| US200-SS4-20030 | 20 | 30 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                          |                 |
|--|--|-----------------|-----------|--------------------------|-----------------|
| P  |  | M               | K         | S                        |                 |
| 1234                                     | 5                                      | 123             | 123       | 123                      | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Heat-resistant<br>Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○         | ○                        | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P491

# US200-S4

4 Flutes, Standard Length

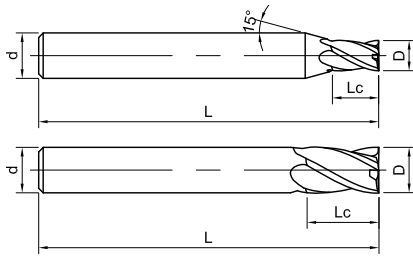


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D   | Lc | L   | d  | Figure No. | Stock |
|----------------|-----|----|-----|----|------------|-------|
| US200-S4-01003 | 1   | 3  | 50  | 4  | 1          | ●     |
| US200-S4-01504 | 1.5 | 4  | 50  | 4  | 1          | ●     |
| US200-S4-01505 | 1.5 | 5  | 50  | 4  | 1          | ●     |
| US200-S4-02006 | 2   | 6  | 50  | 4  | 1          | ●     |
| US200-S4-02508 | 2.5 | 8  | 50  | 4  | 1          | ●     |
| US200-S4-63008 | 3   | 8  | 50  | 6  | 1          | ●     |
| US200-S4-03009 | 3   | 9  | 50  | 4  | 1          | ●     |
| US200-S4-03510 | 3.5 | 10 | 50  | 4  | 1          | ●     |
| US200-S4-04011 | 4   | 11 | 50  | 4  | 2          | ●     |
| US200-S4-64011 | 4   | 11 | 50  | 6  | 1          | ●     |
| US200-S4-05013 | 5   | 13 | 50  | 6  | 1          | ●     |
| US200-S4-06016 | 6   | 16 | 50  | 6  | 2          | ●     |
| US200-S4-08020 | 8   | 20 | 60  | 8  | 2          | ●     |
| US200-S4-10025 | 10  | 25 | 75  | 10 | 2          | ●     |
| US200-S4-12030 | 12  | 30 | 75  | 12 | 2          | ●     |
| US200-S4-13032 | 13  | 32 | 100 | 14 | 1          | ●     |
| US200-S4-14040 | 14  | 40 | 100 | 14 | 2          | ●     |
| US200-S4-16036 | 16  | 36 | 100 | 16 | 2          | ●     |
| US200-S4-20045 | 20  | 45 | 100 | 20 | 2          | ●     |
| US200-S4-22050 | 22  | 50 | 119 | 22 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                          |                 |
|--|--|-----------------|-----------|--------------------------|-----------------|
| P  |  | M               | K         | S                        |                 |
| 1234                                     | 5                                      | 123             | 123       | 123                      | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Heat-resistant<br>Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○         | ○                        | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P491

# US200-SN4

4 Flutes with long neck, Square

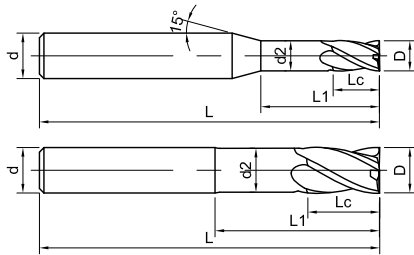


Fig1

Fig2



Please refer to page 149

| Ordering Code   | D  | Lc | d2  | L1 | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|----|-----|----|------------|-------|
| US200-SN4-02008 | 2  | 4  | 1.9 | 8  | 50  | 4  | 1          | ●     |
| US200-SN4-04012 | 4  | 8  | 3.8 | 12 | 50  | 4  | 2          | ●     |
| US200-SN4-06018 | 6  | 13 | 5.8 | 18 | 50  | 6  | 2          | ●     |
| US200-SN4-08025 | 8  | 19 | 7.5 | 25 | 60  | 8  | 2          | ●     |
| US200-SN4-10032 | 10 | 22 | 9.5 | 32 | 75  | 10 | 2          | ●     |
| US200-SN4-12034 | 12 | 24 | 11  | 34 | 75  | 12 | 2          | ●     |
| US200-SN4-16036 | 16 | 26 | 15  | 36 | 100 | 16 | 2          | ●     |
| US200-SN4-20040 | 20 | 28 | 19  | 40 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                          |                 |
|--|--|-----------------|-----------|--------------------------|-----------------|
| P  |  | M               | K         | S                        |                 |
| 1234                                     | 5                                      | 123             | 123       | 123                      | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Heat-resistant<br>Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○         | ○                        | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P491



# US200-R2

2 Flutes, Corner Radius

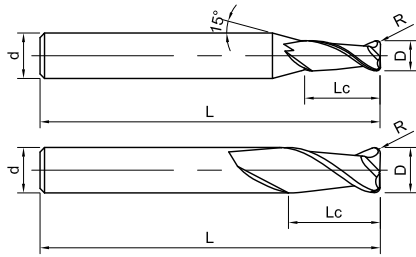


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D  | Lc | R   | L   | d  | Figure No. | Stock |
|----------------|----|----|-----|-----|----|------------|-------|
| US200-R2-03003 | 3  | 9  | 0.3 | 50  | 4  | 1          | ●     |
| US200-R2-04002 | 4  | 11 | 0.2 | 50  | 4  | 2          | ●     |
| US200-R2-04003 | 4  | 11 | 0.3 | 50  | 4  | 2          | ●     |
| US200-R2-64005 | 4  | 11 | 0.5 | 50  | 6  | 1          | ●     |
| US200-R2-05003 | 5  | 13 | 0.3 | 50  | 6  | 1          | ●     |
| US200-R2-05005 | 5  | 13 | 0.5 | 50  | 6  | 1          | ●     |
| US200-R2-06002 | 6  | 16 | 0.2 | 50  | 6  | 2          | ●     |
| US200-R2-06003 | 6  | 16 | 0.3 | 50  | 6  | 2          | ●     |
| US200-R2-08005 | 8  | 20 | 0.5 | 60  | 8  | 2          | ●     |
| US200-R2-10005 | 10 | 25 | 0.5 | 75  | 10 | 2          | ●     |
| US200-R2-10010 | 10 | 25 | 1   | 75  | 10 | 2          | ●     |
| US200-R2-10015 | 10 | 25 | 1.5 | 75  | 10 | 2          | ●     |
| US200-R2-16005 | 16 | 36 | 0.5 | 100 | 16 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
| ○  | ○                                      | ◎               | ○         | ○                   | ○                | ○        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P490

# US200-R3

3 Flutes, Corner Radius

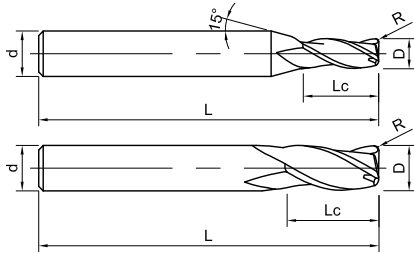


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D  | Lc | R   | L   | d  | Figure No. | Stock |
|----------------|----|----|-----|-----|----|------------|-------|
| US200-R3-02002 | 2  | 6  | 0.2 | 50  | 4  | 1          | ●     |
| US200-R3-04002 | 4  | 11 | 0.2 | 50  | 4  | 2          | ●     |
| US200-R3-04005 | 4  | 11 | 0.5 | 50  | 4  | 2          | ●     |
| US200-R3-06002 | 6  | 16 | 0.2 | 50  | 6  | 2          | ●     |
| US200-R3-06005 | 6  | 16 | 0.5 | 50  | 6  | 2          | ●     |
| US200-R3-08005 | 8  | 20 | 0.5 | 60  | 8  | 2          | ●     |
| US200-R3-08010 | 8  | 20 | 1   | 60  | 8  | 2          | ●     |
| US200-R3-10010 | 10 | 25 | 1   | 75  | 10 | 2          | ●     |
| US200-R3-10020 | 10 | 25 | 2   | 75  | 10 | 2          | ●     |
| US200-R3-12005 | 12 | 30 | 0.5 | 75  | 12 | 2          | ●     |
| US200-R3-12010 | 12 | 30 | 1   | 75  | 12 | 2          | ●     |
| US200-R3-12015 | 12 | 30 | 1.5 | 75  | 12 | 2          | ●     |
| US200-R3-16005 | 16 | 36 | 0.5 | 100 | 16 | 2          | ●     |
| US200-R3-16010 | 16 | 36 | 1   | 100 | 16 | 2          | ●     |
| US200-R3-16020 | 16 | 36 | 2   | 100 | 16 | 2          | ●     |
| US200-R3-20005 | 20 | 45 | 0.5 | 100 | 20 | 2          | ●     |
| US200-R3-20040 | 20 | 45 | 4   | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
| ○  | ○                                      | ◎               | ○         | ○                   | ○                | ○        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P490

# US200-R4

4 Flutes, Corner Radius

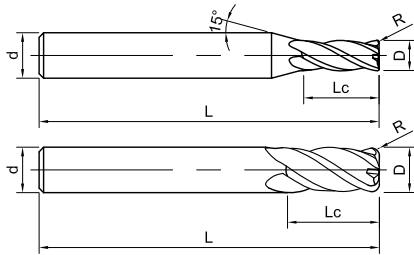


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D  | Lc | R   | L   | d  | Figure No. | Stock |
|----------------|----|----|-----|-----|----|------------|-------|
| US200-R4-02002 | 2  | 6  | 0.2 | 50  | 4  | 1          | ●     |
| US200-R4-03003 | 3  | 9  | 0.3 | 50  | 4  | 1          | ●     |
| US200-R4-03005 | 3  | 9  | 0.5 | 50  | 4  | 1          | ●     |
| US200-R4-64002 | 4  | 11 | 0.2 | 50  | 6  | 1          | ●     |
| US200-R4-64003 | 4  | 11 | 0.3 | 50  | 6  | 1          | ●     |
| US200-R4-04003 | 4  | 11 | 0.3 | 50  | 4  | 2          | ●     |
| US200-R4-04005 | 4  | 11 | 0.5 | 50  | 4  | 2          | ●     |
| US200-R4-05005 | 5  | 13 | 0.5 | 50  | 6  | 1          | ●     |
| US200-R4-06005 | 6  | 16 | 0.5 | 50  | 6  | 2          | ●     |
| US200-R4-08002 | 8  | 20 | 0.2 | 60  | 8  | 2          | ●     |
| US200-R4-08005 | 8  | 20 | 0.5 | 60  | 8  | 2          | ●     |
| US200-R4-08010 | 8  | 20 | 1   | 60  | 8  | 2          | ●     |
| US200-R4-10005 | 10 | 25 | 0.5 | 75  | 10 | 2          | ●     |
| US200-R4-10010 | 10 | 25 | 1   | 75  | 10 | 2          | ●     |
| US200-R4-12005 | 12 | 30 | 0.5 | 75  | 12 | 2          | ●     |
| US200-R4-12010 | 12 | 30 | 1   | 75  | 12 | 2          | ●     |
| US200-R4-12020 | 12 | 30 | 2   | 75  | 12 | 2          | ●     |
| US200-R4-16010 | 16 | 36 | 1   | 100 | 16 | 2          | ●     |
| US200-R4-20010 | 20 | 45 | 1   | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
| ○  | ○                                      | ◎               | ○         | ○                   | ○                | ○        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P491

# US200-B2

2 Flutes, ball-nose

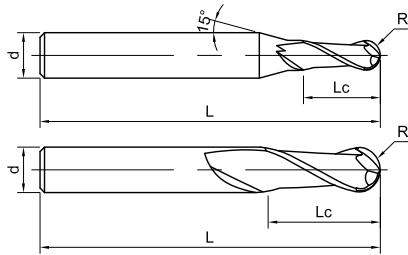


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D   | Lc | R    | L   | d  | Figure No. | Stock |
|----------------|-----|----|------|-----|----|------------|-------|
| US200-B2-01002 | 1   | 2  | 0.5  | 50  | 4  | 1          | ●     |
| US200-B2-01503 | 1.5 | 3  | 0.75 | 50  | 4  | 1          | ●     |
| US200-B2-02004 | 2   | 4  | 1    | 50  | 4  | 1          | ●     |
| US200-B2-03006 | 3   | 6  | 1.5  | 50  | 4  | 1          | ●     |
| US200-B2-63006 | 3   | 6  | 1.5  | 50  | 6  | 1          | ●     |
| US200-B2-04008 | 4   | 8  | 2    | 50  | 4  | 2          | ●     |
| US200-B2-64008 | 4   | 8  | 2    | 50  | 6  | 1          | ●     |
| US200-B2-05010 | 5   | 10 | 2.5  | 50  | 6  | 1          | ●     |
| US200-B2-06012 | 6   | 12 | 3    | 50  | 6  | 2          | ●     |
| US200-B2-08014 | 8   | 14 | 4    | 60  | 8  | 2          | ●     |
| US200-B2-10018 | 10  | 18 | 5    | 75  | 10 | 2          | ●     |
| US200-B2-12022 | 12  | 22 | 6    | 75  | 12 | 2          | ●     |
| US200-B2-16026 | 16  | 26 | 8    | 100 | 16 | 2          | ●     |

● Stock ○ Available upon Order

| R     | Tol    |
|-------|--------|
| R < 3 | ±0.015 |
| R ≥ 3 | ±0.02  |

Unit (mm)

| Workpiece Material                       |  |                 |           |                          |                 |
|--|--|-----------------|-----------|--------------------------|-----------------|
| P  |  | M               | K         | S                        |                 |
| 1234                                     | 5                                      | 123             | 123       | 123                      | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Heat-resistant<br>Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○         | ○                        | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P491

# US200-B4

4 Flutes, ball-nose

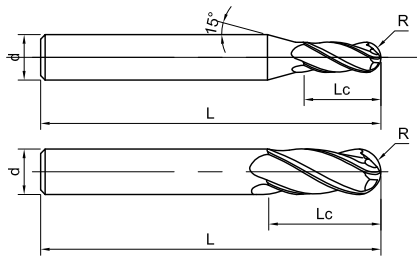


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D   | Lc  | R    | L   | d  | Figure No. | Stock |
|----------------|-----|-----|------|-----|----|------------|-------|
| US200-B4-01002 | 1   | 2   | 0.5  | 50  | 4  | 1          | ●     |
| US200-B4-01503 | 1.5 | 3   | 0.75 | 50  | 4  | 1          | ●     |
| US200-B4-02004 | 2   | 4   | 1    | 50  | 4  | 1          | ●     |
| US200-B4-03006 | 3   | 6   | 1.5  | 50  | 4  | 1          | ●     |
| US200-B4-63006 | 3   | 1.5 | 6    | 50  | 6  | 1          | ●     |
| US200-B4-04008 | 4   | 8   | 2    | 50  | 4  | 2          | ●     |
| US200-B4-05010 | 5   | 10  | 2.5  | 50  | 6  | 1          | ●     |
| US200-B4-06012 | 6   | 12  | 3    | 50  | 6  | 2          | ●     |
| US200-B4-08014 | 8   | 14  | 4    | 60  | 8  | 2          | ●     |
| US200-B4-10018 | 10  | 18  | 5    | 75  | 10 | 2          | ●     |
| US200-B4-12022 | 12  | 22  | 6    | 75  | 12 | 2          | ●     |
| US200-B4-16026 | 16  | 26  | 8    | 100 | 16 | 2          | ●     |
| US200-B4-20038 | 20  | 38  | 10   | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| R     | Tol    |
|-------|--------|
| R < 3 | ±0.015 |
| R ≥ 3 | ±0.02  |

Unit (mm)

| Workpiece Material                       |  |                 |           |                          |                 |
|--|--|-----------------|-----------|--------------------------|-----------------|
| P  |  | M               | K         | S                        |                 |
| 1234                                     | 5                                      | 123             | 123       | 123                      | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Heat-resistant<br>Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○         | ○                        | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P491

# US260-S2/SS2 NEW

2 Flutes, Short flute, Square

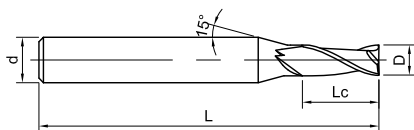


Fig1



Please refer to page 149

| Ordering Code   | D   | Lc | L  | d | Figure No. | Stock |
|-----------------|-----|----|----|---|------------|-------|
| US260-S2-00501  | 0.5 | 1  | 50 | 4 | 1          | ●     |
| US260-S2-00802  | 0.8 | 2  | 50 | 4 | 1          | ●     |
| US260-SS2-00801 | 0.8 | 1  | 50 | 4 | 1          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                          |                 |
|--|--|-----------------|-----------|--------------------------|-----------------|
| P  |  | M               | K         | S                        |                 |
| 1234                                     | 5                                      | 123             | 123       | 123                      | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Heat-resistant<br>Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○         | ○                        | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P492

# US260-SS4A NEW

4 Short flutes, Square

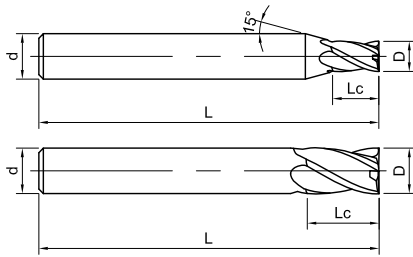
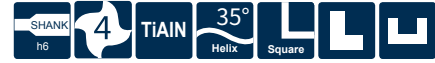


Fig1

Fig2



Please refer to page 149

| Ordering Code     | D   | Lc  | L  | d  | Figure No. | Stock |
|-------------------|-----|-----|----|----|------------|-------|
| US260-SS4A-01002  | 1   | 2   | 50 | 4  | 1          | ●     |
| US260-SS4A-01502  | 1.5 | 2.5 | 50 | 4  | 1          | ●     |
| US260-SS4A-01503  | 1.5 | 3   | 50 | 4  | 1          | ●     |
| US260-SS4A-02004  | 2   | 4   | 50 | 4  | 1          | ●     |
| US260-SS4A-03003  | 3   | 3   | 50 | 4  | 1          | ●     |
| US260-SS4A-03006  | 3   | 6   | 50 | 4  | 1          | ●     |
| US260-SS4A-04006  | 4   | 6   | 50 | 4  | 2          | ●     |
| US260-SS4A-06006  | 6   | 6   | 50 | 6  | 2          | ●     |
| US260-SS4A-06010  | 6   | 10  | 50 | 6  | 2          | ●     |
| US260-SS4A-08015  | 8   | 15  | 60 | 8  | 2          | ●     |
| US260-SS4A 10015  | 10  | 15  | 50 | 10 | 2          | ●     |
| US260-SS4A -12015 | 12  | 15  | 50 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                          |                 |
|--|--|-----------------|-----------|--------------------------|-----------------|
| <b>P</b>                                 |  | <b>M</b>        | <b>K</b>  | <b>S</b>                 |                 |
| 1234                                     | 5                                      | 123             | 123       | 123                      | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Heat-resistant<br>Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○         | ○                        | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P492

# US260-SS4B NEW

4 Short Flutes, Square, for Finish Machining

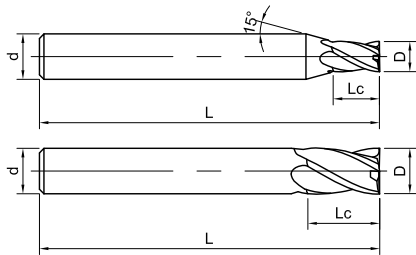


Fig1

Fig2



Please refer to page 149

| Ordering Code    | D   | Lc | L  | d | Figure No. | Stock |
|------------------|-----|----|----|---|------------|-------|
| US260-SS4B-01002 | 1   | 2  | 50 | 4 | 1          | ●     |
| US260-SS4B-01503 | 1.5 | 3  | 50 | 4 | 1          | ●     |
| US260-SS4B-02004 | 2   | 4  | 50 | 4 | 1          | ●     |
| US260-SS4B-03003 | 3   | 3  | 50 | 4 | 1          | ●     |
| US260-SS4B-04006 | 4   | 6  | 50 | 4 | 2          | ●     |
| US260-SS4B-05006 | 5   | 6  | 50 | 6 | 1          | ●     |
| US260-SS4B-06006 | 6   | 6  | 50 | 6 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                          |                 |
|--|--|-----------------|-----------|--------------------------|-----------------|
| P  |  | M               | K         | S                        |                 |
| 1234                                     | 5                                      | 123             | 123       | 123                      | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Heat-resistant<br>Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○         | ○                        | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P492



# US260-S4A NEW

4 Flutes, Square

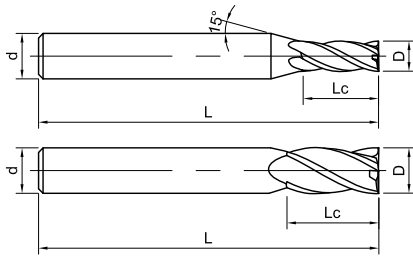


Fig1

Fig2



Please refer to page 149

| Ordering Code   | D   | Lc | L   | d  | Figure No. | Stock |
|-----------------|-----|----|-----|----|------------|-------|
| US260-S4A-01003 | 1   | 3  | 50  | 4  | 1          | ●     |
| US260-S4A-01504 | 1.5 | 4  | 50  | 4  | 1          | ●     |
| US260-S4A-01505 | 1.5 | 5  | 50  | 4  | 1          | ●     |
| US260-S4A-01506 | 1.5 | 6  | 50  | 4  | 1          | ●     |
| US260-S4A-02006 | 2   | 6  | 50  | 4  | 1          | ●     |
| US260-S4A-02508 | 2.5 | 8  | 50  | 4  | 1          | ●     |
| US260-S4A-03009 | 3   | 9  | 50  | 4  | 1          | ●     |
| US260-S4A-04011 | 4   | 11 | 50  | 4  | 2          | ●     |
| US260-S4A-05013 | 5   | 13 | 50  | 6  | 1          | ●     |
| US260-S4A-06016 | 6   | 16 | 50  | 6  | 2          | ●     |
| US260-S4A-08020 | 8   | 20 | 60  | 8  | 2          | ●     |
| US260-S4A-10025 | 10  | 25 | 75  | 10 | 2          | ●     |
| US260-S4A-10030 | 10  | 30 | 75  | 10 | 2          | ●     |
| US260-S4A-12030 | 12  | 30 | 75  | 12 | 2          | ●     |
| US260-S4A-16036 | 16  | 36 | 100 | 16 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

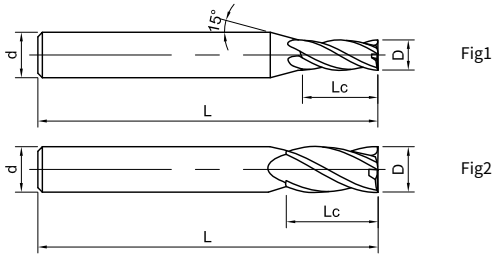
| Workpiece Material                       |  |                 |           |                          |                 |
|--|--|-----------------|-----------|--------------------------|-----------------|
| P  |  | M               | K         | S                        |                 |
| 1234                                     | 5                                      | 123             | 123       | 123                      | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Heat-resistant<br>Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○         | ○                        | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P492

# US260-S4B NEW

4 Flutes, Square, for Finish Machining



Please refer to page 149

| Ordering Code   | D   | Lc  | L  | d | Figure No. | Stock |
|-----------------|-----|-----|----|---|------------|-------|
| US260-S4B-01003 | 1   | 3   | 50 | 4 | 1          | ●     |
| US260-S4B-01203 | 1.2 | 3   | 50 | 4 | 1          | ●     |
| US260-S4B-01503 | 1.5 | 3.5 | 50 | 4 | 1          | ●     |
| US260-S4B-01504 | 1.5 | 4   | 50 | 4 | 1          | ●     |
| US260-S4B-02006 | 2   | 6   | 50 | 4 | 1          | ●     |
| US260-S4B-03009 | 3   | 9   | 50 | 4 | 1          | ●     |
| US260-S4B-04011 | 4   | 11  | 50 | 4 | 2          | ●     |
| US260-S4B-06016 | 6   | 16  | 50 | 6 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                          |                 |
|--|--|-----------------|-----------|--------------------------|-----------------|
| P  |  | M               | K         | S                        |                 |
| 1234                                     | 5                                      | 123             | 123       | 123                      | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Heat-resistant<br>Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○         | ○                        | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P492

# US260-RS4 NEW

4 Short flutes, Corner Radius

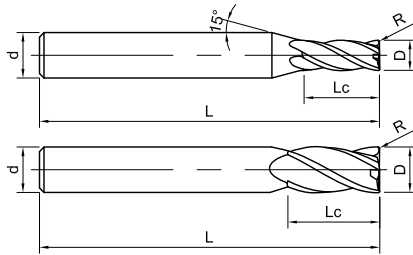


Fig1

Fig2



Please refer to page 149

| Ordering Code   | D  | Lc | R   | L  | d  | Figure No. | Stock |
|-----------------|----|----|-----|----|----|------------|-------|
| US260-RS4-01001 | 1  | 2  | 0.1 | 50 | 4  | 1          | ●     |
| US260-RS4-04001 | 4  | 5  | 0.1 | 50 | 4  | 2          | ●     |
| US260-RS4-04002 | 4  | 5  | 0.2 | 50 | 4  | 2          | ●     |
| US260-RS4-05001 | 5  | 6  | 0.1 | 50 | 6  | 1          | ●     |
| US260-RS4-06001 | 6  | 8  | 0.1 | 50 | 6  | 2          | ●     |
| US260-RS4-06002 | 6  | 8  | 0.2 | 50 | 6  | 2          | ●     |
| US260-RS4-06005 | 6  | 8  | 0.5 | 50 | 6  | 2          | ●     |
| US260-RS4-08002 | 8  | 15 | 0.2 | 60 | 8  | 2          | ●     |
| US260-RS4-08005 | 8  | 15 | 0.5 | 60 | 8  | 2          | ●     |
| US260-RS4-10002 | 10 | 15 | 0.2 | 50 | 10 | 2          | ●     |
| US260-RS4-10005 | 10 | 15 | 0.5 | 50 | 10 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                          |                 |
|--|--|-----------------|-----------|--------------------------|-----------------|
| P  |  | M               | K         | S                        |                 |
| 1234                                     | 5                                      | 123             | 123       | 123                      | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Heat-resistant<br>Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○         | ○                        | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P493

# US260-R4 NEW

4 Flutes, Corner Radius

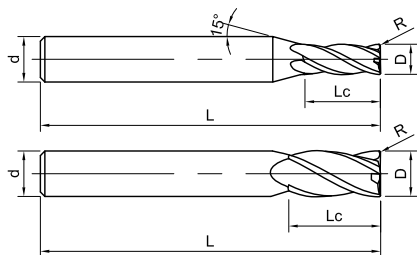


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D   | Lc | R   | L  | d | Figure No. | Stock |
|----------------|-----|----|-----|----|---|------------|-------|
| US260-R4-01501 | 1.5 | 5  | 0.1 | 50 | 4 | 1          | ●     |
| US260-R4-02001 | 2   | 6  | 0.1 | 50 | 4 | 1          | ●     |
| US260-R4-02002 | 2   | 6  | 0.2 | 50 | 4 | 1          | ●     |
| US260-R4-03001 | 3   | 9  | 0.1 | 50 | 4 | 1          | ●     |
| US260-R4-03002 | 3   | 9  | 0.2 | 50 | 4 | 1          | ●     |
| US260-R4-03003 | 3   | 9  | 0.3 | 50 | 4 | 1          | ●     |
| US260-R4-63001 | 3   | 9  | 0.1 | 50 | 6 | 1          | ●     |
| US260-R4-63002 | 3   | 9  | 0.2 | 50 | 6 | 1          | ●     |
| US260-R4-63003 | 3   | 9  | 0.3 | 50 | 6 | 1          | ●     |
| US260-R4-06002 | 6   | 12 | 0.2 | 50 | 6 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                          |                 |
|--|--|-----------------|-----------|--------------------------|-----------------|
| P  |  | M               | K         | S                        |                 |
| 1234                                     | 5                                      | 123             | 123       | 123                      | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Heat-resistant<br>Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○         | ○                        | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P493

# SS600-S4 NEW

4 Flutes, Square

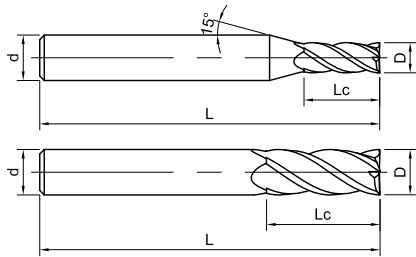


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D  | Lc | L   | d  | Figure No. | Stock |
|----------------|----|----|-----|----|------------|-------|
| SS600-S4-02006 | 2  | 6  | 50  | 4  | 1          | ●     |
| SS600-S4-03009 | 3  | 9  | 50  | 4  | 1          | ●     |
| SS600-S4-04011 | 4  | 11 | 50  | 4  | 2          | ●     |
| SS600-S4-64011 | 4  | 11 | 50  | 6  | 1          | ●     |
| SS600-S4-05013 | 5  | 13 | 50  | 6  | 1          | ●     |
| SS600-S4-06016 | 6  | 16 | 50  | 6  | 2          | ●     |
| SS600-S4-08020 | 8  | 20 | 60  | 8  | 2          | ●     |
| SS600-S4-10025 | 10 | 25 | 75  | 10 | 2          | ●     |
| SS600-S4-12026 | 12 | 26 | 83  | 12 | 2          | ●     |
| SS600-S4-16032 | 16 | 32 | 92  | 16 | 2          | ●     |
| SS600-S4-20038 | 20 | 38 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D < 6      | 0<br>-0.02 |
| 6 ≤ D ≤ 12 | 0<br>-0.03 |
| D > 12     | 0<br>-0.04 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                          |                 |
|--|--|-----------------|-----------|--------------------------|-----------------|
| P  |  | M               | K         | S                        |                 |
| 1234                                     | 5                                      | 123             | 123       | 123                      | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Heat-resistant<br>Alloys | Titanium Alloys |
| ○  | ○                                      | ○               | ○         | ○                        | ○               |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P494

# SS600-R4 NEW

4 Flutes, Corner Radius

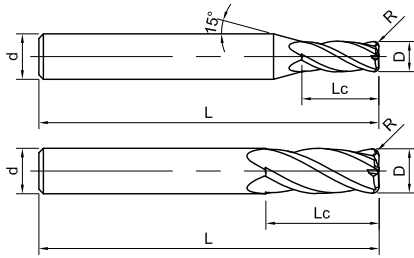


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D  | R   | Lc | L  | d  | Figure No. | Stock |
|----------------|----|-----|----|----|----|------------|-------|
| SS600-R4-02002 | 2  | 0.2 | 6  | 50 | 4  | 1          | ●     |
| SS600-R4-03005 | 3  | 0.5 | 8  | 50 | 4  | 1          | ●     |
| SS600-R4-04005 | 4  | 0.5 | 11 | 50 | 4  | 2          | ●     |
| SS600-R4-64005 | 4  | 0.5 | 11 | 50 | 6  | 1          | ●     |
| SS600-R4-05005 | 5  | 0.5 | 13 | 50 | 6  | 1          | ●     |
| SS600-R4-06005 | 6  | 0.5 | 16 | 50 | 6  | 2          | ●     |
| SS600-R4-06010 | 6  | 1   | 16 | 50 | 6  | 2          | ●     |
| SS600-R4-08005 | 8  | 0.5 | 20 | 60 | 8  | 2          | ●     |
| SS600-R4-08010 | 8  | 1   | 20 | 60 | 8  | 2          | ●     |
| SS600-R4-10005 | 10 | 0.5 | 25 | 75 | 10 | 2          | ●     |
| SS600-R4-10010 | 10 | 1   | 25 | 75 | 10 | 2          | ●     |
| SS600-R4-10020 | 10 | 2   | 25 | 75 | 10 | 2          | ●     |
| SS600-R4-12005 | 12 | 0.5 | 26 | 83 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D < 6      | 0<br>-0.02 |
| 6 ≤ D ≤ 12 | 0<br>-0.03 |
| D > 12     | 0<br>-0.04 |

Unit (mm)

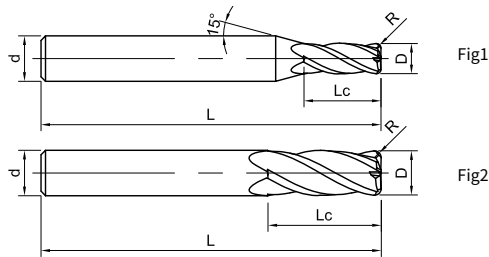
| Workpiece Material                       |  |                 |           |                          |                 |
|--|--|-----------------|-----------|--------------------------|-----------------|
| P  |  | M               | K         | S                        |                 |
| 1234                                     | 5                                      | 123             | 123       | 123                      | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Heat-resistant<br>Alloys | Titanium Alloys |
| ○  | ○                                      | ○               | ○         | ○                        | ○               |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P494

# SS600-R4 NEW

4 Flutes, Corner Radius



Please refer to page 149

| Ordering Code  | D  | R   | Lc | L   | d  | Figure No. | Stock |
|----------------|----|-----|----|-----|----|------------|-------|
| SS600-R4-12010 | 12 | 1   | 26 | 83  | 12 | 2          | ●     |
| SS600-R4-12020 | 12 | 2   | 26 | 83  | 12 | 2          | ●     |
| SS600-R4-12030 | 12 | 3   | 26 | 83  | 12 | 2          | ●     |
| SS600-R4-16005 | 16 | 0.5 | 32 | 92  | 16 | 2          | ○     |
| SS600-R4-16010 | 16 | 1   | 32 | 92  | 16 | 2          | ●     |
| SS600-R4-16015 | 16 | 1.5 | 32 | 92  | 16 | 2          | ○     |
| SS600-R4-16020 | 16 | 2   | 32 | 92  | 16 | 2          | ●     |
| SS600-R4-16030 | 16 | 3   | 32 | 92  | 16 | 2          | ○     |
| SS600-R4-20005 | 20 | 0.5 | 38 | 100 | 20 | 2          | ○     |
| SS600-R4-20010 | 20 | 1   | 38 | 100 | 20 | 2          | ○     |
| SS600-R4-20020 | 20 | 2   | 38 | 100 | 20 | 2          | ●     |
| SS600-R4-20030 | 20 | 3   | 38 | 100 | 20 | 2          | ○     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D < 6      | 0<br>-0.02 |
| 6 ≤ D ≤ 12 | 0<br>-0.03 |
| D > 12     | 0<br>-0.04 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                          |                 |
|--|--|-----------------|-----------|--------------------------|-----------------|
| <b>P</b>                                 |  | <b>M</b>        | <b>K</b>  | <b>S</b>                 |                 |
| 1234                                     | 5                                      | 123             | 123       | 123                      | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Heat-resistant<br>Alloys | Titanium Alloys |
| ○  | ○                                      | ○               | ○         | ○                        | ○               |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P494

# SS600-B4 NEW

4 Flutes, Ball-nose

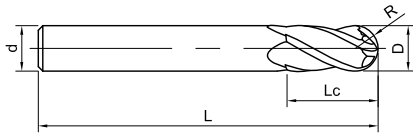


Fig1



Please refer to page 149

| Ordering Code  | D  | R  | Lc | L   | d  | Figure No. | Stock |
|----------------|----|----|----|-----|----|------------|-------|
| SS600-B4-06012 | 6  | 3  | 12 | 50  | 6  | 1          | ○     |
| SS600-B4-08014 | 8  | 4  | 14 | 60  | 8  | 1          | ○     |
| SS600-B4-10018 | 10 | 5  | 18 | 75  | 10 | 1          | ○     |
| SS600-B4-12022 | 12 | 6  | 22 | 75  | 12 | 1          | ○     |
| SS600-B4-16030 | 16 | 8  | 30 | 100 | 16 | 1          | ○     |
| SS600-B4-20038 | 20 | 10 | 38 | 100 | 20 | 1          | ○     |

● Stock ○ Available upon Order

| R     | Tol    |
|-------|--------|
| R ≥ 3 | ±0.020 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                          |                 |
|--|--|-----------------|-----------|--------------------------|-----------------|
| P  |  | M               | K         | S                        |                 |
| 1234                                     | 5                                      | 123             | 123       | 123                      | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Heat-resistant<br>Alloys | Titanium Alloys |
| ○  | ○                                      | ○               | ○         | ○                        | ○               |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P494



# UA100-S2

2 Flutes, Square

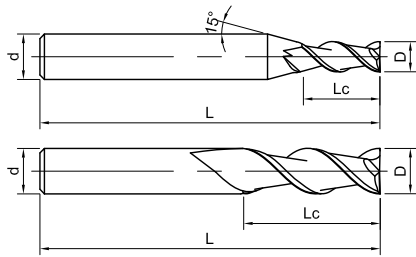


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D   | Lc | L   | d  | Figure No. | Stock |
|----------------|-----|----|-----|----|------------|-------|
| UA100-S2-01003 | 1   | 3  | 50  | 4  | 1          | ●     |
| UA100-S2-01504 | 1.5 | 4  | 50  | 4  | 1          | ●     |
| UA100-S2-02006 | 2   | 6  | 50  | 4  | 1          | ●     |
| UA100-S2-03009 | 3   | 9  | 50  | 4  | 1          | ●     |
| UA100-S2-63009 | 3   | 9  | 50  | 6  | 1          | ●     |
| UA100-S2-04006 | 4   | 6  | 50  | 4  | 2          | ●     |
| UA100-S2-04011 | 4   | 11 | 50  | 4  | 2          | ●     |
| UA100-S2-64011 | 4   | 11 | 50  | 6  | 1          | ●     |
| UA100-S2-04512 | 4.5 | 12 | 50  | 6  | 1          | ●     |
| UA100-S2-05013 | 5   | 13 | 50  | 6  | 1          | ●     |
| UA100-S2-05516 | 5.5 | 16 | 50  | 6  | 1          | ●     |
| UA100-S2-06006 | 6   | 6  | 50  | 6  | 2          | ●     |
| UA100-S2-06012 | 6   | 12 | 50  | 6  | 2          | ●     |
| UA100-S2-06016 | 6   | 16 | 50  | 6  | 2          | ●     |
| UA100-S2-07020 | 7   | 20 | 60  | 8  | 1          | ●     |
| UA100-S2-08020 | 8   | 20 | 60  | 8  | 2          | ●     |
| UA100-S2-09023 | 9   | 23 | 75  | 10 | 1          | ●     |
| UA100-S2-10025 | 10  | 25 | 75  | 10 | 2          | ●     |
| UA100-S2-12030 | 12  | 30 | 75  | 12 | 2          | ●     |
| UA100-S2-16036 | 16  | 36 | 100 | 16 | 2          | ●     |
| UA100-S2-20045 | 20  | 45 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ⊙                   | ⊙                |          |

⊙ Most Suitable ○ Suitable

Recommended Cutting Data ※ P495

# UA100-SL2

2 Long flutes, Square

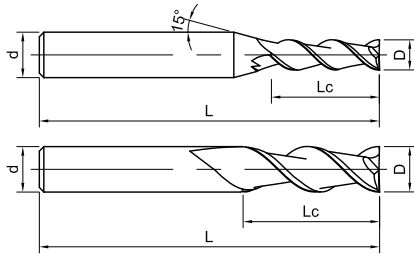


Fig1

Fig2



Please refer to page 149

| Ordering Code   | D  | Lc | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|----|------------|-------|
| UA100-SL2-02020 | 2  | 20 | 75  | 4  | 1          | ●     |
| UA100-SL2-03025 | 3  | 25 | 75  | 4  | 1          | ●     |
| UA100-SL2-04030 | 4  | 30 | 75  | 4  | 2          | ●     |
| UA100-SL2-05030 | 5  | 30 | 75  | 6  | 1          | ●     |
| UA100-SL2-06035 | 6  | 35 | 75  | 6  | 2          | ●     |
| UA100-SL2-08040 | 8  | 40 | 100 | 8  | 2          | ●     |
| UA100-SL2-10045 | 10 | 45 | 100 | 10 | 2          | ●     |
| UA100-SL2-12050 | 12 | 50 | 100 | 12 | 2          | ●     |
| UA100-SL2-16060 | 16 | 60 | 150 | 16 | 2          | ●     |
| UA100-SL2-20070 | 20 | 70 | 150 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ○                   | ○                |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P495

# UA100-SH2

2 Flutes with long shank, Square

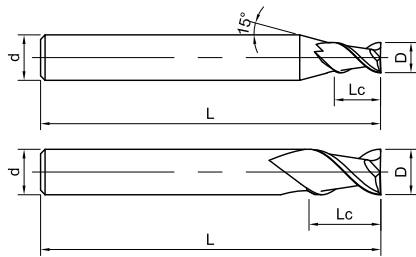


Fig1

Fig2



Please refer to page 149

| Ordering Code   | D  | Lc | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|----|------------|-------|
| UA100-SH2-02006 | 2  | 6  | 75  | 4  | 1          | ●     |
| UA100-SH2-03009 | 3  | 9  | 75  | 4  | 1          | ●     |
| UA100-SH2-04010 | 4  | 10 | 75  | 4  | 2          | ●     |
| UA100-SH2-04011 | 4  | 11 | 75  | 4  | 2          | ●     |
| UA100-SH2-06015 | 6  | 15 | 75  | 6  | 2          | ●     |
| UA100-SH2-06016 | 6  | 16 | 75  | 6  | 2          | ●     |
| UA100-SH2-08020 | 8  | 20 | 100 | 8  | 2          | ●     |
| UA100-SH2-10025 | 10 | 25 | 100 | 10 | 2          | ●     |
| UA100-SH2-12030 | 12 | 30 | 100 | 12 | 2          | ●     |
| UA100-SH2-16036 | 16 | 36 | 150 | 16 | 2          | ●     |
| UA100-SH2-20045 | 20 | 45 | 150 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ⊙                   | ⊙                |          |

⊙ Most Suitable ○ Suitable

Recommended Cutting Data ※ P495

# UA100-S3

2 Flutes, Square

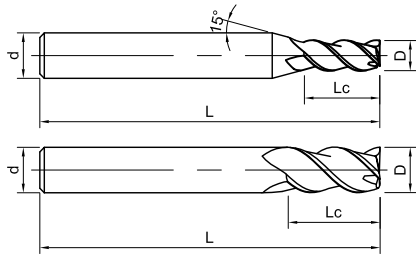


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D   | Lc | L   | d  | Figure No. | Stock |
|----------------|-----|----|-----|----|------------|-------|
| UA100-S3-01003 | 1   | 3  | 50  | 4  | 1          | ●     |
| UA100-S3-01504 | 1.5 | 4  | 50  | 4  | 1          | ●     |
| UA100-S3-02006 | 2   | 6  | 50  | 4  | 1          | ●     |
| UA100-S3-02508 | 2.5 | 8  | 50  | 4  | 1          | ●     |
| UA100-S3-03009 | 3   | 9  | 50  | 4  | 1          | ●     |
| UA100-S3-63009 | 3   | 9  | 50  | 6  | 2          | ●     |
| UA100-S3-04011 | 4   | 11 | 50  | 4  | 2          | ●     |
| UA100-S3-64011 | 4   | 11 | 50  | 6  | 1          | ●     |
| UA100-S3-05013 | 5   | 13 | 50  | 6  | 1          | ●     |
| UA100-S3-06012 | 6   | 12 | 50  | 6  | 2          | ●     |
| UA100-S3-06016 | 6   | 16 | 50  | 6  | 2          | ●     |
| UA100-S3-07020 | 7   | 20 | 60  | 8  | 1          | ●     |
| UA100-S3-08020 | 8   | 20 | 60  | 8  | 2          | ●     |
| UA100-S3-09023 | 9   | 23 | 75  | 10 | 1          | ●     |
| UA100-S3-10025 | 10  | 25 | 75  | 10 | 2          | ●     |
| UA100-S3-12030 | 12  | 30 | 75  | 12 | 2          | ●     |
| UA100-S3-16036 | 16  | 36 | 100 | 16 | 2          | ●     |
| UA100-S3-18038 | 18  | 38 | 100 | 18 | 2          | ●     |
| UA100-S3-20045 | 20  | 45 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ○                   | ○                |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P496

# UA100-SL3

3 Long flutes, Square

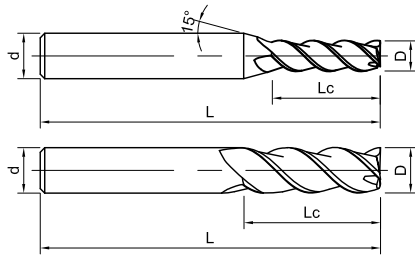
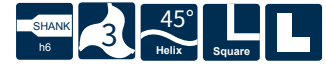


Fig1

Fig2



Please refer to page 149

| Ordering Code   | D  | Lc | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|----|------------|-------|
| UA100-SL3-02020 | 2  | 20 | 75  | 4  | 1          | ●     |
| UA100-SL3-03025 | 3  | 25 | 75  | 4  | 1          | ●     |
| UA100-SL3-04030 | 4  | 30 | 75  | 4  | 2          | ●     |
| UA100-SL3-05030 | 5  | 30 | 75  | 6  | 1          | ●     |
| UA100-SL3-06035 | 6  | 35 | 75  | 6  | 2          | ●     |
| UA100-SL3-08040 | 8  | 40 | 100 | 8  | 2          | ●     |
| UA100-SL3-10045 | 10 | 45 | 100 | 10 | 2          | ●     |
| UA100-SL3-12050 | 12 | 50 | 100 | 12 | 2          | ●     |
| UA100-SL3-16060 | 16 | 60 | 150 | 16 | 2          | ●     |
| UA100-SL3-20070 | 20 | 70 | 150 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ⊙                   | ⊙                |          |

⊙ Most Suitable ○ Suitable

Recommended Cutting Data ※ P496

# UA100-SH3

3 Flutes with long shank, Square

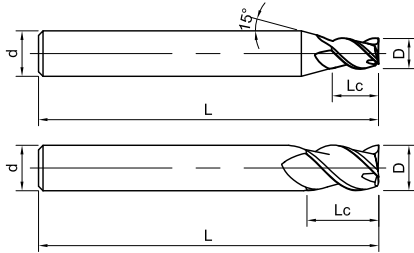


Fig1

Fig2



Please refer to page 149

| Ordering Code   | D  | Lc | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|----|------------|-------|
| UA100-SH3-02008 | 2  | 8  | 75  | 4  | 1          | ●     |
| UA100-SH3-03010 | 3  | 10 | 75  | 4  | 1          | ●     |
| UA100-SH3-04012 | 4  | 12 | 75  | 4  | 2          | ●     |
| UA100-SH3-06016 | 6  | 16 | 75  | 6  | 2          | ●     |
| UA100-SH3-08020 | 8  | 20 | 100 | 8  | 2          | ●     |
| UA100-SH3-10025 | 10 | 25 | 100 | 10 | 2          | ●     |
| UA100-SH3-12030 | 12 | 30 | 100 | 12 | 2          | ●     |
| UA100-SH3-16036 | 16 | 36 | 150 | 16 | 2          | ●     |
| UA100-SH3-20045 | 20 | 45 | 150 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ○                   | ○                |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P496

# UA100-R2

2 Flutes, Corner Radius

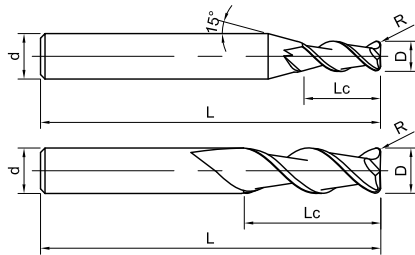


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D | Lc | R   | L  | d | Figure No. | Stock |
|----------------|---|----|-----|----|---|------------|-------|
| UA100-R2-01001 | 1 | 3  | 0.1 | 50 | 4 | 1          | ●     |
| UA100-R2-02002 | 2 | 6  | 0.2 | 50 | 4 | 1          | ●     |
| UA100-R2-03002 | 3 | 9  | 0.2 | 50 | 4 | 1          | ●     |
| UA100-R2-03003 | 3 | 9  | 0.3 | 50 | 4 | 1          | ●     |
| UA100-R2-63003 | 3 | 9  | 0.3 | 50 | 6 | 1          | ●     |
| UA100-R2-03005 | 3 | 9  | 0.5 | 50 | 4 | 1          | ●     |
| UA100-R2-63005 | 3 | 9  | 0.5 | 50 | 6 | 1          | ●     |
| UA100-R2-04002 | 4 | 11 | 0.2 | 50 | 4 | 2          | ●     |
| UA100-R2-04003 | 4 | 11 | 0.3 | 50 | 4 | 2          | ●     |
| UA100-R2-64003 | 4 | 11 | 0.3 | 50 | 6 | 1          | ●     |
| UA100-R2-04005 | 4 | 11 | 0.5 | 50 | 4 | 2          | ●     |
| UA100-R2-64005 | 4 | 11 | 0.5 | 50 | 6 | 1          | ●     |
| UA100-R2-04010 | 4 | 11 | 1   | 50 | 4 | 2          | ●     |
| UA100-R2-05002 | 5 | 13 | 0.2 | 50 | 6 | 1          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ○                   | ○                |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P495

# UA100-R2

2 Flutes, Corner Radius

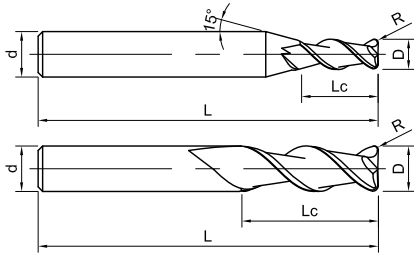


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code  | D  | Lc | R   | L  | d  | Figure No. | Stock |
|----------------|----|----|-----|----|----|------------|-------|
| UA100-R2-05003 | 5  | 13 | 0.3 | 50 | 6  | 1          | ●     |
| UA100-R2-05005 | 5  | 13 | 0.5 | 50 | 6  | 1          | ●     |
| UA100-R2-05010 | 5  | 13 | 1   | 50 | 6  | 1          | ●     |
| UA100-R2-05015 | 5  | 13 | 1.5 | 50 | 6  | 1          | ●     |
| UA100-R2-06005 | 6  | 16 | 0.5 | 50 | 6  | 2          | ●     |
| UA100-R2-06010 | 6  | 16 | 1   | 50 | 6  | 2          | ●     |
| UA100-R2-06015 | 6  | 16 | 1.5 | 50 | 6  | 2          | ●     |
| UA100-R2-06020 | 6  | 16 | 2   | 50 | 6  | 2          | ●     |
| UA100-R2-08005 | 8  | 20 | 0.5 | 60 | 8  | 2          | ●     |
| UA100-R2-08010 | 8  | 20 | 1   | 60 | 8  | 2          | ●     |
| UA100-R2-08015 | 8  | 20 | 1.5 | 60 | 8  | 2          | ●     |
| UA100-R2-08020 | 8  | 20 | 2   | 60 | 8  | 2          | ●     |
| UA100-R2-10005 | 10 | 25 | 0.5 | 75 | 10 | 2          | ●     |
| UA100-R2-10010 | 10 | 25 | 1   | 75 | 10 | 2          | ●     |
| UA100-R2-10015 | 10 | 25 | 1.5 | 75 | 10 | 2          | ●     |
| UA100-R2-10020 | 10 | 25 | 2   | 75 | 10 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

## Workpiece Material

| P  |  | M               | K         | N                   |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ○                   | ○                |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P495



# UA100-R2

2 Flutes, Corner Radius

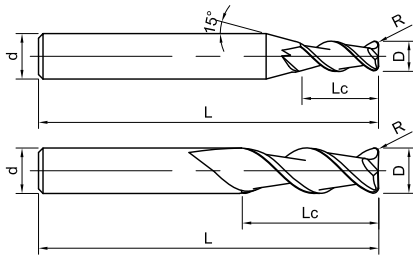
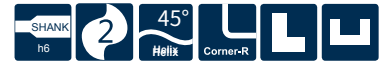


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code  | D  | Lc | R   | L   | d  | Figure No. | Stock |
|----------------|----|----|-----|-----|----|------------|-------|
| UA100-R2-10025 | 10 | 25 | 2.5 | 75  | 10 | 2          | ●     |
| UA100-R2-12005 | 12 | 30 | 0.5 | 75  | 12 | 2          | ●     |
| UA100-R2-12010 | 12 | 30 | 1   | 75  | 12 | 2          | ●     |
| UA100-R2-12015 | 12 | 30 | 1.5 | 75  | 12 | 2          | ●     |
| UA100-R2-12020 | 12 | 30 | 2   | 75  | 12 | 2          | ●     |
| UA100-R2-12025 | 12 | 30 | 2.5 | 75  | 12 | 2          | ●     |
| UA100-R2-16005 | 16 | 36 | 0.5 | 100 | 16 | 2          | ●     |
| UA100-R2-16010 | 16 | 36 | 1   | 100 | 16 | 2          | ●     |
| UA100-R2-16015 | 16 | 36 | 1.5 | 100 | 16 | 2          | ●     |
| UA100-R2-16020 | 16 | 36 | 2   | 100 | 16 | 2          | ●     |
| UA100-R2-16025 | 16 | 36 | 2.5 | 100 | 16 | 2          | ●     |
| UA100-R2-20005 | 20 | 45 | 0.5 | 100 | 20 | 2          | ●     |
| UA100-R2-20010 | 20 | 45 | 1   | 100 | 20 | 2          | ●     |
| UA100-R2-20015 | 20 | 45 | 1.5 | 100 | 20 | 2          | ●     |
| UA100-R2-20020 | 20 | 45 | 2   | 100 | 20 | 2          | ●     |
| UA100-R2-20030 | 20 | 45 | 3   | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

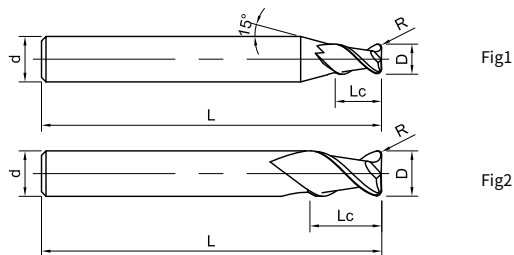
| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ⊙                   | ⊙                |          |

⊙ Most Suitable ○ Suitable

Recommended Cutting Data ※ P495

# UA100-RH2

2 Flutes with long shank, Corner Radius



Please refer to page 149

| Ordering Code   | D  | Lc | R   | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|-----|----|------------|-------|
| UA100-RH2-06005 | 6  | 16 | 0.5 | 75  | 6  | 2          | ●     |
| UA100-RH2-06010 | 6  | 16 | 1   | 75  | 6  | 2          | ●     |
| UA100-RH2-06015 | 6  | 16 | 1.5 | 75  | 6  | 2          | ●     |
| UA100-RH2-06020 | 6  | 16 | 2   | 75  | 6  | 2          | ●     |
| UA100-RH2-08005 | 8  | 20 | 0.5 | 100 | 8  | 2          | ●     |
| UA100-RH2-08010 | 8  | 20 | 1   | 100 | 8  | 2          | ●     |
| UA100-RH2-08015 | 8  | 20 | 1.5 | 100 | 8  | 2          | ●     |
| UA100-RH2-08020 | 8  | 20 | 2   | 100 | 8  | 2          | ●     |
| UA100-RH2-10005 | 10 | 25 | 0.5 | 100 | 10 | 2          | ●     |
| UA100-RH2-10010 | 10 | 25 | 1   | 100 | 10 | 2          | ●     |
| UA100-RH2-10015 | 10 | 25 | 1.5 | 100 | 10 | 2          | ●     |
| UA100-RH2-10020 | 10 | 25 | 2   | 100 | 10 | 2          | ●     |
| UA100-RH2-10025 | 10 | 25 | 2.5 | 100 | 10 | 2          | ●     |
| UA100-RH2-12005 | 12 | 30 | 0.5 | 100 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ○                   | ○                |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P495

# UA100-RH2

2 Flutes with long shank, Corner Radius

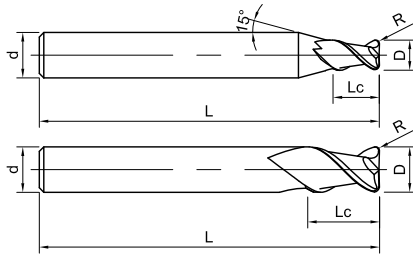


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code   | D  | Lc | R   | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|-----|----|------------|-------|
| UA100-RH2-12010 | 12 | 30 | 1   | 100 | 12 | 2          | ●     |
| UA100-RH2-12015 | 12 | 30 | 1.5 | 100 | 12 | 2          | ●     |
| UA100-RH2-12020 | 12 | 30 | 2   | 100 | 12 | 2          | ●     |
| UA100-RH2-12025 | 12 | 30 | 2.5 | 100 | 12 | 2          | ●     |
| UA100-RH2-16005 | 16 | 36 | 0.5 | 150 | 16 | 2          | ●     |
| UA100-RH2-16010 | 16 | 36 | 1   | 150 | 16 | 2          | ●     |
| UA100-RH2-16015 | 16 | 36 | 1.5 | 150 | 16 | 2          | ●     |
| UA100-RH2-16020 | 16 | 36 | 2   | 150 | 16 | 2          | ●     |
| UA100-RH2-16025 | 16 | 36 | 2.5 | 150 | 16 | 2          | ●     |
| UA100-RH2-20005 | 20 | 45 | 0.5 | 150 | 20 | 2          | ●     |
| UA100-RH2-20010 | 20 | 45 | 1   | 150 | 20 | 2          | ●     |
| UA100-RH2-20015 | 20 | 45 | 1.5 | 150 | 20 | 2          | ●     |
| UA100-RH2-20020 | 20 | 45 | 2   | 150 | 20 | 2          | ●     |
| UA100-RH2-20030 | 20 | 45 | 3   | 150 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ⊙                   | ⊙                |          |

⊙ Most Suitable ○ Suitable

Recommended Cutting Data ※ P495

# UA100-R3

3 Flutes, Corner Radius

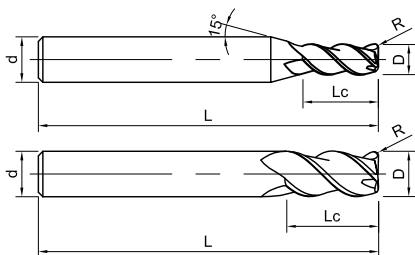


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D | Lc | R   | L  | d | Figure No. | Stock |
|----------------|---|----|-----|----|---|------------|-------|
| UA100-R3-01001 | 1 | 3  | 0.1 | 50 | 4 | 1          | ●     |
| UA100-R3-02002 | 2 | 6  | 0.2 | 50 | 4 | 1          | ●     |
| UA100-R3-03002 | 3 | 9  | 0.2 | 50 | 4 | 1          | ●     |
| UA100-R3-03003 | 3 | 9  | 0.3 | 50 | 4 | 1          | ●     |
| UA100-R3-03005 | 3 | 9  | 0.5 | 50 | 4 | 1          | ●     |
| UA100-R3-04002 | 4 | 11 | 0.2 | 50 | 4 | 2          | ●     |
| UA100-R3-04003 | 4 | 11 | 0.3 | 50 | 4 | 2          | ●     |
| UA100-R3-04005 | 4 | 11 | 0.5 | 50 | 4 | 2          | ●     |
| UA100-R3-04010 | 4 | 11 | 1   | 50 | 4 | 2          | ●     |
| UA100-R3-05002 | 5 | 13 | 0.2 | 50 | 6 | 1          | ●     |
| UA100-R3-05003 | 5 | 13 | 0.3 | 50 | 6 | 1          | ●     |
| UA100-R3-05005 | 5 | 13 | 0.5 | 50 | 6 | 1          | ●     |
| UA100-R3-05010 | 5 | 13 | 1   | 50 | 6 | 1          | ●     |
| UA100-R3-05015 | 5 | 13 | 1.5 | 50 | 6 | 1          | ●     |
| UA100-R3-06005 | 6 | 16 | 0.5 | 50 | 6 | 2          | ●     |
| UA100-R3-06010 | 6 | 16 | 1   | 50 | 6 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ⊙                   | ⊙                |          |

⊙ Most Suitable ○ Suitable

Recommended Cutting Data ※ P496

# UA100-R3

3 Flutes, Corner Radius

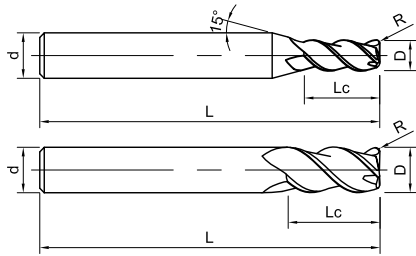
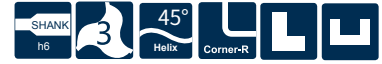


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code  | D  | Lc | R   | L  | d  | Figure No. | Stock |
|----------------|----|----|-----|----|----|------------|-------|
| UA100-R3-06015 | 6  | 16 | 1.5 | 50 | 6  | 2          | ●     |
| UA100-R3-06020 | 6  | 16 | 2   | 50 | 6  | 2          | ●     |
| UA100-R3-08005 | 8  | 20 | 0.5 | 60 | 8  | 2          | ●     |
| UA100-R3-08010 | 8  | 20 | 1   | 60 | 8  | 2          | ●     |
| UA100-R3-08015 | 8  | 20 | 1.5 | 60 | 8  | 2          | ●     |
| UA100-R3-08020 | 8  | 20 | 2   | 60 | 8  | 2          | ●     |
| UA100-R3-08030 | 8  | 20 | 3   | 60 | 8  | 2          | ●     |
| UA100-R3-10005 | 10 | 25 | 0.5 | 75 | 10 | 2          | ●     |
| UA100-R3-10010 | 10 | 25 | 1   | 75 | 10 | 2          | ●     |
| UA100-R3-10015 | 10 | 25 | 1.5 | 75 | 10 | 2          | ●     |
| UA100-R3-10020 | 10 | 25 | 2   | 75 | 10 | 2          | ●     |
| UA100-R3-10025 | 10 | 25 | 2.5 | 75 | 10 | 2          | ●     |
| UA100-R3-10030 | 10 | 25 | 3   | 75 | 10 | 2          | ●     |
| UA100-R3-12005 | 12 | 30 | 0.5 | 75 | 12 | 2          | ●     |
| UA100-R3-12010 | 12 | 30 | 1   | 75 | 12 | 2          | ●     |
| UA100-R3-12015 | 12 | 30 | 1.5 | 75 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ○                   | ○                |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P496

# UA100-R3

3 Flutes, Corner Radius

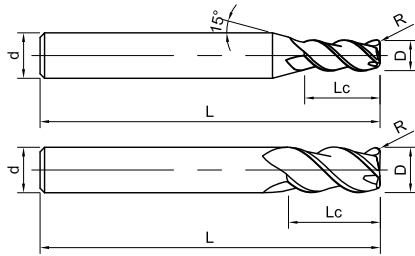


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code  | D  | Lc | R   | L   | d  | Figure No. | Stock |
|----------------|----|----|-----|-----|----|------------|-------|
| UA100-R3-12020 | 12 | 30 | 2   | 75  | 12 | 2          | ●     |
| UA100-R3-12025 | 12 | 30 | 2.5 | 75  | 12 | 2          | ●     |
| UA100-R3-12030 | 12 | 30 | 3   | 75  | 12 | 2          | ●     |
| UA100-R3-16005 | 16 | 36 | 0.5 | 100 | 16 | 2          | ●     |
| UA100-R3-16010 | 16 | 36 | 1   | 100 | 16 | 2          | ●     |
| UA100-R3-16015 | 16 | 36 | 1.5 | 100 | 16 | 2          | ●     |
| UA100-R3-16020 | 16 | 36 | 2   | 100 | 16 | 2          | ●     |
| UA100-R3-16025 | 16 | 36 | 2.5 | 100 | 16 | 2          | ●     |
| UA100-R3-16030 | 16 | 36 | 3   | 100 | 16 | 2          | ●     |
| UA100-R3-20005 | 20 | 45 | 0.5 | 100 | 20 | 2          | ●     |
| UA100-R3-20010 | 20 | 45 | 1   | 100 | 20 | 2          | ●     |
| UA100-R3-20015 | 20 | 45 | 1.5 | 100 | 20 | 2          | ●     |
| UA100-R3-20020 | 20 | 45 | 2   | 100 | 20 | 2          | ●     |
| UA100-R3-20030 | 20 | 45 | 3   | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ○                   | ○                |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P496

# UA100-RH3

3 Flutes with long shank, Corner Radius

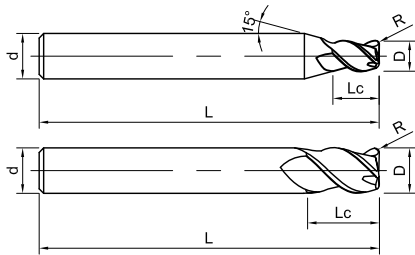


Fig1

Fig2



Please refer to page 149

| Ordering Code   | D  | Lc | R   | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|-----|----|------------|-------|
| UA100-RH3-06005 | 6  | 16 | 0.5 | 75  | 6  | 2          | ●     |
| UA100-RH3-06010 | 6  | 16 | 1   | 75  | 6  | 2          | ●     |
| UA100-RH3-06015 | 6  | 16 | 1.5 | 75  | 6  | 2          | ●     |
| UA100-RH3-06020 | 6  | 16 | 2   | 75  | 6  | 2          | ●     |
| UA100-RH3-08005 | 8  | 20 | 0.5 | 100 | 8  | 2          | ●     |
| UA100-RH3-08010 | 8  | 20 | 1   | 100 | 8  | 2          | ●     |
| UA100-RH3-08015 | 8  | 20 | 1.5 | 100 | 8  | 2          | ●     |
| UA100-RH3-08020 | 8  | 20 | 2   | 100 | 8  | 2          | ●     |
| UA100-RH3-10005 | 10 | 25 | 0.5 | 100 | 10 | 2          | ●     |
| UA100-RH3-10010 | 10 | 25 | 1   | 100 | 10 | 2          | ●     |
| UA100-RH3-10015 | 10 | 25 | 1.5 | 100 | 10 | 2          | ●     |
| UA100-RH3-10020 | 10 | 25 | 2   | 100 | 10 | 2          | ●     |
| UA100-RH3-10025 | 10 | 25 | 2.5 | 100 | 10 | 2          | ●     |
| UA100-RH3-12005 | 12 | 30 | 0.5 | 100 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ○                   | ○                |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P496

# UA100-RH3

3 Flutes with long shank, Corner Radius

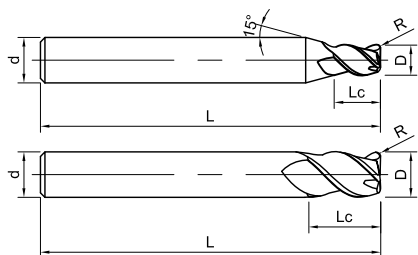
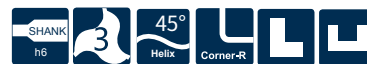


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code   | D  | Lc | R   | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|-----|----|------------|-------|
| UA100-RH3-12010 | 12 | 30 | 1   | 100 | 12 | 2          | ●     |
| UA100-RH3-12015 | 12 | 30 | 1.5 | 100 | 12 | 2          | ●     |
| UA100-RH3-12020 | 12 | 30 | 2   | 100 | 12 | 2          | ●     |
| UA100-RH3-12025 | 12 | 30 | 2.5 | 100 | 12 | 2          | ●     |
| UA100-RH3-16005 | 16 | 36 | 0.5 | 150 | 16 | 2          | ●     |
| UA100-RH3-16010 | 16 | 36 | 1   | 150 | 16 | 2          | ●     |
| UA100-RH3-16015 | 16 | 36 | 1.5 | 150 | 16 | 2          | ●     |
| UA100-RH3-16020 | 16 | 36 | 2   | 150 | 16 | 2          | ●     |
| UA100-RH3-16025 | 16 | 36 | 2.5 | 150 | 16 | 2          | ●     |
| UA100-RH3-20005 | 20 | 45 | 0.5 | 150 | 20 | 2          | ●     |
| UA100-RH3-20010 | 20 | 45 | 1   | 150 | 20 | 2          | ●     |
| UA100-RH3-20015 | 20 | 45 | 1.5 | 150 | 20 | 2          | ●     |
| UA100-RH3-20020 | 20 | 45 | 2   | 150 | 20 | 2          | ●     |
| UA100-RH3-20030 | 20 | 45 | 3   | 150 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.02 |
| D > 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ○                   | ○                |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P496



# UA100-B2

2 Flutes, Ball-nose

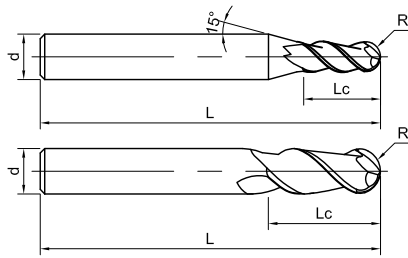
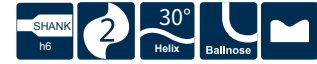


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D  | Lc | R   | L   | d  | Figure No. | Stock |
|----------------|----|----|-----|-----|----|------------|-------|
| UA100-B2-01002 | 1  | 2  | 0.5 | 50  | 4  | 1          | ●     |
| UA100-B2-02004 | 2  | 4  | 1   | 50  | 4  | 1          | ●     |
| UA100-B2-03006 | 3  | 6  | 1.5 | 50  | 4  | 1          | ●     |
| UA100-B2-63006 | 3  | 6  | 1.5 | 50  | 6  | 1          | ●     |
| UA100-B2-04008 | 4  | 8  | 2   | 50  | 4  | 2          | ●     |
| UA100-B2-64008 | 4  | 8  | 2   | 50  | 6  | 1          | ●     |
| UA100-B2-05010 | 5  | 10 | 2.5 | 50  | 6  | 1          | ●     |
| UA100-B2-06012 | 6  | 12 | 3   | 50  | 6  | 2          | ●     |
| UA100-B2-07014 | 7  | 14 | 3.5 | 60  | 8  | 1          | ●     |
| UA100-B2-08014 | 8  | 14 | 4   | 60  | 8  | 2          | ●     |
| UA100-B2-09016 | 9  | 16 | 4.5 | 75  | 10 | 1          | ●     |
| UA100-B2-10018 | 10 | 18 | 5   | 75  | 10 | 2          | ●     |
| UA100-B2-12022 | 12 | 22 | 6   | 75  | 12 | 2          | ●     |
| UA100-B2-16026 | 16 | 26 | 8   | 100 | 16 | 2          | ●     |

● Stock ○ Available upon Order

| R     | Tol    |
|-------|--------|
| R < 3 | ±0.015 |
| R ≥ 3 | ±0.02  |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
|  |  |                 |           | ⊙                   | ⊙             |          |

⊙ Most Suitable ○ Suitable

Recommended Cutting Data ※ P497

# SA100-S3

3 Flutes, Ball-nose

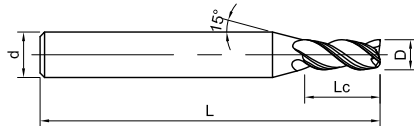


Fig1

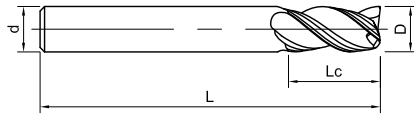
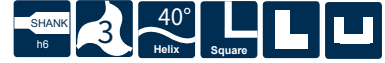


Fig2



Please refer to page 149

| Ordering Code  | D  | Lc | L   | d  | Figure No. | Stock |
|----------------|----|----|-----|----|------------|-------|
| SA100-S3-03009 | 3  | 9  | 50  | 6  | 1          | ●     |
| SA100-S3-04011 | 4  | 11 | 50  | 6  | 1          | ●     |
| SA100-S3-05013 | 5  | 13 | 50  | 6  | 1          | ●     |
| SA100-S3-06012 | 6  | 12 | 50  | 6  | 2          | ●     |
| SA100-S3-06016 | 6  | 16 | 50  | 6  | 2          | ●     |
| SA100-S3-08020 | 8  | 20 | 60  | 8  | 2          | ●     |
| SA100-S3-10025 | 10 | 25 | 75  | 10 | 2          | ●     |
| SA100-S3-12030 | 12 | 30 | 75  | 12 | 2          | ●     |
| SA100-S3-16036 | 16 | 36 | 100 | 16 | 2          | ●     |
| SA100-S3-20045 | 20 | 45 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 10 | 0<br>-0.01 |
| D > 10 | 0<br>-0.02 |

Unit (mm)

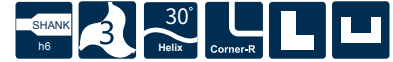
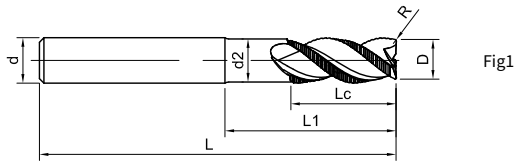
| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ○                   | ○                |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P497

# SA210-WR NEW

3 Flutes with long neck, Corner Radius



Please refer to page 149

| Ordering Code  | D  | R | Lc | L1 | d2    | L   | d  | Figure No. | Stock |
|----------------|----|---|----|----|-------|-----|----|------------|-------|
| SA210-WR-16020 | 16 | 2 | 20 | 65 | 15.2  | 115 | 16 | 1          | ○     |
| SA210-WR-16030 | 16 | 3 | 20 | 65 | 15.2  | 115 | 16 | 1          | ●     |
| SA210-WR-20010 | 20 | 1 | 25 | 73 | 19    | 125 | 20 | 1          | ●     |
| SA210-WR-20030 | 20 | 3 | 25 | 73 | 19    | 125 | 20 | 1          | ●     |
| SA210-WR-20050 | 20 | 5 | 25 | 73 | 19    | 125 | 20 | 1          | ○     |
| SA210-WR-25010 | 25 | 1 | 30 | 72 | 23.75 | 130 | 25 | 1          | ○     |
| SA210-WR-25030 | 25 | 3 | 25 | 72 | 23.75 | 130 | 25 | 1          | ○     |
| SA210-WR-25050 | 25 | 5 | 30 | 72 | 23.75 | 130 | 25 | 1          | ○     |

● Stock ○ Available upon Order

| D           | Tol        |
|-------------|------------|
| 12 ≤ D < 16 | 0<br>-0.03 |
| 16 ≤ D ≤ 25 | 0<br>-0.04 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ○                   | ○                |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P498

# SA210-NR NEW

3 Flutes, Corner Radius

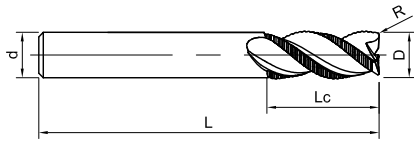


Fig1



Please refer to page 149

| Ordering Code  | D  | Lc | R    | L   | d  | Figure No. | Stock |
|----------------|----|----|------|-----|----|------------|-------|
| SA210-NR-06001 | 6  | 16 | 0.1  | 50  | 6  | 2          | ●     |
| SA210-NR-08002 | 8  | 20 | 0.2  | 60  | 8  | 2          | ●     |
| SA210-NR-10003 | 10 | 25 | 0.25 | 75  | 10 | 2          | ●     |
| SA210-NR-12003 | 12 | 30 | 0.25 | 75  | 12 | 2          | ●     |
| SA210-NR-16003 | 16 | 36 | 0.3  | 100 | 16 | 2          | ●     |
| SA210-NR-20003 | 20 | 45 | 0.3  | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D     | Tol        |
|-------|------------|
| D ≤ 6 | 0<br>-0.03 |
| D > 6 | 0<br>-0.04 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ◎                   | ◎                |          |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P498

# SA300-S3

3 Flutes, Square

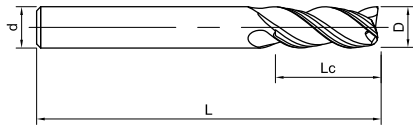
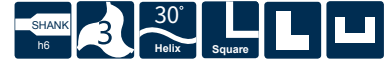


Fig1



Please refer to page 149

| Ordering Code   | D  | Lc | L   | d  | Figure No. | Stock |
|-----------------|----|----|-----|----|------------|-------|
| SA300-S3-06016  | 6  | 16 | 50  | 6  | 1          | ○     |
| SA300-S3-06016A | 6  | 16 | 75  | 6  | 1          | ○     |
| SA300-S3-08020  | 8  | 20 | 60  | 8  | 1          | ○     |
| SA300-S3-08025  | 8  | 25 | 75  | 8  | 1          | ○     |
| SA300-S3-10025  | 10 | 25 | 75  | 10 | 1          | ○     |
| SA300-S3-12030  | 12 | 30 | 75  | 12 | 1          | ○     |
| SA300-S3-16036  | 16 | 36 | 100 | 16 | 1          | ○     |
| SA300-S3-20038  | 20 | 38 | 100 | 20 | 1          | ○     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| 6 ≤ D ≤ 20 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| <b>P</b>                                 |  | <b>M</b>        | <b>K</b>  | <b>N</b>            |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ○                   | ○                |          |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P499

# SA300-RN2

2 Flutes with long neck, Corner Radius

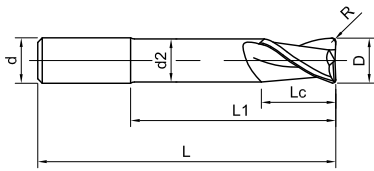


Fig1



Please refer to page 149

| Ordering Code    | D  | R   | Lc | L1 | d2  | L  | d  | Figure No. | Stock |
|------------------|----|-----|----|----|-----|----|----|------------|-------|
| SA300-RN2-06002  | 6  | 0.2 | 10 | 20 | 5.5 | 60 | 6  | 1          | ●     |
| SA300-RN2-06002A | 6  | 0.2 | 10 | 40 | 5.5 | 80 | 6  | 1          | ●     |
| SA300-RN2-06010  | 6  | 1   | 10 | 20 | 5.5 | 60 | 6  | 1          | ●     |
| SA300-RN2-06010A | 6  | 1   | 10 | 30 | 5.5 | 75 | 6  | 1          | ●     |
| SA300-RN2-06010B | 6  | 1   | 10 | 40 | 5.5 | 80 | 6  | 1          | ●     |
| SA300-RN2-06020  | 6  | 2   | 10 | 20 | 5.5 | 60 | 6  | 1          | ●     |
| SA300-RN2-06020A | 6  | 2   | 10 | 40 | 5.5 | 80 | 6  | 1          | ●     |
| SA300-RN2-08002  | 8  | 0.2 | 10 | 30 | 7.5 | 75 | 8  | 1          | ●     |
| SA300-RN2-08002A | 8  | 0.2 | 10 | 50 | 7.5 | 90 | 8  | 1          | ●     |
| SA300-RN2-08010  | 8  | 1   | 10 | 30 | 7.5 | 75 | 8  | 1          | ●     |
| SA300-RN2-08010A | 8  | 1   | 10 | 40 | 7.5 | 80 | 8  | 1          | ●     |
| SA300-RN2-08010B | 8  | 1   | 10 | 50 | 7.5 | 90 | 8  | 1          | ●     |
| SA300-RN2-08020  | 8  | 2   | 10 | 30 | 7.5 | 75 | 8  | 1          | ●     |
| SA300-RN2-08020A | 8  | 2   | 10 | 50 | 7.5 | 90 | 8  | 1          | ●     |
| SA300-RN2-10002  | 10 | 0.2 | 12 | 30 | 9.5 | 75 | 10 | 1          | ●     |
| SA300-RN2-10002A | 10 | 0.2 | 12 | 50 | 9.5 | 90 | 10 | 1          | ●     |
| SA300-RN2-10010A | 10 | 1   | 12 | 30 | 9.5 | 75 | 10 | 1          | ●     |
| SA300-RN2-10010B | 10 | 1   | 12 | 40 | 9.5 | 80 | 10 | 1          | ●     |
| SA300-RN2-10010C | 10 | 1   | 12 | 50 | 9.5 | 90 | 10 | 1          | ●     |
| SA300-RN2-10020  | 10 | 2   | 12 | 30 | 9.5 | 75 | 10 | 1          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| 6 ≤ D ≤ 32 | 0<br>-0.03 |

Unit (mm)

## Workpiece Material

| P  |  | M               | K         | N                   |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ◎                   | ◎                |          |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P499

# SA300-RN2

2 Flutes Corner Radius with reduced neck

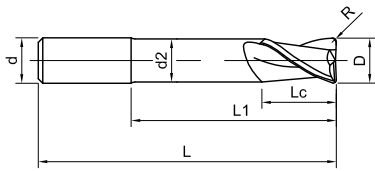


Fig1



Please refer to page 149

| Ordering Code    | D  | R   | Lc | L1 | d2   | L   | d  | Figure No. | Stock |
|------------------|----|-----|----|----|------|-----|----|------------|-------|
| SA300-RN2-10020A | 10 | 2   | 12 | 50 | 9.5  | 90  | 10 | 1          | ●     |
| SA300-RN2-10030  | 10 | 3   | 12 | 30 | 9.5  | 75  | 10 | 1          | ●     |
| SA300-RN2-10030A | 10 | 3   | 12 | 40 | 9.5  | 80  | 10 | 1          | ●     |
| SA300-RN2-10030B | 10 | 3   | 12 | 50 | 9.5  | 90  | 10 | 1          | ●     |
| SA300-RN2-12002  | 12 | 0.2 | 14 | 50 | 11.5 | 100 | 12 | 1          | ●     |
| SA300-RN2-12002A | 12 | 0.2 | 14 | 70 | 11.5 | 120 | 12 | 1          | ●     |
| SA300-RN2-12010  | 12 | 1   | 14 | 40 | 11.5 | 90  | 12 | 1          | ●     |
| SA300-RN2-12010A | 12 | 1   | 14 | 50 | 11.5 | 100 | 12 | 1          | ●     |
| SA300-RN2-12010B | 12 | 1   | 14 | 60 | 11.5 | 110 | 12 | 1          | ●     |
| SA300-RN2-12010C | 12 | 1   | 14 | 70 | 11.5 | 120 | 12 | 1          | ●     |
| SA300-RN2-12020  | 12 | 2   | 14 | 50 | 11.5 | 100 | 12 | 1          | ●     |
| SA300-RN2-12020A | 12 | 2   | 14 | 70 | 11.5 | 120 | 12 | 1          | ●     |
| SA300-RN2-12030  | 12 | 3   | 14 | 40 | 11.5 | 90  | 12 | 1          | ●     |
| SA300-RN2-12030A | 12 | 3   | 14 | 50 | 11.5 | 100 | 12 | 1          | ●     |
| SA300-RN2-12030B | 12 | 3   | 14 | 60 | 11.5 | 110 | 12 | 1          | ●     |
| SA300-RN2-12030C | 12 | 3   | 14 | 70 | 11.5 | 120 | 12 | 1          | ●     |
| SA300-RN2-16002  | 16 | 0.2 | 18 | 50 | 15.5 | 100 | 16 | 1          | ●     |
| SA300-RN2-16002A | 16 | 0.2 | 18 | 70 | 15.5 | 120 | 16 | 1          | ●     |
| SA300-RN2-16010  | 16 | 1   | 18 | 50 | 15.5 | 100 | 16 | 1          | ●     |
| SA300-RN2-16010A | 16 | 1   | 18 | 60 | 15.5 | 110 | 16 | 1          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| 6 ≤ D ≤ 32 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ⊙                   | ⊙                |          |

⊙ Most Suitable ○ Suitable

Recommended Cutting Data ※ P499

# SA300-RN2

2 Flutes Corner Radius with reduced neck

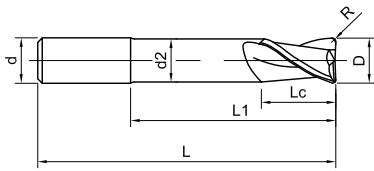


Fig1



Please refer to page 149

| Ordering Code    | D  | R   | Lc | L1  | d2   | L   | d  | Figure No. | Stock |
|------------------|----|-----|----|-----|------|-----|----|------------|-------|
| SA300-RN2-16010B | 16 | 1   | 18 | 70  | 15.5 | 120 | 16 | 1          | ●     |
| SA300-RN2-16010C | 16 | 1   | 18 | 80  | 15.5 | 130 | 16 | 1          | ●     |
| SA300-RN2-16020  | 16 | 2   | 18 | 60  | 15.5 | 110 | 16 | 1          | ○     |
| SA300-RN2-16030  | 16 | 3   | 18 | 50  | 15.5 | 100 | 16 | 1          | ●     |
| SA300-RN2-16030A | 16 | 3   | 18 | 60  | 15.5 | 110 | 16 | 1          | ●     |
| SA300-RN2-16030B | 16 | 3   | 18 | 70  | 15.5 | 120 | 16 | 1          | ●     |
| SA300-RN2-16030C | 16 | 3   | 18 | 80  | 15.5 | 130 | 16 | 1          | ●     |
| SA300-RN2-16040  | 16 | 4   | 18 | 60  | 15.5 | 110 | 16 | 1          | ○     |
| SA300-RN2-16050  | 16 | 5   | 18 | 60  | 15.5 | 110 | 16 | 1          | ●     |
| SA300-RN2-16050A | 16 | 5   | 18 | 80  | 15.5 | 130 | 16 | 1          | ○     |
| SA300-RN2-20002  | 20 | 0.2 | 24 | 60  | 19   | 110 | 20 | 1          | ●     |
| SA300-RN2-20002A | 20 | 0.2 | 24 | 80  | 19   | 130 | 20 | 1          | ●     |
| SA300-RN2-20010  | 20 | 1   | 24 | 60  | 19   | 110 | 20 | 1          | ●     |
| SA300-RN2-20010A | 20 | 1   | 24 | 80  | 19   | 130 | 20 | 1          | ●     |
| SA300-RN2-20010B | 20 | 1   | 24 | 50  | 19   | 100 | 20 | 1          | ●     |
| SA300-RN2-20010C | 20 | 1   | 24 | 70  | 19   | 120 | 20 | 1          | ●     |
| SA300-RN2-20010D | 20 | 1   | 24 | 90  | 19   | 140 | 20 | 1          | ●     |
| SA300-RN2-20010E | 20 | 1   | 24 | 100 | 19   | 150 | 20 | 1          | ●     |
| SA300-RN2-20020  | 20 | 2   | 24 | 60  | 19   | 110 | 20 | 1          | ○     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| 6 ≤ D ≤ 32 | 0<br>-0.03 |

Unit (mm)

## Workpiece Material

| P  |  | M               | K         | N                   |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ◎                   | ◎                |          |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P499



# SA300-RN2

2 Flutes Corner Radius with reduced neck

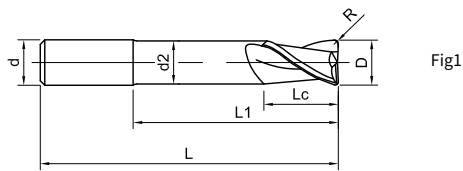


Fig1



Please refer to page 149

| Ordering Code    | D  | R | Lc | L1  | d2 | L   | d  | Figure No. | Stock |
|------------------|----|---|----|-----|----|-----|----|------------|-------|
| SA300-RN2-20030  | 20 | 3 | 24 | 60  | 19 | 110 | 20 | 1          | ●     |
| SA300-RN2-20030A | 20 | 3 | 24 | 80  | 19 | 130 | 20 | 1          | ●     |
| SA300-RN2-20030B | 20 | 3 | 24 | 50  | 19 | 100 | 20 | 1          | ●     |
| SA300-RN2-20030C | 20 | 3 | 24 | 70  | 19 | 120 | 20 | 1          | ●     |
| SA300-RN2-20030D | 20 | 3 | 24 | 90  | 19 | 140 | 20 | 1          | ●     |
| SA300-RN2-20030E | 20 | 3 | 24 | 100 | 19 | 150 | 20 | 1          | ●     |
| SA300-RN2-20040  | 20 | 4 | 24 | 60  | 19 | 110 | 20 | 1          | ○     |
| SA300-RN2-20050  | 20 | 5 | 24 | 60  | 19 | 110 | 20 | 1          | ●     |
| SA300-RN2-20050A | 20 | 5 | 24 | 80  | 19 | 130 | 20 | 1          | ○     |
| SA300-RN2-20050B | 20 | 5 | 24 | 100 | 19 | 150 | 20 | 1          | ○     |
| SA300-RN2-25010  | 25 | 1 | 30 | 80  | 24 | 135 | 25 | 1          | ●     |
| SA300-RN2-25010A | 25 | 1 | 30 | 100 | 24 | 155 | 25 | 1          | ●     |
| SA300-RN2-25010B | 25 | 1 | 30 | 125 | 24 | 180 | 25 | 1          | ○     |
| SA300-RN2-25020  | 25 | 2 | 30 | 80  | 24 | 135 | 25 | 1          | ○     |
| SA300-RN2-25030  | 25 | 3 | 30 | 80  | 24 | 135 | 25 | 1          | ●     |
| SA300-RN2-25030A | 25 | 3 | 30 | 100 | 24 | 155 | 25 | 1          | ●     |
| SA300-RN2-25030B | 25 | 3 | 30 | 125 | 24 | 180 | 25 | 1          | ○     |
| SA300-RN2-32030  | 32 | 3 | 40 | 100 | 31 | 163 | 32 | 1          | ○     |
| SA300-RN2-32030A | 32 | 3 | 40 | 120 | 31 | 183 | 32 | 1          | ○     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| 6 ≤ D ≤ 32 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ⊙                   | ⊙                |          |

⊙ Most Suitable ○ Suitable

Recommended Cutting Data ※ P499

# SA300-RN3

3 Flutes Corner Radius with reduced neck

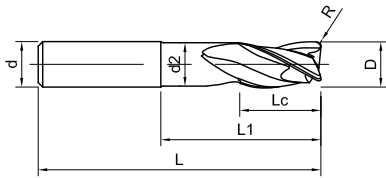


Fig1



Please refer to page 149

| Ordering Code    | D  | R   | Lc | L1 | d2  | L  | d  | Figure No. | Stock |
|------------------|----|-----|----|----|-----|----|----|------------|-------|
| SA300-RN3-06002  | 6  | 0.2 | 10 | 20 | 5.5 | 60 | 6  | 1          | ●     |
| SA300-RN3-06002A | 6  | 0.2 | 10 | 40 | 5.5 | 80 | 6  | 1          | ●     |
| SA300-RN3-06010  | 6  | 1   | 10 | 20 | 5.5 | 60 | 6  | 1          | ●     |
| SA300-RN3-06010A | 6  | 1   | 10 | 30 | 5.5 | 75 | 6  | 1          | ●     |
| SA300-RN3-06010B | 6  | 1   | 10 | 40 | 5.5 | 80 | 6  | 1          | ●     |
| SA300-RN3-06020  | 6  | 2   | 10 | 20 | 5.5 | 60 | 6  | 1          | ●     |
| SA300-RN3-06020A | 6  | 2   | 10 | 40 | 5.5 | 80 | 6  | 1          | ●     |
| SA300-RN3-08002  | 8  | 0.2 | 10 | 30 | 7.5 | 75 | 8  | 1          | ●     |
| SA300-RN3-08002A | 8  | 0.2 | 10 | 50 | 7.5 | 90 | 8  | 1          | ●     |
| SA300-RN3-08010  | 8  | 1   | 10 | 30 | 7.5 | 75 | 8  | 1          | ●     |
| SA300-RN3-08010A | 8  | 1   | 10 | 40 | 7.5 | 80 | 8  | 1          | ●     |
| SA300-RN3-08010B | 8  | 1   | 10 | 50 | 7.5 | 90 | 8  | 1          | ●     |
| SA300-RN3-08020  | 8  | 2   | 10 | 30 | 7.5 | 75 | 8  | 1          | ●     |
| SA300-RN3-08020A | 8  | 2   | 10 | 50 | 7.5 | 90 | 8  | 1          | ●     |
| SA300-RN3-10002  | 10 | 0.2 | 12 | 30 | 9.5 | 75 | 10 | 1          | ●     |
| SA300-RN3-10002A | 10 | 0.2 | 12 | 50 | 9.5 | 90 | 10 | 1          | ●     |
| SA300-RN3-10010  | 10 | 1   | 12 | 30 | 9.5 | 75 | 10 | 1          | ●     |
| SA300-RN3-10010A | 10 | 1   | 12 | 40 | 9.5 | 80 | 10 | 1          | ●     |
| SA300-RN3-10010B | 10 | 1   | 12 | 50 | 9.5 | 90 | 10 | 1          | ●     |
| SA300-RN3-10020  | 10 | 2   | 12 | 30 | 9.5 | 75 | 10 | 1          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| 6 ≤ D ≤ 32 | 0<br>-0.03 |

Unit (mm)

## Workpiece Material

| P  |  | M               | K         | N                   |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ⊙                   | ⊙                |          |

⊙ Most Suitable ○ Suitable

Recommended Cutting Data ※ P499

# SA300-RN3

3 Flutes Corner Radius with reduced neck

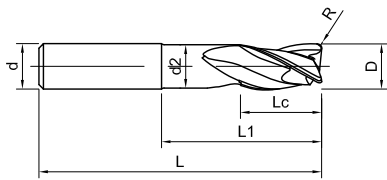


Fig1



Please refer to page 149

| Ordering Code    | D  | R   | Lc | L1 | d2   | L   | d  | Figure No. | Stock |
|------------------|----|-----|----|----|------|-----|----|------------|-------|
| SA300-RN3-10020A | 10 | 2   | 12 | 50 | 9.5  | 90  | 10 | 1          | ●     |
| SA300-RN3-10030  | 10 | 3   | 12 | 30 | 9.5  | 75  | 10 | 1          | ●     |
| SA300-RN3-10030A | 10 | 3   | 12 | 40 | 9.5  | 80  | 10 | 1          | ●     |
| SA300-RN3-10030B | 10 | 3   | 12 | 50 | 9.5  | 90  | 10 | 1          | ●     |
| SA300-RN3-12002  | 12 | 0.2 | 14 | 50 | 11.5 | 100 | 12 | 1          | ●     |
| SA300-RN3-12002A | 12 | 0.2 | 14 | 70 | 11.5 | 120 | 12 | 1          | ●     |
| SA300-RN3-12010  | 12 | 1   | 14 | 40 | 11.5 | 90  | 12 | 1          | ●     |
| SA300-RN3-12010A | 12 | 1   | 14 | 50 | 11.5 | 100 | 12 | 1          | ●     |
| SA300-RN3-12010B | 12 | 1   | 14 | 60 | 11.5 | 110 | 12 | 1          | ●     |
| SA300-RN3-12010C | 12 | 1   | 14 | 70 | 11.5 | 120 | 12 | 1          | ●     |
| SA300-RN3-12020  | 12 | 2   | 14 | 50 | 11.5 | 100 | 12 | 1          | ●     |
| SA300-RN3-12020A | 12 | 2   | 14 | 70 | 11.5 | 115 | 12 | 1          | ●     |
| SA300-RN3-12030  | 12 | 3   | 14 | 40 | 11.5 | 90  | 12 | 1          | ●     |
| SA300-RN3-12030A | 12 | 3   | 14 | 50 | 11.5 | 100 | 12 | 1          | ●     |
| SA300-RN3-12030B | 12 | 3   | 14 | 60 | 11.5 | 110 | 12 | 1          | ●     |
| SA300-RN3-12030C | 12 | 3   | 14 | 70 | 11.5 | 120 | 12 | 1          | ●     |
| SA300-RN3-16002  | 16 | 0.2 | 18 | 50 | 15.5 | 100 | 16 | 1          | ●     |
| SA300-RN3-16002A | 16 | 0.2 | 18 | 70 | 15.5 | 120 | 16 | 1          | ●     |
| SA300-RN3-16010  | 16 | 1   | 18 | 50 | 15.5 | 100 | 16 | 1          | ●     |
| SA300-RN3-16010A | 16 | 1   | 18 | 60 | 15.5 | 110 | 16 | 1          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| 6 ≤ D ≤ 32 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ⊙                   | ⊙                |          |

⊙ Most Suitable ○ Suitable

Recommended Cutting Data ※ P499

# SA300-RN3

3 Flutes Corner Radius with reduced neck

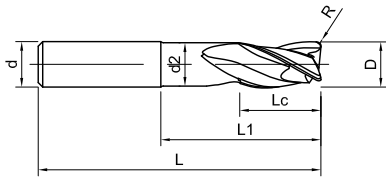


Fig1



Please refer to page 149

| Ordering Code    | D  | R   | Lc | L1  | d2   | L   | d  | Figure No. | Stock |
|------------------|----|-----|----|-----|------|-----|----|------------|-------|
| SA300-RN3-16010B | 16 | 1   | 18 | 70  | 15.5 | 120 | 16 | 1          | ●     |
| SA300-RN3-16010C | 16 | 1   | 18 | 80  | 15.5 | 130 | 16 | 1          | ●     |
| SA300-RN3-16020  | 16 | 2   | 18 | 60  | 15.5 | 110 | 16 | 1          | ○     |
| SA300-RN3-16030  | 16 | 3   | 18 | 50  | 15.5 | 100 | 16 | 1          | ●     |
| SA300-RN3-16030A | 16 | 3   | 18 | 60  | 15.5 | 110 | 16 | 1          | ●     |
| SA300-RN3-16030B | 16 | 3   | 18 | 70  | 15.5 | 120 | 16 | 1          | ●     |
| SA300-RN3-16030C | 16 | 3   | 18 | 80  | 15.5 | 130 | 16 | 1          | ●     |
| SA300-RN3-16040  | 16 | 4   | 18 | 60  | 15.5 | 110 | 16 | 1          | ○     |
| SA300-RN3-16050  | 16 | 5   | 18 | 60  | 15.5 | 110 | 16 | 1          | ●     |
| SA300-RN3-16050A | 16 | 5   | 18 | 80  | 15.5 | 130 | 16 | 1          | ○     |
| SA300-RN3-20002  | 20 | 0.2 | 24 | 60  | 19   | 110 | 20 | 1          | ●     |
| SA300-RN3-20002A | 20 | 0.2 | 24 | 80  | 19   | 130 | 20 | 1          | ●     |
| SA300-RN3-20010  | 20 | 1   | 24 | 60  | 19   | 110 | 20 | 1          | ●     |
| SA300-RN3-20010A | 20 | 1   | 24 | 80  | 19   | 130 | 20 | 1          | ●     |
| SA300-RN3-20010B | 20 | 1   | 24 | 50  | 19   | 100 | 20 | 1          | ●     |
| SA300-RN3-20010C | 20 | 1   | 24 | 70  | 19   | 120 | 20 | 1          | ●     |
| SA300-RN3-20010D | 20 | 1   | 24 | 90  | 19   | 140 | 20 | 1          | ●     |
| SA300-RN3-20010E | 20 | 1   | 24 | 100 | 19   | 150 | 20 | 1          | ●     |
| SA300-RN3-20020  | 20 | 2   | 24 | 60  | 19   | 110 | 20 | 1          | ○     |
| SA300-RN3-20030  | 20 | 3   | 24 | 60  | 19   | 110 | 20 | 1          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| 6 ≤ D ≤ 32 | 0<br>-0.03 |

Unit (mm)

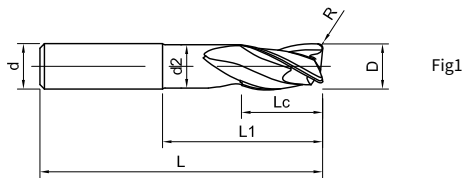
| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ⊙                   | ⊙                |          |

⊙ Most Suitable ○ Suitable

Recommended Cutting Data ※ P499

# SA300-RN3

3 Flutes Corner Radius with reduced neck



Please refer to page 149

| Ordering Code    | D  | R | Lc | L1  | d2 | L   | d  | Figure No. | Stock |
|------------------|----|---|----|-----|----|-----|----|------------|-------|
| SA300-RN3-20030A | 20 | 3 | 24 | 80  | 19 | 130 | 20 | 1          | ●     |
| SA300-RN3-20030B | 20 | 3 | 24 | 50  | 19 | 100 | 20 | 1          | ●     |
| SA300-RN3-20030C | 20 | 3 | 24 | 70  | 19 | 120 | 20 | 1          | ●     |
| SA300-RN3-20030D | 20 | 3 | 24 | 90  | 19 | 140 | 20 | 1          | ●     |
| SA300-RN3-20030E | 20 | 3 | 24 | 100 | 19 | 150 | 20 | 1          | ●     |
| SA300-RN3-20040  | 20 | 4 | 24 | 60  | 19 | 110 | 20 | 1          | ○     |
| SA300-RN3-20050  | 20 | 5 | 24 | 60  | 19 | 110 | 20 | 1          | ●     |
| SA300-RN3-20050A | 20 | 5 | 24 | 80  | 19 | 130 | 20 | 1          | ○     |
| SA300-RN3-20050B | 20 | 5 | 24 | 100 | 19 | 150 | 20 | 1          | ○     |
| SA300-RN3-25010  | 25 | 1 | 30 | 80  | 24 | 135 | 25 | 1          | ●     |
| SA300-RN3-25010A | 25 | 1 | 30 | 100 | 24 | 155 | 25 | 1          | ●     |
| SA300-RN3-25010B | 25 | 1 | 30 | 125 | 24 | 180 | 25 | 1          | ○     |
| SA300-RN3-25020  | 25 | 2 | 30 | 80  | 24 | 135 | 25 | 1          | ○     |
| SA300-RN3-25030  | 25 | 3 | 30 | 80  | 24 | 135 | 25 | 1          | ●     |
| SA300-RN3-25030A | 25 | 3 | 30 | 100 | 24 | 155 | 25 | 1          | ●     |
| SA300-RN3-25030B | 25 | 3 | 30 | 125 | 24 | 180 | 25 | 1          | ○     |
| SA300-RN3-32030  | 32 | 3 | 40 | 100 | 31 | 163 | 32 | 1          | ○     |
| SA300-RN3-32030A | 32 | 3 | 40 | 120 | 31 | 183 | 32 | 1          | ○     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| 6 ≤ D ≤ 32 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ⊙                   | ⊙                |          |

⊙ Most Suitable ○ Suitable

Recommended Cutting Data ※ P499

# SA300-BN2

2 Flutes ball-nose head

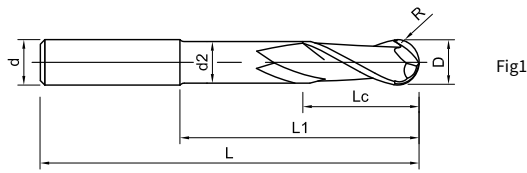


Fig1



Please refer to page 149

| Ordering Code   | D  | R  | Lc | L1 | d2   | L   | d  | Figure No. | Stock |
|-----------------|----|----|----|----|------|-----|----|------------|-------|
| SA300-BN2-06020 | 6  | 3  | 10 | 20 | 5.5  | 60  | 6  | 1          | ○     |
| SA300-BN2-06030 | 6  | 3  | 10 | 30 | 5.5  | 75  | 6  | 1          | ○     |
| SA300-BN2-08030 | 8  | 4  | 10 | 30 | 7.5  | 75  | 8  | 1          | ○     |
| SA300-BN2-08040 | 8  | 4  | 10 | 40 | 7.5  | 80  | 8  | 1          | ○     |
| SA300-BN2-10030 | 10 | 5  | 12 | 30 | 9.5  | 75  | 10 | 1          | ○     |
| SA300-BN2-10040 | 10 | 5  | 12 | 40 | 9.5  | 80  | 10 | 1          | ○     |
| SA300-BN2-12040 | 12 | 6  | 14 | 40 | 11.5 | 90  | 12 | 1          | ○     |
| SA300-BN2-12050 | 12 | 6  | 14 | 50 | 11.5 | 100 | 12 | 1          | ○     |
| SA300-BN2-16060 | 16 | 8  | 18 | 60 | 15.5 | 110 | 16 | 1          | ○     |
| SA300-BN2-16070 | 16 | 8  | 18 | 70 | 15.5 | 120 | 16 | 1          | ○     |
| SA300-BN2-20060 | 20 | 10 | 24 | 60 | 19   | 110 | 20 | 1          | ○     |
| SA300-BN2-20080 | 20 | 10 | 24 | 80 | 19   | 130 | 20 | 1          | ○     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| 6 ≤ D ≤ 20 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ◎                   | ◎                |          |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P499

# DNM100-RS1 NEW

1 flute Corner Radius

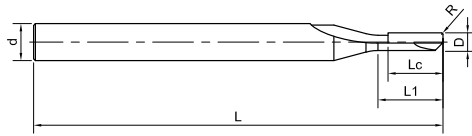


Fig1



Please refer to page 149

| Ordering Code    | D | Lc | R   | L1 | L  | d | Figure No. | Stock |
|------------------|---|----|-----|----|----|---|------------|-------|
| DNM100-RS1-02001 | 2 | 6  | 0.1 | 8  | 50 | 4 | 1          | ●     |
| DNM100-RS1-02002 | 2 | 6  | 0.2 | 8  | 50 | 4 | 1          | ●     |
| DNM100-RS1-02003 | 2 | 6  | 0.3 | 8  | 50 | 4 | 1          | ○     |
| DNM100-RS1-03001 | 3 | 6  | 0.1 | 8  | 50 | 4 | 1          | ●     |
| DNM100-RS1-03002 | 3 | 6  | 0.2 | 8  | 50 | 4 | 1          | ●     |
| DNM100-RS1-03003 | 3 | 6  | 0.3 | 8  | 50 | 4 | 1          | ○     |

● Stock ○ Available upon Order

| D     | Tol   |
|-------|-------|
| D ≤ 3 | ±0.02 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ⊙                   | ⊙                | ⊙        |

⊙ Most Suitable ○ Suitable

Recommended Cutting Data ※ P500

# DNM100-RS2 NEW

2 flutes Corner Radius

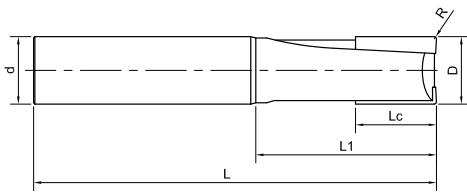


Fig1



Please refer to page 149

| Ordering Code    | D  | Lc | R   | L1 | L  | d  | Figure No. | Stock |
|------------------|----|----|-----|----|----|----|------------|-------|
| DNM100-RS2-04001 | 4  | 6  | 0.1 | 8  | 50 | 6  | 1          | ●     |
| DNM100-RS2-04002 | 4  | 6  | 0.2 | 8  | 50 | 6  | 1          | ●     |
| DNM100-RS2-04005 | 4  | 6  | 0.5 | 8  | 50 | 6  | 1          | ○     |
| DNM100-RS2-06001 | 6  | 10 | 0.1 | 20 | 75 | 6  | 1          | ●     |
| DNM100-RS2-06002 | 6  | 10 | 0.2 | 20 | 75 | 6  | 1          | ●     |
| DNM100-RS2-06003 | 6  | 10 | 0.3 | 20 | 75 | 6  | 1          | ○     |
| DNM100-RS2-06005 | 6  | 10 | 0.5 | 20 | 75 | 6  | 1          | ○     |
| DNM100-RS2-08001 | 8  | 15 | 0.1 | 30 | 75 | 10 | 1          | ●     |
| DNM100-RS2-08002 | 8  | 15 | 0.2 | 30 | 75 | 10 | 1          | ○     |
| DNM100-RS2-08005 | 8  | 15 | 0.5 | 30 | 75 | 10 | 1          | ●     |
| DNM100-RS2-08010 | 8  | 15 | 1   | 30 | 75 | 10 | 1          | ●     |
| DNM100-RS2-10001 | 10 | 15 | 0.1 | 35 | 75 | 10 | 1          | ○     |
| DNM100-RS2-10002 | 10 | 15 | 0.2 | 35 | 75 | 10 | 1          | ●     |
| DNM100-RS2-10005 | 10 | 15 | 0.5 | 35 | 75 | 10 | 1          | ●     |
| DNM100-RS2-10010 | 10 | 15 | 1   | 35 | 75 | 10 | 1          | ●     |
| DNM100-RS2-10020 | 10 | 15 | 2   | 35 | 75 | 10 | 1          | ○     |

● Stock ○ Available upon Order

| D      | Tol   |
|--------|-------|
| D ≤ 20 | ±0.02 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ◎                   | ◎                | ◎        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P500



# DNM100-RS3 NEW

3 flutes Corner Radius

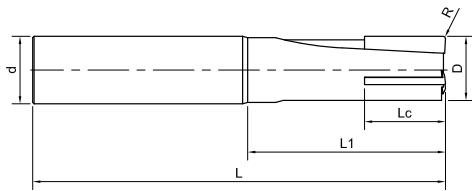


Fig1



Please refer to page 149

| Ordering Code    | D  | Lc | R   | L1 | L   | d  | Figure No. | Stock |
|------------------|----|----|-----|----|-----|----|------------|-------|
| DNM100-RS3-10001 | 10 | 15 | 0.1 | 35 | 75  | 10 | 1          | ●     |
| DNM100-RS3-10002 | 10 | 15 | 0.2 | 35 | 75  | 10 | 1          | ●     |
| DNM100-RS3-10005 | 10 | 15 | 0.5 | 35 | 75  | 10 | 1          | ●     |
| DNM100-RS3-10010 | 10 | 15 | 1   | 35 | 75  | 10 | 1          | ○     |
| DNM100-RS3-10020 | 10 | 15 | 2   | 35 | 75  | 10 | 1          | ○     |
| DNM100-RS3-12002 | 12 | 15 | 0.2 | 40 | 75  | 12 | 1          | ●     |
| DNM100-RS3-12005 | 12 | 15 | 0.5 | 40 | 75  | 12 | 1          | ●     |
| DNM100-RS3-12010 | 12 | 15 | 1   | 40 | 75  | 12 | 1          | ●     |
| DNM100-RS3-12020 | 12 | 15 | 2   | 40 | 75  | 12 | 1          | ○     |
| DNM100-RS3-16002 | 16 | 15 | 0.2 | 45 | 100 | 16 | 1          | ●     |
| DNM100-RS3-16005 | 16 | 15 | 0.5 | 45 | 100 | 16 | 1          | ●     |
| DNM100-RS3-16010 | 16 | 15 | 1   | 45 | 100 | 16 | 1          | ●     |
| DNM100-RS3-16020 | 16 | 15 | 2   | 45 | 100 | 16 | 1          | ○     |
| DNM100-RS3-16030 | 16 | 15 | 3   | 45 | 100 | 16 | 1          | ○     |

● Stock ○ Available upon Order

| D      | Tol   |
|--------|-------|
| D ≤ 20 | ±0.02 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |                  |          |
|--|--|-----------------|-----------|---------------------|------------------|----------|
| P  |  | M               | K         | N                   |                  |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4                | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper<br>Alloys | Graphite |
|  |  |                 |           | ⊙                   | ⊙                | ⊙        |

⊙ Most Suitable ○ Suitable

Recommended Cutting Data ※ P500

# SG200-S2

2 Flutes Square

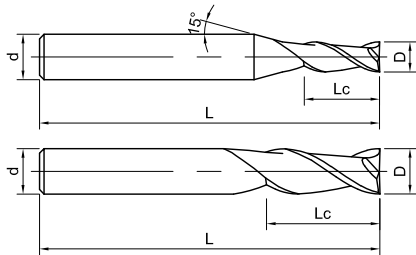
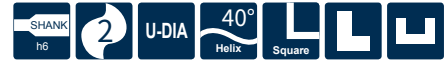


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D   | Lc  | L   | d  | Figure No. | Stock |
|----------------|-----|-----|-----|----|------------|-------|
| SG200-S2-00401 | 0.4 | 0.8 | 50  | 4  | 1          | ○     |
| SG200-S2-00802 | 0.8 | 2   | 50  | 4  | 1          | ○     |
| SG200-S2-01003 | 1   | 3   | 50  | 4  | 1          | ●     |
| SG200-S2-01504 | 1.5 | 4   | 50  | 4  | 1          | ●     |
| SG200-S2-02006 | 2   | 6   | 50  | 4  | 1          | ●     |
| SG200-S2-02008 | 2   | 8   | 75  | 4  | 1          | ●     |
| SG200-S2-03009 | 3   | 9   | 50  | 4  | 1          | ●     |
| SG200-S2-03012 | 3   | 12  | 75  | 4  | 1          | ●     |
| SG200-S2-63009 | 3   | 9   | 50  | 6  | 1          | ○     |
| SG200-S2-04011 | 4   | 11  | 50  | 4  | 2          | ●     |
| SG200-S2-04016 | 4   | 16  | 75  | 4  | 2          | ●     |
| SG200-S2-64011 | 4   | 11  | 50  | 6  | 1          | ○     |
| SG200-S2-05013 | 5   | 13  | 50  | 6  | 1          | ●     |
| SG200-S2-05020 | 5   | 20  | 100 | 6  | 1          | ●     |
| SG200-S2-06016 | 6   | 16  | 50  | 6  | 2          | ●     |
| SG200-S2-06025 | 6   | 25  | 100 | 6  | 2          | ●     |
| SG200-S2-08020 | 8   | 20  | 60  | 8  | 2          | ●     |
| SG200-S2-10025 | 10  | 25  | 75  | 10 | 2          | ●     |
| SG200-S2-12030 | 12  | 30  | 75  | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D < 6      | 0<br>-0.02 |
| 6 ≤ D ≤ 12 | 0<br>-0.03 |

Unit (mm)

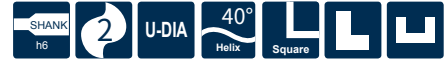
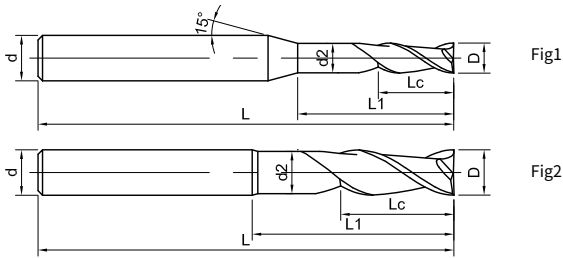
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
|  |  |                 |           | ○                   | ○             | ◎        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P501

# SG200-SN2

2 Flutes Square with reduced neck



Please refer to page 149

| Ordering Code   | D   | Lc | d2   | L1 | L   | d  | Figure No. | Stock |
|-----------------|-----|----|------|----|-----|----|------------|-------|
| SG200-SN2-01005 | 1   | 3  | 0.95 | 5  | 50  | 4  | 1          | ●     |
| SG200-SN2-01006 | 1   | 25 | 0.96 | 6  | 50  | 4  | 2          | ●     |
| SG200-SN2-01020 | 1   | 3  | 0.95 | 20 | 60  | 4  | 1          | ●     |
| SG200-SN2-01510 | 1.5 | 6  | 1.44 | 10 | 50  | 4  | 1          | ●     |
| SG200-SN2-01520 | 1.5 | 6  | 1.44 | 20 | 60  | 4  | 1          | ●     |
| SG200-SN2-02015 | 2   | 8  | 1.92 | 15 | 50  | 4  | 1          | ●     |
| SG200-SN2-02020 | 2   | 8  | 1.92 | 20 | 50  | 4  | 1          | ○     |
| SG200-SN2-02030 | 2   | 8  | 1.92 | 30 | 75  | 4  | 1          | ●     |
| SG200-SN2-03015 | 3   | 12 | 2.9  | 15 | 50  | 4  | 1          | ●     |
| SG200-SN2-03030 | 3   | 12 | 2.9  | 30 | 75  | 4  | 1          | ●     |
| SG200-SN2-04020 | 4   | 16 | 3.9  | 20 | 50  | 4  | 2          | ●     |
| SG200-SN2-04025 | 4   | 16 | 3.9  | 25 | 75  | 4  | 2          | ●     |
| SG200-SN2-04040 | 4   | 16 | 3.9  | 40 | 75  | 4  | 2          | ●     |
| SG200-SN2-05030 | 5   | 20 | 4.9  | 30 | 75  | 6  | 1          | ●     |
| SG200-SN2-06030 | 6   | 24 | 5.9  | 30 | 75  | 6  | 2          | ●     |
| SG200-SN2-06040 | 6   | 24 | 5.9  | 40 | 75  | 6  | 2          | ●     |
| SG200-SN2-08040 | 8   | 25 | 7.9  | 40 | 100 | 8  | 2          | ●     |
| SG200-SN2-10040 | 10  | 25 | 9.8  | 40 | 100 | 10 | 2          | ●     |
| SG200-SN2-12040 | 12  | 25 | 11.8 | 40 | 100 | 12 | 2          | ●     |
| SG200-SN2-12060 | 12  | 25 | 11.8 | 60 | 100 | 12 | 2          | ○     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D < 6      | 0<br>-0.02 |
| 6 ≤ D ≤ 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
|  |  |                 |           | ○                   | ○             | ◎        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P501

# SG200-S3

3 Flutes Square

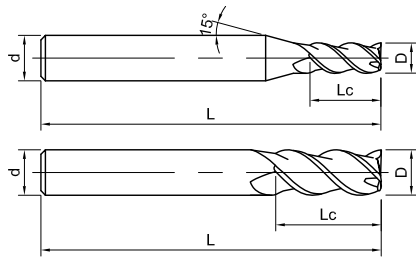
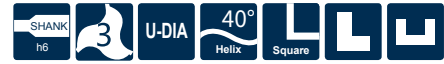


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D   | Lc | L   | d  | Figure No. | Stock |
|----------------|-----|----|-----|----|------------|-------|
| SG200-S3-01003 | 1   | 3  | 50  | 4  | 1          | ○     |
| SG200-S3-01504 | 1.5 | 4  | 50  | 4  | 1          | ●     |
| SG200-S3-01506 | 1.5 | 6  | 60  | 4  | 1          | ○     |
| SG200-S3-02006 | 2   | 6  | 50  | 4  | 1          | ●     |
| SG200-S3-02010 | 2   | 10 | 60  | 4  | 1          | ●     |
| SG200-S3-03009 | 3   | 9  | 50  | 4  | 1          | ●     |
| SG200-S3-03015 | 3   | 15 | 60  | 4  | 1          | ●     |
| SG200-S3-63009 | 3   | 9  | 50  | 6  | 1          | ○     |
| SG200-S3-04011 | 4   | 11 | 50  | 4  | 2          | ●     |
| SG200-S3-04020 | 4   | 20 | 75  | 4  | 2          | ●     |
| SG200-S3-64011 | 4   | 11 | 50  | 6  | 1          | ●     |
| SG200-S3-05013 | 5   | 13 | 50  | 6  | 1          | ○     |
| SG200-S3-06016 | 6   | 16 | 50  | 6  | 2          | ●     |
| SG200-S3-06018 | 6   | 18 | 75  | 6  | 2          | ●     |
| SG200-S3-06025 | 6   | 25 | 100 | 6  | 2          | ●     |
| SG200-S3-08020 | 8   | 20 | 60  | 8  | 2          | ●     |
| SG200-S3-08035 | 8   | 35 | 100 | 8  | 2          | ●     |
| SG200-S3-10025 | 10  | 25 | 75  | 10 | 2          | ●     |
| SG200-S3-10040 | 10  | 40 | 100 | 10 | 2          | ●     |
| SG200-S3-12030 | 12  | 30 | 75  | 12 | 2          | ○     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D < 6      | 0<br>-0.02 |
| 6 ≤ D ≤ 12 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
|  |  |                 |           | ○                   | ○             | ◎        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P501

# SG200-S4

4 Flutes Square

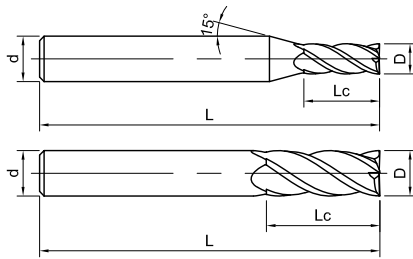


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D  | Lc | L   | d  | Figure No. | Stock |
|----------------|----|----|-----|----|------------|-------|
| SG200-S4-02006 | 2  | 6  | 50  | 4  | 1          | ●     |
| SG200-S4-02010 | 2  | 10 | 60  | 4  | 1          | ●     |
| SG200-S4-03009 | 3  | 9  | 50  | 4  | 1          | ●     |
| SG200-S4-03015 | 3  | 15 | 60  | 4  | 1          | ●     |
| SG200-S4-63009 | 3  | 9  | 50  | 6  | 1          | ○     |
| SG200-S4-04011 | 4  | 11 | 50  | 4  | 2          | ●     |
| SG200-S4-04020 | 4  | 20 | 75  | 4  | 2          | ●     |
| SG200-S4-64011 | 4  | 11 | 50  | 6  | 1          | ○     |
| SG200-S4-05013 | 5  | 13 | 50  | 6  | 1          | ●     |
| SG200-S4-06016 | 6  | 16 | 50  | 6  | 2          | ●     |
| SG200-S4-06025 | 6  | 25 | 100 | 6  | 2          | ●     |
| SG200-S4-08020 | 8  | 20 | 60  | 8  | 2          | ●     |
| SG200-S4-08025 | 8  | 25 | 100 | 8  | 2          | ●     |
| SG200-S4-10025 | 10 | 25 | 75  | 10 | 2          | ●     |
| SG200-S4-10040 | 10 | 40 | 100 | 10 | 2          | ●     |
| SG200-S4-12030 | 12 | 30 | 75  | 12 | 2          | ●     |
| SG200-S4-12045 | 12 | 45 | 100 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D < 6      | 0<br>-0.02 |
| 6 ≤ D ≤ 12 | 0<br>-0.03 |

Unit (mm)

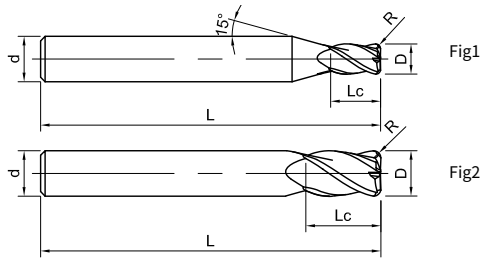
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
|  |  |                 |           | ○                   | ○             | ◎        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P501

# SG200-R4

4 flutes Corner Radius



Please refer to page 149

| Ordering Code  | D  | Lc  | R   | L   | d  | Figure No. | Stock |
|----------------|----|-----|-----|-----|----|------------|-------|
| SG200-R4-02002 | 2  | 3.5 | 0.2 | 50  | 4  | 1          | ●     |
| SG200-R4-02005 | 2  | 3.5 | 0.5 | 60  | 4  | 1          | ○     |
| SG200-R4-03002 | 3  | 4   | 0.2 | 50  | 4  | 1          | ●     |
| SG200-R4-03005 | 3  | 4   | 0.5 | 75  | 4  | 1          | ●     |
| SG200-R4-03010 | 3  | 4   | 1   | 75  | 4  | 1          | ●     |
| SG200-R4-04002 | 4  | 6   | 0.2 | 50  | 4  | 2          | ●     |
| SG200-R4-04010 | 4  | 6   | 1   | 50  | 4  | 2          | ●     |
| SG200-R4-05003 | 5  | 7   | 0.3 | 50  | 6  | 1          | ○     |
| SG200-R4-06005 | 6  | 9   | 0.5 | 50  | 6  | 2          | ●     |
| SG200-R4-06010 | 6  | 9   | 1   | 50  | 6  | 2          | ●     |
| SG200-R4-08005 | 8  | 12  | 0.5 | 60  | 8  | 2          | ●     |
| SG200-R4-08010 | 8  | 12  | 1   | 60  | 8  | 2          | ●     |
| SG200-R4-10005 | 10 | 15  | 0.5 | 75  | 10 | 2          | ●     |
| SG200-R4-10010 | 10 | 15  | 1   | 75  | 10 | 2          | ●     |
| SG200-R4-12005 | 12 | 18  | 0.5 | 75  | 12 | 2          | ●     |
| SG200-R4-12010 | 12 | 18  | 1   | 75  | 12 | 2          | ●     |
| SG200-R4-16010 | 16 | 36  | 1   | 100 | 16 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D < 6      | 0<br>-0.02 |
| 6 ≤ D ≤ 12 | 0<br>-0.03 |

Unit (mm)

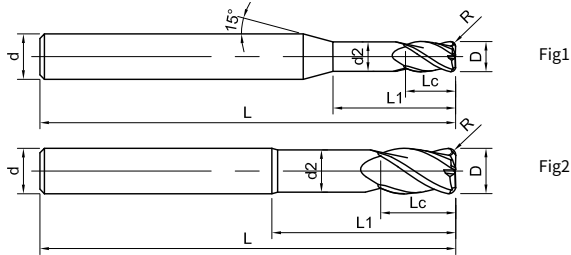
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
|  |  |                 |           | ○                   | ○             | ◎        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P501

# SG200-RN4

4 flutes Corner Radius with reduced neck



Please refer to page 149

| Ordering Code   | D  | Lc  | R   | d2   | L1 | L   | d  | Figure No. | Stock |
|-----------------|----|-----|-----|------|----|-----|----|------------|-------|
| SG200-RN4-02002 | 2  | 3.5 | 0.2 | 1.92 | 6  | 50  | 4  | 1          | ●     |
| SG200-RN4-02003 | 2  | 3.5 | 0.3 | 1.92 | 30 | 60  | 4  | 1          | ●     |
| SG200-RN4-02005 | 2  | 3.5 | 0.5 | 1.92 | 30 | 60  | 4  | 1          | ●     |
| SG200-RN4-03002 | 3  | 4   | 0.2 | 2.9  | 10 | 50  | 4  | 1          | ●     |
| SG200-RN4-03003 | 3  | 4   | 0.3 | 2.9  | 20 | 50  | 4  | 1          | ○     |
| SG200-RN4-03005 | 3  | 4   | 0.5 | 2.9  | 20 | 75  | 4  | 1          | ●     |
| SG200-RN4-03010 | 3  | 4   | 1   | 2.9  | 20 | 75  | 4  | 1          | ●     |
| SG200-RN4-04002 | 4  | 6   | 0.2 | 3.9  | 20 | 75  | 4  | 2          | ●     |
| SG200-RN4-04005 | 4  | 6   | 0.5 | 3.9  | 20 | 50  | 4  | 2          | ●     |
| SG200-RN4-04010 | 4  | 6   | 1   | 3.9  | 20 | 50  | 4  | 2          | ●     |
| SG200-RN4-06005 | 6  | 9   | 0.5 | 5.9  | 25 | 80  | 6  | 2          | ●     |
| SG200-RN4-06010 | 6  | 9   | 1   | 5.9  | 25 | 60  | 6  | 2          | ●     |
| SG200-RN4-08005 | 8  | 12  | 0.5 | 7.9  | 30 | 100 | 8  | 2          | ●     |
| SG200-RN4-08010 | 8  | 12  | 1   | 7.9  | 30 | 100 | 8  | 2          | ●     |
| SG200-RN4-10005 | 10 | 15  | 0.5 | 9.8  | 45 | 100 | 10 | 2          | ●     |
| SG200-RN4-10010 | 10 | 15  | 1   | 9.8  | 35 | 100 | 10 | 2          | ●     |
| SG200-RN4-12005 | 12 | 18  | 0.5 | 11.8 | 40 | 100 | 12 | 2          | ●     |
| SG200-RN4-12010 | 12 | 18  | 1   | 11.8 | 40 | 100 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D < 6      | 0<br>-0.02 |
| 6 ≤ D ≤ 12 | 0<br>-0.03 |

Unit (mm)

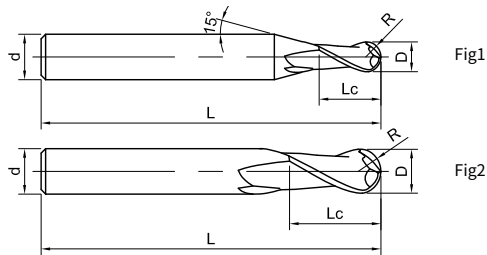
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
|  |  |                 |           | ○                   | ○             | ◎        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P501

# SG200-B2

2 Flutes ball-nose



Please refer to page 149

| Ordering Code  | D   | R    | Lc | L  | d  | Figure No. | Stock |
|----------------|-----|------|----|----|----|------------|-------|
| SG200-B2-00502 | 0.5 | 0.25 | 2  | 50 | 4  | 1          | ●     |
| SG200-B2-00602 | 0.6 | 0.3  | 2  | 50 | 4  | 1          | ●     |
| SG200-B2-00803 | 0.8 | 0.4  | 3  | 50 | 4  | 1          | ○     |
| SG200-B2-01002 | 1   | 0.5  | 2  | 50 | 4  | 1          | ●     |
| SG200-B2-01503 | 1.5 | 0.75 | 3  | 50 | 4  | 1          | ●     |
| SG200-B2-02004 | 2   | 1    | 4  | 50 | 4  | 1          | ●     |
| SG200-B2-02006 | 2   | 1    | 6  | 60 | 4  | 1          | ●     |
| SG200-B2-03006 | 3   | 1.5  | 6  | 50 | 4  | 1          | ●     |
| SG200-B2-03008 | 3   | 1.5  | 8  | 60 | 4  | 1          | ●     |
| SG200-B2-04008 | 4   | 2    | 8  | 50 | 4  | 2          | ●     |
| SG200-B2-04016 | 4   | 2    | 16 | 60 | 4  | 2          | ●     |
| SG200-B2-05010 | 5   | 2.5  | 10 | 50 | 6  | 1          | ●     |
| SG200-B2-06012 | 6   | 3    | 12 | 50 | 6  | 2          | ●     |
| SG200-B2-08014 | 8   | 4    | 14 | 60 | 8  | 2          | ●     |
| SG200-B2-10018 | 10  | 5    | 18 | 75 | 10 | 2          | ●     |
| SG200-B2-12022 | 12  | 6    | 22 | 75 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D         | Tol        |
|-----------|------------|
| R < 3     | 0<br>-0.02 |
| 3 ≤ R ≤ 6 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
|  |  |                 |           | ○                   | ○             | ◎        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P502



# SG200-BN2

2 flutes ball-nose with reduced neck

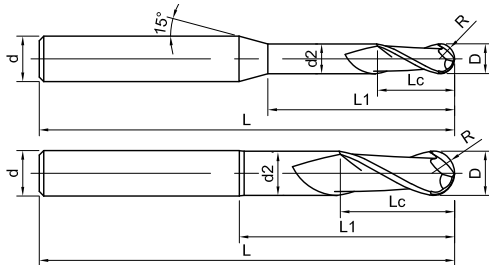


Fig1

Fig2



Please refer to page 149

| Ordering Code   | D   | R    | Lc | d2   | L1 | L  | d | Figure No. | Stock |
|-----------------|-----|------|----|------|----|----|---|------------|-------|
| SG200-BN2-00508 | 0.5 | 0.25 | 2  | 0.45 | 8  | 50 | 4 | 1          | ●     |
| SG200-BN2-01010 | 1   | 0.5  | 3  | 0.95 | 10 | 50 | 4 | 1          | ●     |
| SG200-BN2-01015 | 1   | 0.5  | 3  | 0.95 | 15 | 60 | 4 | 1          | ●     |
| SG200-BN2-01020 | 1   | 0.5  | 3  | 0.95 | 20 | 60 | 4 | 1          | ●     |
| SG200-BN2-01515 | 1.5 | 0.75 | 3  | 1.44 | 15 | 50 | 4 | 1          | ●     |
| SG200-BN2-02015 | 2   | 1    | 6  | 1.95 | 15 | 75 | 4 | 1          | ●     |
| SG200-BN2-02020 | 2   | 1    | 4  | 1.92 | 20 | 75 | 4 | 1          | ●     |
| SG200-BN2-02030 | 2   | 1    | 6  | 1.92 | 30 | 75 | 4 | 1          | ●     |
| SG200-BN2-03015 | 3   | 1.5  | 6  | 2.9  | 15 | 50 | 4 | 1          | ●     |
| SG200-BN2-03020 | 3   | 1.5  | 6  | 2.9  | 20 | 75 | 4 | 1          | ●     |
| SG200-BN2-04012 | 4   | 2    | 8  | 3.9  | 12 | 60 | 4 | 2          | ●     |
| SG200-BN2-04020 | 4   | 2    | 8  | 3.9  | 20 | 60 | 4 | 2          | ●     |

● Stock ○ Available upon Order

| D         | Tol        |
|-----------|------------|
| R < 3     | 0<br>-0.02 |
| 3 ≤ R ≤ 6 | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
|  |  |                 |           | ○                   | ○             | ◎        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P502

# SG200-BN2

2 flutes ball-nose with reduced neck

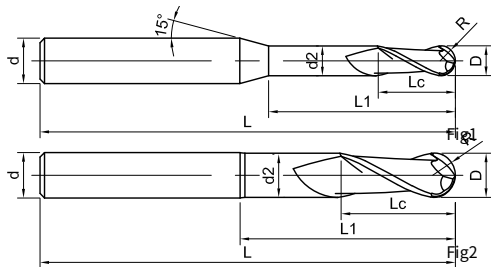


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code   | D  | R | Lc | d2   | L1 | L   | d  | Figure No. | Stock |
|-----------------|----|---|----|------|----|-----|----|------------|-------|
| SG200-BN2-06018 | 6  | 3 | 12 | 5.9  | 18 | 75  | 6  | 2          | ○     |
| SG200-BN2-06025 | 6  | 3 | 16 | 5.9  | 25 | 75  | 6  | 2          | ●     |
| SG200-BN2-06030 | 6  | 3 | 12 | 5.9  | 30 | 75  | 6  | 2          | ●     |
| SG200-BN2-08024 | 8  | 4 | 14 | 7.9  | 24 | 100 | 8  | 2          | ●     |
| SG200-BN2-08030 | 8  | 4 | 20 | 7.9  | 30 | 100 | 8  | 2          | ○     |
| SG200-BN2-08040 | 8  | 4 | 14 | 7.9  | 40 | 100 | 8  | 2          | ●     |
| SG200-BN2-10030 | 10 | 5 | 18 | 9.8  | 30 | 100 | 10 | 2          | ●     |
| SG200-BN2-10040 | 10 | 5 | 22 | 9.8  | 40 | 100 | 10 | 2          | ○     |
| SG200-BN2-10050 | 10 | 5 | 18 | 9.8  | 50 | 100 | 10 | 2          | ●     |
| SG200-BN2-12035 | 12 | 6 | 22 | 11.8 | 35 | 100 | 12 | 2          | ○     |
| SG200-BN2-12050 | 12 | 6 | 22 | 11.8 | 50 | 100 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D         | Tol        |
|-----------|------------|
| R < 3     | 0<br>-0.02 |
| 3 ≤ R ≤ 6 | 0<br>-0.03 |

Unit (mm)

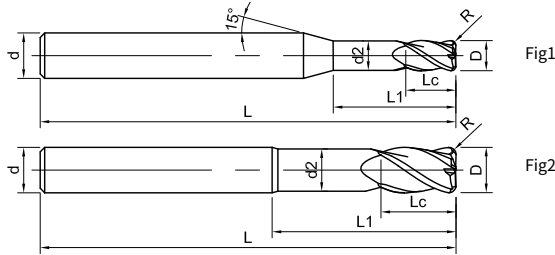
| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
|  |  |                 |           | ○                   | ○             | ◎        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P502

# SG200-M-RN4

4 flutes Corner Radius with reduced neck



Please refer to page 149

| Ordering Code            | D  | Lc  | R    | d2   | L1 | L  | d  | Figure No. | Stock |
|--------------------------|----|-----|------|------|----|----|----|------------|-------|
| SG200-M-RN4-1-6-0.1-50   | 1  | 2   | 0.1  | 0.96 | 6  | 50 | 4  | 1          | ●     |
| SG200-M-RN4-2-6-0.15-50  | 2  | 3.5 | 0.15 | 1.92 | 6  | 50 | 4  | 1          | ●     |
| SG200-M-RN4-2-12-0.15-50 | 2  | 3.5 | 0.15 | 1.92 | 12 | 50 | 4  | 1          | ●     |
| SG200-M-RN4-2-6-0.2-50   | 2  | 3.5 | 0.2  | 1.92 | 6  | 50 | 4  | 1          | ●     |
| SG200-M-RN4-2-12-0.2-50  | 2  | 3.5 | 0.2  | 1.92 | 12 | 50 | 4  | 1          | ○     |
| SG200-M-RN4-2-6-0.3-50   | 2  | 3.5 | 0.3  | 1.92 | 6  | 50 | 4  | 1          | ●     |
| SG200-M-RN4-2-12-0.3-50  | 2  | 3.5 | 0.3  | 1.92 | 12 | 50 | 4  | 1          | ○     |
| SG200-M-RN4-3-10-0.15-50 | 3  | 4   | 0.15 | 2.9  | 10 | 50 | 4  | 1          | ○     |
| SG200-M-RN4-3-10-0.2-50  | 3  | 4   | 0.2  | 2.9  | 10 | 50 | 4  | 1          | ●     |
| SG200-M-RN4-3-15-0.2-50  | 3  | 4   | 0.2  | 2.9  | 15 | 50 | 4  | 1          | ○     |
| SG200-M-RN4-3-10-0.5-50  | 3  | 4   | 0.5  | 2.9  | 10 | 50 | 4  | 1          | ●     |
| SG200-M-RN4-4-10-0.2-50  | 4  | 6   | 0.2  | 3.9  | 10 | 50 | 4  | 2          | ●     |
| SG200-M-RN4-4-15-0.5-50  | 4  | 6   | 0.5  | 3.9  | 15 | 50 | 4  | 2          | ●     |
| SG200-M-RN4-4-10-1-50    | 4  | 6   | 1    | 3.9  | 10 | 50 | 4  | 2          | ●     |
| SG200-M-RN4-6-25-0.5-50  | 6  | 9   | 0.5  | 5.9  | 25 | 50 | 6  | 2          | ●     |
| SG200-M-RN4-6-25-1-50    | 6  | 9   | 1    | 5.9  | 25 | 50 | 6  | 2          | ●     |
| SG200-M-RN4-6-20-1.5-50  | 6  | 15  | 1.5  | 5.9  | 20 | 50 | 6  | 2          | ○     |
| SG200-M-RN4-6-20-2-50    | 6  | 15  | 2    | 5.9  | 20 | 50 | 6  | 2          | ●     |
| SG200-M-RN4-8-30-1-60    | 8  | 10  | 1    | 7.9  | 30 | 60 | 8  | 2          | ●     |
| SG200-M-RN4-10-35-0.5-75 | 10 | 15  | 0.5  | 9.8  | 35 | 75 | 10 | 2          | ●     |
| SG200-M-RN4-10-45-1-75   | 10 | 15  | 1    | 9.8  | 45 | 75 | 10 | 2          | ○     |

● Stock ○ Available upon Order

| D     | Tol         |
|-------|-------------|
| D ≤ 4 | 0<br>-0.010 |
| D > 4 | 0<br>-0.015 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  | M                                      | K               | N         |                     |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
|  |  |                 |           |                     |               | ⊙        |

⊙ Most Suitable ○ Suitable

Recommended Cutting Data ※ P502

# SG200-M-B2

2 Flutes ball-nose

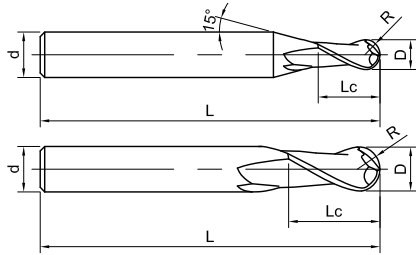


Fig1

Fig2



Please refer to page 149

| Ordering Code         | D   | R    | Lc  | L  | d | Figure No. | Stock |
|-----------------------|-----|------|-----|----|---|------------|-------|
| SG200-M-B2-0.4-1.5-50 | 0.4 | 0.2  | 1.5 | 50 | 4 | 1          | ●     |
| SG200-M-B2-0.5-2-50   | 0.5 | 0.25 | 2   | 50 | 4 | 1          | ●     |
| SG200-M-B2-0.6-2-50   | 0.6 | 0.3  | 2   | 50 | 4 | 1          | ●     |
| SG200-M-B2-0.8-3-50   | 0.8 | 0.4  | 3   | 50 | 4 | 1          | ●     |
| SG200-M-B2-1-3-50     | 1   | 0.5  | 3   | 50 | 4 | 1          | ●     |
| SG200-M-B2-1.5-5-50   | 1.5 | 0.75 | 5   | 50 | 4 | 1          | ●     |
| SG200-M-B2-2-6-50     | 2   | 1    | 6   | 50 | 4 | 1          | ●     |
| SG200-M-B2-3-8-50     | 3   | 1.5  | 8   | 50 | 4 | 1          | ●     |
| SG200-M-B2-4-16-50    | 4   | 2    | 16  | 50 | 4 | 2          | ●     |
| SG200-M-B2-5-16-50    | 5   | 2.5  | 16  | 50 | 6 | 1          | ○     |
| SG200-M-B2-6-16-50    | 6   | 3    | 16  | 50 | 6 | 2          | ○     |

●Stock ○Available upon Order

| D       | Tol    |
|---------|--------|
| R ≤ 0.4 | ±0.003 |
| R > 0.4 | ±0.005 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
|  |  |                 |           |                     |               | ⊙        |

⊙ Most Suitable ○ Suitable

Recommended Cutting Data ※ P502

# SG200-M-BN2

2 flutes ball-nose with reduced neck

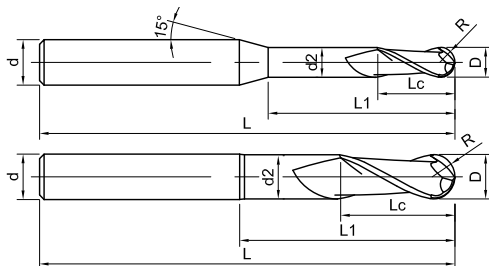


Fig1

Fig2



Please refer to page 149

| Ordering Code       | D | R   | Lc | d2   | L1 | L  | d | Figure No. | Stock |
|---------------------|---|-----|----|------|----|----|---|------------|-------|
| SG200-M-BN2-1-7-50  | 1 | 0.5 | 3  | 0.95 | 7  | 50 | 4 | 1          | ●     |
| SG200-M-BN2-1-10-50 | 1 | 0.5 | 3  | 0.95 | 10 | 50 | 4 | 1          | ●     |
| SG200-M-BN2-1-15-50 | 1 | 0.5 | 3  | 0.95 | 15 | 50 | 4 | 1          | ●     |
| SG200-M-BN2-2-5-45  | 2 | 1   | 3  | 1.92 | 5  | 45 | 4 | 1          | ●     |
| SG200-M-BN2-2-8-50  | 2 | 1   | 3  | 1.95 | 8  | 50 | 4 | 1          | ●     |
| SG200-M-BN2-2-10-50 | 2 | 1   | 6  | 1.92 | 10 | 50 | 4 | 1          | ○     |
| SG200-M-BN2-3-15-50 | 3 | 1.5 | 8  | 2.90 | 15 | 50 | 4 | 1          | ●     |
| SG200-M-BN2-4-25-50 | 4 | 2   | 8  | 3.90 | 25 | 50 | 4 | 2          | ●     |
| SG200-M-BN2-6-25-50 | 6 | 3   | 16 | 5.90 | 25 | 50 | 6 | 2          | ●     |

● Stock ○ Available upon Order

| D       | Tol    |
|---------|--------|
| R ≤ 0.4 | ±0.003 |
| R > 0.4 | ±0.005 |

Unit (mm)

| Workpiece Material                       |  |                 |           |                     |               |          |
|--|--|-----------------|-----------|---------------------|---------------|----------|
| P  |  | M               | K         | N                   |               |          |
| 1234                                     | 5                                      | 123             | 123       | 123                 | 4             | 5        |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Cast Iron | Aluminium<br>Alloys | Copper Alloys | Graphite |
|  |  |                 |           |                     |               | ○        |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P502

# ST210-S4

4 Flutes Square with Unequal Tooth Pitch

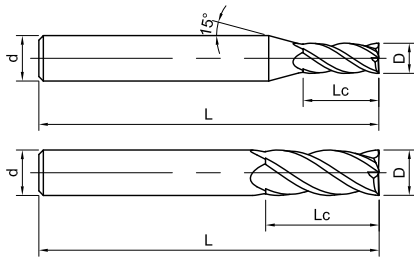


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D   | Lc | L   | d  | Figure No. | Stock |
|----------------|-----|----|-----|----|------------|-------|
| ST210-S4-02006 | 2   | 6  | 50  | 4  | 1          | ●     |
| ST210-S4-02506 | 2.5 | 6  | 50  | 4  | 1          | ●     |
| ST210-S4-03009 | 3   | 9  | 50  | 4  | 1          | ●     |
| ST210-S4-03510 | 3.5 | 10 | 50  | 4  | 1          | ○     |
| ST210-S4-04011 | 4   | 11 | 50  | 4  | 2          | ●     |
| ST210-S4-04511 | 4.5 | 11 | 50  | 6  | 1          | ○     |
| ST210-S4-05013 | 5   | 13 | 50  | 6  | 1          | ●     |
| ST210-S4-06016 | 6   | 16 | 50  | 6  | 2          | ●     |
| ST210-S4-08020 | 8   | 20 | 60  | 8  | 2          | ●     |
| ST210-S4-10025 | 10  | 25 | 72  | 10 | 2          | ●     |
| ST210-S4-12030 | 12  | 30 | 75  | 12 | 2          | ●     |
| ST210-S4-14032 | 14  | 32 | 80  | 14 | 2          | ○     |
| ST210-S4-16036 | 16  | 36 | 100 | 16 | 2          | ●     |
| ST210-S4-20045 | 20  | 45 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D<6    | 0<br>-0.02 |
| 6≤D≤16 | 0<br>-0.03 |
| D>16   | 0<br>-0.04 |

Unit (mm)

| Workpiece Material                       |  |                 |                       |                 |
|--|--|-----------------|-----------------------|-----------------|
| P  |  | M               | S                     |                 |
| 1 2 3 4                                  | 5                                      | 1 2 3           | 1 2 3                 | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Heat-resistant Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○                     | ◎               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P503

# ST210-R4

4 Flutes Cornor Raidus with Unequal Tooth Pitch

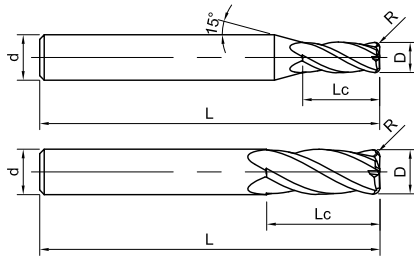


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D  | R   | Lc | L  | d  | Figure No. | Stock |
|----------------|----|-----|----|----|----|------------|-------|
| ST210-R4-02002 | 2  | 0.2 | 6  | 50 | 4  | 1          | ●     |
| ST210-R4-03003 | 3  | 0.3 | 9  | 50 | 4  | 1          | ●     |
| ST210-R4-03005 | 3  | 0.5 | 9  | 50 | 4  | 1          | ●     |
| ST210-R4-04003 | 4  | 0.3 | 11 | 50 | 4  | 2          | ●     |
| ST210-R4-04005 | 4  | 0.5 | 11 | 50 | 4  | 2          | ●     |
| ST210-R4-04010 | 4  | 1   | 11 | 50 | 4  | 2          | ●     |
| ST210-R4-05005 | 5  | 0.5 | 13 | 50 | 6  | 1          | ●     |
| ST210-R4-06005 | 6  | 0.5 | 16 | 50 | 6  | 2          | ●     |
| ST210-R4-06010 | 6  | 1   | 16 | 50 | 6  | 2          | ●     |
| ST210-R4-08005 | 8  | 0.5 | 20 | 60 | 8  | 2          | ●     |
| ST210-R4-08010 | 8  | 1   | 20 | 60 | 8  | 2          | ●     |
| ST210-R4-10005 | 10 | 0.5 | 25 | 72 | 10 | 2          | ●     |
| ST210-R4-10010 | 10 | 1   | 25 | 72 | 10 | 2          | ●     |
| ST210-R4-10020 | 10 | 2   | 25 | 72 | 10 | 2          | ●     |
| ST210-R4-10030 | 10 | 3   | 25 | 72 | 10 | 2          | ○     |
| ST210-R4-12005 | 12 | 0.5 | 30 | 75 | 12 | 2          | ●     |
| ST210-R4-12010 | 12 | 1   | 30 | 75 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D<6    | 0<br>-0.02 |
| 6≤D≤16 | 0<br>-0.03 |
| D>16   | 0<br>-0.04 |

Unit (mm)

| Workpiece Material                       |  |                 |                       |                 |
|--|--|-----------------|-----------------------|-----------------|
| P  |  | M               | S                     |                 |
| 1 2 3 4                                  | 5                                      | 1 2 3           | 1 2 3                 | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Heat-resistant Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○                     | ◎               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P503

# ST210-R4

4 Flutes Corner Radius with Unequal Tooth Pitch

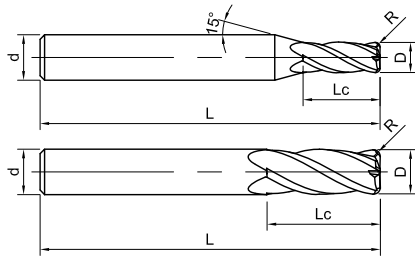


Fig1

Fig2



Please refer to page 149

| Ordering Code  | D  | R   | Lc | L   | d  | Figure No. | Stock |
|----------------|----|-----|----|-----|----|------------|-------|
| ST210-R4-12020 | 12 | 2   | 30 | 75  | 12 | 2          | ●     |
| ST210-R4-12030 | 12 | 3   | 30 | 75  | 12 | 2          | ●     |
| ST210-R4-16005 | 16 | 0.5 | 36 | 100 | 16 | 2          | ○     |
| ST210-R4-16010 | 16 | 1   | 36 | 100 | 16 | 2          | ●     |
| ST210-R4-16020 | 16 | 2   | 36 | 100 | 16 | 2          | ○     |
| ST210-R4-16030 | 16 | 3   | 36 | 100 | 16 | 2          | ●     |
| ST210-R4-16040 | 16 | 4   | 36 | 100 | 16 | 2          | ○     |
| ST210-R4-16050 | 16 | 5   | 36 | 100 | 16 | 2          | ○     |
| ST210-R4-20005 | 20 | 0.5 | 45 | 100 | 20 | 2          | ●     |
| ST210-R4-20010 | 20 | 1   | 45 | 100 | 20 | 2          | ●     |
| ST210-R4-20020 | 20 | 2   | 45 | 100 | 20 | 2          | ○     |
| ST210-R4-20030 | 20 | 3   | 45 | 100 | 20 | 2          | ●     |
| ST210-R4-20040 | 20 | 4   | 45 | 100 | 20 | 2          | ○     |
| ST210-R4-20050 | 20 | 5   | 45 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 16 | 0<br>-0.03 |
| D > 16 | 0<br>-0.04 |

Unit (mm)

| Workpiece Material                       |  |                 |                       |                 |
|--|--|-----------------|-----------------------|-----------------|
| P  |  | M               | S                     |                 |
| 1 2 3 4                                  | 5                                      | 1 2 3           | 1 2 3                 | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Heat-resistant Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○                     | ◎               |

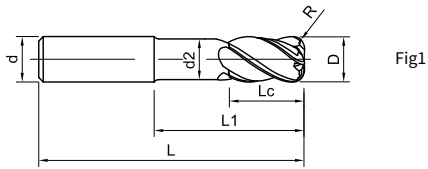
◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P503



# ST210-RN4

4 Flutes Cornor Raidus with Unequal Tooth Pitch and reduced neck



Please refer to page 149

| Ordering Code    | D  | R   | Lc | L1 | d2   | L   | d  | Figure No. | Stock |
|------------------|----|-----|----|----|------|-----|----|------------|-------|
| ST210-RN4-06005  | 6  | 0.5 | 12 | 18 | 5.4  | 60  | 6  | 1          | ●     |
| ST210-RN4-06010  | 6  | 1   | 12 | 18 | 5.4  | 60  | 6  | 1          | ●     |
| ST210-RN4-08005  | 8  | 0.5 | 16 | 25 | 7.4  | 75  | 8  | 1          | ●     |
| ST210-RN4-08010  | 8  | 1   | 16 | 25 | 7.4  | 75  | 8  | 1          | ●     |
| ST210-RN4-10005  | 10 | 0.5 | 20 | 30 | 9.4  | 75  | 10 | 1          | ●     |
| ST210-RN4-10005A | 10 | 0.5 | 30 | 50 | 9.4  | 90  | 10 | 1          | ○     |
| ST210-RN4-10010  | 10 | 1   | 20 | 30 | 9.4  | 75  | 10 | 1          | ●     |
| ST210-RN4-10010A | 10 | 1   | 30 | 50 | 9.4  | 90  | 10 | 1          | ○     |
| ST210-RN4-10020  | 10 | 2   | 20 | 30 | 9.4  | 75  | 10 | 1          | ●     |
| ST210-RN4-10020A | 10 | 2   | 30 | 50 | 9.4  | 90  | 10 | 1          | ○     |
| ST210-RN4-10030  | 10 | 3   | 20 | 30 | 9.4  | 75  | 10 | 1          | ●     |
| ST210-RN4-10030A | 10 | 3   | 30 | 50 | 9.4  | 90  | 10 | 1          | ●     |
| ST210-RN4-10030B | 10 | 3   | 30 | 60 | 9.4  | 100 | 10 | 1          | ●     |
| ST210-RN4-10030C | 10 | 3   | 30 | 40 | 9.4  | 90  | 10 | 1          | ○     |
| ST210-RN4-12005  | 12 | 0.5 | 24 | 40 | 11.4 | 90  | 12 | 1          | ●     |
| ST210-RN4-12005A | 12 | 0.5 | 24 | 50 | 11.4 | 100 | 12 | 1          | ○     |
| ST210-RN4-12010  | 12 | 1   | 24 | 40 | 11.4 | 90  | 12 | 1          | ●     |
| ST210-RN4-12010A | 12 | 1   | 24 | 50 | 11.4 | 100 | 12 | 1          | ○     |
| ST210-RN4-12020  | 12 | 2   | 24 | 40 | 11.4 | 90  | 12 | 1          | ●     |
| ST210-RN4-12020A | 12 | 2   | 24 | 50 | 11.4 | 100 | 12 | 1          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 16 | 0<br>-0.03 |
| D > 16 | 0<br>-0.04 |

Unit (mm)

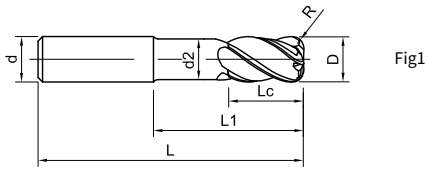
| Workpiece Material                       |  |                 |                       |                 |
|--|--|-----------------|-----------------------|-----------------|
| P  |  | M               | S                     |                 |
| 1 2 3 4                                  | 5                                      | 1 2 3           | 1 2 3                 | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Heat-resistant Alloys | Titanium Alloys |
| ○  | ○                                      | ○               | ○                     | ○               |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P503

# ST210-RN4

4 Flutes Cornor Raidus with Unequal Tooth Pitch and reduced neck



Please refer to page 149

| Ordering Code    | D  | R   | Lc | L1 | d2   | L   | d  | Figure No. | Stock |
|------------------|----|-----|----|----|------|-----|----|------------|-------|
| ST210-RN4-12030A | 12 | 3   | 24 | 40 | 11.4 | 90  | 12 | 1          | ●     |
| ST210-RN4-12030B | 12 | 3   | 36 | 50 | 11.4 | 100 | 12 | 1          | ●     |
| ST210-RN4-12030C | 12 | 3   | 36 | 60 | 11.4 | 110 | 12 | 1          | ●     |
| ST210-RN4-16005  | 16 | 0.5 | 32 | 50 | 15.4 | 100 | 16 | 1          | ●     |
| ST210-RN4-16005A | 16 | 0.5 | 32 | 60 | 15.4 | 110 | 16 | 1          | ●     |
| ST210-RN4-16010  | 16 | 1   | 32 | 50 | 15.4 | 100 | 16 | 1          | ●     |
| ST210-RN4-16010A | 16 | 1   | 32 | 70 | 15.4 | 120 | 16 | 1          | ●     |
| ST210-RN4-16010B | 16 | 1   | 32 | 80 | 15.4 | 130 | 16 | 1          | ●     |
| ST210-RN4-16010C | 16 | 1   | 32 | 60 | 15.4 | 110 | 16 | 1          | ○     |
| ST210-RN4-16020  | 16 | 2   | 32 | 50 | 15.4 | 100 | 16 | 1          | ●     |
| ST210-RN4-16020A | 16 | 2   | 32 | 60 | 15.4 | 110 | 16 | 1          | ○     |
| ST210-RN4-16030  | 16 | 3   | 32 | 50 | 15.4 | 100 | 16 | 1          | ●     |
| ST210-RN4-16030A | 16 | 3   | 32 | 70 | 15.4 | 120 | 16 | 1          | ●     |
| ST210-RN4-16030B | 16 | 3   | 32 | 80 | 15.4 | 130 | 16 | 1          | ●     |
| ST210-RN4-16030C | 16 | 3   | 32 | 60 | 15.4 | 110 | 16 | 1          | ○     |
| ST210-RN4-16040  | 16 | 4   | 32 | 50 | 15.4 | 100 | 16 | 1          | ○     |
| ST210-RN4-16040A | 16 | 4   | 32 | 60 | 15.4 | 110 | 16 | 1          | ○     |
| ST210-RN4-16050  | 16 | 5   | 32 | 50 | 15.4 | 100 | 16 | 1          | ○     |
| ST210-RN4-16050A | 16 | 5   | 32 | 60 | 15.4 | 110 | 16 | 1          | ○     |
| ST210-RN4-16050B | 16 | 5   | 32 | 70 | 15.4 | 120 | 16 | 1          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 16 | 0<br>-0.03 |
| D > 16 | 0<br>-0.04 |

Unit (mm)

| Workpiece Material                       |  |                 |                       |                 |
|--|--|-----------------|-----------------------|-----------------|
| P  |  | M               | S                     |                 |
| 1 2 3 4                                  | 5                                      | 1 2 3           | 1 2 3                 | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Heat-resistant Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○                     | ◎               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P503

# ST210-RN4

4 Flutes Cornor Raidus with Unequal Tooth Pitch and reduced neck

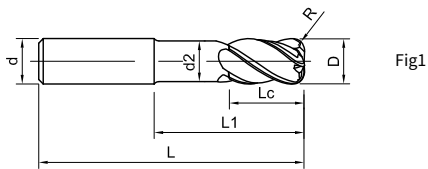
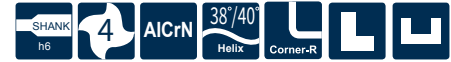


Fig1



Please refer to page 149

| Ordering Code    | D  | R   | Lc | L1  | d2   | L   | d  | Figure No. | Stock |
|------------------|----|-----|----|-----|------|-----|----|------------|-------|
| ST210-RN4-16050C | 16 | 5   | 32 | 80  | 15.4 | 130 | 16 | 1          | ○     |
| ST210-RN4-20005  | 20 | 0.5 | 40 | 60  | 19.4 | 110 | 20 | 1          | ●     |
| ST210-RN4-20005A | 20 | 0.5 | 40 | 80  | 19.4 | 130 | 20 | 1          | ○     |
| ST210-RN4-20010  | 20 | 1   | 40 | 60  | 19.4 | 110 | 20 | 1          | ●     |
| ST210-RN4-20010A | 20 | 1   | 40 | 80  | 19.4 | 130 | 20 | 1          | ●     |
| ST210-RN4-20010B | 20 | 1   | 40 | 70  | 19.4 | 120 | 20 | 1          | ●     |
| ST210-RN4-20010C | 20 | 1   | 40 | 100 | 19.4 | 150 | 20 | 1          | ●     |
| ST210-RN4-20020  | 20 | 2   | 40 | 60  | 19.4 | 110 | 20 | 1          | ●     |
| ST210-RN4-20020A | 20 | 2   | 40 | 80  | 19.4 | 130 | 20 | 1          | ○     |
| ST210-RN4-20030  | 20 | 3   | 40 | 60  | 19.4 | 110 | 20 | 1          | ●     |
| ST210-RN4-20030A | 20 | 3   | 40 | 80  | 19.4 | 130 | 20 | 1          | ●     |
| ST210-RN4-20030B | 20 | 3   | 40 | 100 | 19.4 | 150 | 20 | 1          | ●     |
| ST210-RN4-20030C | 20 | 3   | 40 | 70  | 19.4 | 120 | 20 | 1          | ●     |
| ST210-RN4-20040  | 20 | 4   | 40 | 60  | 19.4 | 110 | 20 | 1          | ●     |
| ST210-RN4-20040A | 20 | 4   | 40 | 80  | 19.4 | 130 | 20 | 1          | ○     |
| ST210-RN4-20050  | 20 | 5   | 40 | 60  | 19.4 | 110 | 20 | 1          | ●     |
| ST210-RN4-20050A | 20 | 5   | 40 | 80  | 19.4 | 130 | 20 | 1          | ●     |
| ST210-RN4-20050B | 20 | 5   | 40 | 100 | 19.4 | 150 | 20 | 1          | ●     |
| ST210-RN4-20050C | 20 | 5   | 40 | 70  | 19.4 | 120 | 20 | 1          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 16 | 0<br>-0.03 |
| D > 16 | 0<br>-0.04 |

Unit (mm)

| Workpiece Material                       |  |                 |                       |                 |
|--|--|-----------------|-----------------------|-----------------|
| P  |  | M               | S                     |                 |
| 1 2 3 4                                  | 5                                      | 1 2 3           | 1 2 3                 | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Heat-resistant Alloys | Titanium Alloys |
| ○  | ○                                      | ○               | ○                     | ○               |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P503

# ST210-RL5

5 Flutes Corner Radius with Unequal Tooth Pitch and Long Flute

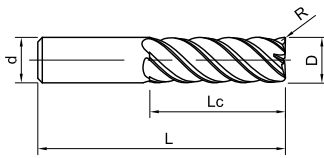


Fig1



Please refer to page 149

| Ordering Code     | D  | R   | Lc  | L   | d  | Figure No. | Stock |
|-------------------|----|-----|-----|-----|----|------------|-------|
| ST210-RL5-16005   | 16 | 0.5 | 48  | 100 | 16 | 1          | ○     |
| ST210-RL5-16005A  | 16 | 0.5 | 80  | 130 | 16 | 1          | ●     |
| ST210-RL5-200005  | 20 | 0.5 | 60  | 110 | 20 | 1          | ●     |
| ST210-RL5-200005A | 20 | 0.5 | 100 | 150 | 20 | 1          | ○     |
| ST210-RL5-25005   | 25 | 0.5 | 75  | 155 | 25 | 1          | ○     |
| ST210-RL5-25005A  | 25 | 0.5 | 125 | 205 | 25 | 1          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 16 | 0<br>-0.03 |
| D > 16 | 0<br>-0.04 |

Unit (mm)

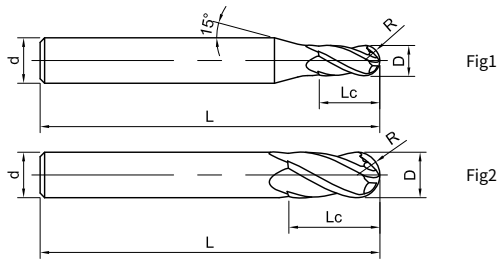
| Workpiece Material                       |  |                 |                       |                 |
|--|--|-----------------|-----------------------|-----------------|
| P  |  | M               | S                     |                 |
| 1 2 3 4                                  | 5                                      | 1 2 3           | 1 2 3                 | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Heat-resistant Alloys | Titanium Alloys |
| ○  | ○                                      | ◎               | ○                     | ◎               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P504

# ST210-B4

4 Flutes Ball-nose with Unequal Tooth Pitch



Please refer to page 149

| Ordering Code  | D  | R   | Lc | L   | d  | Figure No. | Stock |
|----------------|----|-----|----|-----|----|------------|-------|
| ST210-B4-02004 | 2  | 1   | 4  | 50  | 6  | 1          | ●     |
| ST210-B4-03006 | 3  | 1.5 | 6  | 50  | 6  | 1          | ●     |
| ST210-B4-04008 | 4  | 2   | 8  | 50  | 6  | 1          | ●     |
| ST210-B4-05010 | 5  | 2.5 | 10 | 50  | 6  | 1          | ○     |
| ST210-B4-06012 | 6  | 3   | 12 | 50  | 6  | 2          | ●     |
| ST210-B4-08014 | 8  | 4   | 14 | 60  | 8  | 2          | ●     |
| ST210-B4-10018 | 10 | 5   | 18 | 75  | 10 | 2          | ●     |
| ST210-B4-12022 | 12 | 6   | 22 | 75  | 12 | 2          | ●     |
| ST210-B4-16030 | 16 | 8   | 30 | 100 | 16 | 2          | ●     |
| ST210-B4-20038 | 20 | 10  | 38 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D     | Tol   |
|-------|-------|
| R ≥ 1 | ±0.02 |

Unit (mm)

| Workpiece Material                       |  |                 |                       |                 |
|--|--|-----------------|-----------------------|-----------------|
| P  |  | M               | S                     |                 |
| 1 2 3 4                                  | 5                                      | 1 2 3           | 1 2 3                 | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Heat-resistant Alloys | Titanium Alloys |
| ○  | ○                                      | ○               | ○                     | ○               |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P504

# SM200-TP2 NEW

2 flutes ball-nose with reduced neck

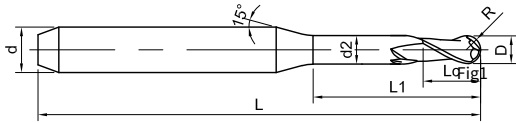


Fig1



Please refer to page 149

| Ordering Code          | D   | R    | Lc  | d2   | L1 | L  | d | Flute | Figure No. | Stock |
|------------------------|-----|------|-----|------|----|----|---|-------|------------|-------|
| SM200-TP2-1-12-50-d6   | 1   | 0.5  | 2.5 | 0.95 | 12 | 50 | 6 | 2     | 1          | ○     |
| SM200-TP2-1.5-14-50-d6 | 1.5 | 0.75 | 3   | 1.45 | 14 | 50 | 6 | 2     | 1          | ○     |
| SM200-TP2-2-16-50-d6   | 2   | 1    | 3   | 1.95 | 16 | 50 | 6 | 2     | 1          | ○     |
| SM200-TP2-3-16-50-d6   | 3   | 1.5  | 4   | 2.95 | 16 | 50 | 6 | 2     | 1          | ○     |

● Stock ○ Available upon Order

| R             | Tol    |
|---------------|--------|
| 0.5 ≤ R ≤ 1.5 | ±0.007 |

Unit (mm)

| Workpiece Material |               |          |                            |  |
|--------------------|---------------|----------|----------------------------|--|
| N                  |               |          | S                          |  |
| 123                | 4             | 5        | 123                        | 45                                       |
| Aluminium Alloys   | Copper Alloys | Zirconia | Heat Resistant Super Alloy | Titanium Alloy/<br>Cobalt-chromium Alloy |
|                    |               |          |                            | ○  |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P505

# SM200-RO2/RO3

NEW

2/3 flutes ball-nose with reduced neck

Interchangeable equipment: DWX50, DWX30, DWX51D

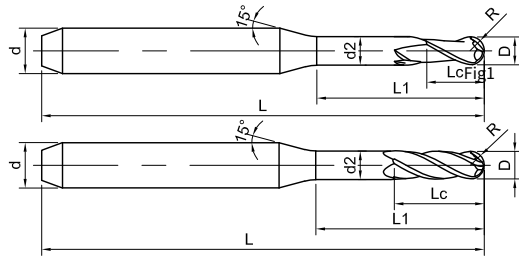


Fig1

Fig2



Please refer to page 149

| Ordering Code          | D   | R   | Lc | d2   | L1 | L  | d | Flute | Figure No. | Stock |
|------------------------|-----|-----|----|------|----|----|---|-------|------------|-------|
| SM200-RO2-1.0-16-45    | 1   | 0.5 | 6  | 0.92 | 16 | 45 | 4 | 2     | 1          | ●     |
| SM200-RO2-2.0-16-45    | 2   | 1   | 8  | 1.92 | 16 | 45 | 4 | 2     | 1          | ●     |
| SM200-RO2-0.6-6-50-d4  | 0.6 | 0.3 | 2  | 0.55 | 6  | 50 | 4 | 2     | 1          | ●     |
| SM200-RO2-0.6-14-50-d4 | 0.6 | 0.3 | 2  | 0.55 | 14 | 50 | 4 | 2     | 1          | ○     |
| SM200-RO2-1-16-50-d4   | 1   | 0.5 | 6  | 0.95 | 16 | 50 | 4 | 2     | 1          | ●     |
| SM200-RO2-1-20-50-d4   | 1   | 0.5 | 6  | 0.95 | 20 | 50 | 4 | 2     | 1          | ●     |
| SM200-RO2-2-16-50-d4   | 2   | 1   | 8  | 1.95 | 16 | 50 | 4 | 2     | 1          | ●     |
| SM200-RO2-2-20-50-d4   | 2   | 1   | 8  | 1.95 | 20 | 50 | 4 | 2     | 1          | ●     |
| SM200-RO2-3-20-50-d4   | 3   | 1.5 | 10 | 2.95 | 20 | 50 | 4 | 2     | 1          | ○     |
| SM200-RO3-1-16-50-d4   | 1   | 0.5 | 6  | 0.95 | 16 | 50 | 4 | 3     | 2          | ○     |
| SM200-RO3-1-20-50-d4   | 1   | 0.5 | 6  | 0.95 | 20 | 50 | 4 | 3     | 2          | ○     |
| SM200-RO3-2-16-50-d4   | 2   | 1   | 8  | 1.95 | 16 | 50 | 4 | 3     | 2          | ○     |
| SM200-RO3-2-20-50-d4   | 2   | 1   | 8  | 1.95 | 20 | 50 | 4 | 3     | 2          | ○     |
| SM200-RO3-3-20-50-d4   | 3   | 1.5 | 10 | 2.95 | 20 | 50 | 4 | 3     | 2          | ○     |

● Stock ○ Available upon Order

| R             | Tol    |
|---------------|--------|
| 0.3 ≤ R ≤ 1.5 | ±0.007 |

Unit (mm)

| Workpiece Material |               |          |                            |  |
|--------------------|---------------|----------|----------------------------|--|
| N                  |               |          | S                          |  |
| 123                | 4             | 5        | 123                        | 45                                       |
| Aluminium Alloys   | Copper Alloys | Zirconia | Heat Resistant Super Alloy | Titanium Alloy/<br>Cobalt-chromium Alloy |
|                    |               | ○        |                            |  |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P505

# SM200-VH2/VH3 NEW

2/3 flutes ball-nose with reduced neck

Interchangeable equipment: 5Axes, Wieland, Brux Zir, EzMill, Jensen

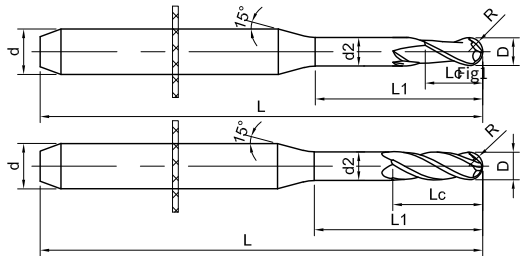


Fig1

Fig2



Please refer to page 149

| Ordering Code          | D   | R   | Lc | d2   | L1 | L  | d | Flute | Figure No. | Stock |
|------------------------|-----|-----|----|------|----|----|---|-------|------------|-------|
| SM200-VH2-0.6-7-40-d3  | 0.6 | 0.3 | 2  | 0.55 | 7  | 40 | 3 | 2     | 1          | ○     |
| SM200-VH2-0.6-11-40-d3 | 0.6 | 0.3 | 2  | 0.55 | 11 | 40 | 3 | 2     | 1          | ○     |
| SM200-VH2-1-17-40-d3   | 1   | 0.5 | 5  | 1.95 | 17 | 40 | 3 | 2     | 1          | ○     |
| SM200-VH2-2-17-40-d3   | 2   | R1  | 8  | 2.95 | 17 | 40 | 3 | 2     | 1          | ○     |
| SM200-VH3-1-16-40-d3   | 1   | 0.5 | 5  | 1.95 | 16 | 40 | 3 | 3     | 2          | ●     |
| SM200-VH3-2-17-40-d3   | 2   | 1   | 8  | 2.95 | 17 | 40 | 3 | 3     | 2          | ●     |

● Stock ○ Available upon Order

| R           | Tol    |
|-------------|--------|
| 0.3 ≤ R ≤ 1 | ±0.007 |

Unit (mm)

| Workpiece Material |               |          |                            |  |
|--------------------|---------------|----------|----------------------------|--|
| N                  |               |          | S                          |  |
| 123                | 4             | 5        | 123                        | 45                                       |
| Aluminium Alloys   | Copper Alloys | Zirconia | Heat Resistant Super Alloy | Titanium Alloy/<br>Cobalt-chromium Alloy |
|                    |               | ○        |                            |  |

○ Most Suitable ○ Suitable

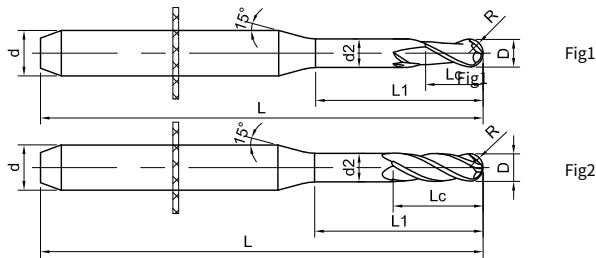
Recommended Cutting Data ※ P505



# SM200-WI2/WI3 NEW

2/3 flutes ball-nose with reduced neck

Special equipment: Wieland



Please refer to page 149

| Ordering Code          | D   | R    | Lc | d2   | L1 | L  | d | Flute | Figure No. | Stock |
|------------------------|-----|------|----|------|----|----|---|-------|------------|-------|
| SM200-WI2-0.6-7-40-d3  | 0.6 | 0.3  | 2  | 0.55 | 7  | 40 | 3 | 2     | 1          | ○     |
| SM200-WI2-0.7-7-40-d3  | 0.7 | 0.35 | 2  | 0.65 | 7  | 40 | 3 | 2     | 1          | ○     |
| SM200-WI2-1-17-40-d3   | 1   | 0.5  | 5  | 0.95 | 17 | 40 | 3 | 2     | 1          | ○     |
| SM200-WI2-2-17-40-d3   | 2   | 1    | 8  | 1.95 | 17 | 40 | 3 | 2     | 1          | ○     |
| SM200-WI2-2.5-20-40-d3 | 2.5 | 1.25 | 10 | 2.45 | 20 | 40 | 3 | 2     | 1          | ●     |
| SM200-WI3-1-17-40-d3   | 1   | 0.5  | 5  | 0.95 | 17 | 40 | 3 | 3     | 2          | ○     |
| SM200-WI3-2-17-40-d3   | 2   | 1    | 8  | 1.95 | 17 | 40 | 3 | 3     | 2          | ○     |
| SM200-WI3-2.5-20-40-d3 | 2.5 | 1.25 | 10 | 2.45 | 20 | 40 | 3 | 3     | 2          | ●     |

● Stock ○ Available upon Order

| R              | Tol    |
|----------------|--------|
| 0.3 ≤ R ≤ 1.25 | ±0.007 |

Unit (mm)

| Workpiece Material |               |          |                            |  |
|--------------------|---------------|----------|----------------------------|--|
| N                  |               |          | S                          |  |
| 123                | 4             | 5        | 123                        | 45                                       |
| Aluminium Alloys   | Copper Alloys | Zirconia | Heat Resistant Super Alloy | Titanium Alloy/<br>Cobalt-chromium Alloy |
|                    |               | ○        |                            |  |

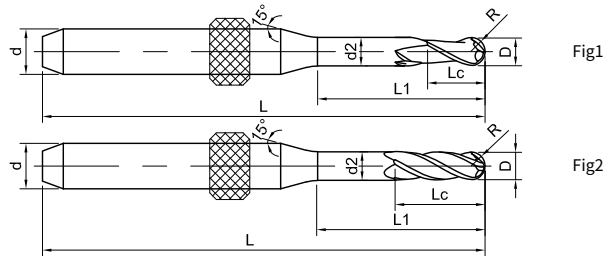
○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P505

# SM200-IM2/IM3 NEW

2/3 flutes ball-nose with reduced neck

Special equipment: 250i



Please refer to page 149

| Ordering Code           | D    | R     | Lc | d2   | L1 | L  | d | Flute | Figure No. | Stock |
|-------------------------|------|-------|----|------|----|----|---|-------|------------|-------|
| SM200-IM2-0.6-7-48-d3   | 0.6  | 0.3   | 2  | 0.55 | 7  | 48 | 3 | 2     | 1          | ○     |
| SM200-IM2-0.65-12-48-d3 | 0.65 | 0.325 | 2  | 0.60 | 12 | 48 | 3 | 2     | 1          | ○     |
| SM200-IM2-1-16-48-d3    | 1    | 0.5   | 2  | 0.95 | 16 | 48 | 3 | 2     | 1          | ○     |
| SM200-IM2-2-20-48-d3    | 2    | 1     | 8  | 1.95 | 20 | 48 | 3 | 2     | 1          | ○     |
| SM200-IM2-2.5-20-48-d3  | 2.5  | 1.25  | 9  | 2.45 | 20 | 48 | 3 | 2     | 1          | ○     |
| SM200-IM3-1-16-48-d3    | 1    | 0.5   | 2  | 0.95 | 16 | 48 | 3 | 3     | 2          | ○     |
| SM200-IM3-2-20-48-d3    | 2    | 1     | 8  | 1.95 | 20 | 48 | 3 | 3     | 2          | ○     |
| SM200-IM3-2.5-20-48-d3  | 2.5  | 1.25  | 9  | 2.45 | 20 | 48 | 3 | 3     | 2          | ○     |

● Stock ○ Available upon Order

| R              | Tol    |
|----------------|--------|
| 0.3 ≤ R ≤ 1.25 | ±0.007 |

Unit (mm)

| Workpiece Material |               |          |                            |  |
|--------------------|---------------|----------|----------------------------|--|
| N                  |               |          | S                          |  |
| 123                | 4             | 5        | 123                        | 45                                       |
| Aluminium Alloys   | Copper Alloys | Zirconia | Heat Resistant Super Alloy | Titanium Alloy/<br>Cobalt-chromium Alloy |
|                    |               | ○        |                            |  |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P505

# SM200-IM2/IM3 NEW

2/3 flutes ball-nose with reduced neck

Interchangeable equipment: 450i, 540i, DMG

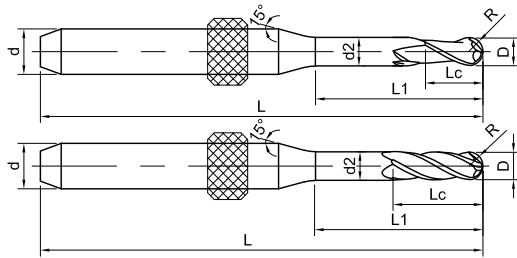


Fig1

Fig2



Please refer to page 149

| Ordering Code           | D    | R     | Lc | d2   | L1 | L  | d | Flute | Figure No. | Stock |
|-------------------------|------|-------|----|------|----|----|---|-------|------------|-------|
| SM200-IM2-0.6-7-53-d6   | 0.6  | 0.3   | 2  | 0.55 | 7  | 53 | 6 | 2     | 1          | ○     |
| SM200-IM2-0.65-12-53-d6 | 0.65 | 0.325 | 2  | 0.60 | 12 | 53 | 6 | 2     | 1          | ○     |
| SM200-IM2-1-16-53-d6    | 1    | 0.5   | 2  | 0.95 | 16 | 53 | 6 | 2     | 1          | ○     |
| SM200-IM2-2-20-53-d6    | 2    | 1     | 8  | 1.95 | 20 | 53 | 6 | 2     | 1          | ○     |
| SM200-IM2-2.5-20-53-d6  | 2.5  | 1.25  | 9  | 2.45 | 20 | 53 | 6 | 2     | 1          | ○     |
| SM200-IM3-1-16-53-d6    | 1    | 0.5   | 2  | 0.95 | 16 | 53 | 6 | 3     | 2          | ○     |
| SM200-IM3-2-20-53-d6    | 2    | 1     | 8  | 1.95 | 20 | 53 | 6 | 3     | 2          | ○     |
| SM200-IM3-2.5-20-53-d6  | 2.5  | 1.25  | 9  | 2.45 | 20 | 53 | 6 | 3     | 2          | ○     |

● Stock ○ Available upon Order

| R              | Tol    |
|----------------|--------|
| 0.3 ≤ R ≤ 1.25 | ±0.007 |

Unit (mm)

| Workpiece Material |               |          |                            |  |
|--------------------|---------------|----------|----------------------------|--|
| N                  |               |          | S                          |  |
| 123                | 4             | 5        | 123                        | 45                                       |
| Aluminium Alloys   | Copper Alloys | Zirconia | Heat Resistant Super Alloy | Titanium Alloy/<br>Cobalt-chromium Alloy |
|                    |               | ○        |                            |  |

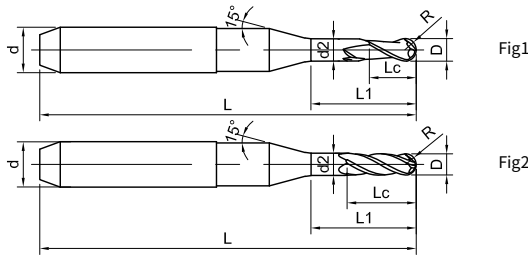
○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P505

# SM200-ZI2/ZI3 NEW

2/3 flutes ball-nose with reduced neck

Interchangeable equipment: M1, M5



Please refer to page 149

| Ordering Code         | D   | R    | Lc | d2   | L1 | L  | d | Flute | Figure No. | Stock |
|-----------------------|-----|------|----|------|----|----|---|-------|------------|-------|
| SM200-ZI2-0.5-5-57-d3 | 0.5 | 0.25 | 3  | 0.45 | 5  | 57 | 3 | 2     | 1          | ○     |
| SM200-ZI2-0.5-5-50-d6 | 0.5 | 0.25 | 3  | 0.45 | 5  | 50 | 6 | 2     | 1          | ○     |
| SM200-ZI2-1-16-57-d3  | 1   | 0.5  | 8  | 0.95 | 16 | 57 | 3 | 2     | 1          | ○     |
| SM200-ZI2-1-12-50-d6  | 1   | 0.5  | 6  | 0.95 | 12 | 50 | 6 | 2     | 1          | ○     |
| SM200-ZI2-2-18-57-d3  | 2   | 1    | 10 | 1.95 | 18 | 57 | 3 | 2     | 1          | ○     |
| SM200-ZI2-2-18-50-d6  | 2   | 1    | 10 | 1.95 | 18 | 50 | 6 | 2     | 1          | ○     |
| SM200-ZI3-1-16-57-d3  | 1   | 0.5  | 8  | 0.95 | 16 | 57 | 3 | 3     | 2          | ○     |
| SM200-ZI3-1-12-50-d6  | 1   | 0.5  | 6  | 0.95 | 12 | 50 | 6 | 3     | 2          | ○     |
| SM200-ZI3-2-18-57-d3  | 2   | 1    | 10 | 1.95 | 18 | 57 | 3 | 3     | 2          | ○     |
| SM200-ZI3-2-18-50-d6  | 2   | 1    | 10 | 1.95 | 18 | 50 | 6 | 3     | 2          | ○     |

● Stock ○ Available upon Order

| R              | Tol    |
|----------------|--------|
| 0.25 ≤ R ≤ 1.5 | ±0.007 |

Unit (mm)

| Workpiece Material |               |          |                            |  |
|--------------------|---------------|----------|----------------------------|--|
| N                  |               |          | S                          |  |
| 123                | 4             | 5        | 123                        | 45                                       |
| Aluminium Alloys   | Copper Alloys | Zirconia | Heat Resistant Super Alloy | Titanium Alloy/<br>Cobalt-chromium Alloy |
|                    |               | ○        |                            |  |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P505

# SM200-ZI2 NEW

2 flutes ball-nose with reduced neck

Special equipment: M1

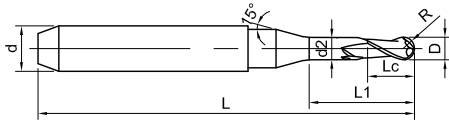


Fig1



Please refer to page 149

| Ordering Code        | D | R   | Lc | d2   | L1 | L  | d | Flute | Figure No. | Stock |
|----------------------|---|-----|----|------|----|----|---|-------|------------|-------|
| SM200-ZI2-2-18-50-d6 | 2 | 1   | 3  | 1.95 | 18 | 50 | 6 | 2     | 1          | ○     |
| SM200-ZI2-3-18-50-d6 | 3 | 1.5 | 4  | 2.95 | 18 | 50 | 6 | 2     | 1          | ○     |

● Stock ○ Available upon Order

| R               | Tol    |
|-----------------|--------|
| 0.25 ≤ R ≤ 1.25 | ±0.007 |

Unit (mm)

| Workpiece Material |               |          |                            |  |
|--------------------|---------------|----------|----------------------------|--|
| N                  |               |          | S                          |  |
| 123                | 4             | 5        | 123                        | 45                                       |
| Aluminium Alloys   | Copper Alloys | Zirconia | Heat Resistant Super Alloy | Titanium Alloy/<br>Cobalt-chromium Alloy |
|                    |               |          |                            | ○  |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P505

# SM200-AM2/AM3 NEW

2/3 flutes ball-nose with reduced neck

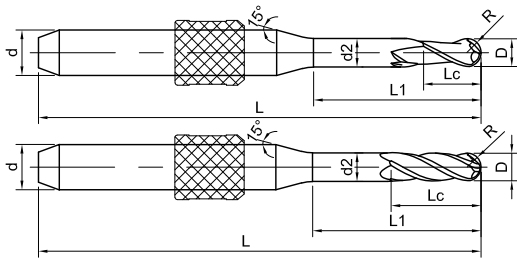


Fig1



Fig2



Please refer to page 149

| Ordering Code          | D   | R    | Lc | d2   | L1 | L  | d | Flute | Figure No. | Stock |
|------------------------|-----|------|----|------|----|----|---|-------|------------|-------|
| SM200-AM2-0.6-7-47-d3  | 0.6 | 0.3  | 2  | 0.55 | 7  | 47 | 3 | 2     | 1          | ○     |
| SM200-AM2-1-17-47-d3   | 1   | 0.5  | 6  | 0.95 | 17 | 47 | 3 | 2     | 1          | ○     |
| SM200-AM2-2.5-17-47-d3 | 2.5 | 1.25 | 9  | 2.45 | 17 | 47 | 3 | 2     | 1          | ○     |
| SM200-AM3-1-17-47-d3   | 1   | 0.5  | 6  | 0.95 | 17 | 47 | 3 | 3     | 2          | ○     |
| SM200-AM3-2.5-17-47-d3 | 2.5 | 1.25 | 9  | 2.45 | 17 | 47 | 3 | 3     | 2          | ○     |

● Stock ○ Available upon Order

| R              | Tol    |
|----------------|--------|
| 0.3 ≤ R ≤ 1.25 | ±0.007 |

Unit (mm)

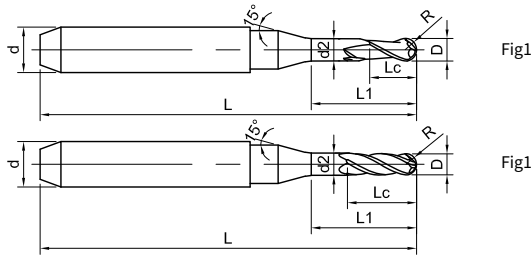
| Workpiece Material |               |          |                            |  |
|--------------------|---------------|----------|----------------------------|--|
| N                  |               |          | S                          |  |
| 123                | 4             | 5        | 123                        | 45                                       |
| Aluminium Alloys   | Copper Alloys | Zirconia | Heat Resistant Super Alloy | Titanium Alloy/<br>Cobalt-chromium Alloy |
|                    |               | ○        |                            |  |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P506

# SM200-AR2/AR3 NEW

2/3 flutes ball-nose with reduced neck



Please refer to page 149

| Ordering Code          | D   | R   | Lc | d2   | L1 | L  | d | Flute | Figure No. | Stock |
|------------------------|-----|-----|----|------|----|----|---|-------|------------|-------|
| SM200-AR2-0.6-13-50-d6 | 0.6 | 0.3 | 2  | 0.55 | 13 | 50 | 6 | 2     | 1          | ●     |
| SM200-AR2-0.6-13-63-d6 | 0.6 | 0.3 | 2  | 0.55 | 13 | 63 | 6 | 2     | 1          | ○     |
| SM200-AR2-1-16-50-d6   | 1   | 0.5 | 6  | 0.95 | 16 | 50 | 6 | 2     | 1          | ●     |
| SM200-AR2-1-16-63-d6   | 1   | 0.5 | 6  | 0.95 | 16 | 63 | 6 | 2     | 1          | ○     |
| SM200-AR2-2-20-50-d6   | 2   | 1   | 8  | 1.95 | 20 | 50 | 6 | 2     | 1          | ●     |
| SM200-AR2-2-20-63-d6   | 2   | 1   | 8  | 1.95 | 20 | 63 | 6 | 2     | 1          | ○     |
| SM200-AR3-1-16-50-d6   | 1   | 0.5 | 6  | 0.95 | 16 | 50 | 6 | 3     | 2          | ○     |
| SM200-AR3-1-16-63-d6   | 1   | 0.5 | 6  | 0.55 | 16 | 63 | 6 | 3     | 2          | ○     |
| SM200-AR3-2-20-50-d6   | 2   | 1   | 8  | 1.95 | 20 | 50 | 6 | 3     | 2          | ○     |
| SM200-AR3-2-20-63-d6   | 2   | 1   | 8  | 1.95 | 20 | 63 | 6 | 3     | 2          | ○     |

● Stock ○ Available upon Order

| R             | Tol    |
|---------------|--------|
| 0.3 ≤ R ≤ 1.5 | ±0.007 |

Unit (mm)

| Workpiece Material |               |          |                            |  |
|--------------------|---------------|----------|----------------------------|--|
| N                  |               |          | S                          |  |
| 123                | 4             | 5        | 123                        | 45                                       |
| Aluminium Alloys   | Copper Alloys | Zirconia | Heat Resistant Super Alloy | Titanium Alloy/<br>Cobalt-chromium Alloy |
|                    |               | ○        |                            |  |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P506

# SM200-AR2 NEW

2 flutes ball-nose with reduced neck

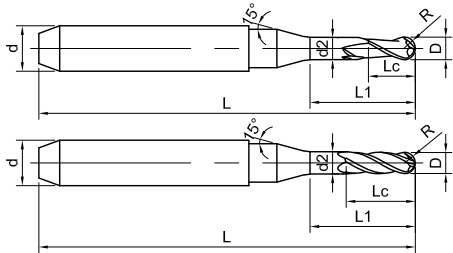


Fig1

Fig2



Please refer to page 149

| Ordering Code          | D   | R    | Lc  | d2   | L1 | L  | d | Flute | Figure No. | Stock |
|------------------------|-----|------|-----|------|----|----|---|-------|------------|-------|
| SM200-AR2-1-8-50-d6    | 1   | 0.5  | 3   | 0.95 | 8  | 50 | 6 | 2     | 1          | ●     |
| SM200-AR2-1.5-10-50-d6 | 1.5 | 0.75 | 3   | 1.45 | 10 | 50 | 6 | 2     | 1          | ●     |
| SM200-AR2-2-12-50-d6   | 2   | 1    | 3   | 1.95 | 12 | 50 | 6 | 2     | 1          | ●     |
| SM200-AR2-3-14-50-d6   | 3   | 1.5  | 2.5 | 2.95 | 14 | 50 | 6 | 2     | 1          | ●     |

● Stock ○ Available upon Order

| R             | Tol    |
|---------------|--------|
| 0.3 ≤ R ≤ 1.5 | ±0.007 |

Unit (mm)

| Workpiece Material |               |          |                            |  |
|--------------------|---------------|----------|----------------------------|--|
| N                  |               |          | S                          |  |
| 123                | 4             | 5        | 123                        | 45                                       |
| Aluminium Alloys   | Copper Alloys | Zirconia | Heat Resistant Super Alloy | Titanium Alloy/<br>Cobalt-chromium Alloy |
|                    |               |          |                            | ○  |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P506



# SM200-KL2 NEW

2 flutes ball-nose with reduced neck

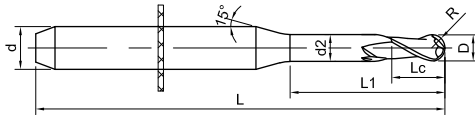


Fig1



Please refer to page 149

| Ordering Code          | D   | R    | Lc | d2   | L1 | L  | d | Flute | Figure No. | Stock |
|------------------------|-----|------|----|------|----|----|---|-------|------------|-------|
| SM200-KL2-0.6-7-40-d3  | 0.6 | 0.3  | 2  | 0.55 | 7  | 40 | 3 | 2     | 1          | ●     |
| SM200-KL2-1.5-16-40-d3 | 1.5 | 0.75 | 6  | 1.45 | 16 | 40 | 3 | 2     | 1          | ●     |
| SM200-KL2-1-16-40-d3   | 1   | 0.5  | 4  | 0.95 | 16 | 40 | 3 | 2     | 1          | ●     |
| SM200-KL2-2-16-40-d3   | 2   | 1    | 8  | 1.95 | 16 | 40 | 3 | 2     | 1          | ●     |

● Stock ○ Available upon Order

| R           | Tol    |
|-------------|--------|
| 0.3 ≤ R ≤ 1 | ±0.007 |

Unit (mm)

| Workpiece Material |               |          |                            |  |
|--------------------|---------------|----------|----------------------------|--|
| N                  |               |          | S                          |  |
| 123                | 4             | 5        | 123                        | 45                                       |
| Aluminium Alloys   | Copper Alloys | Zirconia | Heat Resistant Super Alloy | Titanium Alloy/<br>Cobalt-chromium Alloy |
|                    |               | ○        |                            |  |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P505

# SM200-XT2 NEW

2 flutes ball-nose with reduced neck

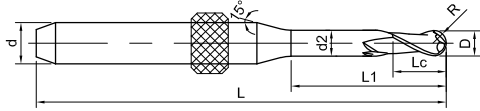


Fig1



Please refer to page 149

| Ordering Code          | D   | R    | Lc | d2   | L1 | L  | d | Flute | Figure No. | Stock |
|------------------------|-----|------|----|------|----|----|---|-------|------------|-------|
| SM200-XT2-0.6-5-50-d3  | 0.6 | 0.3  | 2  | 0.55 | 5  | 50 | 3 | 2     | 1          | ●     |
| SM200-XT2-0.8-16-50-d3 | 0.8 | 0.4  | 6  | 0.72 | 16 | 50 | 3 | 2     | 1          | ●     |
| SM200-XT2-1.5-16-50-d3 | 1.5 | 0.75 | 8  | 1.45 | 16 | 50 | 3 | 2     | 1          | ●     |
| SM200-XT2-1-16-50-d3   | 1   | 0.5  | 6  | 0.95 | 16 | 50 | 3 | 2     | 1          | ●     |
| SM200-XT2-2-16-50-d3   | 2   | 1    | 8  | 1.95 | 16 | 50 | 3 | 2     | 1          | ●     |
| SM200-XT2-2-22-50-d3   | 2   | 1    | 8  | 1.95 | 22 | 50 | 3 | 2     | 1          | ●     |
| SM200-XT2-2-25-50-d3   | 2   | 1    | 8  | 1.95 | 25 | 50 | 3 | 2     | 1          | ●     |
| SM200-XT2-0.6-6-50-d4  | 0.6 | 0.3  | 2  | 0.55 | 6  | 50 | 4 | 2     | 1          | ●     |
| SM200-XT2-1.5-16-50-d4 | 1.5 | 0.75 | 8  | 1.45 | 16 | 50 | 4 | 2     | 1          | ●     |
| SM200-XT2-1-16-50-d4   | 1   | 0.5  | 6  | 0.95 | 16 | 50 | 4 | 2     | 1          | ●     |
| SM200-XT2-2-16-50-d4   | 2   | 1    | 8  | 1.95 | 16 | 50 | 4 | 2     | 1          | ●     |
| SM200-XT2-2-18-50-d4   | 2   | 1    | 8  | 1.95 | 18 | 50 | 4 | 2     | 1          | ●     |

● Stock ○ Available upon Order

| R                     | Tol         |
|-----------------------|-------------|
| $0.3 \leq R \leq 1.5$ | $\pm 0.007$ |

Unit (mm)

| Workpiece Material |               |          |                            |  |
|--------------------|---------------|----------|----------------------------|--|
| N                  |               |          | S                          |  |
| 123                | 4             | 5        | 123                        | 45                                       |
| Aluminium Alloys   | Copper Alloys | Zirconia | Heat Resistant Super Alloy | Titanium Alloy/<br>Cobalt-chromium Alloy |
|                    |               | ○        |                            |  |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P506

# SM200-XT2 NEW

2 flutes ball-nose with reduced neck

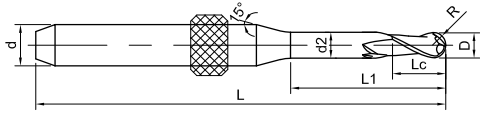


Fig1



Please refer to page 149

| Ordering Code        | D | R   | Lc  | d2   | L1 | L  | d | Flute | Figure No. | Stock |
|----------------------|---|-----|-----|------|----|----|---|-------|------------|-------|
| SM200-XT2-1-10-50-d4 | 1 | 0.5 | 2.5 | 0.95 | 10 | 50 | 4 | 2     | 1          | ●     |
| SM200-XT2-2-12-50-d4 | 2 | 1   | 2.5 | 1.95 | 12 | 50 | 4 | 2     | 1          | ●     |
| SM200-XT2-3-14-50-d4 | 3 | 1.5 | 4   | 2.95 | 14 | 50 | 4 | 2     | 2          | ●     |

● Stock ○ Available upon Order

| R             | Tol    |
|---------------|--------|
| 0.3 ≤ R ≤ 1.5 | ±0.007 |

Unit (mm)

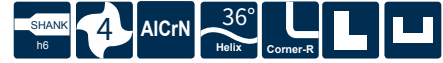
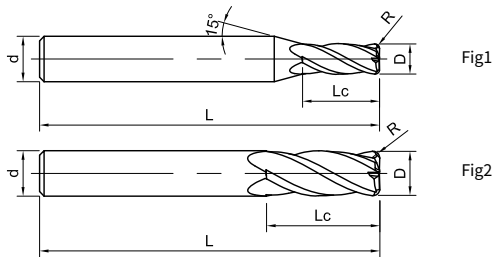
| Workpiece Material |               |          |                            |  |
|--------------------|---------------|----------|----------------------------|--|
| N                  |               |          | S                          |  |
| 123                | 4             | 5        | 123                        | 45                                       |
| Aluminium Alloys   | Copper Alloys | Zirconia | Heat Resistant Super Alloy | Titanium Alloy/<br>Cobalt-chromium Alloy |
|                    |               |          |                            | ○  |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P506

# SN200-R4

4 Flutes with Unequal Tooth Pitch, Corner Radius



Please refer to page 149

| Ordering Code  | D   | R   | Lc  | L  | d | Figure No. | Stock |
|----------------|-----|-----|-----|----|---|------------|-------|
| SN200-R4-01001 | 1   | 0.1 | 3   | 50 | 4 | 1          | ○     |
| SN200-R4-61001 | 1   | 0.1 | 3   | 50 | 6 | 1          | ●     |
| SN200-R4-01501 | 1.5 | 0.1 | 4.5 | 50 | 4 | 1          | ○     |
| SN200-R4-61501 | 1.5 | 0.1 | 4.5 | 50 | 6 | 1          | ●     |
| SN200-R4-02002 | 2   | 0.2 | 6   | 50 | 4 | 1          | ○     |
| SN200-R4-62002 | 2   | 0.2 | 6   | 50 | 6 | 1          | ●     |
| SN200-R4-02005 | 2   | 0.5 | 6   | 50 | 4 | 1          | ○     |
| SN200-R4-62005 | 2   | 0.5 | 6   | 50 | 6 | 1          | ●     |
| SN200-R4-03002 | 3   | 0.2 | 8   | 50 | 4 | 1          | ○     |
| SN200-R4-63002 | 3   | 0.2 | 8   | 50 | 6 | 1          | ●     |
| SN200-R4-03005 | 3   | 0.5 | 8   | 50 | 4 | 1          | ○     |
| SN200-R4-63005 | 3   | 0.5 | 8   | 50 | 6 | 1          | ●     |
| SN200-R4-04002 | 4   | 0.2 | 11  | 50 | 4 | 2          | ○     |
| SN200-R4-64002 | 4   | 0.2 | 11  | 50 | 6 | 1          | ●     |
| SN200-R4-04005 | 4   | 0.5 | 11  | 50 | 4 | 2          | ○     |
| SN200-R4-64005 | 4   | 0.5 | 11  | 50 | 6 | 1          | ●     |
| SN200-R4-05002 | 5   | 0.2 | 13  | 50 | 6 | 1          | ●     |
| SN200-R4-05005 | 5   | 0.5 | 13  | 50 | 6 | 1          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.03 |
| D > 12 | 0<br>-0.04 |

Unit (mm)

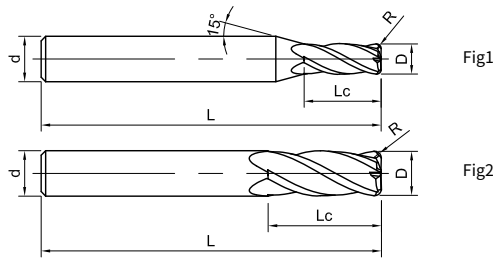
| Workpiece Material                       |  |                 |                       |                 |
|--|--|-----------------|-----------------------|-----------------|
| P  |  | M               | S                     |                 |
| 1 2 3 4                                  | 5                                      | 1 2 3           | 1 2 3                 | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Heat-resistant Alloys | Titanium Alloys |
| ○  | ○                                      | ○               | ◎                     | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P507

# SN200-R4

4 Flutes with Unequal Tooth Pitch, Corner Radius



| Ordering Code   | D  | R   | Lc | L  | d  | Figure No. | Stock |
|-----------------|----|-----|----|----|----|------------|-------|
| SN200-R4-06002  | 6  | 0.2 | 15 | 50 | 6  | 2          | ●     |
| SN200-R4-06005  | 6  | 0.5 | 15 | 50 | 6  | 2          | ●     |
| SN200-R4-06010  | 6  | 1   | 15 | 50 | 6  | 2          | ●     |
| SN200-R4-06015  | 6  | 1.5 | 15 | 50 | 6  | 2          | ●     |
| SN200-R4-08002  | 8  | 0.2 | 20 | 60 | 8  | 2          | ●     |
| SN200-R4-08005  | 8  | 0.5 | 20 | 60 | 8  | 2          | ●     |
| SN200-R4-08010A | 8  | 1   | 20 | 60 | 8  | 2          | ●     |
| SN200-R4-08015  | 8  | 1.5 | 20 | 60 | 8  | 2          | ●     |
| SN200-R4-08020  | 8  | 2   | 20 | 60 | 8  | 2          | ●     |
| SN200-R4-10002  | 10 | 0.2 | 25 | 75 | 10 | 2          | ●     |
| SN200-R4-10005  | 10 | 0.5 | 25 | 75 | 10 | 2          | ●     |
| SN200-R4-10010A | 10 | 1   | 25 | 75 | 10 | 2          | ●     |
| SN200-R4-10015  | 10 | 1.5 | 25 | 75 | 10 | 2          | ●     |
| SN200-R4-10020  | 10 | 2   | 25 | 75 | 10 | 2          | ●     |
| SN200-R4-10025  | 10 | 2.5 | 25 | 75 | 10 | 2          | ●     |
| SN200-R4-12002  | 12 | 0.2 | 26 | 83 | 12 | 2          | ●     |
| SN200-R4-12005  | 12 | 0.5 | 26 | 83 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.03 |
| D > 12 | 0<br>-0.04 |

Unit (mm)

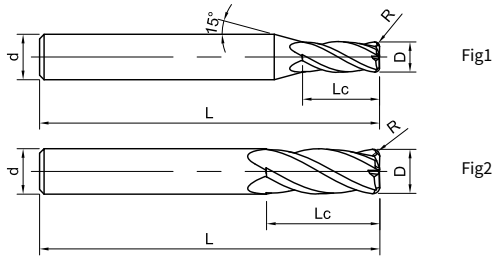
| Workpiece Material                       |  |                 |                       |                 |
|--|--|-----------------|-----------------------|-----------------|
| P  |  | M               | S                     |                 |
| 1 2 3 4                                  | 5                                      | 1 2 3           | 1 2 3                 | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Heat-resistant Alloys | Titanium Alloys |
| ○  | ○                                      | ○               | ◎                     | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P507

# SN200-R4

4 Flutes with Unequal Tooth Pitch, Corner Radius



| Ordering Code  | D  | R   | Lc | L   | d  | Figure No. | Stock |
|----------------|----|-----|----|-----|----|------------|-------|
| SN200-R4-12010 | 12 | 1   | 26 | 83  | 12 | 2          | ●     |
| SN200-R4-12015 | 12 | 1.5 | 26 | 83  | 12 | 2          | ●     |
| SN200-R4-12020 | 12 | 2   | 26 | 83  | 12 | 2          | ●     |
| SN200-R4-12025 | 12 | 2.5 | 26 | 83  | 12 | 2          | ●     |
| SN200-R4-12030 | 12 | 3   | 26 | 83  | 12 | 2          | ●     |
| SN200-R4-16002 | 16 | 0.2 | 32 | 92  | 16 | 2          | ○     |
| SN200-R4-16005 | 16 | 0.5 | 32 | 92  | 16 | 2          | ○     |
| SN200-R4-16010 | 16 | 1   | 32 | 92  | 16 | 2          | ○     |
| SN200-R4-16015 | 16 | 1.5 | 32 | 92  | 16 | 2          | ○     |
| SN200-R4-16020 | 16 | 2   | 32 | 92  | 16 | 2          | ○     |
| SN200-R4-16025 | 16 | 2.5 | 32 | 92  | 16 | 2          | ○     |
| SN200-R4-16030 | 16 | 3   | 32 | 92  | 16 | 2          | ○     |
| SN200-R4-16040 | 16 | 4   | 32 | 92  | 16 | 2          | ○     |
| SN200-R4-20002 | 20 | 0.2 | 38 | 100 | 20 | 2          | ○     |
| SN200-R4-20010 | 20 | 1   | 38 | 100 | 20 | 2          | ○     |
| SN200-R4-20020 | 20 | 2   | 38 | 100 | 20 | 2          | ○     |
| SN200-R4-20030 | 20 | 3   | 38 | 100 | 20 | 2          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.03 |
| D > 12 | 0<br>-0.04 |

Unit (mm)

| Workpiece Material                       |  |                 |                       |                 |
|--|--|-----------------|-----------------------|-----------------|
| P  |  | M               | S                     |                 |
| 1 2 3 4                                  | 5                                      | 1 2 3           | 1 2 3                 | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Heat-resistant Alloys | Titanium Alloys |
| ○  | ○                                      | ○               | ◎                     | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P507

# SN200-RH4

4 Flutes with Unequal Tooth Pitch and long Neck,  
Long Shank, Corner Radius

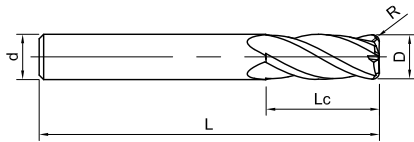


Fig1



Please refer to page 149

| Ordering Code   | D  | R | Lc | L   | d  | Figure No. | Stock |
|-----------------|----|---|----|-----|----|------------|-------|
| SN200-RH4-08010 | 8  | 1 | 20 | 75  | 8  | 1          | ●     |
| SN200-RH4-08020 | 8  | 2 | 20 | 75  | 8  | 1          | ●     |
| SN200-RH4-10010 | 10 | 1 | 25 | 100 | 10 | 1          | ●     |
| SN200-RH4-10020 | 10 | 2 | 25 | 100 | 10 | 1          | ●     |
| SN200-RH4-12010 | 12 | 1 | 26 | 100 | 12 | 1          | ●     |
| SN200-RH4-12020 | 12 | 2 | 26 | 100 | 12 | 1          | ●     |
| SN200-RH4-16010 | 16 | 1 | 32 | 110 | 16 | 1          | ○     |
| SN200-RH4-16020 | 16 | 2 | 32 | 110 | 16 | 1          | ○     |
| SN200-RH4-16030 | 16 | 3 | 32 | 110 | 16 | 1          | ○     |
| SN200-RH4-16040 | 16 | 4 | 32 | 110 | 16 | 1          | ○     |

● Stock ○ Available upon Order

| D      | Tol        |
|--------|------------|
| D ≤ 12 | 0<br>-0.03 |
| D > 12 | 0<br>-0.04 |

Unit (mm)

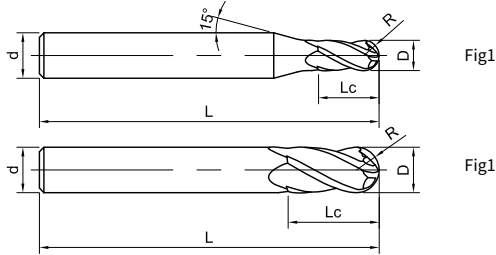
| Workpiece Material                       |  |                 |                       |                 |
|--|--|-----------------|-----------------------|-----------------|
| P  |  | M               | S                     |                 |
| 1 2 3 4                                  | 5                                      | 1 2 3           | 1 2 3                 | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Heat-resistant Alloys | Titanium Alloys |
| ○  | ○                                      | ○               | ◎                     | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P507

# SN200-B4

4 Flutes with Unequal Tooth Pitch, Ball-nose



Please refer to page 149

| Ordering Code  | D  | R   | Lc | L  | d  | Figure No. | Stock |
|----------------|----|-----|----|----|----|------------|-------|
| SN200-B4-02004 | 2  | 1   | 4  | 50 | 4  | 1          | ○     |
| SN200-B4-62004 | 2  | 1   | 4  | 50 | 6  | 1          | ●     |
| SN200-B4-03006 | 3  | 1.5 | 6  | 50 | 4  | 1          | ○     |
| SN200-B4-63006 | 3  | 1.5 | 6  | 50 | 6  | 1          | ●     |
| SN200-B4-04008 | 4  | 2   | 8  | 50 | 4  | 2          | ○     |
| SN200-B4-64008 | 4  | 2   | 8  | 50 | 6  | 1          | ●     |
| SN200-B4-05010 | 5  | 2.5 | 10 | 50 | 6  | 1          | ●     |
| SN200-B4-06012 | 6  | 3   | 12 | 50 | 6  | 2          | ●     |
| SN200-B4-08014 | 8  | 4   | 14 | 60 | 8  | 2          | ●     |
| SN200-B4-10018 | 10 | 5   | 18 | 75 | 10 | 2          | ●     |
| SN200-B4-12022 | 12 | 6   | 22 | 75 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| R     | Tol    |
|-------|--------|
| R ≥ 3 | ±0.020 |

Unit (mm)

| Workpiece Material                       |  |                 |                       |                 |
|--|--|-----------------|-----------------------|-----------------|
| P  |  | M               | S                     |                 |
| 1 2 3 4                                  | 5                                      | 1 2 3           | 1 2 3                 | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Heat-resistant Alloys | Titanium Alloys |
| ○  | ○                                      | ○               | ◎                     | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P508



# SN200-BH4

4 Flutes with Unequal Tooth Pitch and long Neck, Long Shank

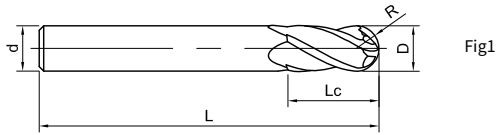


Fig1



Please refer to page 149

| Ordering Code   | D  | R | Lc | L   | d  | Figure No. | Stock |
|-----------------|----|---|----|-----|----|------------|-------|
| SN200-BH4-08014 | 8  | 4 | 14 | 75  | 8  | 1          | ●     |
| SN200-BH4-10018 | 10 | 5 | 18 | 100 | 10 | 1          | ●     |
| SN200-BH4-12022 | 12 | 6 | 22 | 100 | 12 | 1          | ●     |

● Stock ○ Available upon Order

| R     | Tol    |
|-------|--------|
| R ≥ 3 | ±0.020 |

Unit (mm)

| Workpiece Material                       |  |                 |                       |                 |
|--|--|-----------------|-----------------------|-----------------|
| P  |  | M               | S                     |                 |
| 1 2 3 4                                  | 5                                      | 1 2 3           | 1 2 3                 | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Heat-resistant Alloys | Titanium Alloys |
| ○  | ○                                      | ○               | ◎                     | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P508

# STB200-B4 NEW

4 Flutes Tapered Ball-nose

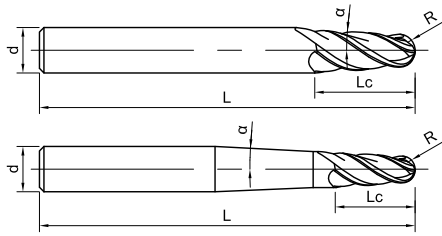


Fig1

Fig2



Please refer to page 149

| Ordering Code          | $\alpha$ | R   | Lc | L   | d  | Figure No. | Stock |
|------------------------|----------|-----|----|-----|----|------------|-------|
| STB200-B4-040152307506 | 4        | 1.5 | 23 | 75  | 6  | 1          | ○     |
| STB200-B4-040150808008 | 4        | 1.5 | 8  | 80  | 8  | 2          | ●     |
| STB200-B4-030201008008 | 3        | 2   | 10 | 80  | 8  | 2          | ●     |
| STB200-B4-040201510010 | 4        | 2   | 15 | 100 | 10 | 2          | ●     |
| STB200-B4-030301510010 | 3        | 3   | 15 | 100 | 10 | 2          | ●     |
| STB200-B4-040301510012 | 4        | 3   | 15 | 100 | 12 | 2          | ○     |
| STB200-B4-030401510012 | 3        | 4   | 15 | 100 | 12 | 2          | ○     |
| STB200-B4-040402012016 | 4        | 4   | 20 | 120 | 16 | 2          | ○     |

● Stock ○ Available upon Order

| R     | Tol    |
|-------|--------|
| R ≥ 3 | ±0.020 |

Unit (mm)

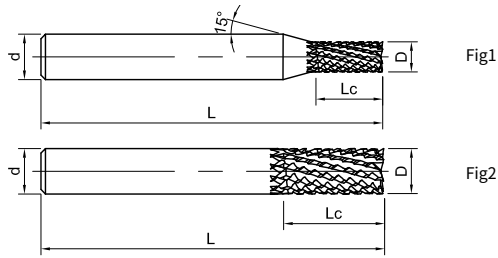
| Workpiece Material                       |  |                 |                       |                 |
|--|--|-----------------|-----------------------|-----------------|
| P  |  | M               | S                     |                 |
| 1 2 3 4                                  | 5                                      | 1 2 3           | 1 2 3                 | 4               |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Heat-resistant Alloys | Titanium Alloys |
| ○  | ○                                      | ○               | ◎                     | ○               |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P508

# SD200-CN

12 Flutes, Rhombic Teeth



Please refer to page 149

| Ordering Code    | D  | Lc | L  | d  | Figure No. | Stock |
|------------------|----|----|----|----|------------|-------|
| SD200-CN8-02008  | 2  | 8  | 50 | 4  | 1          | ○     |
| SD200-CN8-04010  | 4  | 10 | 50 | 4  | 2          | ●     |
| SD200-CN12-06015 | 6  | 15 | 60 | 6  | 2          | ●     |
| SD200-CN12-08020 | 8  | 20 | 60 | 8  | 2          | ●     |
| SD200-CN12-10025 | 10 | 25 | 75 | 10 | 2          | ●     |
| SD200-CN12-12030 | 12 | 30 | 85 | 12 | 2          | ○     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| 4 ≤ D ≤ 12 | 0<br>-0.04 |

Unit (mm)

| Workpiece Material                       |  |                 |                  |               |   |
|--|--|-----------------|------------------|---------------|---|
| P  |  | M               | N                |               |   |
| 1234                                     | 5                                      | 123             | 123              | 4             | 5   |
| Carbon Steel,<br>Alloy Steel<br>(<35HRC) | Alloy Steel,<br>Tool Steel<br>(<48HRC) | Stainless Steel | Aluminium Alloys | Copper Alloys | Carbon fiber, glass<br>fiber, composite<br>material |
|  |  |                 |                  |               | ○   |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P509

# SH260-S2-H

2 Flutes, Standard Length

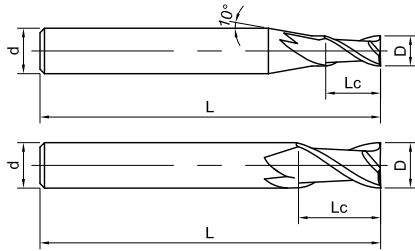
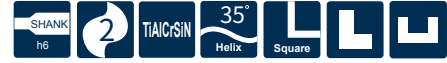


Fig1

Fig2



Please refer to page 149

| Ordering Code     | D   | Lc   | L  | d  | Figure No. | Stock |
|-------------------|-----|------|----|----|------------|-------|
| SH260-S2-1-2.5-H  | 1   | 2.5  | 50 | 4  | 1          | ●     |
| SH260-S2-1.5-6-H  | 1.5 | 6    | 50 | 4  | 1          | ●     |
| SH260-S2-2-5-H    | 2   | 5    | 50 | 4  | 1          | ●     |
| SH260-S2-3-7.5-H  | 3   | 7.5  | 50 | 4  | 1          | ●     |
| SH260-S2-4-10-H   | 4   | 10   | 50 | 4  | 2          | ●     |
| SH260-S2-5-12.5-H | 5   | 12.5 | 50 | 6  | 1          | ●     |
| SH260-S2-6-15-H   | 6   | 15   | 50 | 6  | 2          | ●     |
| SH260-S2-8-20-H   | 8   | 20   | 60 | 8  | 2          | ●     |
| SH260-S2-10-25-H  | 10  | 25   | 75 | 10 | 2          | ●     |
| SH260-S2-12-30-H  | 12  | 30   | 75 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D     | Tol        |
|-------|------------|
| D ≤ 6 | 0<br>-0.01 |
| D > 6 | 0<br>-0.02 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1  | 2  | 3  | 4                            | 5                            | 6                            |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ○  | ○  | ○                            | ○                            | ○                            |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P510

# SH260-SN2-H

2 Flutes, Reduced Neck

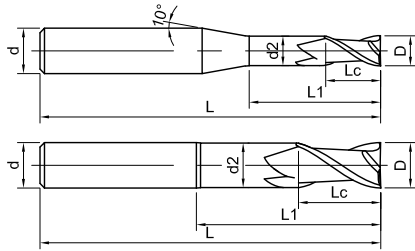


Fig1

Fig2



Please refer to page 149

| Ordering Code       | D   | Lc  | d2   | L1  | L  | d | Figure No. | Stock |
|---------------------|-----|-----|------|-----|----|---|------------|-------|
| SH260-SN2-0.6-5.5-H | 0.6 | 0.9 | 0.57 | 5.5 | 50 | 4 | 1          | ●     |
| SH260-SN2-0.8-2.5-H | 0.8 | 1.2 | 0.76 | 2.5 | 50 | 4 | 1          | ●     |
| SH260-SN2-0.8-5-H   | 0.8 | 1.2 | 0.76 | 5   | 50 | 4 | 1          | ●     |
| SH260-SN2-0.8-7-H   | 0.8 | 1.2 | 0.76 | 7   | 50 | 4 | 1          | ●     |
| SH260-SN2-1-3-H     | 1   | 1.5 | 0.96 | 3   | 50 | 4 | 1          | ●     |
| SH260-SN2-1-4-H     | 1   | 1.5 | 0.96 | 4   | 50 | 4 | 1          | ●     |
| SH260-SN2-1-6-H     | 1   | 1.5 | 0.96 | 6   | 50 | 4 | 1          | ●     |
| SH260-SN2-1-8-H     | 1   | 1.5 | 0.96 | 8   | 50 | 4 | 1          | ●     |
| SH260-SN2-1-10-H    | 1   | 1.5 | 0.96 | 10  | 50 | 4 | 1          | ●     |
| SH260-SN2-1.5-6-H   | 1.5 | 2.5 | 1.44 | 6   | 50 | 4 | 1          | ●     |
| SH260-SN2-1.5-10-H  | 1.5 | 2.5 | 1.44 | 10  | 50 | 4 | 1          | ●     |
| SH260-SN2-2-6-H     | 2   | 3   | 1.92 | 6   | 50 | 4 | 1          | ●     |
| SH260-SN2-2-8-H     | 2   | 3   | 1.92 | 8   | 50 | 4 | 1          | ●     |

● Stock ○ Available upon Order

| D     | Tol        |
|-------|------------|
| D ≤ 6 | 0<br>-0.01 |
| D > 6 | 0<br>-0.02 |

Unit (mm)

| Workpiece Material                         |  |   |                              |                              |                              |
|--|--|---|------------------------------|------------------------------|------------------------------|
| P  |  |   | H                            |                              |                              |
| 1  | 2  | 3   | 4                            | 5                            | 6                            |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH,Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |   | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P510

# SH260-SN2-H

2 Flutes, Reduced Neck

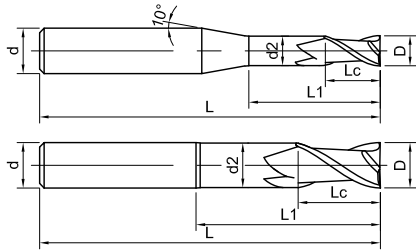


Fig1

Fig2



Please refer to page 149

| Ordering Code      | D   | Lc  | d2   | L1 | L  | d | Figure No. | Stock |
|--------------------|-----|-----|------|----|----|---|------------|-------|
| SH260-SN2-2-10-H   | 2   | 3   | 1.92 | 10 | 50 | 4 | 1          | ●     |
| SH260-SN2-2-12-H   | 2   | 3   | 1.92 | 12 | 50 | 4 | 1          | ●     |
| SH260-SN2-2.5-13-H | 2.5 | 3.8 | 2.4  | 13 | 50 | 4 | 1          | ●     |
| SH260-SN2-3-9-H    | 3   | 4.5 | 2.88 | 9  | 50 | 4 | 1          | ●     |
| SH260-SN2-3-18-H   | 3   | 4.5 | 2.88 | 18 | 50 | 4 | 1          | ●     |
| SH260-SN2-4-12-H-6 | 4   | 6   | 3.8  | 12 | 60 | 6 | 1          | ●     |
| SH260-SN2-4-24-H-6 | 4   | 6   | 3.8  | 24 | 60 | 6 | 1          | ●     |
| SH260-SN2-5-15-H   | 5   | 7.5 | 4.8  | 15 | 60 | 6 | 1          | ●     |
| SH260-SN2-5-25-H   | 5   | 7.5 | 4.85 | 25 | 75 | 6 | 1          | ●     |
| SH260-SN2-6-18-H   | 6   | 9   | 5.8  | 18 | 75 | 6 | 2          | ●     |
| SH260-SN2-6-36-H   | 6   | 9   | 5.8  | 36 | 75 | 6 | 2          | ●     |

● Stock ○ Available upon Order

| D     | Tol        |
|-------|------------|
| D ≤ 6 | 0<br>-0.01 |
| D > 6 | 0<br>-0.02 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1  | 2  | 3  | 4                            | 5                            | 6                            |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ○  | ○  | ○                            | ○                            | ○                            |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P510

# SH260-S4-H

4 Flutes, Standard Length

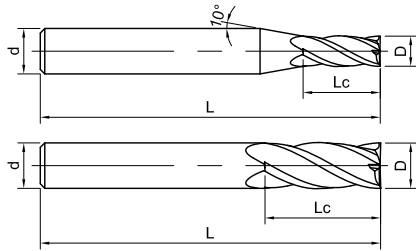


Fig1

Fig2



Please refer to page 149

| Ordering Code      | D   | Lc  | L   | d  | Figure No. | Stock |
|--------------------|-----|-----|-----|----|------------|-------|
| SH260-S4-1-2.5-H   | 1   | 2.5 | 50  | 4  | 1          | ●     |
| SH260-S4-1-2.5-H-6 | 1   | 2.5 | 50  | 6  | 1          | ●     |
| SH260-S4-1.5-4-H   | 1.5 | 4   | 50  | 4  | 1          | ●     |
| SH260-S4-2-5-H     | 2   | 5   | 50  | 4  | 1          | ●     |
| SH260-S4-2.5-6-H   | 2.5 | 6   | 50  | 4  | 1          | ●     |
| SH260-S4-3-8-H     | 3   | 8   | 50  | 4  | 1          | ●     |
| SH260-S4-3-8-H-3   | 3   | 8   | 50  | 3  | 2          | ●     |
| SH260-S4-3-9-H-6   | 3   | 9   | 50  | 6  | 1          | ●     |
| SH260-S4-4-10-H    | 4   | 10  | 50  | 4  | 2          | ●     |
| SH260-S4-5-13-H    | 5   | 13  | 50  | 6  | 1          | ●     |
| SH260-S4-6-15-H    | 6   | 15  | 50  | 6  | 2          | ●     |
| SH260-S4-8-20-H    | 8   | 20  | 60  | 8  | 2          | ●     |
| SH260-S4-10-25-H   | 10  | 25  | 75  | 10 | 2          | ●     |
| SH260-S4-10-30-H   | 10  | 30  | 75  | 10 | 2          | ●     |
| SH260-S4-12-30-H   | 12  | 30  | 75  | 12 | 2          | ●     |
| SH260-S4-12-36-H   | 12  | 36  | 75  | 12 | 2          | ●     |
| SH260-S4-14-35-H   | 14  | 35  | 100 | 14 | 2          | ●     |
| SH260-S4-16-40-H   | 16  | 40  | 100 | 16 | 2          | ●     |
| SH260-S4-20-50-H   | 20  | 50  | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                         |  |   |                              |                              |                              |
|--|--|---|------------------------------|------------------------------|------------------------------|
| P  |  |   | H                            |                              |                              |
| 1  | 2  | 3   | 4                            | 5                            | 6                            |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH,Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |   | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-S4A-H

4 Flutes, Standard Length, 45° helix angle

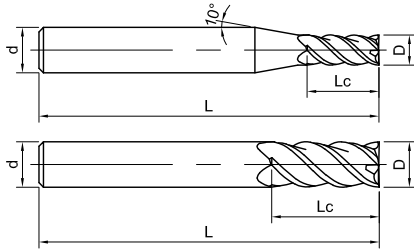


Fig1

Fig2



Please refer to page 149

| Ordering Code     | D   | Lc | L   | d  | Figure No. | Stock |
|-------------------|-----|----|-----|----|------------|-------|
| SH260-S4A-1-3-H   | 1   | 3  | 50  | 4  | 1          | ●     |
| SH260-S4A-1.5-4-H | 1.5 | 4  | 50  | 4  | 1          | ●     |
| SH260-S4A-2-5-H   | 2   | 5  | 50  | 4  | 1          | ●     |
| SH260-S4A-2.5-6-H | 2.5 | 6  | 50  | 4  | 1          | ●     |
| SH260-S4A-3-8-H   | 3   | 8  | 50  | 4  | 1          | ●     |
| SH260-S4A-4-10-H  | 4   | 10 | 50  | 4  | 2          | ●     |
| SH260-S4A-5-13-H  | 5   | 13 | 50  | 6  | 1          | ●     |
| SH260-S4A-6-15-H  | 6   | 15 | 50  | 6  | 2          | ●     |
| SH260-S4A-8-20-H  | 8   | 20 | 60  | 8  | 2          | ●     |
| SH260-S4A-10-25-H | 10  | 25 | 75  | 10 | 2          | ●     |
| SH260-S4A-10-30-H | 10  | 30 | 75  | 10 | 2          | ●     |
| SH260-S4A-12-30-H | 12  | 30 | 75  | 12 | 2          | ●     |
| SH260-S4A-16-45-H | 16  | 45 | 100 | 16 | 2          | ●     |
| SH260-S4A-20-50-H | 20  | 50 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |  | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511



# SH260-SH4-H

4 Flutes, Long Shank

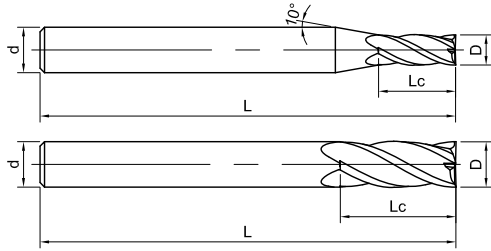


Fig1

Fig2



Please refer to page 149

| Ordering Code      | D  | Lc  | L   | d  | Figure No. | Stock |
|--------------------|----|-----|-----|----|------------|-------|
| SH260-SH4-1-60-H   | 1  | 2.5 | 60  | 4  | 1          | ●     |
| SH260-SH4-2-60-H   | 2  | 5   | 60  | 4  | 1          | ●     |
| SH260-SH4-3-60-H   | 3  | 8   | 60  | 4  | 1          | ●     |
| SH260-SH4-3-60-H-6 | 3  | 8   | 60  | 6  | 1          | ●     |
| SH260-SH4-4-60-H   | 4  | 10  | 60  | 4  | 2          | ●     |
| SH260-SH4-4-75-H   | 4  | 10  | 75  | 4  | 2          | ●     |
| SH260-SH4-4-60-H-6 | 4  | 10  | 60  | 6  | 1          | ●     |
| SH260-SH4-4-75-H-6 | 4  | 10  | 75  | 6  | 1          | ●     |
| SH260-SH4-5-60-H   | 5  | 13  | 60  | 6  | 1          | ●     |
| SH260-SH4-6-60-H   | 6  | 15  | 60  | 6  | 2          | ●     |
| SH260-SH4-6-75-H   | 6  | 15  | 75  | 6  | 2          | ●     |
| SH260-SH4-8-75-H   | 8  | 20  | 75  | 8  | 2          | ●     |
| SH260-SH4-8-100-H  | 8  | 20  | 100 | 8  | 2          | ●     |
| SH260-SH4-10-100-H | 10 | 25  | 100 | 10 | 2          | ●     |
| SH260-SH4-12-100-H | 12 | 30  | 100 | 12 | 2          | ●     |
| SH260-SH4-16-150-H | 16 | 40  | 150 | 16 | 2          | ●     |
| SH260-SH4-20-150-H | 20 | 50  | 150 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                  |                                    |   |                           |                           |                          |
|-------------------------------------|------------------------------------|---|---------------------------|---------------------------|--------------------------|
| P                                   |                                    |   | H                         |                           |                          |
| 1 2 3 4                             | 5                                  | 6                                       | 1                         | 2                         | 3 4                      |
| Carbon Steel, Alloy Steel (< 35HRC) | Alloy Steel, Tool Steel (35-48HRC) | PH, Ferrite, Martensite Steel (< 35HRC) | Hardened Steel (45-55HRC) | Hardened Steel (55-60HRC) | Hardened Steel (> 60HRC) |
| ○                                   | ◎                                  |   | ◎                         | ◎                         | ○                        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-SH4A-H

4 Flutes, Long Shank, 45°helix angle

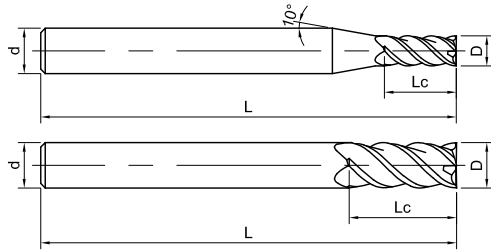


Fig1

Fig2



Please refer to page 149

| Ordering Code       | D  | Lc | L   | d  | Figure No. | Stock |
|---------------------|----|----|-----|----|------------|-------|
| SH260-SH4A-3-60-H   | 3  | 9  | 60  | 4  | 1          | ●     |
| SH260-SH4A-4-60-H   | 4  | 12 | 60  | 4  | 2          | ●     |
| SH260-SH4A-4-75-H-6 | 4  | 12 | 75  | 6  | 1          | ●     |
| SH260-SH4A-5-60-H   | 5  | 15 | 60  | 6  | 1          | ●     |
| SH260-SH4A-6-75-H   | 6  | 18 | 75  | 6  | 2          | ●     |
| SH260-SH4A-6-100-H  | 6  | 18 | 100 | 6  | 2          | ●     |
| SH260-SH4A-8-75-H   | 8  | 24 | 75  | 8  | 2          | ●     |
| SH260-SH4A-8-100-H  | 8  | 24 | 100 | 8  | 2          | ●     |
| SH260-SH4A-10-100-H | 10 | 30 | 100 | 10 | 2          | ●     |
| SH260-SH4A-12-100-H | 12 | 36 | 100 | 12 | 2          | ●     |
| SH260-SH4A-16-150-H | 16 | 48 | 150 | 16 | 2          | ●     |
| SH260-SH4A-20-150-H | 20 | 60 | 150 | 20 | 2          | ●     |

●Stock ○Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                         |  |   |                              |                              |                              |
|--|--|---|------------------------------|------------------------------|------------------------------|
| P  |  |   | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6   | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH,Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |   | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-SN4-H

4 Flutes, Reduced Neck

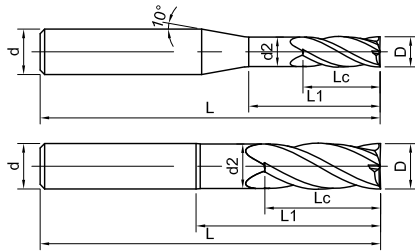


Fig1

Fig2



Please refer to page 149

| Ordering Code      | D   | Lc | d2   | L1 | L   | d  | Figure No. | Stock |
|--------------------|-----|----|------|----|-----|----|------------|-------|
| SH260-S N4-1-3-H   | 1   | 2  | 0.96 | 3  | 50  | 4  | 1          | ●     |
| SH260-SN4-1-6-H    | 1   | 2  | 0.96 | 6  | 50  | 4  | 1          | ●     |
| SH260-SN4-2-6-H    | 2   | 4  | 1.92 | 6  | 50  | 4  | 1          | ●     |
| SH260-SN4-2-6-H-6  | 2   | 4  | 1.92 | 6  | 50  | 6  | 1          | ●     |
| SH260-SN4-2-12-H   | 2   | 4  | 1.92 | 12 | 50  | 4  | 1          | ●     |
| SH260-SN4-2.5-10-H | 2.5 | 5  | 2.4  | 10 | 60  | 4  | 1          | ●     |
| SH260-SN4-3-9-H    | 3   | 6  | 2.88 | 9  | 50  | 4  | 1          | ●     |
| SH260-SN4-3-18-H-6 | 3   | 6  | 2.88 | 18 | 60  | 6  | 1          | ●     |
| SH260-SN4-4-12-H   | 4   | 8  | 3.8  | 12 | 60  | 4  | 2          | ●     |
| SH260-SN4-4-24-H-6 | 4   | 8  | 3.8  | 24 | 60  | 6  | 1          | ●     |
| SH260-SN4-5-15-H   | 5   | 10 | 4.8  | 15 | 60  | 6  | 1          | ●     |
| SH260-SN4-6-18-H   | 6   | 12 | 5.8  | 18 | 75  | 6  | 2          | ●     |
| SH260-SN4-6-24-H   | 6   | 12 | 5.8  | 24 | 75  | 6  | 2          | ●     |
| SH260-SN4-8-24-H   | 8   | 16 | 7.8  | 24 | 75  | 8  | 2          | ●     |
| SH260-SN4-8-32-H   | 8   | 16 | 7.8  | 32 | 100 | 8  | 2          | ●     |
| SH260-SN4-10-30-H  | 10  | 20 | 9.8  | 30 | 100 | 10 | 2          | ●     |
| SH260-SN4-10-40-H  | 10  | 20 | 9.8  | 40 | 100 | 10 | 2          | ●     |
| SH260-SN4-12-36-H  | 12  | 24 | 11.8 | 36 | 100 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1  | 2  | 3  | 4                            | 5                            | 6                            |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ○  | ○  | ○                            | ○                            | ○                            |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-SL4-H

4 Flutes, Long Flute

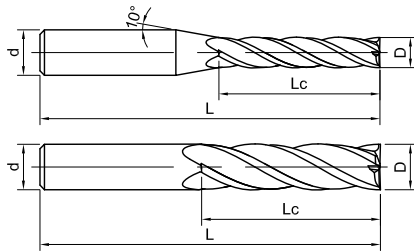


Fig1

Fig2



Please refer to page 149

| Ordering Code      | D  | Lc | L   | d  | Figure No. | Stock |
|--------------------|----|----|-----|----|------------|-------|
| SH260-SL4-1-5-H    | 1  | 5  | 50  | 4  | 1          | ●     |
| SH260-SL4-2-10-H   | 2  | 10 | 50  | 4  | 1          | ●     |
| SH260-SL4-3-15-H   | 3  | 15 | 50  | 4  | 1          | ●     |
| SH260-SL4-4-16-H   | 4  | 16 | 60  | 4  | 2          | ●     |
| SH260-SL4-4-20-H-6 | 4  | 20 | 60  | 6  | 1          | ●     |
| SH260-SL4-5-20-H   | 5  | 20 | 60  | 6  | 1          | ●     |
| SH260-SL4-6-24-H   | 6  | 24 | 75  | 6  | 2          | ●     |
| SH260-SL4-8-32-H   | 8  | 32 | 75  | 8  | 2          | ●     |
| SH260-SL4-8-35-H   | 8  | 35 | 100 | 8  | 2          | ●     |
| SH260-SL4-10-40-H  | 10 | 40 | 100 | 10 | 2          | ●     |
| SH260-SL4-10-50-H  | 10 | 50 | 120 | 10 | 2          | ●     |
| SH260-SL4-12-50-H  | 12 | 50 | 120 | 12 | 2          | ●     |
| SH260-SL4-16-60-H  | 16 | 60 | 150 | 16 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |  | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-SL4A-H

4 Flutes, Long Flute, 45°helix angle

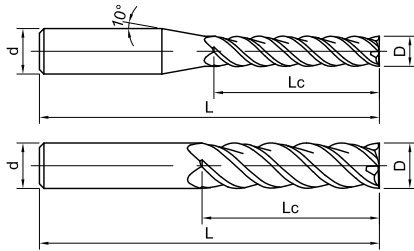


Fig1

Fig2



Please refer to page 149

| Ordering Code       | D  | Lc | L   | d  | Figure No. | Stock |
|---------------------|----|----|-----|----|------------|-------|
| SH260-SL4A-3-12-H-6 | 3  | 12 | 50  | 6  | 1          | ●     |
| SH260-SL4A-4-16-H   | 4  | 16 | 60  | 4  | 2          | ●     |
| SH260-SL4A-5-20-H   | 5  | 20 | 60  | 6  | 1          | ●     |
| SH260-SL4A-6-24-H   | 6  | 24 | 75  | 6  | 2          | ●     |
| SH260-SL4A-8-36-H   | 8  | 36 | 100 | 8  | 2          | ●     |
| SH260-SL4A-10-45-H  | 10 | 45 | 100 | 10 | 2          | ●     |
| SH260-SL4A-10-50-H  | 10 | 50 | 150 | 10 | 2          | ●     |
| SH260-SL4A-12-50-H  | 12 | 50 | 100 | 12 | 2          | ●     |
| SH260-SL4A-12-60-H  | 12 | 60 | 150 | 12 | 2          | ●     |
| SH260-SL4A-16-65-H  | 16 | 65 | 150 | 16 | 2          | ●     |
| SH260-SL4A-20-75-H  | 20 | 75 | 150 | 20 | 2          | ●     |

●Stock ○Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                         |  |   |                              |                              |                              |
|--|--|---|------------------------------|------------------------------|------------------------------|
| P  |  |   | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6   | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH,Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |   | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-S6-H

6 Flutes, Standard Length

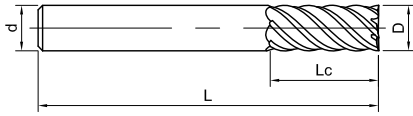


Fig1



Please refer to page 149

| Ordering Code    | D  | Lc | L   | d  | Figure No. | Stock |
|------------------|----|----|-----|----|------------|-------|
| SH260-S6-6-15-H  | 6  | 15 | 50  | 6  | 1          | ●     |
| SH260-S6-8-20-H  | 8  | 20 | 60  | 8  | 1          | ●     |
| SH260-S6-10-25-H | 10 | 25 | 75  | 10 | 1          | ●     |
| SH260-S6-10-30-H | 10 | 30 | 75  | 10 | 1          | ●     |
| SH260-S6-12-30-H | 12 | 30 | 75  | 12 | 1          | ●     |
| SH260-S6-16-40-H | 16 | 40 | 100 | 16 | 1          | ●     |
| SH260-S6-20-45-H | 20 | 45 | 100 | 20 | 1          | ●     |

● Stock ○ Available upon Order

| D     | Tol         |
|-------|-------------|
| D ≤ 6 | 0<br>-0.010 |
| D > 6 | 0<br>-0.020 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1  | 2  | 3  | 4                            | 5                            | 6                            |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ○  | ○  | ○                            | ○                            | ○                            |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-SH6-H

6 Flutes, Long Shank

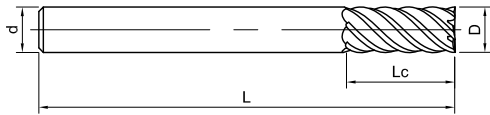


Fig1



Please refer to page 149

| Ordering Code      | D  | Lc | L   | d  | Figure No. | Stock |
|--------------------|----|----|-----|----|------------|-------|
| SH260-SH6-6-60-H   | 6  | 15 | 60  | 6  | 1          | ●     |
| SH260-SH6-8-75-H   | 8  | 20 | 75  | 8  | 1          | ●     |
| SH260-SH6-10-100-H | 10 | 25 | 100 | 10 | 1          | ●     |
| SH260-SH6-12-100-H | 12 | 30 | 100 | 12 | 1          | ●     |
| SH260-SH6-16-150-H | 16 | 45 | 150 | 16 | 1          | ●     |
| SH260-SH6-20-150-H | 20 | 60 | 150 | 20 | 1          | ●     |

● Stock ○ Available upon Order

| D     | Tol         |
|-------|-------------|
| D ≤ 6 | 0<br>-0.010 |
| D > 6 | 0<br>-0.020 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |  | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-SL6-H

6 Flutes, Long Flute

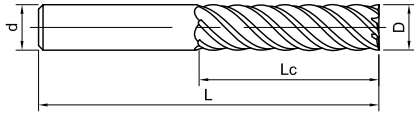


Fig1



Please refer to page 149

| Ordering Code     | D  | Lc | L   | d  | Figure No. | Stock |
|-------------------|----|----|-----|----|------------|-------|
| SH260-SL6-6-24-H  | 6  | 24 | 75  | 6  | 1          | ●     |
| SH260-SL6-6-30-H  | 6  | 30 | 100 | 6  | 1          | ●     |
| SH260-SL6-8-32-H  | 8  | 32 | 75  | 8  | 1          | ●     |
| SH260-SL6-8-40-H  | 8  | 40 | 100 | 8  | 1          | ●     |
| SH260-SL6-10-40-H | 10 | 40 | 100 | 10 | 1          | ●     |
| SH260-SL6-10-50-H | 10 | 50 | 150 | 10 | 1          | ●     |
| SH260-SL6-12-50-H | 12 | 50 | 100 | 12 | 1          | ●     |
| SH260-SL6-12-60-H | 12 | 60 | 150 | 12 | 1          | ●     |
| SH260-SL6-16-70-H | 16 | 70 | 150 | 16 | 1          | ●     |
| SH260-SL6-16-80-H | 16 | 80 | 150 | 16 | 1          | ●     |
| SH260-SL6-20-80-H | 20 | 80 | 150 | 20 | 1          | ●     |

● Stock ○ Available upon Order

| D     | Tol         |
|-------|-------------|
| D ≤ 6 | 0<br>-0.010 |
| D > 6 | 0<br>-0.020 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1  | 2  | 3  | 4                            | 5                            | 6                            |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ○  | ○  | ○                            | ○                            | ○                            |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511



# SH260-R2-H

2 Flutes, Corner Radius

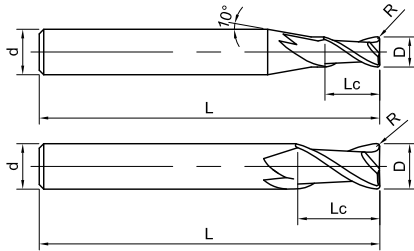


Fig1

Fig2



Please refer to page 149

| Ordering Code    | D | Lc  | R   | L  | d | Figure No. | Stock |
|------------------|---|-----|-----|----|---|------------|-------|
| SH260-R2-1-0.1-H | 1 | 2.5 | 0.1 | 50 | 4 | 1          | ●     |
| SH260-R2-1-0.2-H | 1 | 2.5 | 0.2 | 50 | 4 | 1          | ●     |
| SH260-R2-2-0.2-H | 2 | 5   | 0.2 | 50 | 4 | 1          | ●     |
| SH260-R2-2-0.3-H | 2 | 5   | 0.3 | 50 | 4 | 1          | ●     |
| SH260-R2-3-0.2-H | 3 | 7.5 | 0.2 | 50 | 4 | 1          | ●     |
| SH260-R2-3-0.5-H | 3 | 7.5 | 0.5 | 50 | 4 | 1          | ●     |
| SH260-R2-4-0.2-H | 4 | 10  | 0.2 | 50 | 4 | 2          | ●     |
| SH260-R2-4-0.5-H | 4 | 10  | 0.5 | 50 | 4 | 2          | ●     |
| SH260-R2-6-0.5-H | 6 | 15  | 0.5 | 50 | 6 | 2          | ●     |
| SH260-R2-6-1-H   | 6 | 15  | 1   | 50 | 6 | 2          | ●     |
| SH260-R2-8-0.2-H | 8 | 20  | 0.2 | 60 | 8 | 2          | ●     |

● Stock ○ Available upon Order

| D     | Tol        |
|-------|------------|
| D ≤ 6 | 0<br>-0.01 |
| D > 6 | 0<br>-0.02 |

Unit (mm)

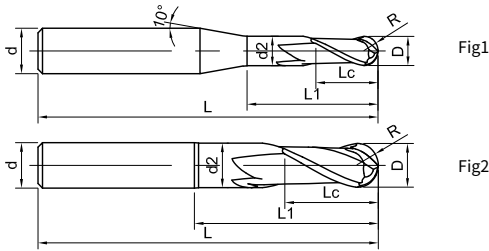
| Workpiece Material                         |  |   |                              |                              |                              |
|--|--|---|------------------------------|------------------------------|------------------------------|
| P  |  |   | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6   | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH,Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |   | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P510

# SH260-RN2-H

2 Flutes with Reduced Neck



Please refer to page 149

| Ordering Code          | D   | Lc  | R   | d2   | L1 | L  | d | Figure No. | Stock |
|------------------------|-----|-----|-----|------|----|----|---|------------|-------|
| SH260-RN2-1-3-0.1-H    | 1   | 1.5 | 0.1 | 0.96 | 3  | 50 | 4 | 1          | ●     |
| SH260-RN2-1-3-0.2-H    | 1   | 1.5 | 0.2 | 0.96 | 3  | 50 | 4 | 1          | ●     |
| SH260-RN2-1-4-0.2-H    | 1   | 1.5 | 0.2 | 0.96 | 4  | 50 | 4 | 1          | ●     |
| SH260-RN2-1-6-0.1-H    | 1   | 1.5 | 0.1 | 0.96 | 6  | 50 | 4 | 1          | ●     |
| SH260-RN2-1-6-0.2-H    | 1   | 1.5 | 0.2 | 0.96 | 6  | 50 | 4 | 1          | ●     |
| SH260-RN2-1-8-0.2-H    | 1   | 1.5 | 0.2 | 0.96 | 8  | 50 | 4 | 1          | ●     |
| SH260-RN2-1-10-0.2-H   | 1   | 1.5 | 0.2 | 0.96 | 10 | 50 | 4 | 1          | ●     |
| SH260-RN2-1.5-6-0.2-H  | 1.5 | 2.5 | 0.2 | 1.44 | 6  | 50 | 4 | 1          | ●     |
| SH260-RN2-1.5-8-0.2-H  | 1.5 | 2.5 | 0.2 | 1.44 | 8  | 50 | 4 | 1          | ●     |
| SH260-RN2-1.5-10-0.2-H | 1.5 | 2.5 | 0.2 | 1.44 | 10 | 50 | 4 | 1          | ●     |
| SH260-RN2-2-6-0.2-H    | 2   | 3   | 0.2 | 1.92 | 6  | 50 | 4 | 1          | ●     |
| SH260-RN2-2-6-0.5-H    | 2   | 3   | 0.5 | 1.92 | 6  | 50 | 4 | 1          | ●     |
| SH260-RN2-2-8-0.2-H    | 2   | 3   | 0.2 | 1.92 | 8  | 50 | 4 | 1          | ●     |
| SH260-RN2-2-10-0.2-H   | 2   | 3   | 0.2 | 1.92 | 10 | 50 | 4 | 1          | ●     |

● Stock ○ Available upon Order

| D     | Tol        |
|-------|------------|
| D ≤ 6 | 0<br>-0.01 |
| D > 6 | 0<br>-0.02 |

Unit (mm)

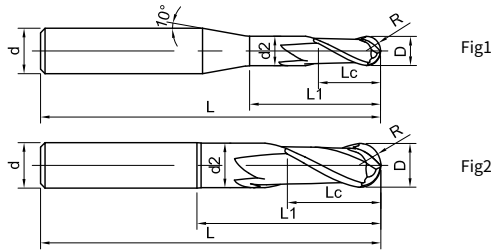
| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |  | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P510

# SH260-RN2-H

2 Flutes with Reduced Neck



Please refer to page 149

» Continuation

| Ordering Code        | D | Lc  | R   | d2   | L1 | L  | d | Figure No. | Stock |
|----------------------|---|-----|-----|------|----|----|---|------------|-------|
| SH260-RN2-2-12-0.2-H | 2 | 3   | 0.2 | 1.92 | 12 | 50 | 4 | 1          | ●     |
| SH260-RN2-2-12-0.5-H | 2 | 3   | 0.5 | 1.92 | 12 | 50 | 4 | 1          | ●     |
| SH260-RN2-3-9-0.2-H  | 3 | 4.5 | 0.2 | 2.88 | 9  | 50 | 4 | 1          | ●     |
| SH260-RN2-3-9-0.5-H  | 3 | 4.5 | 0.5 | 2.88 | 9  | 50 | 4 | 1          | ●     |
| SH260-RN2-3-18-0.2-H | 3 | 4.5 | 0.2 | 2.88 | 18 | 50 | 4 | 1          | ●     |
| SH260-RN2-3-18-0.5-H | 3 | 4.5 | 0.5 | 2.88 | 18 | 50 | 4 | 1          | ●     |
| SH260-RN2-4-12-0.2-H | 4 | 6   | 0.2 | 3.8  | 12 | 50 | 4 | 2          | ●     |
| SH260-RN2-4-12-0.5-H | 4 | 6   | 0.5 | 3.8  | 12 | 50 | 4 | 2          | ●     |
| SH260-RN2-4-24-0.2-H | 4 | 6   | 0.2 | 3.8  | 24 | 60 | 4 | 2          | ●     |
| SH260-RN2-4-24-0.5-H | 4 | 6   | 0.5 | 3.8  | 24 | 60 | 4 | 2          | ●     |
| SH260-RN2-5-15-0.5-H | 5 | 7.5 | 0.5 | 4.8  | 15 | 50 | 6 | 1          | ●     |
| SH260-RN2-5-30-0.5-H | 5 | 7.5 | 0.5 | 4.8  | 30 | 60 | 6 | 1          | ●     |
| SH260-RN2-6-18-0.5-H | 6 | 9   | 0.5 | 5.8  | 18 | 60 | 6 | 2          | ●     |
| SH260-RN2-6-36-0.5-H | 6 | 9   | 0.5 | 5.8  | 36 | 60 | 6 | 2          | ●     |

● Stock ○ Available upon Order

| D     | Tol        |
|-------|------------|
| D ≤ 6 | 0<br>-0.01 |
| D > 6 | 0<br>-0.02 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |  | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P510

# SH260-R4-H

4 Flutes, Corner Radius

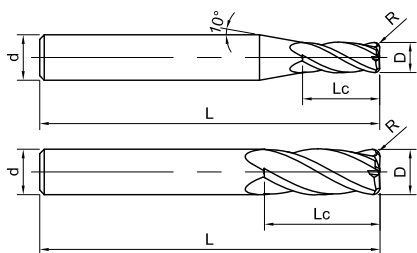


Fig1

Fig2



Please refer to page 149

| Ordering Code      | D   | Lc  | R   | L  | d | Figure No. | Stock |
|--------------------|-----|-----|-----|----|---|------------|-------|
| SH260-R4-1-0.1-H   | 1   | 2.5 | 0.1 | 50 | 4 | 1          | ●     |
| SH260-R4-1-0.2-H   | 1   | 2.5 | 0.2 | 50 | 4 | 1          | ●     |
| SH260-R4-1.5-0.1-H | 1.5 | 4   | 0.1 | 50 | 4 | 1          | ●     |
| SH260-R4-1.5-0.2-H | 1.5 | 4   | 0.2 | 50 | 4 | 1          | ●     |
| SH260-R4-1.5-0.3-H | 1.5 | 4   | 0.3 | 50 | 4 | 1          | ●     |
| SH260-R4-2-0.1-H   | 2   | 5   | 0.1 | 50 | 4 | 1          | ●     |
| SH260-R4-2-0.2-H   | 2   | 5   | 0.2 | 50 | 4 | 1          | ●     |
| SH260-R4-2-0.3-H   | 2   | 5   | 0.3 | 50 | 4 | 1          | ●     |
| SH260-R4-2-0.5-H   | 2   | 5   | 0.5 | 50 | 4 | 1          | ●     |
| SH260-R4-3-0.2-H   | 3   | 8   | 0.2 | 50 | 4 | 1          | ●     |
| SH260-R4-3-0.3-H   | 3   | 8   | 0.3 | 50 | 4 | 1          | ●     |
| SH260-R4-3-0.5-H   | 3   | 8   | 0.5 | 50 | 4 | 1          | ●     |
| SH260-R4-3-0.2-H-3 | 3   | 8   | 0.2 | 50 | 3 | 2          | ●     |
| SH260-R4-3-0.3-H-3 | 3   | 8   | 0.3 | 50 | 3 | 2          | ●     |
| SH260-R4-3-0.5-H-3 | 3   | 8   | 0.5 | 50 | 3 | 2          | ●     |
| SH260-R4-3-0.2-H-6 | 3   | 8   | 0.2 | 50 | 6 | 1          | ●     |
| SH260-R4-4-0.2-H   | 4   | 10  | 0.2 | 50 | 4 | 2          | ●     |

●Stock ○Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                         |  |   |                              |                              |                              |
|--|--|---|------------------------------|------------------------------|------------------------------|
| P  |  |   | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6   | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH,Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |   | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-R4-H

4 Flutes, Corner Radius

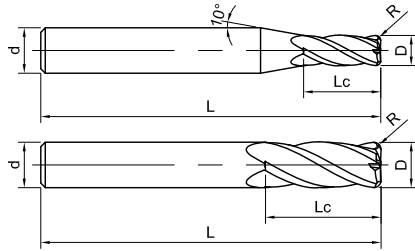


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code      | D  | Lc | R   | L  | d  | Figure No. | Stock |
|--------------------|----|----|-----|----|----|------------|-------|
| SH260-R4-4-0.3-H   | 4  | 10 | 0.3 | 50 | 4  | 2          | ●     |
| SH260-R4-4-0.5-H   | 4  | 10 | 0.5 | 50 | 4  | 2          | ●     |
| SH260-R4-4-1-H     | 4  | 10 | 1   | 50 | 4  | 2          | ●     |
| SH260-R4-4-0.5-H-6 | 4  | 10 | 0.5 | 50 | 6  | 1          | ●     |
| SH260-R4-5-0.2-H   | 5  | 13 | 0.2 | 50 | 6  | 1          | ●     |
| SH260-R4-5-0.5-H   | 5  | 13 | 0.5 | 50 | 6  | 1          | ●     |
| SH260-R4-6-0.2-H   | 6  | 15 | 0.2 | 50 | 6  | 2          | ●     |
| SH260-R4-6-0.3-H   | 6  | 15 | 0.3 | 50 | 6  | 2          | ●     |
| SH260-R4-6-0.5-H   | 6  | 15 | 0.5 | 50 | 6  | 2          | ●     |
| SH260-R4-6-1-H     | 6  | 15 | 1   | 50 | 6  | 2          | ●     |
| SH260-R4-8-0.2-H   | 8  | 20 | 0.2 | 60 | 8  | 2          | ●     |
| SH260-R4-8-0.3-H   | 8  | 20 | 0.3 | 60 | 8  | 2          | ●     |
| SH260-R4-8-0.4-H   | 8  | 20 | 0.4 | 60 | 8  | 2          | ●     |
| SH260-R4-8-0.5-H   | 8  | 20 | 0.5 | 60 | 8  | 2          | ●     |
| SH260-R4-8-1-H     | 8  | 20 | 1   | 60 | 8  | 2          | ●     |
| SH260-R4-8-2-H     | 8  | 20 | 2   | 60 | 8  | 2          | ●     |
| SH260-R4-10-0.2-H  | 10 | 25 | 0.2 | 75 | 10 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                         |  |   |                              |                              |                              |
|--|--|---|------------------------------|------------------------------|------------------------------|
| P  |  |   | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6   | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH,Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |   | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-R4-H

4 Flutes, Corner Radius

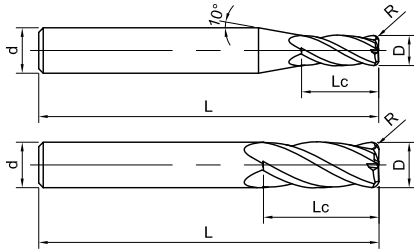


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code     | D  | Lc | R   | L  | d  | Figure No. | Stock |
|-------------------|----|----|-----|----|----|------------|-------|
| SH260-R4-10-0.5-H | 10 | 25 | 0.5 | 75 | 10 | 2          | ●     |
| SH260-R4-10-1-H   | 10 | 25 | 1   | 75 | 10 | 2          | ●     |
| SH260-R4-10-2-H   | 10 | 25 | 2   | 75 | 10 | 2          | ●     |
| SH260-R4-12-0.2-H | 12 | 30 | 0.2 | 75 | 12 | 2          | ●     |
| SH260-R4-12-0.5-H | 12 | 30 | 0.5 | 75 | 12 | 2          | ●     |
| SH260-R4-12-1-H   | 12 | 30 | 1   | 75 | 12 | 2          | ●     |
| SH260-R4-12-2-H   | 12 | 30 | 2   | 75 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1  | 2  | 3  | 4                            | 5                            | 6                            |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |  | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-R4A-H

4 Flutes, Corner Radius, 45°helix angle

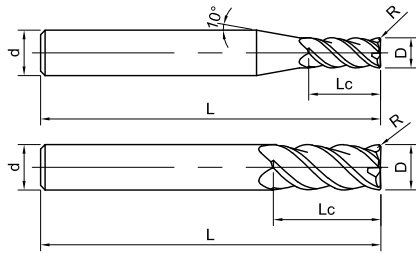


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code       | D | Lc  | R   | L  | d | Figure No. | Stock |
|---------------------|---|-----|-----|----|---|------------|-------|
| SH260-R4A-1-0.1-H   | 1 | 2.5 | 0.1 | 50 | 4 | 1          | ●     |
| SH260-R4A-1-0.2-H   | 1 | 2.5 | 0.2 | 50 | 4 | 1          | ●     |
| SH260-R4A-2-0.1-H   | 2 | 5   | 0.1 | 50 | 4 | 1          | ●     |
| SH260-R4A-2-0.2-H   | 2 | 5   | 0.2 | 50 | 4 | 1          | ●     |
| SH260-R4A-2-0.3-H   | 2 | 5   | 0.3 | 50 | 4 | 1          | ●     |
| SH260-R4A-2-0.5-H   | 2 | 5   | 0.5 | 50 | 4 | 1          | ●     |
| SH260-R4A-3-0.2-H-3 | 3 | 7.5 | 0.2 | 50 | 3 | 2          | ●     |
| SH260-R4A-3-0.2-H   | 3 | 7.5 | 0.2 | 50 | 4 | 1          | ●     |
| SH260-R4A-3-0.3-H   | 3 | 7.5 | 0.3 | 50 | 4 | 1          | ●     |
| SH260-R4A-3-0.5-H   | 3 | 7.5 | 0.5 | 50 | 4 | 1          | ●     |
| SH260-R4A-4-0.2-H   | 4 | 10  | 0.2 | 50 | 4 | 2          | ●     |
| SH260-R4A-4-0.5-H   | 4 | 10  | 0.5 | 50 | 4 | 2          | ●     |
| SH260-R4A-4-0.5-H-6 | 4 | 10  | 0.5 | 50 | 6 | 1          | ●     |
| SH260-R4A-5-0.2-H   | 5 | 13  | 0.2 | 50 | 6 | 1          | ●     |
| SH260-R4A-5-0.5-H   | 5 | 13  | 0.5 | 50 | 6 | 1          | ●     |
| SH260-R4A-6-0.2-H   | 6 | 15  | 0.2 | 50 | 6 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                         |  |   |                              |                              |                              |
|--|--|---|------------------------------|------------------------------|------------------------------|
| P  |  |   | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6   | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH,Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |   | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-R4A-H

4 Flutes, Corner Radius, 45°helix angle

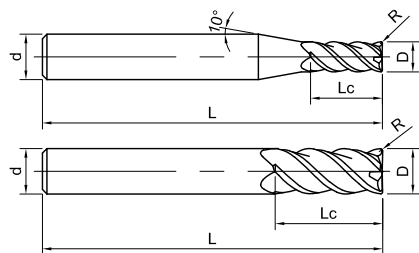


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code      | D  | Lc | R   | L  | d  | Figure No. | Stock |
|--------------------|----|----|-----|----|----|------------|-------|
| SH260-R4A-6-0.5-H  | 6  | 15 | 0.5 | 50 | 6  | 2          | ●     |
| SH260-R4A-6-1-H    | 6  | 15 | 1   | 50 | 6  | 2          | ●     |
| SH260-R4A-8-0.2-H  | 8  | 20 | 0.2 | 60 | 8  | 2          | ●     |
| SH260-R4A-8-0.5-H  | 8  | 20 | 0.5 | 60 | 8  | 2          | ●     |
| SH260-R4A-8-1-H    | 8  | 20 | 1   | 60 | 8  | 2          | ●     |
| SH260-R4A-10-0.2-H | 10 | 25 | 0.2 | 75 | 10 | 2          | ●     |
| SH260-R4A-10-0.5-H | 10 | 25 | 0.5 | 75 | 10 | 2          | ●     |
| SH260-R4A-10-1-H   | 10 | 25 | 1   | 75 | 10 | 2          | ●     |
| SH260-R4A-10-2-H   | 10 | 25 | 2   | 75 | 10 | 2          | ●     |
| SH260-R4A-12-0.5-H | 12 | 30 | 0.5 | 75 | 12 | 2          | ●     |
| SH260-R4A-12-1-H   | 12 | 30 | 1   | 75 | 12 | 2          | ●     |
| SH260-R4A-12-2-H   | 12 | 30 | 2   | 75 | 12 | 2          | ●     |

●Stock ○Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                         |  |   |                              |                              |                              |
|--|--|---|------------------------------|------------------------------|------------------------------|
| P  |  |   | H                            |                              |                              |
| 1  | 2  | 3   | 4                            | 5                            | 6                            |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH,Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ○  | ○   | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511



# SH260-RH4-H

4 Flutes with Long Shank, Corner Radius

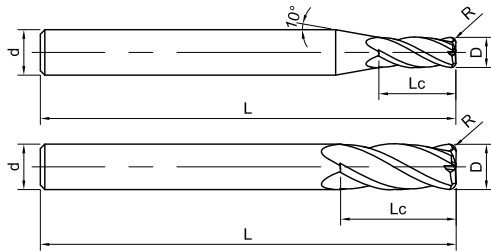


Fig1

Fig2



Please refer to page 149

| Ordering Code            | D   | Lc | R   | L   | d | Figure No. | Stock |
|--------------------------|-----|----|-----|-----|---|------------|-------|
| SH260-RH4-2.5-60-0.5-H-6 | 2.5 | 6  | 0.5 | 60  | 6 | 1          | ●     |
| SH260-RH4-3-60-0.5-H-6   | 3   | 8  | 0.5 | 60  | 6 | 1          | ●     |
| SH260-RH4-4-60-0.2-H     | 4   | 10 | 0.2 | 60  | 4 | 2          | ●     |
| SH260-RH4-4-60-0.3-H     | 4   | 10 | 0.3 | 60  | 4 | 2          | ●     |
| SH260-RH4-4-60-0.5-H     | 4   | 10 | 0.5 | 60  | 4 | 2          | ●     |
| SH260-RH4-4-75-0.5-H     | 4   | 10 | 0.5 | 75  | 4 | 2          | ●     |
| SH260-RH4-4-60-1-H       | 4   | 10 | 1   | 60  | 4 | 2          | ●     |
| SH260-RH4-4-75-0.5-H-6   | 4   | 10 | 0.5 | 75  | 6 | 1          | ●     |
| SH260-RH4-4-60-1-H-6     | 4   | 10 | 1   | 60  | 6 | 1          | ●     |
| SH260-RH4-5-60-0.5-H     | 5   | 13 | 0.5 | 60  | 6 | 1          | ●     |
| SH260-RH4-6-60-0.2-H     | 6   | 15 | 0.2 | 60  | 6 | 2          | ●     |
| SH260-RH4-6-60-0.3-H     | 6   | 15 | 0.3 | 60  | 6 | 2          | ●     |
| SH260-RH4-6-75-0.3-H     | 6   | 15 | 0.3 | 60  | 6 | 2          | ●     |
| SH260-RH4-6-60-0.5-H     | 6   | 15 | 0.5 | 6   | 6 | 2          | ●     |
| SH260-RH4-6-75-0.5-H     | 6   | 15 | 0.5 | 75  | 6 | 2          | ●     |
| SH260-RH4-6-100-0.5-H    | 6   | 15 | 0.5 | 100 | 6 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                         |  |   |                              |                              |                              |
|--|--|---|------------------------------|------------------------------|------------------------------|
| P  |  |   | H                            |                              |                              |
| 1  | 2  | 3   | 4                            | 5                            | 6                            |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH,Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |   | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-RH4-H

4 Flutes with Long Shank, Corner Radius

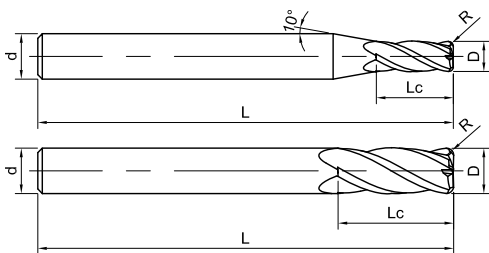


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code          | D  | Lc | R   | L   | d  | Figure No. | Stock |
|------------------------|----|----|-----|-----|----|------------|-------|
| SH260-RH4-6-60-1-H     | 6  | 15 | 1   | 60  | 6  | 2          | ●     |
| SH260-RH4-6-75-1-H     | 6  | 15 | 1   | 75  | 6  | 2          | ●     |
| SH260-RH4-8-75-0.3-H   | 8  | 20 | 0.3 | 75  | 8  | 2          | ●     |
| SH260-RH4-8-75-0.5-H   | 8  | 20 | 0.5 | 75  | 8  | 2          | ●     |
| SH260-RH4-8-100-0.5-H  | 8  | 20 | 0.5 | 100 | 8  | 2          | ●     |
| SH260-RH4-8-75-1-H     | 8  | 20 | 1   | 75  | 8  | 2          | ●     |
| SH260-RH4-8-100-1-H    | 8  | 20 | 1   | 100 | 8  | 2          | ●     |
| SH260-RH4-10-100-0.5-H | 10 | 25 | 0.5 | 100 | 10 | 2          | ●     |
| SH260-RH4-10-120-0.5-H | 10 | 25 | 0.5 | 120 | 10 | 2          | ●     |
| SH260-RH4-10-100-1-H   | 10 | 25 | 1   | 100 | 10 | 2          | ●     |
| SH260-RH4-10-120-1-H   | 10 | 25 | 1   | 120 | 10 | 2          | ●     |
| SH260-RH4-10-100-2-H   | 10 | 25 | 2   | 120 | 10 | 2          | ●     |
| SH260-RH4-12-100-0.5-H | 12 | 30 | 0.5 | 100 | 12 | 2          | ●     |
| SH260-RH4-12-120-0.5-H | 12 | 30 | 0.5 | 120 | 12 | 2          | ●     |
| SH260-RH4-12-100-1-H   | 12 | 30 | 1   | 100 | 12 | 2          | ●     |
| SH260-RH4-12-120-1-H   | 12 | 30 | 1   | 120 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

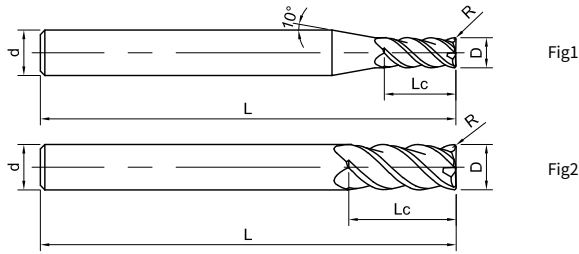
| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |  | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-RH4A-H

4 Flutes with Long Shank, Corner Radius, 45°helix angle



Please refer to page 149

| Ordering Code           | D | Lc | R   | L   | d | Figure No. | Stock |
|-------------------------|---|----|-----|-----|---|------------|-------|
| SH260-RH4A-2-60-0.5-H-6 | 2 | 6  | 0.5 | 60  | 6 | 1          | ●     |
| SH260-RH4A-3-60-0.5-H-6 | 3 | 9  | 0.5 | 60  | 6 | 1          | ●     |
| SH260-RH4A-4-60-0.2-H   | 4 | 12 | 0.2 | 60  | 4 | 2          | ●     |
| SH260-RH4A-4-60-0.5-H   | 4 | 12 | 0.5 | 60  | 4 | 2          | ●     |
| SH260-RH4A-4-75-0.5-H   | 4 | 12 | 0.5 | 75  | 4 | 2          | ●     |
| SH260-RH4A-4-75-0.5-H-6 | 4 | 12 | 0.5 | 75  | 6 | 1          | ●     |
| SH260-RH4A-6-60-0.2-H   | 6 | 18 | 0.2 | 60  | 6 | 2          | ●     |
| SH260-RH4A-6-75-0.2-H   | 6 | 18 | 0.2 | 75  | 6 | 2          | ●     |
| SH260-RH4A-6-100-0.5-H  | 6 | 18 | 0.5 | 100 | 6 | 2          | ●     |
| SH260-RH4A-6-60-0.5-H   | 6 | 18 | 0.5 | 60  | 6 | 2          | ●     |
| SH260-RH4A-6-75-0.5-H   | 6 | 18 | 0.5 | 75  | 6 | 2          | ●     |
| SH260-RH4A-6-60-1-H     | 6 | 18 | 1   | 60  | 6 | 2          | ●     |

●Stock ○Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

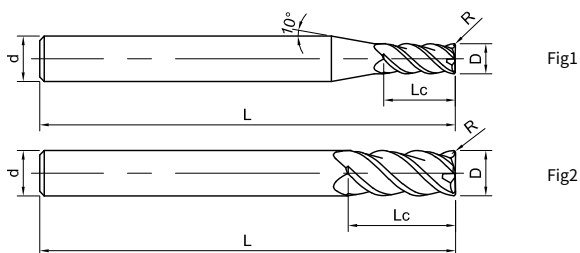
| Workpiece Material                         |  |   |                              |                              |                              |
|--|--|---|------------------------------|------------------------------|------------------------------|
| P  |  |   | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6   | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH,Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |   | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-RH4A-H

4 Flutes with Long Shank, Corner Radius, 45°helix angle



Please refer to page 149

| Ordering Code           | D  | Lc | R   | L   | d  | Figure No. | Stock |
|-------------------------|----|----|-----|-----|----|------------|-------|
| SH260-RH4A-6-75-1-H     | 6  | 18 | 1   | 75  | 6  | 2          | ●     |
| SH260-RH4A-8-75-0.5-H   | 8  | 24 | 0.5 | 75  | 8  | 2          | ●     |
| SH260-RH4A-8-100-0.5-H  | 8  | 24 | 0.5 | 100 | 8  | 2          | ●     |
| SH260-RH4A-8-75-1-H     | 8  | 24 | 1   | 75  | 8  | 2          | ●     |
| SH260-RH4A-8-100-1-H    | 8  | 24 | 1   | 100 | 8  | 2          | ●     |
| SH260-RH4A-10-100-0.5-H | 10 | 30 | 0.5 | 100 | 10 | 2          | ●     |
| SH260-RH4A-10-120-0.5-H | 10 | 30 | 0.5 | 120 | 10 | 2          | ●     |
| SH260-RH4A-10-100-1-H   | 10 | 30 | 1   | 100 | 10 | 2          | ●     |
| SH260-RH4A-10-120-1-H   | 10 | 30 | 1   | 120 | 10 | 2          | ●     |
| SH260-RH4A-12-100-0.5-H | 12 | 36 | 0.5 | 100 | 12 | 2          | ●     |
| SH260-RH4A-12-120-0.5-H | 12 | 36 | 0.5 | 120 | 12 | 2          | ●     |
| SH260-RH4A-12-100-1-H   | 12 | 36 | 1   | 100 | 12 | 2          | ●     |

●Stock ○Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                         |  |   |                              |                              |                              |
|--|--|---|------------------------------|------------------------------|------------------------------|
| P  |  |   | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6   | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH,Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |   | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-RL4A-H

4 Flutes with Long Flute, Corner Radius, 45° helix angle

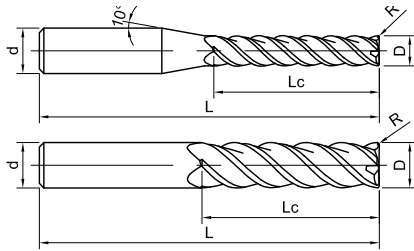


Fig1

Fig2



Please refer to page 149

| Ordering Code          | D  | Lc | R   | L   | d  | Figure No. | Stock |
|------------------------|----|----|-----|-----|----|------------|-------|
| SH260-RL4A-6-20-0.5-H  | 6  | 20 | 0.5 | 75  | 6  | 2          | ●     |
| SH260-RL4A-8-25-0.5-H  | 8  | 25 | 0.5 | 100 | 8  | 2          | ●     |
| SH260-RL4A-10-50-0.5-H | 10 | 50 | 0.5 | 150 | 10 | 2          | ●     |
| SH260-RL4A-12-50-0.5-H | 12 | 50 | 0.5 | 100 | 12 | 2          | ●     |
| SH260-RL4A-12-60-0.5-H | 12 | 60 | 0.5 | 150 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1  | 2  | 3  | 4                            | 5                            | 6                            |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |  | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-RN4-H

4 Flutes with Reduced Neck, Corner Radius

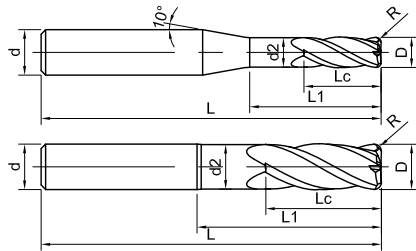


Fig1

Fig2



Please refer to page 149

| Ordering Code           | D   | Lc  | R   | d2  | L1   | L  | d | Figure No. | Stock |
|-------------------------|-----|-----|-----|-----|------|----|---|------------|-------|
| SH260-RN4-1-3-0.1-H     | 1   | 2   | 0.1 | 3   | 0.96 | 50 | 4 | 1          | ●     |
| SH260-RN4-1-6-0.1-H     | 1   | 2   | 0.1 | 6   | 0.96 | 50 | 4 | 1          | ●     |
| SH260-RN4-1.5-4.5-0.1-H | 1.5 | 3   | 0.1 | 4.5 | 1.45 | 50 | 4 | 1          | ●     |
| SH260-RN4-1.5-6-0.2-H   | 1.5 | 3   | 0.2 | 6   | 1.45 | 50 | 4 | 1          | ●     |
| SH260-RN4-1.5-9-0.1-H   | 1.5 | 3   | 0.1 | 9   | 1.45 | 50 | 4 | 1          | ●     |
| SH260-RN4-2-6-0.2-H     | 2   | 4   | 0.2 | 6   | 1.92 | 50 | 4 | 1          | ●     |
| SH260-RN4-2-6-0.3-H     | 2   | 4   | 0.3 | 6   | 1.92 | 50 | 4 | 1          | ●     |
| SH260-RN4-2-8-0.2-H     | 2   | 4   | 0.2 | 8   | 1.92 | 50 | 4 | 1          | ●     |
| SH260-RN4-2-12-0.2-H    | 2   | 4   | 0.2 | 12  | 1.92 | 50 | 4 | 1          | ●     |
| SH260-RN4-2-12-0.3-H    | 2   | 4   | 0.3 | 12  | 1.92 | 50 | 4 | 1          | ●     |
| SH260-RN4-3-9-0.2-H-6   | 3   | 6   | 0.2 | 9   | 2.88 | 60 | 6 | 1          | ●     |
| SH260-RN4-3-9-0.3-H-6   | 3   | 6   | 0.3 | 9   | 2.88 | 60 | 6 | 1          | ●     |
| SH260-RN4-3-16-0.3-H-6  | 3   | 4.5 | 0.3 | 16  | 2.88 | 75 | 6 | 1          | ●     |
| SH260-RN4-3-18-0.2-H-6  | 3   | 6   | 0.2 | 18  | 2.88 | 60 | 6 | 1          | ●     |
| SH260-RN4-3-18-0.3-H-6  | 3   | 6   | 0.3 | 18  | 2.88 | 60 | 6 | 1          | ●     |
| SH260-RN4-3-18-0.5-H-6  | 3   | 6   | 0.5 | 18  | 2.88 | 60 | 6 | 1          | ●     |
| SH260-RN4-3-20-0.3-H-6  | 3   | 6   | 0.3 | 20  | 2.88 | 75 | 6 | 1          | ●     |
| SH260-RN4-4-12-0.2-H-6  | 4   | 8   | 0.2 | 12  | 3.8  | 60 | 6 | 1          | ●     |
| SH260-RN4-4-12-0.3-H-6  | 4   | 8   | 0.3 | 12  | 3.8  | 60 | 6 | 1          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

## Workpiece Material

| P  |  |  | H                            |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |  | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-RN4-H

4 Flutes with Reduced Neck, Corner Radius

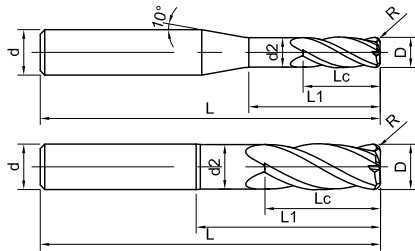


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code          | D  | Lc | R   | d2 | L1   | L   | d  | Figure No. | Stock |
|------------------------|----|----|-----|----|------|-----|----|------------|-------|
| SH260-RN4-4-12-0.5-H-6 | 4  | 8  | 0.5 | 12 | 3.8  | 60  | 6  | 1          | ●     |
| SH260-RN4-4-24-0.5-H-6 | 4  | 8  | 0.5 | 24 | 3.8  | 75  | 6  | 1          | ●     |
| SH260-RN4-6-18-0.2-H   | 6  | 12 | 0.2 | 18 | 5.8  | 75  | 6  | 2          | ●     |
| SH260-RN4-6-18-0.5-H   | 6  | 12 | 0.5 | 18 | 5.8  | 75  | 6  | 2          | ●     |
| SH260-RN4-6-24-0.2-H   | 6  | 12 | 0.2 | 24 | 5.8  | 75  | 6  | 2          | ●     |
| SH260-RN4-6-24-0.5-H   | 6  | 12 | 0.5 | 24 | 5.8  | 75  | 6  | 2          | ●     |
| SH260-RN4-6-24-1-H     | 6  | 12 | 1   | 24 | 5.8  | 75  | 6  | 2          | ●     |
| SH260-RN4-8-24-0.2-H   | 8  | 16 | 0.2 | 24 | 7.8  | 75  | 8  | 2          | ●     |
| SH260-RN4-8-24-0.5-H   | 8  | 16 | 0.5 | 24 | 7.8  | 75  | 8  | 2          | ●     |
| SH260-RN4-8-32-0.2-H   | 8  | 16 | 0.2 | 32 | 7.8  | 75  | 8  | 2          | ●     |
| SH260-RN4-8-32-0.5-H   | 8  | 16 | 0.5 | 32 | 7.8  | 75  | 8  | 2          | ●     |
| SH260-RN4-10-30-0.5-H  | 10 | 20 | 0.5 | 30 | 9.8  | 100 | 10 | 2          | ●     |
| SH260-RN4-10-30-1-H    | 10 | 20 | 1   | 30 | 9.8  | 100 | 10 | 2          | ●     |
| SH260-RN4-10-40-0.5-H  | 10 | 20 | 0.5 | 40 | 9.8  | 100 | 10 | 2          | ●     |
| SH260-RN4-10-40-1-H    | 10 | 20 | 1   | 40 | 9.8  | 100 | 10 | 2          | ●     |
| SH260-RN4-12-36-0.5-H  | 12 | 24 | 0.5 | 36 | 11.8 | 100 | 12 | 2          | ●     |
| SH260-RN4-12-48-0.5-H  | 12 | 24 | 0.5 | 36 | 11.8 | 100 | 12 | 2          | ●     |
| SH260-RN4-12-36-1-H    | 12 | 24 | 1   | 36 | 11.8 | 100 | 12 | 2          | ●     |
| SH260-RN4-12-48-1-H    | 12 | 24 | 1   | 48 | 11.8 | 100 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol        |
|------------|------------|
| D ≤ 6      | 0<br>-0.01 |
| 6 < D ≤ 12 | 0<br>-0.02 |
| D > 12     | 0<br>-0.03 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1  | 2  | 3  | 4                            | 5                            | 6                            |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |  | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P511

# SH260-B2-H

2 Flutes Ballnose

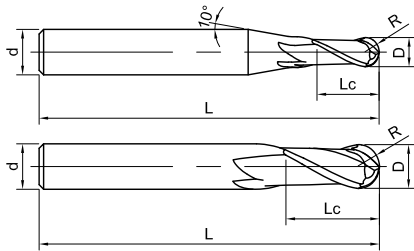


Fig1

Fig2



Please refer to page 149

| Ordering Code        | D   | R    | Lc   | L   | d  | Figure No. | Stock |
|----------------------|-----|------|------|-----|----|------------|-------|
| SH260-B2-0.6-0.9-H   | 0.6 | 0.3  | 0.9  | 50  | 4  | 1          | ●     |
| SH260-B2-1-1.5-H     | 1   | 0.5  | 1.5  | 50  | 4  | 1          | ●     |
| SH260-B2-1.5-2.5-H   | 1.5 | 0.75 | 2.5  | 50  | 4  | 1          | ●     |
| SH260-B2-1.5-2.5-H-6 | 1.5 | 0.75 | 2.5  | 50  | 6  | 1          | ●     |
| SH260-B2-2-3-H       | 2   | 1    | 3    | 50  | 4  | 1          | ●     |
| SH260-B2-2-3-H-6     | 2   | 1    | 3    | 50  | 6  | 1          | ●     |
| SH260-B2-3-4.5-H     | 3   | 1.5  | 4.5  | 50  | 4  | 1          | ●     |
| SH260-B2-3-4.5-H-3   | 3   | 1.5  | 4.5  | 50  | 3  | 2          | ●     |
| SH260-B2-3-4.5-H-6   | 3   | 1.5  | 4.5  | 50  | 6  | 1          | ●     |
| SH260-B2-4-6-H       | 4   | 2    | 6    | 50  | 4  | 2          | ●     |
| SH260-B2-4-6-H-6     | 4   | 2    | 6    | 50  | 6  | 1          | ●     |
| SH260-B2-5-7.5-H     | 5   | 2.5  | 7.5  | 50  | 6  | 1          | ●     |
| SH260-B2-6-9-H       | 6   | 3    | 9    | 50  | 6  | 2          | ●     |
| SH260-B2-7-10.5-H    | 7   | 3.5  | 10.5 | 60  | 8  | 1          | ●     |
| SH260-B2-8-12-H      | 8   | 4    | 12   | 60  | 8  | 2          | ●     |
| SH260-B2-10-15-H     | 10  | 5    | 15   | 75  | 10 | 2          | ●     |
| SH260-B2-12-18-H     | 12  | 6    | 18   | 75  | 12 | 2          | ●     |
| SH260-B2-16-24-H     | 16  | 8    | 24   | 100 | 16 | 2          | ●     |

● Stock ○ Available upon Order

| D     | Tol    |
|-------|--------|
| R ≤ 3 | ±0.005 |
| R > 3 | ±0.008 |

Unit (mm)

## Workpiece Material

| P  |  |  | H                            |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| 1  | 2  | 3  | 4                            | 5                            | 6                            |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ○  | ○  | ○                            | ○                            | ○                            |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P512



# SH260-BH2-H

2 Flutes Ballnose with Long Shank Length

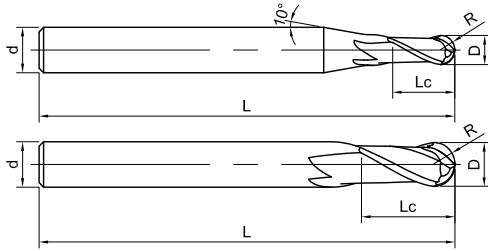


Fig1

Fig2



Please refer to page 149

| Ordering Code      | D | R   | Lc  | L  | d | Figure No. | Stock |
|--------------------|---|-----|-----|----|---|------------|-------|
| SH260-BH2-2-60-H   | 2 | 1   | 3   | 60 | 4 | 1          | ●     |
| SH260-BH2-2-60-H-6 | 2 | 1   | 3   | 60 | 6 | 1          | ●     |
| SH260-BH2-2-75-H   | 2 | 1   | 3   | 75 | 4 | 1          | ●     |
| SH260-BH2-3-60-H   | 3 | 1.5 | 4.5 | 60 | 4 | 1          | ●     |
| SH260-BH2-3-60-H-6 | 3 | 1.5 | 4.5 | 60 | 6 | 1          | ●     |
| SH260-BH2-3-75-H   | 3 | 1.5 | 4.5 | 75 | 4 | 1          | ●     |
| SH260-BH2-3-75-H-6 | 3 | 1.5 | 4.5 | 75 | 6 | 1          | ●     |
| SH260-BH2-4-60-H   | 4 | 2   | 6   | 60 | 4 | 2          | ●     |
| SH260-BH2-4-75-H   | 4 | 2   | 6   | 75 | 4 | 2          | ●     |
| SH260-BH2-4-60-H-6 | 4 | 2   | 6   | 60 | 6 | 1          | ●     |
| SH260-BH2-4-75-H-6 | 4 | 2   | 6   | 75 | 6 | 1          | ●     |
| SH260-BH2-5-60-H   | 5 | 2.5 | 7.5 | 60 | 6 | 1          | ●     |

● Stock ○ Available upon Order

| D     | Tol    |
|-------|--------|
| R ≤ 3 | ±0.005 |
| R > 3 | ±0.008 |

Unit (mm)

## Workpiece Material

| P                                   |                                    |   | H                         |                           |                          |
|-------------------------------------|------------------------------------|---|---------------------------|---------------------------|--------------------------|
| 1 2 3 4                             | 5                                  | 6                                       | 1                         | 2                         | 3 4                      |
| Carbon Steel, Alloy Steel (< 35HRC) | Alloy Steel, Tool Steel (35-48HRC) | PH, Ferrite, Martensite Steel (< 35HRC) | Hardened Steel (45-55HRC) | Hardened Steel (55-60HRC) | Hardened Steel (> 60HRC) |
| ○                                   | ◎                                  |   | ◎                         | ◎                         | ○                        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P512

# SH260-BH2-H

2 Flutes Ballnose with Long Shank Length

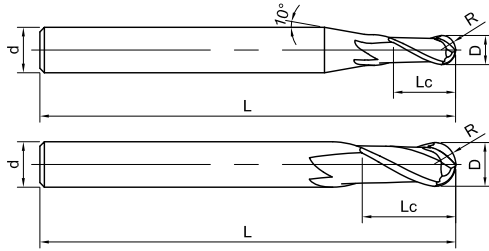


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code      | D  | R | Lc | L   | d  | Figure No. | Stock |
|--------------------|----|---|----|-----|----|------------|-------|
| SH260-BH2-6-60-H   | 6  | 3 | 9  | 60  | 6  | 2          | ●     |
| SH260-BH2-6-75-H   | 6  | 3 | 9  | 75  | 6  | 2          | ●     |
| SH260-BH2-6-100-H  | 6  | 3 | 9  | 100 | 6  | 2          | ●     |
| SH260-BH2-8-75-H   | 8  | 4 | 12 | 75  | 8  | 2          | ●     |
| SH260-BH2-8-100-H  | 8  | 4 | 12 | 100 | 8  | 2          | ●     |
| SH260-BH2-10-100-H | 10 | 5 | 15 | 100 | 10 | 2          | ●     |
| SH260-BH2-10-120-H | 10 | 5 | 15 | 120 | 10 | 2          | ●     |
| SH260-BH2-12-100-H | 12 | 6 | 18 | 100 | 12 | 2          | ●     |
| SH260-BH2-12-120-H | 12 | 6 | 18 | 120 | 12 | 2          | ●     |
| SH260-BH2-16-150-H | 16 | 8 | 24 | 150 | 16 | 2          | ●     |

● Stock ○ Available upon Order

| D     | Tol    |
|-------|--------|
| R ≤ 3 | ±0.005 |
| R > 3 | ±0.008 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |  | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P512

# SH260-BN2-H

2 Flutes, Ball-nose with Long Neck

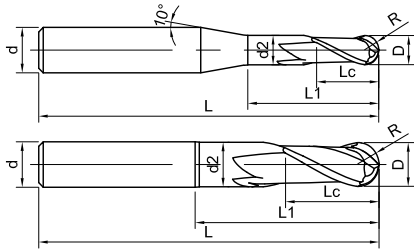


Fig1

Fig2



Please refer to page 149

| Ordering Code       | D   | R    | Lc  | d2   | L1  | L  | d. | Figure No. | Stock |
|---------------------|-----|------|-----|------|-----|----|----|------------|-------|
| SH260-BN2-0.4-1.2-H | 0.4 | 0.2  | 0.4 | 0.38 | 1.2 | 50 | 4  | 1          | ●     |
| SH260-BN2-0.4-2.5-H | 0.4 | 0.2  | 0.4 | 0.38 | 2.5 | 50 | 4  | 1          | ●     |
| SH260-BN2-0.5-1.5-H | 0.5 | 0.25 | 0.5 | 0.48 | 1.5 | 50 | 4  | 1          | ●     |
| SH260-BN2-0.5-3-H   | 0.5 | 0.25 | 0.5 | 0.48 | 3   | 50 | 4  | 1          | ●     |
| SH260-BN2-0.6-2-H   | 0.6 | 0.3  | 0.6 | 0.57 | 2   | 50 | 4  | 1          | ●     |
| SH260-BN2-0.6-4-H   | 0.6 | 0.3  | 0.6 | 0.57 | 4   | 50 | 4  | 1          | ●     |
| SH260-BN2-0.8-2.5-H | 0.8 | 0.4  | 0.8 | 0.77 | 2.5 | 50 | 4  | 1          | ●     |
| SH260-BN2-0.8-4-H   | 0.8 | 0.4  | 0.8 | 0.77 | 4   | 50 | 4  | 1          | ●     |
| SH260-BN2-1-3-H     | 1   | 0.5  | 1   | 0.96 | 3   | 50 | 4  | 1          | ●     |
| SH260-BN2-1-4-H     | 1   | 0.5  | 1   | 0.96 | 4   | 50 | 4  | 1          | ●     |
| SH260-BN2-1-6-H     | 1   | 0.5  | 1   | 0.96 | 6   | 50 | 4  | 1          | ●     |
| SH260-BN2-1-8-H     | 1   | 0.5  | 1   | 0.96 | 8   | 50 | 4  | 1          | ●     |
| SH260-BN2-1-10-H    | 1   | 0.5  | 1   | 0.96 | 10  | 50 | 4  | 1          | ●     |
| SH260-BN2-1.5-5-H   | 1.5 | 0.75 | 1.5 | 1.45 | 5   | 50 | 4  | 1          | ●     |
| SH260-BN2-1.5-5-H-6 | 1.5 | 0.75 | 1.5 | 1.45 | 5   | 50 | 6  | 1          | ●     |
| SH260-BN2-1.5-6-H   | 1.5 | 0.75 | 1.5 | 1.45 | 6   | 50 | 4  | 1          | ●     |
| SH260-BN2-1.5-8-H   | 1.5 | 0.75 | 1.5 | 1.45 | 8   | 50 | 4  | 1          | ●     |
| SH260-BN2-1.5-9-H   | 1.5 | 0.75 | 1.5 | 1.45 | 9   | 50 | 4  | 1          | ●     |
| SH260-BN2-1.5-10-H  | 1.5 | 0.75 | 1.5 | 1.45 | 10  | 50 | 4  | 1          | ●     |
| SH260-BN2-1.5-12-H  | 1.5 | 0.75 | 1.5 | 1.45 | 12  | 50 | 4  | 1          | ●     |

● Stock ○ Available upon Order

| D     | Tol    |
|-------|--------|
| R ≤ 3 | ±0.005 |
| R > 3 | ±0.008 |

Unit (mm)

| Workpiece Material                  |                                    |   |                           |                           |                          |
|-------------------------------------|------------------------------------|---|---------------------------|---------------------------|--------------------------|
| P                                   |                                    |   | H                         |                           |                          |
| 1                                   | 2                                  | 3                                       | 4                         | 5                         | 6                        |
| Carbon Steel, Alloy Steel (< 35HRC) | Alloy Steel, Tool Steel (35-48HRC) | PH, Ferrite, Martensite Steel (< 35HRC) | Hardened Steel (45-55HRC) | Hardened Steel (55-60HRC) | Hardened Steel (> 60HRC) |
| ○                                   | ◎                                  |   | ◎                         | ◎                         | ○                        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P512

# SH260-BN2-H

2 Flutes, Ball-nose with Long Neck

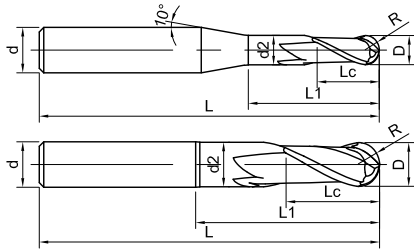


Fig1

Fig2



Please refer to page 149

» Continuation

| Ordering Code      | D  | R   | Lc | d2   | L1 | L   | d  | Figure No. | Stock |
|--------------------|----|-----|----|------|----|-----|----|------------|-------|
| SH260-BN2-2-6-H    | 2  | 1   | 2  | 1.95 | 6  | 50  | 4  | 1          | ●     |
| SH260-BN2-2-6-H-6  | 2  | 1   | 2  | 1.95 | 6  | 50  | 6  | 1          | ●     |
| SH260-BN2-2-8-H    | 2  | 1   | 2  | 1.95 | 8  | 50  | 4  | 1          | ●     |
| SH260-BN2-2-10-H   | 2  | 1   | 2  | 1.95 | 10 | 50  | 4  | 1          | ●     |
| SH260-BN2-2-12-H   | 2  | 1   | 2  | 1.95 | 12 | 50  | 4  | 1          | ●     |
| SH260-BN2-3-9-H    | 3  | 1.5 | 3  | 2.9  | 9  | 50  | 4  | 1          | ●     |
| SH260-BN2-3-12-H   | 3  | 1.5 | 3  | 2.9  | 12 | 50  | 4  | 1          | ●     |
| SH260-BN2-3-16-H-6 | 3  | 1.5 | 3  | 2.9  | 16 | 50  | 6  | 1          | ●     |
| SH260-BN2-3-18-H   | 3  | 1.5 | 3  | 2.9  | 18 | 50  | 4  | 1          | ●     |
| SH260-BN2-3-18-H-6 | 3  | 1.5 | 3  | 2.9  | 18 | 50  | 6  | 1          | ●     |
| SH260-BN2-4-12-H   | 4  | 2   | 4  | 3.9  | 12 | 50  | 4  | 2          | ●     |
| SH260-BN2-4-12-H-6 | 4  | 2   | 4  | 3.9  | 12 | 50  | 6  | 1          | ●     |
| SH260-BN2-4-24-H   | 4  | 2   | 4  | 3.9  | 24 | 60  | 4  | 2          | ●     |
| SH260-BN2-4-24-H-6 | 4  | 2   | 4  | 3.9  | 24 | 60  | 6  | 1          | ●     |
| SH260-BN2-5-15-H   | 5  | 2.5 | 5  | 4.9  | 15 | 60  | 6  | 1          | ●     |
| SH260-BN2-5-30-H   | 5  | 2.5 | 5  | 4.9  | 30 | 75  | 6  | 1          | ●     |
| SH260-BN2-6-18-H   | 6  | 3   | 6  | 5.9  | 18 | 75  | 6  | 2          | ●     |
| SH260-BN2-8-24-H   | 8  | 4   | 8  | 7.9  | 24 | 75  | 8  | 2          | ●     |
| SH260-BN2-10-30-H  | 10 | 5   | 10 | 9.9  | 30 | 100 | 10 | 2          | ●     |
| SH260-BN2-12-36-H  | 12 | 6   | 12 | 11.9 | 36 | 100 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D     | Tol    |
|-------|--------|
| R ≤ 3 | ±0.005 |
| R > 3 | ±0.008 |

Unit (mm)

## Workpiece Material

| P  |  |  | H                            |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ◎  |  | ◎                            | ◎                            | ○                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P512

# SH360-S2 NEW

2 Flutes Standard Length

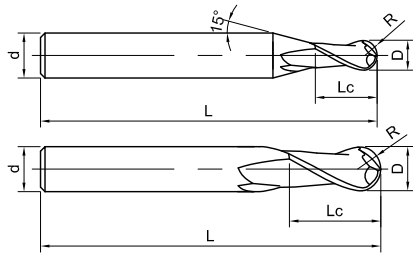


Fig1

Fig2



Please refer to page 149

| Ordering Code     | D   | Lc | L  | d  | Figure No. | Stock |
|-------------------|-----|----|----|----|------------|-------|
| SH360-S2-1-3-K    | 1   | 3  | 50 | 4  | 1          | ●     |
| SH360-S2-1.5-4-K  | 1.5 | 4  | 50 | 4  | 1          | ●     |
| SH360-S2-2-6-K    | 2   | 6  | 50 | 4  | 1          | ●     |
| SH360-S2-2.5-8-K  | 2.5 | 8  | 50 | 4  | 1          | ●     |
| SH360-S2-3-8-K    | 3   | 8  | 50 | 4  | 1          | ●     |
| SH360-S2-4-11-K   | 4   | 11 | 50 | 4  | 2          | ●     |
| SH360-S2-3-8-K-6  | 3   | 8  | 50 | 6  | 1          | ●     |
| SH360-S2-4-11-K-6 | 4   | 11 | 50 | 6  | 1          | ●     |
| SH360-S2-5-13-K   | 5   | 13 | 50 | 6  | 1          | ●     |
| SH360-S2-6-16-K   | 6   | 16 | 50 | 6  | 2          | ●     |
| SH360-S2-7-20-K   | 7   | 20 | 60 | 8  | 1          | ●     |
| SH360-S2-8-20-K   | 8   | 20 | 60 | 8  | 2          | ●     |
| SH360-S2-9-22-K   | 9   | 22 | 75 | 10 | 1          | ●     |
| SH360-S2-10-25-K  | 10  | 25 | 75 | 10 | 2          | ●     |
| SH360-S2-12-30-K  | 12  | 30 | 75 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol         |
|------------|-------------|
| D ≤ 6      | 0<br>-0.01  |
| 6 < D ≤ 12 | 0<br>-0.015 |
| D > 12     | 0<br>-0.025 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ○  |  | ◎                            | ◎                            | ◎                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P513

# SH360-S4A NEW

## 4 Flutes Standard Length

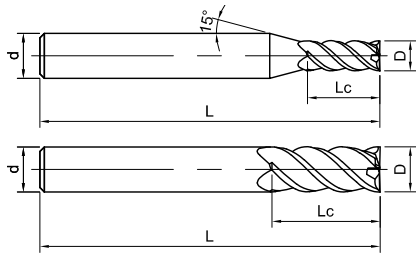


Fig1

Fig2



Please refer to page 149

| Ordering Code      | D   | Lc | L   | d  | Figure No. | Stock |
|--------------------|-----|----|-----|----|------------|-------|
| SH360-S4A-1-3-K    | 1   | 3  | 50  | 4  | 1          | ●     |
| SH360-S4A-1.5-4-K  | 1.5 | 4  | 50  | 4  | 1          | ●     |
| SH360-S4A-2-6-K    | 2   | 6  | 50  | 4  | 1          | ●     |
| SH360-S4A-2.5-8-K  | 2.5 | 8  | 50  | 4  | 1          | ●     |
| SH360-S4A-3-8-K    | 3   | 8  | 50  | 4  | 1          | ●     |
| SH360-S4A-4-11-K   | 4   | 11 | 50  | 4  | 2          | ●     |
| SH360-S4A-2-6-K-6  | 2   | 6  | 50  | 6  | 1          | ●     |
| SH360-S4A-3-8-K-6  | 3   | 8  | 50  | 6  | 1          | ●     |
| SH360-S4A-4-11-K-6 | 4   | 11 | 50  | 6  | 1          | ●     |
| SH360-S4A-5-13-K   | 5   | 13 | 50  | 6  | 1          | ●     |
| SH360-S4A-6-16-K   | 6   | 16 | 50  | 6  | 2          | ●     |
| SH360-S4A-8-20-K   | 8   | 20 | 60  | 8  | 2          | ●     |
| SH360-S4A-10-25-K  | 10  | 25 | 75  | 10 | 2          | ●     |
| SH360-S4A-10-30-K  | 10  | 30 | 75  | 10 | 2          | ●     |
| SH360-S4A-12-30-K  | 12  | 30 | 75  | 12 | 2          | ●     |
| SH360-S4A-14-32-K  | 14  | 32 | 100 | 14 | 2          | ●     |
| SH360-S4A-16-45-K  | 16  | 45 | 100 | 16 | 2          | ●     |
| SH360-S4A-20-45-K  | 20  | 45 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D               | Tol                                       |
|-----------------|---|
| $D \leq 6$      | $\begin{matrix} 0 \\ -0.01 \end{matrix}$  |
| $6 < D \leq 12$ | $\begin{matrix} 0 \\ -0.015 \end{matrix}$ |
| $D > 12$        | $\begin{matrix} 0 \\ -0.025 \end{matrix}$ |

Unit (mm)

### Workpiece Material

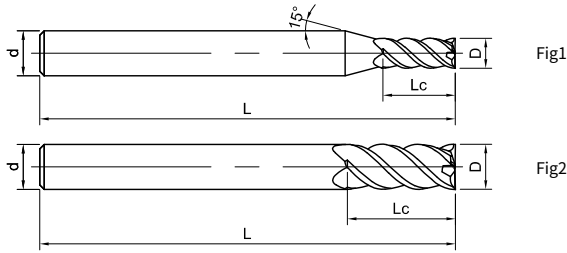
| P  |  |  | H                            |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ○  |  | ◎                            | ◎                            | ◎                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P514

# SH360-SH4A NEW

4 Flutes with Long Shank Length



Please refer to page 149

| Ordering Code       | D  | Lc | L   | d  | Figure No. | Stock |
|---------------------|----|----|-----|----|------------|-------|
| SH360-SH4A-4-60-K   | 4  | 13 | 60  | 4  | 2          | ●     |
| SH360-SH4A-4-75-K   | 4  | 13 | 75  | 4  | 2          | ●     |
| SH360-SH4A-4-60-K-6 | 4  | 13 | 60  | 6  | 1          | ●     |
| SH360-SH4A-6-60-K   | 6  | 20 | 60  | 6  | 2          | ●     |
| SH360-SH4A-6-75-K   | 6  | 20 | 75  | 6  | 2          | ●     |
| SH360-SH4A-6-100-K  | 6  | 20 | 100 | 6  | 2          | ●     |
| SH360-SH4A-8-75-K   | 8  | 25 | 75  | 8  | 2          | ●     |
| SH360-SH4A-8-100-K  | 8  | 25 | 100 | 8  | 2          | ●     |
| SH360-SH4A-10-100-K | 10 | 30 | 100 | 10 | 2          | ●     |
| SH360-SH4A-12-100-K | 12 | 35 | 100 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol         |
|------------|-------------|
| D ≤ 6      | 0<br>-0.01  |
| 6 < D ≤ 12 | 0<br>-0.015 |
| D > 12     | 0<br>-0.025 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1  | 2  | 3  | 4                            | 5                            | 6                            |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ○  |  | ◎                            | ◎                            | ◎                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P514

# SH360-S6 NEW

6 Flutes Standard Length

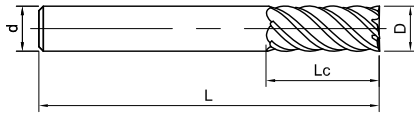


Fig1



Please refer to page 149

| Ordering Code    | D  | Lc | L   | d  | Figure No. | Stock |
|------------------|----|----|-----|----|------------|-------|
| SH360-S6-6-16-K  | 6  | 16 | 50  | 6  | 2          | ●     |
| SH360-S6-8-20-K  | 8  | 20 | 60  | 8  | 2          | ●     |
| SH360-S6-10-30-K | 10 | 30 | 75  | 10 | 2          | ●     |
| SH360-S6-12-32-K | 12 | 32 | 75  | 12 | 2          | ●     |
| SH360-S6-16-40-K | 16 | 40 | 100 | 16 | 2          | ●     |
| SH360-S6-20-45-K | 20 | 45 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol         |
|------------|-------------|
| D ≤ 6      | 0<br>-0.01  |
| 6 < D ≤ 12 | 0<br>-0.015 |
| D > 12     | 0<br>-0.025 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ○  |  | ◎                            | ◎                            | ◎                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P514



# SH360-SL6 NEW

6 Flutes with Long Flute Length

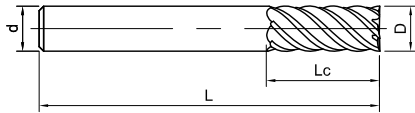


Fig1



Please refer to page 149

| Ordering Code     | D  | Lc | L   | d  | Figure No. | Stock |
|-------------------|----|----|-----|----|------------|-------|
| SH360-SL6-6-24-K  | 6  | 24 | 75  | 6  | 1          | ●     |
| SH360-SL6-8-32-K  | 8  | 32 | 75  | 8  | 1          | ●     |
| SH360-SL6-10-40-K | 10 | 40 | 100 | 10 | 1          | ●     |
| SH360-SL6-12-45-K | 12 | 45 | 100 | 12 | 1          | ●     |
| SH360-SL6-16-64-K | 16 | 64 | 150 | 16 | 1          | ●     |
| SH360-SL6-20-75-K | 20 | 75 | 150 | 20 | 1          | ●     |

● Stock ○ Available upon Order

| D          | Tol         |
|------------|-------------|
| D ≤ 6      | 0<br>-0.01  |
| 6 < D ≤ 12 | 0<br>-0.015 |
| D > 12     | 0<br>-0.025 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
| ○  | ○  |  | ◎                            | ◎                            | ◎                            |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P514

# SH360-R4 NEW

4 Flutes Corner Radius

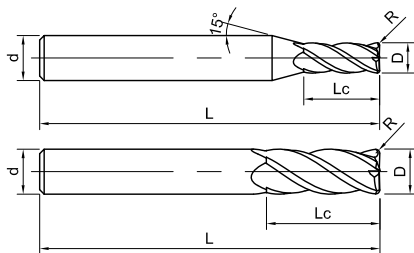


Fig1

Fig2



Please refer to page 149

| Ordering Code      | D   | Lc  | R   | L  | d | Figure No. | Stock |
|--------------------|-----|-----|-----|----|---|------------|-------|
| SH360-R4-1-0.2-K   | 1   | 2.5 | 0.2 | 50 | 4 | 1          | ●     |
| SH360-R4-1.5-0.2-K | 1.5 | 4   | 0.2 | 50 | 4 | 1          | ●     |
| SH360-R4-2-0.2-K   | 2   | 5   | 0.2 | 50 | 4 | 1          | ●     |
| SH360-R4-3-0.2-K   | 3   | 8   | 0.2 | 50 | 4 | 1          | ●     |
| SH360-R4-3-0.3-K   | 3   | 8   | 0.3 | 50 | 4 | 1          | ●     |
| SH360-R4-3-0.3-K-3 | 3   | 8   | 0.3 | 50 | 3 | 2          | ●     |
| SH360-R4-3-0.3-K-6 | 3   | 8   | 0.3 | 50 | 6 | 1          | ●     |
| SH360-R4-4-0.2-K   | 4   | 10  | 0.2 | 50 | 4 | 2          | ●     |
| SH360-R4-4-0.3-K   | 4   | 10  | 0.3 | 50 | 4 | 2          | ●     |
| SH360-R4-4-0.3-K-6 | 4   | 10  | 0.3 | 50 | 6 | 1          | ●     |
| SH360-R4-4-0.5-K   | 4   | 10  | 0.5 | 50 | 4 | 2          | ●     |
| SH360-R4-5-0.5-K   | 5   | 13  | 0.5 | 50 | 6 | 1          | ●     |

● Stock ○ Available upon Order

| D          | Tol                                       | RTol   |
|------------|---|--------|
| D ≤ 6      | $\begin{matrix} 0 \\ -0.01 \end{matrix}$  | ±0.005 |
| 6 < D ≤ 12 | $\begin{matrix} 0 \\ -0.015 \end{matrix}$ | ±0.007 |
| D > 12     | $\begin{matrix} 0 \\ -0.025 \end{matrix}$ | ±0.007 |

Unit (mm)

| Workpiece Material                  |                                    |   |                           |                           |                          |
|-------------------------------------|------------------------------------|---|---------------------------|---------------------------|--------------------------|
| P                                   |                                    |   | H                         |                           |                          |
| 1 2 3 4                             | 5                                  | 6                                       | 1                         | 2                         | 3 4                      |
| Carbon Steel, Alloy Steel (< 35HRC) | Alloy Steel, Tool Steel (35-48HRC) | PH, Ferrite, Martensite Steel (< 35HRC) | Hardened Steel (45-55HRC) | Hardened Steel (55-60HRC) | Hardened Steel (> 60HRC) |
| ○                                   | ○                                  |   | ◎                         | ◎                         | ◎                        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P514

# SH360-R4 NEW

4 Flutes Corner Radius

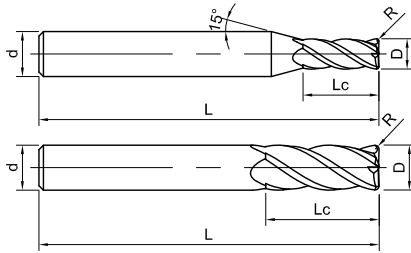


Fig1

Fig2



Please refer to page 149

| Ordering Code     | D  | Lc | R   | L  | d  | Figure No. | Stock |
|-------------------|----|----|-----|----|----|------------|-------|
| SH360-R4-5-1-K    | 5  | 13 | 1   | 50 | 6  | 1          | ●     |
| SH360-R4-6-0.2-K  | 6  | 16 | 0.2 | 50 | 6  | 2          | ●     |
| SH360-R4-6-0.3-K  | 6  | 16 | 0.3 | 50 | 6  | 2          | ●     |
| SH360-R4-6-0.5-K  | 6  | 16 | 0.5 | 50 | 6  | 2          | ●     |
| SH360-R4-6-1-K    | 6  | 16 | 1   | 50 | 6  | 2          | ●     |
| SH360-R4-8-0.5-K  | 8  | 20 | 0.5 | 60 | 8  | 2          | ●     |
| SH360-R4-8-1-K    | 8  | 20 | 1   | 60 | 8  | 2          | ●     |
| SH360-R4-10-0.5-K | 10 | 25 | 0.5 | 75 | 10 | 2          | ●     |
| SH360-R4-10-1-K   | 10 | 25 | 1   | 75 | 10 | 2          | ●     |
| SH360-R4-12-0.5-K | 12 | 30 | 0.5 | 75 | 12 | 2          | ●     |
| SH360-R4-12-1-K   | 12 | 30 | 1   | 75 | 12 | 2          | ●     |
| SH360-R4-12-2-K   | 12 | 30 | 2   | 75 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol                                       | RTol   |
|------------|---|--------|
| D ≤ 6      | $\begin{matrix} 0 \\ -0.01 \end{matrix}$  | ±0.005 |
| 6 < D ≤ 12 | $\begin{matrix} 0 \\ -0.015 \end{matrix}$ | ±0.007 |
| D > 12     | $\begin{matrix} 0 \\ -0.025 \end{matrix}$ | ±0.007 |

Unit (mm)

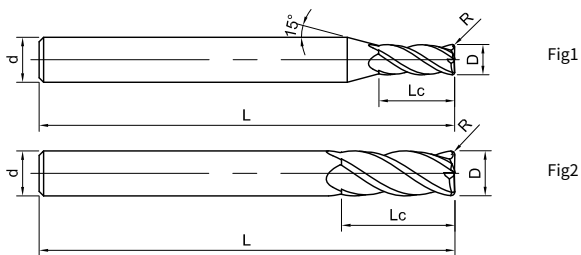
| Workpiece Material                  |                                    |   |                           |                           |                          |
|-------------------------------------|------------------------------------|---|---------------------------|---------------------------|--------------------------|
| P                                   |                                    |   | H                         |                           |                          |
| 1                                   | 2                                  | 3                                       | 4                         | 5                         | 6                        |
| Carbon Steel, Alloy Steel (< 35HRC) | Alloy Steel, Tool Steel (35-48HRC) | PH, Ferrite, Martensite Steel (< 35HRC) | Hardened Steel (45-55HRC) | Hardened Steel (55-60HRC) | Hardened Steel (> 60HRC) |
| ○                                   | ○                                  |   | ◎                         | ◎                         | ◎                        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P514

# SH360-RH4 NEW

4 Flutes Corner Radius with Long Shank Length



Please refer to page 149

| Ordering Code          | D  | Lc | R   | L   | d  | Figure No. | Stock |
|------------------------|----|----|-----|-----|----|------------|-------|
| SH360-RH4-4-75-0.5-K   | 4  | 10 | 0.5 | 75  | 4  | 2          | ●     |
| SH360-RH4-6-75-0.2-K   | 6  | 18 | 0.2 | 75  | 6  | 2          | ●     |
| SH360-RH4-6-60-0.5-K   | 6  | 18 | 0.5 | 60  | 6  | 2          | ●     |
| SH360-RH4-6-75-0.5-K   | 6  | 18 | 0.5 | 75  | 6  | 2          | ●     |
| SH360-RH4-6-100-0.5-K  | 6  | 18 | 0.5 | 100 | 6  | 2          | ●     |
| SH360-RH4-6-60-1-K     | 6  | 18 | 1   | 60  | 6  | 2          | ●     |
| SH360-RH4-6-75-1-K     | 6  | 18 | 1   | 75  | 6  | 2          | ●     |
| SH360-RH4-8-75-0.5-K   | 8  | 24 | 0.5 | 75  | 8  | 2          | ●     |
| SH360-RH4-8-100-0.5-K  | 8  | 24 | 0.5 | 100 | 8  | 2          | ●     |
| SH360-RH4-8-75-1-K     | 8  | 24 | 1   | 75  | 8  | 2          | ●     |
| SH360-RH4-8-100-1-K    | 8  | 24 | 1   | 100 | 8  | 2          | ●     |
| SH360-RH4-10-100-0.5-K | 10 | 30 | 0.5 | 100 | 10 | 2          | ●     |
| SH360-RH4-10-100-1-K   | 10 | 30 | 1   | 100 | 10 | 2          | ●     |
| SH360-RH4-12-100-0.5-K | 12 | 36 | 0.5 | 100 | 12 | 2          | ●     |
| SH360-RH4-12-100-1-K   | 12 | 36 | 1   | 100 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D          | Tol         | RTol   |
|------------|-------------|--------|
| D ≤ 6      | 0<br>-0.01  | ±0.005 |
| 6 < D ≤ 12 | 0<br>-0.015 | ±0.007 |
| D > 12     | 0<br>-0.025 | ±0.007 |

Unit (mm)

| Workpiece Material                  |                                    |   |                           |                           |                          |
|-------------------------------------|------------------------------------|---|---------------------------|---------------------------|--------------------------|
| P                                   |                                    |   | H                         |                           |                          |
| 1 2 3 4                             | 5                                  | 6                                       | 1                         | 2                         | 3 4                      |
| Carbon Steel, Alloy Steel (< 35HRC) | Alloy Steel, Tool Steel (35-48HRC) | PH, Ferrite, Martensite Steel (< 35HRC) | Hardened Steel (45-55HRC) | Hardened Steel (55-60HRC) | Hardened Steel (> 60HRC) |
| ○                                   | ○                                  |   | ◎                         | ◎                         | ◎                        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P514

# SH360-B2 NEW

2 Flutes Ballnose

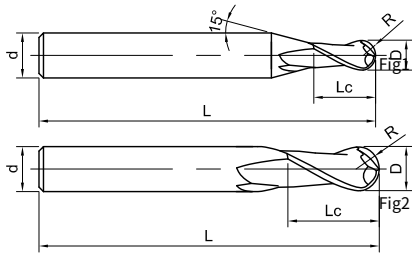


Fig1

Fig2



Please refer to page 149

| Ordering Code    | D   | R    | Lc | L   | d  | Figure No. | Stock |
|------------------|-----|------|----|-----|----|------------|-------|
| SH360-B2-1-2-K   | 1   | 0.5  | 2  | 50  | 4  | 1          | ●     |
| SH360-B2-1.5-3-K | 1.5 | 0.75 | 3  | 50  | 4  | 1          | ●     |
| SH360-B2-2-4-K   | 2   | 1    | 4  | 50  | 4  | 1          | ●     |
| SH360-B2-2.5-5-K | 2.5 | 1.25 | 5  | 50  | 4  | 1          | ●     |
| SH360-B2-3-6-K   | 3   | 1.5  | 6  | 50  | 4  | 1          | ●     |
| SH360-B2-4-8-K   | 4   | 2    | 8  | 50  | 4  | 2          | ●     |
| SH360-B2-3-6-K-6 | 3   | 1.5  | 6  | 50  | 6  | 1          | ●     |
| SH360-B2-4-8-K-6 | 4   | 2    | 8  | 50  | 6  | 1          | ●     |
| SH360-B2-5-10-K  | 5   | 2.5  | 10 | 50  | 6  | 1          | ●     |
| SH360-B2-6-12-K  | 6   | 3    | 12 | 50  | 6  | 2          | ●     |
| SH360-B2-7-14-K  | 7   | 3.5  | 14 | 60  | 8  | 1          | ●     |
| SH360-B2-8-16-K  | 8   | 4    | 16 | 60  | 8  | 2          | ●     |
| SH360-B2-10-20-K | 10  | 5    | 20 | 75  | 10 | 2          | ●     |
| SH360-B2-12-24-K | 12  | 6    | 24 | 75  | 12 | 2          | ●     |
| SH360-B2-16-32-K | 16  | 8    | 32 | 100 | 16 | 2          | ●     |
| SH360-B2-20-30-K | 20  | 10   | 30 | 100 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D     | Tol    |
|-------|--------|
| R ≤ 3 | ±0.005 |
| R > 3 | ±0.007 |

Unit (mm)

| Workpiece Material                  |                                    |   |                           |                           |                          |
|-------------------------------------|------------------------------------|---|---------------------------|---------------------------|--------------------------|
| P                                   |                                    |   | H                         |                           |                          |
| 1                                   | 2                                  | 3                                       | 4                         | 5                         | 6                        |
| Carbon Steel, Alloy Steel (< 35HRC) | Alloy Steel, Tool Steel (35-48HRC) | PH, Ferrite, Martensite Steel (< 35HRC) | Hardened Steel (45-55HRC) | Hardened Steel (55-60HRC) | Hardened Steel (> 60HRC) |
| ○                                   | ○                                  |   | ◎                         | ◎                         | ◎                        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P515

# SH360-BH2 NEW

2 Flutes Ballnose with Long Shank Length

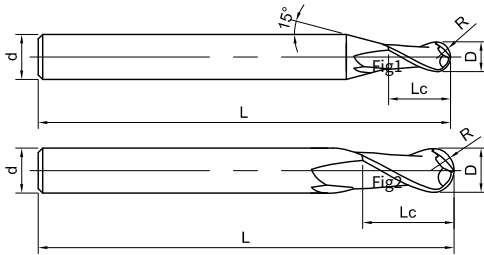


Fig1

Fig2



Please refer to page 149

| Ordering Code      | D  | R   | Lc | L   | d  | Figure No. | Stock |
|--------------------|----|-----|----|-----|----|------------|-------|
| SH360-BH2-3-60-K-6 | 3  | 1.5 | 6  | 60  | 6  | 1          | ●     |
| SH360-BH2-4-75-K-6 | 4  | 2   | 8  | 75  | 6  | 1          | ●     |
| SH360-BH2-4-75-K   | 4  | 2   | 8  | 75  | 4  | 2          | ●     |
| SH360-BH2-5-60-K   | 5  | 2.5 | 10 | 60  | 6  | 1          | ●     |
| SH360-BH2-5-75-K   | 5  | 2.5 | 10 | 75  | 6  | 1          | ●     |
| SH360-BH2-6-75-K   | 6  | 3   | 12 | 75  | 6  | 2          | ●     |
| SH360-BH2-6-100-K  | 6  | 3   | 12 | 100 | 6  | 2          | ●     |
| SH360-BH2-8-75-K   | 8  | 4   | 16 | 75  | 8  | 2          | ●     |
| SH360-BH2-8-100-K  | 8  | 4   | 16 | 100 | 8  | 2          | ●     |
| SH360-BH2-8-120-K  | 8  | 4   | 16 | 120 | 8  | 2          | ●     |
| SH360-BH2-10-100-K | 10 | 5   | 20 | 100 | 10 | 2          | ●     |
| SH360-BH2-12-100-K | 12 | 6   | 24 | 100 | 12 | 2          | ●     |
| SH360-BH2-12-120-K | 12 | 6   | 24 | 120 | 12 | 2          | ●     |
| SH360-BH2-12-150-K | 12 | 6   | 35 | 150 | 12 | 2          | ●     |
| SH360-BH2-16-150-K | 16 | 8   | 24 | 150 | 16 | 2          | ●     |
| SH360-BH2-20-150-K | 20 | 10  | 30 | 150 | 20 | 2          | ●     |

● Stock ○ Available upon Order

| D     | Tol    |
|-------|--------|
| R ≤ 3 | ±0.005 |
| R > 3 | ±0.007 |

Unit (mm)

| Workpiece Material                  |                                    |   |                           |                           |                          |
|-------------------------------------|------------------------------------|---|---------------------------|---------------------------|--------------------------|
| P                                   |                                    |   | H                         |                           |                          |
| 1 2 3 4                             | 5                                  | 6                                       | 1                         | 2                         | 3 4                      |
| Carbon Steel, Alloy Steel (< 35HRC) | Alloy Steel, Tool Steel (35-48HRC) | PH, Ferrite, Martensite Steel (< 35HRC) | Hardened Steel (45-55HRC) | Hardened Steel (55-60HRC) | Hardened Steel (> 60HRC) |
| ○                                   | ○                                  |   | ◎                         | ◎                         | ◎                        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P515

# SH360-B4 NEW

4 Flutes Ballnose

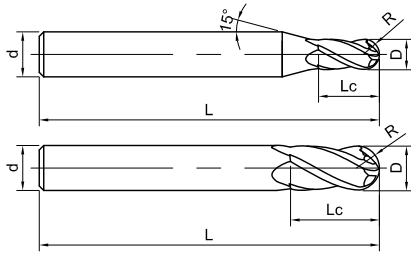


Fig1

Fig2



Please refer to page 149

| Ordering Code    | D  | R   | Lc | L   | d  | Figure No. | Stock |
|------------------|----|-----|----|-----|----|------------|-------|
| SH360-B4-3-6-K-3 | 3  | 1.5 | 6  | 50  | 3  | 2          | ●     |
| SH360-B4-3-6-K-6 | 3  | 1.5 | 6  | 50  | 6  | 1          | ●     |
| SH360-B4-4-8-K-6 | 4  | 2   | 8  | 50  | 6  | 1          | ●     |
| SH360-B4-5-10-K  | 5  | 2.5 | 10 | 50  | 6  | 1          | ●     |
| SH360-B4-6-12-K  | 6  | 3   | 12 | 50  | 6  | 2          | ●     |
| SH360-B4-8-16-K  | 8  | 4   | 16 | 60  | 8  | 2          | ●     |
| SH360-B4-10-20-K | 10 | 5   | 20 | 75  | 10 | 2          | ●     |
| SH360-B4-12-24-K | 12 | 6   | 24 | 75  | 12 | 2          | ●     |
| SH360-B4-16-32-K | 16 | 8   | 32 | 100 | 16 | 2          | ●     |

● Stock ○ Available upon Order

| D       | Tol    |
|---------|--------|
| R ≤ 1.5 | ±0.005 |
| R ≤ 3   | ±0.007 |
| R ≤ 8   | ±0.010 |

Unit (mm)

| Workpiece Material                  |                                    |   |                           |                           |                          |
|-------------------------------------|------------------------------------|---|---------------------------|---------------------------|--------------------------|
| P                                   |                                    |   | H                         |                           |                          |
| 1 2 3 4                             | 5                                  | 6                                       | 1                         | 2                         | 3 4                      |
| Carbon Steel, Alloy Steel (< 35HRC) | Alloy Steel, Tool Steel (35-48HRC) | PH, Ferrite, Martensite Steel (< 35HRC) | Hardened Steel (45-55HRC) | Hardened Steel (55-60HRC) | Hardened Steel (> 60HRC) |
| ○                                   | ○                                  |   | ◎                         | ◎                         | ◎                        |

◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P515

# SH360-BH4 NEW

4 Flutes Ballnose with Long Shank Length

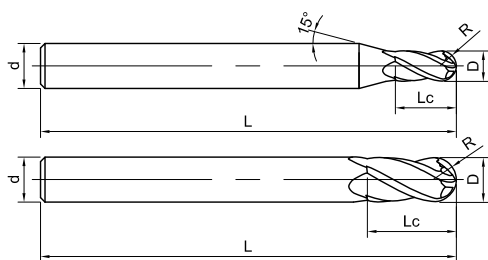


Fig1

Fig2



Please refer to page 149

| Ordering Code      | D  | R   | Lc | L   | d  | Figure No. | Stock |
|--------------------|----|-----|----|-----|----|------------|-------|
| SH360-BH4-3-75-K-6 | 3  | 1.5 | 6  | 75  | 6  | 1          | ●     |
| SH360-BH4-4-75-K   | 4  | 2   | 8  | 75  | 4  | 2          | ●     |
| SH360-BH4-4-75-K-6 | 4  | 2   | 8  | 75  | 6  | 1          | ●     |
| SH360-BH4-5-75-K   | 5  | 2.5 | 10 | 75  | 6  | 1          | ●     |
| SH360-BH4-6-75-K   | 6  | 3   | 12 | 75  | 6  | 2          | ●     |
| SH360-BH4-6-100-K  | 6  | 3   | 12 | 100 | 6  | 2          | ●     |
| SH360-BH4-8-75-K   | 8  | 4   | 16 | 75  | 8  | 2          | ●     |
| SH360-BH4-8-100-K  | 8  | 4   | 16 | 100 | 8  | 2          | ●     |
| SH360-BH4-10-100-K | 10 | 5   | 20 | 100 | 10 | 2          | ●     |
| SH360-BH4-12-100-K | 12 | 6   | 24 | 100 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D       | Tol    |
|---------|--------|
| R ≤ 1.5 | ±0.005 |
| R ≤ 3   | ±0.007 |
| R ≤ 8   | ±0.010 |

Unit (mm)

| Workpiece Material                  |                                    |   |                           |                           |                          |
|-------------------------------------|------------------------------------|---|---------------------------|---------------------------|--------------------------|
| P                                   |                                    |   | H                         |                           |                          |
| 1 2 3 4                             | 5                                  | 6                                       | 1                         | 2                         | 3 4                      |
| Carbon Steel, Alloy Steel (< 35HRC) | Alloy Steel, Tool Steel (35-48HRC) | PH, Ferrite, Martensite Steel (< 35HRC) | Hardened Steel (45-55HRC) | Hardened Steel (55-60HRC) | Hardened Steel (> 60HRC) |
| ○                                   | ○                                  |   | ◎                         | ◎                         | ◎                        |

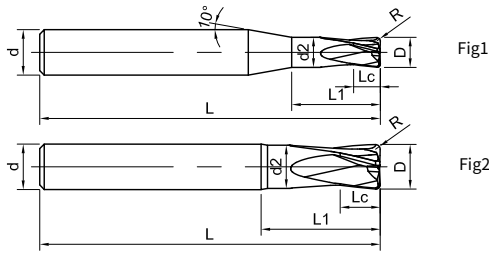
◎ Most Suitable ○ Suitable

Recommended Cutting Data ※ P515



# FH200-R4-H

4 Flutes Corner Radius



Please refer to page 149

| Ordering Code    | D   | Lc  | R   | d2   | L1 | L  | d | Figure No. | Stock |
|------------------|-----|-----|-----|------|----|----|---|------------|-------|
| FH200-R4-01002-H | 1   | 1   | 0.2 | 0.95 | 2  | 50 | 4 | 1          | ●     |
| FH200-R4-01505-H | 1.5 | 1.5 | 0.5 | 1.45 | 3  | 50 | 4 | 1          | ●     |
| FH200-R4-02005-H | 2   | 2   | 0.5 | 1.9  | 4  | 50 | 6 | 1          | ●     |
| FH200-R4-03005-H | 3   | 3   | 0.5 | 2.9  | 6  | 50 | 6 | 1          | ●     |
| FH200-R4-04005-H | 4   | 4   | 0.5 | 3.8  | 8  | 60 | 6 | 1          | ●     |
| FH200-R4-04010-H | 4   | 4   | 1   | 3.8  | 8  | 60 | 6 | 1          | ●     |
| FH200-R4-05005-H | 5   | 5   | 0.5 | 4.7  | 10 | 60 | 6 | 1          | ●     |
| FH200-R4-05010-H | 5   | 5   | 1   | 4.7  | 10 | 60 | 6 | 1          | ●     |
| FH200-R4-06003-H | 6   | 6   | 0.3 | 5.7  | 12 | 60 | 6 | 2          | ●     |
| FH200-R4-06005-H | 6   | 6   | 0.5 | 5.7  | 12 | 60 | 6 | 2          | ●     |
| FH200-R4-06010-H | 6   | 6   | 1   | 5.7  | 12 | 60 | 6 | 2          | ●     |
| FH200-R4-06015-H | 6   | 6   | 1.5 | 5.7  | 12 | 60 | 6 | 2          | ●     |

● Stock ○ Available upon Order

| D     | Tol         |
|-------|-------------|
| D ≤ 5 | 0<br>-0.01  |
| D > 5 | 0<br>-0.015 |

Unit (mm)

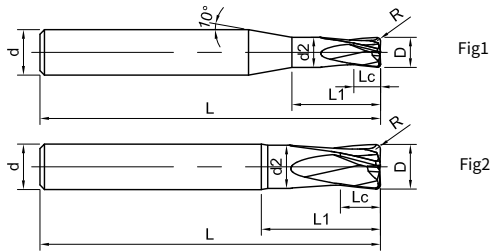
| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
|  | ○  |  | ○                            | ○                            | ○                            |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P517

# FH200-R4-H

4 Flutes Corner Radius



Please refer to page 149

» Continuation

| Ordering Code     | D  | Lc | R   | d2   | L1 | L  | d  | Figure No. | Stock |
|-------------------|----|----|-----|------|----|----|----|------------|-------|
| FH200-R4-08003-H  | 8  | 8  | 0.3 | 7.6  | 16 | 60 | 8  | 2          | ●     |
| FH200-R4-08005-H  | 8  | 8  | 0.5 | 7.6  | 16 | 60 | 8  | 2          | ●     |
| FH200-R4-08010-H  | 8  | 8  | 1   | 7.6  | 16 | 60 | 8  | 2          | ●     |
| FH200-R4-08020-H  | 8  | 8  | 2   | 7.6  | 16 | 60 | 8  | 2          | ●     |
| FH200-R4-08020E-H | 8  | 8  | 2   | 7.6  | 16 | 75 | 8  | 2          | ●     |
| FH200-R4-10005-H  | 10 | 10 | 0.5 | 9.5  | 20 | 75 | 10 | 2          | ●     |
| FH200-R4-10010-H  | 10 | 10 | 1   | 9.5  | 20 | 75 | 10 | 2          | ●     |
| FH200-R4-10020-H  | 10 | 10 | 2   | 9.5  | 20 | 75 | 10 | 2          | ●     |
| FH200-R4-12005-H  | 12 | 12 | 0.5 | 11.5 | 24 | 75 | 12 | 2          | ●     |
| FH200-R4-12010-H  | 12 | 12 | 1   | 11.5 | 24 | 75 | 12 | 2          | ●     |
| FH200-R4-12020-H  | 12 | 12 | 2   | 11.5 | 24 | 75 | 12 | 2          | ●     |
| FH200-R4-12030-H  | 12 | 12 | 3   | 11.5 | 24 | 75 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D     | Tol         |
|-------|-------------|
| D ≤ 5 | 0<br>-0.01  |
| D > 5 | 0<br>-0.015 |

Unit (mm)

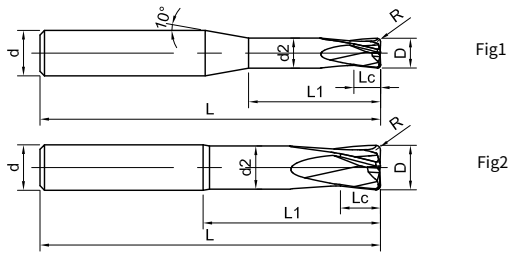
| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
|  | ○  |  | ○                            | ○                            | ○                            |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P517

# FH200-RN4-H

4 Flutes Corner Radius with Reduced Neck



Please refer to page 149

| Ordering Code     | D  | Lc | R   | d2 | L1   | L   | d  | Figure No. | Stock |
|-------------------|----|----|-----|----|------|-----|----|------------|-------|
| FH200-RN4-08005-H | 8  | 8  | 0.5 | 24 | 7.6  | 75  | 8  | 2          | ●     |
| FH200-RN4-08010-H | 8  | 8  | 1   | 24 | 7.6  | 75  | 8  | 2          | ●     |
| FH200-RN4-08020-H | 8  | 8  | 2   | 24 | 7.6  | 75  | 8  | 2          | ●     |
| FH200-RN4-10005-H | 10 | 10 | 0.5 | 30 | 9.5  | 100 | 10 | 2          | ●     |
| FH200-RN4-10010-H | 10 | 10 | 1   | 30 | 9.5  | 100 | 10 | 2          | ●     |
| FH200-RN4-10020-H | 10 | 10 | 2   | 30 | 9.5  | 100 | 10 | 2          | ●     |
| FH200-RN4-12005-H | 12 | 12 | 0.5 | 36 | 11.5 | 100 | 12 | 2          | ●     |
| FH200-RN4-12010-H | 12 | 12 | 1   | 36 | 11.5 | 100 | 12 | 2          | ●     |
| FH200-RN4-12020-H | 12 | 12 | 2   | 36 | 11.5 | 100 | 12 | 2          | ●     |
| FH200-RN4-12030-H | 12 | 12 | 3   | 36 | 11.5 | 100 | 12 | 2          | ●     |

● Stock ○ Available upon Order

| D     | Tol         |
|-------|-------------|
| D ≤ 5 | 0<br>-0.01  |
| D > 5 | 0<br>-0.015 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
|  | ○  |  | ○                            | ○                            | ○                            |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P517

# FH200-R6-H

6 Flutes Corner Radius

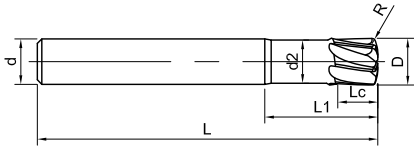


Fig1



Please refer to page 149

| Ordering Code    | D  | Lc | R     | d2   | L1 | L   | d  | Figure No. | Stock |
|------------------|----|----|-------|------|----|-----|----|------------|-------|
| FH200-R6-06004-H | 6  | 5  | 0.375 | 5.5  | 18 | 60  | 6  | 1          | ●     |
| FH200-R6-08005-H | 8  | 7  | 0.5   | 7.5  | 24 | 75  | 8  | 1          | ●     |
| FH200-R6-10006-H | 10 | 8  | 0.625 | 9.5  | 30 | 90  | 10 | 1          | ●     |
| FH200-R6-12008-H | 12 | 10 | 0.75  | 11.5 | 36 | 100 | 12 | 1          | ●     |
| FH200-R6-16010-H | 16 | 14 | 1     | 15.5 | 48 | 110 | 16 | 1          | ●     |
| FH200-R6-20013-H | 20 | 18 | 1.25  | 19.5 | 60 | 125 | 20 | 1          | ●     |

● Stock ○ Available upon Order

| D      | Tol              |
|--------|------------------|
| D ≤ 20 | -0.014<br>-0.038 |

Unit (mm)

| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
|  | ○  |  | ○                            | ○                            | ○                            |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P517

# FH200-RH6-H

6 Flutes Corner Radius with Long Shank Length

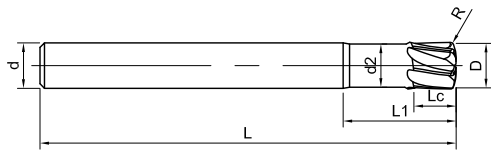


Fig1



Please refer to page 149

| Ordering Code     | D  | Lc | R     | d2   | L1 | L   | d  | Figure No. | Stock |
|-------------------|----|----|-------|------|----|-----|----|------------|-------|
| FH200-RH6-06004-H | 6  | 5  | 0.375 | 5.5  | 18 | 100 | 6  | 1          | ●     |
| FH200-RH6-08005-H | 8  | 7  | 0.5   | 7.5  | 24 | 100 | 8  | 1          | ●     |
| FH200-RH6-10006-H | 10 | 8  | 0.625 | 9.5  | 30 | 120 | 10 | 1          | ●     |
| FH200-RH6-12008-H | 12 | 10 | 0.75  | 11.5 | 36 | 120 | 12 | 1          | ●     |
| FH200-RH6-16010-H | 16 | 14 | 1     | 15.5 | 48 | 150 | 16 | 1          | ●     |
| FH200-RH6-20013-H | 20 | 18 | 1.25  | 19.5 | 60 | 150 | 20 | 1          | ●     |

● Stock ○ Available upon Order

| D      | Tol              |
|--------|------------------|
| D ≤ 20 | -0.014<br>-0.038 |

Unit (mm)

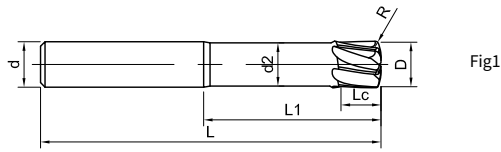
| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
|  | ○  |  | ○                            | ○                            | ○                            |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P517

# FH200-RN6-H

6 Flutes with Long Shank, Corner Radius



Please refer to page 149

| Ordering Code     | D  | Lc | R     | d2   | L1 | L   | d  | Figure No. | Stock |
|-------------------|----|----|-------|------|----|-----|----|------------|-------|
| FH200-RN6-06004-H | 6  | 5  | 0.375 | 5.5  | 24 | 100 | 6  | 1          | ●     |
| FH200-RN6-08005-H | 8  | 7  | 0.5   | 7.5  | 32 | 100 | 8  | 1          | ●     |
| FH200-RN6-10006-H | 10 | 8  | 0.625 | 9.5  | 40 | 120 | 10 | 1          | ●     |
| FH200-RN6-12008-H | 12 | 10 | 0.75  | 11.5 | 48 | 120 | 12 | 1          | ●     |
| FH200-RN6-16010-H | 16 | 14 | 1     | 15.5 | 64 | 150 | 16 | 1          | ●     |
| FH200-RN6-20013-H | 20 | 18 | 1.25  | 19.5 | 80 | 150 | 20 | 1          | ●     |

● Stock ○ Available upon Order

| D      | Tol              |
|--------|------------------|
| D ≤ 20 | -0.014<br>-0.038 |

Unit (mm)

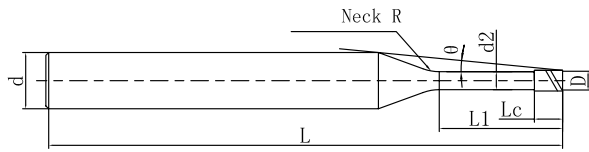
| Workpiece Material                         |  |  |                              |                              |                              |
|--|--|--|------------------------------|------------------------------|------------------------------|
| P  |  |  | H                            |                              |                              |
| 1 2 3 4                                    | 5  | 6  | 1                            | 2                            | 3 4                          |
| Carbon Steel,<br>Alloy Steel<br>( < 35HRC) | Alloy Steel,<br>Tool Steel<br>(35-48HRC) | PH, Ferrite,<br>Martensite Steel<br>( < 35HRC) | Hardened Steel<br>(45-55HRC) | Hardened Steel<br>(55-60HRC) | Hardened Steel<br>( > 60HRC) |
|  | ○  |  | ○                            | ○                            | ○                            |

○ Most Suitable ○ Suitable

Recommended Cutting Data ※ P517

# SPM200-SN2

2Flutes with Extended Neck, Square



Please refer to page 149

| Ordering Code        | Mill Dia. | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |      |      |      |      | Stock |   |
|----------------------|-----------|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|------|------|------|------|-------|---|
|                      |           |                   |              |           |                |            |       |                    | 0.5°   | 1°   | 1.5° | 2°   | 3°   |       |   |
| SPM200-SN2-0.1-0.3-V | 0.1       | 0.3               | 0.15         | 0.08      | 50             | 4          | 1     | 14.39              | 0.31   | 0.33 | 0.35 | 0.37 | 0.40 | ●     |   |
| SPM200-SN2-0.1-0.5-V |           | 0.5               |              |           |                |            |       |                    | 0.52   | 0.55 | 0.58 | 0.60 | 0.65 | ●     |   |
| SPM200-SN2-0.1-1-V   |           | 1                 |              |           |                |            |       |                    | 1.05   | 1.09 | 1.13 | 1.18 | 1.27 | ●     |   |
| SPM200-SN2-0.2-0.5-V | 0.2       | 0.5               | 0.3          | 0.17      | 50             | 4          | 1     | 14.03              | 0.52   | 0.54 | 0.57 | 0.59 | 0.64 | ●     |   |
| SPM200-SN2-0.2-1-V   |           | 1                 |              |           |                |            |       |                    | 1.04   | 1.08 | 1.12 | 1.16 | 1.26 | ●     |   |
| SPM200-SN2-0.2-1.5-V |           | 1.5               |              |           |                |            |       |                    | 1.56   | 1.62 | 1.67 | 1.74 | 1.88 | ●     |   |
| SPM200-SN2-0.2-2-V   | 2         | 11.79             | 2.08         | 2.15      | 2.23           | 2.31       | 2.50  | ●                  |  |      |      |      |      |       |   |
| SPM200-SN2-0.2-3-V   | 3         | 10.65             | 3.11         | 3.22      | 3.34           | 3.46       | 3.74  | ○                  |  |      |      |      |      |       |   |
| SPM200-SN2-0.3-1-V   | 0.3       | 1                 | 0.45         | 0.27      | 50             | 4          | 2     | 13.06              | 1.06   | 1.12 | 1.18 | 1.23 | 1.33 | ●     |   |
| SPM200-SN2-0.3-1.5-V |           | 1.5               |              |           |                |            |       |                    | 1.59   | 1.67 | 1.74 | 1.81 | 1.95 | ●     |   |
| SPM200-SN2-0.3-2-V   |           | 2                 |              |           |                |            |       |                    | 11.65  | 2.12 | 2.21 | 2.29 | 2.38 | 2.57  | ● |
| SPM200-SN2-0.3-2.5-V |           | 2.5               |              |           |                |            |       |                    | 11.05  | 2.64 | 2.75 | 2.85 | 2.96 | 3.20  | ● |
| SPM200-SN2-0.3-3-V   |           | 3                 |              |           |                |            |       |                    | 10.51  | 3.16 | 3.28 | 3.40 | 3.53 | 3.82  | ○ |
| SPM200-SN2-0.4-1-V   | 0.4       | 1                 | 0.6          | 0.37      | 50             | 4          | 2     | 13.01              | 1.06   | 1.12 | 1.18 | 1.23 | 1.33 | ●     |   |
| SPM200-SN2-0.4-1.5-V |           | 1.5               |              |           |                |            |       |                    | 12.25  | 1.59 | 1.67 | 1.74 | 1.81 | 1.95  | ● |
| SPM200-SN2-0.4-2-V   |           | 2                 |              |           |                |            |       |                    | 11.57  | 2.12 | 2.21 | 2.29 | 2.38 | 2.57  | ● |
| SPM200-SN2-0.4-2.5-V |           | 2.5               |              |           |                |            |       |                    | 10.97  | 2.64 | 2.75 | 2.85 | 2.96 | 3.20  | ○ |
| SPM200-SN2-0.4-3-V   |           | 3                 |              |           |                |            |       |                    | 10.42  | 3.16 | 3.28 | 3.40 | 3.53 | 3.82  | ● |
| SPM200-SN2-0.4-3.5-V |           | 3.5               |              |           |                |            |       |                    | 9.92   | 3.68 | 3.82 | 3.96 | 4.11 | 4.44  | ● |
| SPM200-SN2-0.4-4-V   |           | 4                 |              |           |                |            |       |                    | 9.47   | 4.20 | 4.35 | 4.51 | 4.68 | 5.06  | ● |
| SPM200-SN2-0.4-5-V   |           | 5                 |              |           |                |            |       |                    | 8.68   | 5.24 | 5.42 | 5.62 | 5.83 | 6.30  | ○ |
| SPM200-SN2-0.4-6-V   |           | 6                 |              |           |                |            |       |                    | 8.01   | 6.27 | 6.49 | 6.73 | 6.98 | 7.55  | ○ |
| SPM200-SN2-0.4-8-V   |           | 8                 |              |           |                |            |       |                    | 6.94   | 8.34 | 8.63 | 8.94 | 9.28 | 10.03 | ○ |
| SPM200-SN2-0.4-10-V  | 10        | 6.12              | 10.41        | 10.77     | 11.16          | 11.58      | 12.52 | ○                  |  |      |      |      |      |       |   |

● Stock ○ Available upon Order

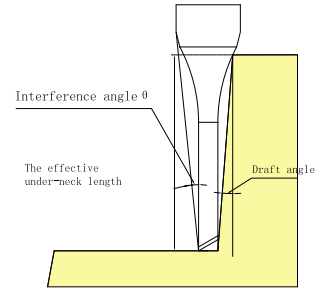
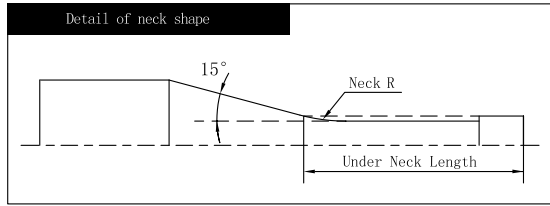
| D             | Tol         |
|---------------|-------------|
| 0.1 ≤ D ≤ 0.5 | 0<br>-0.007 |
| 0.6 ≤ D ≤ 0.9 | 0<br>-0.01  |
| 1.0 ≤ D ≤ 6.0 | 0<br>-0.015 |

(mm)

Cutting Parameters ※ P519

# SPM200-SN2

2Flutes with Extended Neck, Square



Please refer to page 149

» Continue

| Ordering Code        | Mill Dia. | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|----------------------|-----------|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|-------|-------|-------|-------|-------|
|                      |           |                   |              |           |                |            |       |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SPM200-SN2-0.5-1-V   | 0.5       | 1                 | 0.75         | 0.47      | 50             | 4          | 2     | 12.96              | 1.06   | 1.12  | 1.18  | 1.23  | 1.33  | ●     |
| SPM200-SN2-0.5-1.5-V |           | 1.5               |              |           |                |            |       | 12.19              | 1.59   | 1.67  | 1.74  | 1.81  | 1.95  | ●     |
| SPM200-SN2-0.5-2-V   |           | 2                 |              |           |                |            |       | 11.50              | 2.12   | 2.21  | 2.29  | 2.38  | 2.57  | ○     |
| SPM200-SN2-0.5-2.5-V |           | 2.5               |              |           |                |            |       | 10.88              | 2.64   | 2.75  | 2.85  | 2.96  | 3.20  | ●     |
| SPM200-SN2-0.5-3-V   |           | 3                 |              |           |                |            |       | 10.33              | 3.16   | 3.28  | 3.40  | 3.53  | 3.82  | ●     |
| SPM200-SN2-0.5-4-V   |           | 4                 |              |           |                |            |       | 9.37               | 4.20   | 4.35  | 4.51  | 4.68  | 5.06  | ●     |
| SPM200-SN2-0.5-5-V   |           | 5                 |              |           |                |            |       | 8.58               | 5.24   | 5.42  | 5.62  | 5.83  | 6.30  | ●     |
| SPM200-SN2-0.5-6-V   |           | 6                 |              |           |                |            |       | 7.91               | 6.27   | 6.49  | 6.73  | 6.98  | 7.55  | ●     |
| SPM200-SN2-0.5-8-V   |           | 8                 |              |           |                |            |       | 6.84               | 8.34   | 8.63  | 8.94  | 9.28  | 10.03 | ●     |
| SPM200-SN2-0.5-10-V  |           | 10                |              |           |                |            |       | 6.02               | 10.41  | 10.77 | 11.16 | 11.58 | 12.52 | ●     |
| SPM200-SN2-0.6-2-V   | 0.6       | 2                 | 0.9          | 0.57      | 50             | 4          | 4     | 11.21              | 2.17   | 2.31  | 2.44  | 2.56  | 2.78  | ●     |
| SPM200-SN2-0.6-3-V   |           | 3                 |              |           |                |            |       | 10.07              | 3.24   | 3.42  | 3.58  | 3.72  | 4.02  | ●     |
| SPM200-SN2-0.6-4-V   |           | 4                 |              |           |                |            |       | 9.13               | 4.30   | 4.51  | 4.69  | 4.87  | 5.26  | ●     |
| SPM200-SN2-0.6-5-V   |           | 5                 |              |           |                |            |       | 8.36               | 5.35   | 5.59  | 5.80  | 6.02  | 6.50  | ○     |
| SPM200-SN2-0.6-6-V   |           | 6                 |              |           |                |            |       | 7.70               | 6.40   | 6.67  | 6.91  | 7.17  | 7.75  | ●     |
| SPM200-SN2-0.6-7-V   |           | 7                 |              |           |                |            |       | 7.14               | 7.44   | 7.74  | 8.02  | 8.32  | 8.99  | ○     |
| SPM200-SN2-0.6-8-V   |           | 8                 |              |           |                |            |       | 6.66               | 8.49   | 8.81  | 9.12  | 9.47  | 10.23 | ○     |
| SPM200-SN2-0.6-9-V   |           | 9                 |              |           |                |            |       | 6.23               | 9.53   | 9.88  | 10.23 | 10.62 | 11.48 | ●     |
| SPM200-SN2-0.6-10-V  |           | 10                |              |           |                |            |       | 5.86               | 10.57  | 10.94 | 11.34 | 11.77 | 12.72 | ○     |
| SPM200-SN2-0.7-2-V   |           | 0.7               |              |           |                |            |       | 2                  | 1.05   | 0.67  | 50    | 4     | 4     | 11.13 |
| SPM200-SN2-0.7-4-V   | 4         |                   | 9.02         | 4.30      | 4.51           | 4.69       | 4.87  | 5.26               |  |       |       |       |       | ●     |
| SPM200-SN2-0.7-6-V   | 6         |                   | 7.59         | 6.40      | 6.67           | 6.91       | 7.17  | 7.75               |  |       |       |       |       | ○     |
| SPM200-SN2-0.7-8-V   | 8         |                   | 6.54         | 8.49      | 8.81           | 9.12       | 9.47  | 10.23              |  |       |       |       |       | ○     |
| SPM200-SN2-0.7-10-V  | 10        |                   | 5.75         | 10.57     | 10.94          | 11.34      | 11.77 | 12.72              |  |       |       |       |       | ○     |

● Stock ○ Available upon Order

| D             | Tol         |
|---------------|-------------|
| 0.1 ≤ D ≤ 0.5 | 0<br>-0.007 |
| 0.6 ≤ D ≤ 0.9 | 0<br>-0.01  |
| 1.0 ≤ D ≤ 6.0 | 0<br>-0.015 |

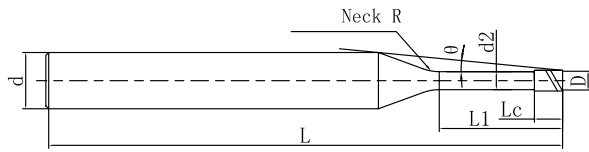
(mm)

Cutting Parameters ※ P519



# SPM200-SN2

2Flutes with Extended Neck, Square



Please refer to page 149

» Continue

| Ordering Code       | Mill Dia. | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |      | Stock |
|---------------------|-----------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|------|-------|
|                     |           |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°   |       |
| SPM200-SN2-0.8-4-V  | 0.8       | 4                 | 1.2          | 0.76      | 50             | 4          | 4    | 8.94               | 4.27   | 4.48  | 4.65  | 4.83  | 5.22 | ●     |
| SPM200-SN2-0.8-6-V  |           | 6                 |              |           | 7.49           |            |      | 6.37               | 6.63   | 6.87  | 7.13  | 7.70  | ●    |       |
| SPM200-SN2-0.8-8-V  |           | 8                 |              |           | 6.45           |            |      | 8.46               | 8.77   | 9.09  | 9.43  | 10.19 | ●    |       |
| SPM200-SN2-0.8-10-V |           | 10                |              |           | 5.65           |            |      | 10.54              | 10.91  | 11.30 | 11.73 | 12.68 | ○    |       |
| SPM200-SN2-0.8-12-V |           | 12                |              |           | 5.04           |            |      | 12.61              | 13.05  | 13.52 | 14.03 | 15.16 | ●    |       |
| SPM200-SN2-0.9-6-V  | 0.9       | 6                 | 1.35         | 0.86      | 50             | 4          | 4    | 7.37               | 6.37   | 6.63  | 6.87  | 7.13  | 7.70 | ●     |
| SPM200-SN2-0.9-8-V  |           | 8                 |              |           | 6.33           |            |      | 8.46               | 8.77   | 9.09  | 9.43  | 10.19 | ○    |       |
| SPM200-SN2-0.9-10-V |           | 10                |              |           | 5.54           |            |      | 10.54              | 10.91  | 11.30 | 11.73 | 12.68 | ●    |       |
| SPM200-SN2-0.9-12-V |           | 12                |              |           | 4.93           |            |      | 12.61              | 13.05  | 13.52 | 14.03 | 15.16 | ○    |       |
| SPM200-SN2-1-2-V    | 1         | 2                 | 1.5          | 0.96      | 50             | 4          | 4    | 10.89              | 2.15   | 2.29  | 2.41  | 2.52  | 2.73 | ●     |
| SPM200-SN2-1-3-V    |           | 3                 |              |           | 9.68           |            |      | 3.21               | 3.39   | 3.54  | 3.68  | 3.98  | ●    |       |
| SPM200-SN2-1-4-V    |           | 4                 |              |           | 8.71           |            |      | 4.27               | 4.48   | 4.65  | 4.83  | 5.22  | ●    |       |
| SPM200-SN2-1-5-V    |           | 5                 |              |           | 7.91           |            |      | 5.32               | 5.56   | 5.76  | 5.98  | 6.46  | ●    |       |
| SPM200-SN2-1-6-V    |           | 6                 |              |           | 7.25           |            |      | 6.37               | 6.63   | 6.87  | 7.13  | 7.70  | ●    |       |
| SPM200-SN2-1-7-V    |           | 7                 |              |           | 6.69           |            |      | 7.41               | 7.7  | 7.98  | 8.28  | 8.95  | ●    |       |
| SPM200-SN2-1-8-V    |           | 8                 |              |           | 6.21           |            |      | 8.46               | 8.77   | 9.09  | 9.43  | 10.19 | ●    |       |
| SPM200-SN2-1-9-V    |           | 9                 |              |           | 5.79           |            |      | 9.50               | 9.84   | 10.19 | 10.58 | 11.43 | ○    |       |
| SPM200-SN2-1-10-V   |           | 10                |              |           | 5.43           |            |      | 10.54              | 10.91  | 11.30 | 11.73 | 12.68 | ●    |       |
| SPM200-SN2-1-12-V   |           | 12                |              |           | 4.82           |            |      | 12.61              | 13.05  | 13.52 | 14.03 | 15.16 | ●    |       |
| SPM200-SN2-1-14-V   |           | 14                |              |           | 4.34           |            |      | 14.67              | 15.19  | 15.73 | 16.32 | 17.65 | ○    |       |
| SPM200-SN2-1-16-V   |           | 16                |              |           | 3.94           |            |      | 16.74              | 17.33  | 17.95 | 18.62 | 20.14 | ●    |       |
| SPM200-SN2-1-20-V   |           | 20                |              |           | 3.33           |            |      | 20.88              | 21.6   | 22.38 | 23.22 | 25.11 | ●    |       |
| SPM200-SN2-1-25-V   |           | 25                |              |           | 2.79           |            |      | 26.05              | 26.95  | 27.93 | 28.97 | -     | ●    |       |
| SPM200-SN2-1.2-6-V  |           | 1.2               |              |           | 6              |            |      | 1.8                | 1.15   | 50    | 4     | 4     | 7.01 | 6.35  |

● Stock ○ Available upon Order

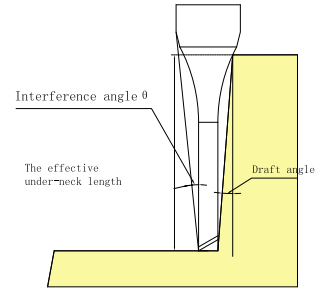
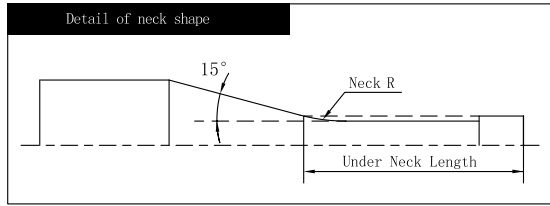
| D             | Tol         |
|---------------|-------------|
| 0.1 ≤ D ≤ 0.5 | 0<br>-0.007 |
| 0.6 ≤ D ≤ 0.9 | 0<br>-0.01  |
| 1.0 ≤ D ≤ 6.0 | 0<br>-0.015 |

(mm)

Cutting Parameters ※ P519

# SPM200-SN2

2Flutes with Extended Neck, Square



Please refer to page 149

» Continue

| Ordering Code       | Mill Dia. | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |   |
|---------------------|-----------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|---|
|                     |           |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |   |
| SPM200-SN2-1.2-8-V  | 1.2       | 8                 | 1.8          | 1.15      | 50             | 4          | 4    | 5.97               | 8.43   | 8.74  | 9.05  | 9.39  | 10.16 | ●     |   |
| SPM200-SN2-1.2-10-V |           | 10                |              |           | 50             |            |      |                    | 5.20   | 10.51 | 10.88 | 11.27 | 11.69 | 12.64 | ● |
| SPM200-SN2-1.2-12-V |           | 12                |              |           | 55             |            |      |                    | 4.61   | 12.58 | 13.02 | 13.49 | 13.99 | 15.13 | ● |
| SPM200-SN2-1.2-16-V |           | 16                |              |           | 55             |            |      |                    | 3.75   | 16.71 | 17.3  | 17.92 | 18.59 | 20.10 | ○ |
| SPM200-SN2-1.4-6-V  | 1.4       | 6                 | 2.1          | 1.34      | 50             | 4          | 4    | 6.74               | 6.33   | 6.57  | 6.81  | 7.07  | 7.64  | ●     |   |
| SPM200-SN2-1.4-12-V |           | 12                |              |           | 55             |            |      |                    | 4.38   | 12.55 | 12.99 | 13.46 | 13.97 | 15.10 | ● |
| SPM200-SN2-1.5-4-V  | 1.5       | 4                 | 2.25         | 1.44      | 50             | 4          | 4    | 8.08               | 4.24   | 4.43  | 4.59  | 4.77  | 5.15  | ●     |   |
| SPM200-SN2-1.5-6-V  |           | 6                 |              |           | 50             |            |      |                    | 6.60   | 6.33  | 6.57  | 6.81  | 7.07  | 7.64  | ● |
| SPM200-SN2-1.5-8-V  |           | 8                 |              |           | 50             |            |      |                    | 5.58   | 8.41  | 8.71  | 9.03  | 9.37  | 10.13 | ● |
| SPM200-SN2-1.5-10-V |           | 10                |              |           | 50             |            |      |                    | 4.83   | 10.48 | 10.85 | 11.24 | 11.67 | 12.61 | ● |
| SPM200-SN2-1.5-12-V |           | 12                |              |           | 55             |            |      |                    | 4.26   | 12.55 | 12.99 | 13.46 | 13.97 | 15.10 | ● |
| SPM200-SN2-1.5-14-V |           | 14                |              |           | 55             |            |      |                    | 3.81   | 14.62 | 15.13 | 15.68 | 16.26 | 17.58 | ● |
| SPM200-SN2-1.5-16-V |           | 16                |              |           | 55             |            |      |                    | 3.44   | 16.69 | 17.27 | 17.89 | 18.56 | 20.07 | ○ |
| SPM200-SN2-1.5-18-V |           | 18                |              |           | 60             |            |      |                    | 3.14   | 18.76 | 19.41 | 20.11 | 20.86 | 22.56 | ● |
| SPM200-SN2-1.5-20-V |           | 20                |              |           | 60             |            |      |                    | 2.89   | 20.82 | 21.55 | 22.33 | 23.16 | -     | ○ |
| SPM200-SN2-1.5-25-V |           | 25                |              |           | 65             |            |      |                    | 2.41   | 25.99 | 26.9  | 27.87 | 28.91 | -     | ○ |
| SPM200-SN2-1.5-30-V |           | 30                |              |           | 70             |            |      |                    | 2.06   | 31.16 | 32.25 | 33.41 | 34.66 | -     | ● |
| SPM200-SN2-1.5-35-V |           | 35                |              |           | 75             |            |      |                    | 1.80   | 36.33 | 37.59 | 38.95 | -     | -     | ● |
| SPM200-SN2-1.5-40-V | 40        | 80                | 1.60         | 41.50     | 42.94          | 44.49      | -    | -                  | ○  |       |       |       |       |       |   |
| SPM200-SN2-1.6-6-V  | 1.6       | 6                 | 2.4          | 1.54      | 50             | 4          | 4    | 6.45               | 6.33   | 6.57  | 6.81  | 7.07  | 7.64  | ●     |   |
| SPM200-SN2-1.6-8-V  |           | 8                 |              |           | 50             |            |      |                    | 5.43   | 8.41  | 8.71  | 9.03  | 9.37  | 10.13 | ○ |
| SPM200-SN2-1.8-6-V  | 1.8       | 6                 | 2.7          | 1.73      | 50             | 4          | 4    | 6.14               | 6.31   | 6.55  | 6.79  | 7.04  | 7.61  | ○     |   |
| SPM200-SN2-1.8-8-V  |           | 8                 |              |           | 50             |            |      |                    | 5.14   | 8.39  | 8.69  | 9.00  | 9.34  | 10.10 | ○ |
| SPM200-SN2-2-4-V    | 2         | 4                 | 3            | 1.92      | 50             | 4          | 4    | 7.27               | 4.21   | 4.39  | 4.55  | 4.72  | 5.11  | ○     |   |

● Stock ○ Available upon Order

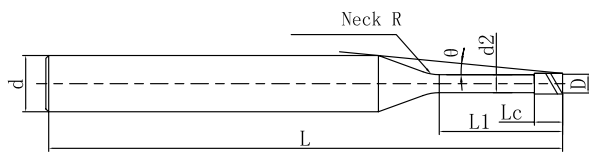
| D             | Tol         |
|---------------|-------------|
| 0.1 ≤ D ≤ 0.5 | 0<br>-0.007 |
| 0.6 ≤ D ≤ 0.9 | 0<br>-0.01  |
| 1.0 ≤ D ≤ 6.0 | 0<br>-0.015 |

(mm)

Cutting Parameters ※ P519

# SPM200-SN2

2Flutes with Extended Neck, Square



Please refer to page 149

» Continue

| Ordering Code       | Mill Dia. | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|---------------------|-----------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                     |           |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SPM200-SN2-2-6-V    | 2         | 6                 | 3            | 1.92      | 50             | 4          | 4    | 5.81               | 6.30   | 6.53  | 6.77  | 7.02  | 7.59  | ●     |
| SPM200-SN2-2-8-V    |           | 8                 |              |           | 4.83           |            |      | 8.38               | 8.67   | 8.99  | 9.32  | 10.08 | ●     |       |
| SPM200-SN2-2-10-V   |           | 10                |              |           | 4.14           |            |      | 10.45              | 10.81  | 11.20 | 11.62 | 12.57 | ●     |       |
| SPM200-SN2-2-12-V   |           | 12                |              |           | 3.62           |            |      | 12.51              | 12.95  | 13.42 | 13.92 | 15.05 | ●     |       |
| SPM200-SN2-2-14-V   |           | 14                |              |           | 3.21           |            |      | 14.58              | 15.09  | 15.64 | 16.22 | 17.54 | ●     |       |
| SPM200-SN2-2-16-V   |           | 16                |              |           | 2.89           |            |      | 16.65              | 17.23  | 17.85 | 18.52 | -     | ●     |       |
| SPM200-SN2-2-18-V   |           | 18                |              |           | 2.63           |            |      | 18.72              | 19.37  | 20.07 | 20.82 | -     | ●     |       |
| SPM200-SN2-2-20-V   |           | 20                |              |           | 2.41           |            |      | 20.78              | 21.51  | 22.28 | 23.12 | -     | ●     |       |
| SPM200-SN2-2-25-V   |           | 25                |              |           | 1.99           |            |      | 25.95              | 26.86  | 27.83 | -     | -     | ●     |       |
| SPM200-SN2-2-30-V   |           | 30                |              |           | 1.70           |            |      | 31.12              | 32.2   | 33.37 | -     | -     | ●     |       |
| SPM200-SN2-2-35-V   |           | 35                |              |           | 1.48           |            |      | 36.29              | 37.55  | -     | -     | -     | ○     |       |
| SPM200-SN2-2-40-V   |           | 40                |              |           | 1.31           |            |      | 41.46              | 42.9   | -     | -     | -     | ●     |       |
| SPM200-SN2-2-50-V   |           | 50                |              |           | 1.07           |            |      | 51.79              | 53.6   | -     | -     | -     | ○     |       |
| SPM200-SN2-2.5-8-V  | 2.5       | 8                 | 3.75         | 2.4       | 50             | 4          | 4    | 3.95               | 8.35   | 8.64  | 8.95  | 9.29  | 10.04 | ○     |
| SPM200-SN2-2.5-12-V |           | 12                |              |           | 2.89           |            |      | 12.48              | 12.92  | 13.39 | 13.89 | -     | ●     |       |
| SPM200-SN2-2.5-16-V |           | 16                |              |           | 2.28           |            |      | 16.62              | 17.2   | 17.82 | 18.49 | -     | ●     |       |
| SPM200-SN2-2.5-20-V |           | 20                |              |           | 1.88           |            |      | 20.75              | 21.48  | 22.25 | -     | -     | ○     |       |
| SPM200-SN2-2.5-30-V |           | 30                |              |           | 1.31           |            |      | 31.09              | 32.17  | -     | -     | -     | ●     |       |
| SPM200-SN2-2.5-40-V |           | 40                |              |           | 1.01           |            |      | 41.43              | 42.87  | -     | -     | -     | ○     |       |
| SPM200-SN2-2.5-50-V | 50        | 0.82              | 51.76        | -         | -              | -          | -    | ○                  |  |       |       |       |       |       |
| SPM200-SN2-3-8-V    | 3         | 8                 | 4.5          | 2.88      | 55             | 6          | 4    | 6.27               | 8.33   | 8.62  | 8.93  | 9.26  | 10.02 | ○     |
| SPM200-SN2-3-12-V   |           | 12                |              |           | 4.86           |            |      | 12.46              | 12.9   | 13.36 | 13.86 | 14.99 | ●     |       |
| SPM200-SN2-3-16-V   |           | 16                |              |           | 3.97           |            |      | 16.60              | 17.17  | 17.79 | 18.46 | 19.96 | ●     |       |
| SPM200-SN2-3-20-V   |           | 20                |              |           | 3.35           |            |      | 20.73              | 21.45  | 22.23 | 23.06 | 24.93 | ●     |       |

● Stock ○ Available upon Order

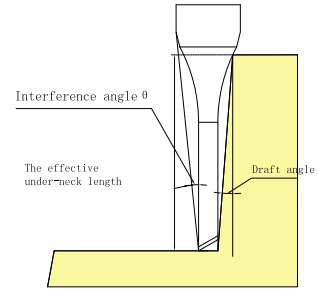
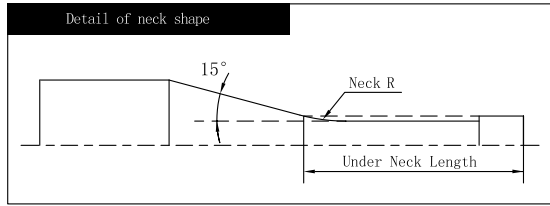
| D             | Tol         |
|---------------|-------------|
| 0.1 ≤ D ≤ 0.5 | 0<br>-0.007 |
| 0.6 ≤ D ≤ 0.9 | 0<br>-0.01  |
| 1.0 ≤ D ≤ 6.0 | 0<br>-0.015 |

(mm)

Cutting Parameters ※ P519

# SPM200-SN2

2Flutes with Extended Neck, Square



Please refer to page 149

» Continue

| Ordering Code     | Mill Dia. | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|-------------------|-----------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                   |           |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SPM200-SN2-3-25-V | 3         | 25                | 4.5          | 2.88      | 70             | 6          | 4    | 2.81               | 25.90  | 26.8  | 27.77 | 28.81 | -     | ○     |
| SPM200-SN2-3-30-V |           | 30                |              |           | 75             |            |      | 2.41               | 31.07  | 32.15 | 33.31 | 34.56 | -     | ●     |
| SPM200-SN2-3-40-V |           | 40                |              |           | 90             |            |      | 1.89               | 41.40  | 42.85 | 44.39 | -     | -     | ●     |
| SPM200-SN2-3-50-V |           | 50                |              |           | 100            |            |      | 1.55               | 51.74  | 53.54 | 55.48 | -     | -     | ○     |
| SPM200-SN2-4-12-V | 4         | 12                | 6            | 3.86      | 60             | 6          | 4    | 3.63               | 12.44  | 12.88 | 13.34 | 13.84 | 14.97 | ●     |
| SPM200-SN2-4-16-V |           | 16                |              |           | 60             |            |      | 2.90               | 16.58  | 17.16 | 17.78 | 18.44 | -     | ○     |
| SPM200-SN2-4-20-V |           | 20                |              |           | 70             |            |      | 2.41               | 20.71  | 21.43 | 22.21 | 23.04 | -     | ●     |
| SPM200-SN2-4-25-V |           | 25                |              |           | 70             |            |      | 2.00               | 25.88  | 26.78 | 27.75 | -     | -     | ○     |
| SPM200-SN2-4-30-V |           | 30                |              |           | 80             |            |      | 1.70               | 31.05  | 32.13 | 33.29 | -     | -     | ○     |
| SPM200-SN2-4-35-V |           | 35                |              |           | 80             |            |      | 1.48               | 36.22  | 37.48 | -     | -     | -     | ○     |
| SPM200-SN2-4-40-V |           | 40                |              |           | 90             |            |      | 1.31               | 41.39  | 42.83 | -     | -     | -     | ●     |
| SPM200-SN2-4-50-V |           | 50                |              |           | 100            |            |      | 1.07               | 51.72  | 53.52 | -     | -     | -     | ○     |
| SPM200-SN2-5-20-V | 5         | 20                | 7.5          | 4.85      | 70             | 6          | 4    | 1.31               | 20.71  | 21.43 | -     | -     | -     | ●     |
| SPM200-SN2-5-25-V |           | 25                |              |           | 70             |            |      | 1.07               | 25.87  | 26.78 | -     | -     | -     | ○     |
| SPM200-SN2-5-30-V |           | 30                |              |           | 80             |            |      | 0.90               | 31.04  | -     | -     | -     | -     | ●     |
| SPM200-SN2-5-40-V |           | 40                |              |           | 90             |            |      | 0.69               | 41.38  | -     | -     | -     | -     | ●     |
| SPM200-SN2-5-50-V | 50        | 100               | 0.56         | 51.72     | -              | -          | -    | -                  | ○  |       |       |       |       |       |
| SPM200-SN2-6-20-V | 6         | 20                | 9            | 5.85      | 70             | 6          | -    | -                  | -  | -     | -     | -     | -     | ○     |
| SPM200-SN2-6-30-V |           | 30                |              |           | 80             |            |      | -                  | -  | -     | -     | -     | -     | ○     |
| SPM200-SN2-6-40-V |           | 40                |              |           | 90             |            |      | -                  | -  | -     | -     | -     | -     | ○     |
| SPM200-SN2-6-50-V |           | 50                |              |           | 100            |            |      | -                  | -  | -     | -     | -     | -     | ●     |

● Stock ○ Available upon Order

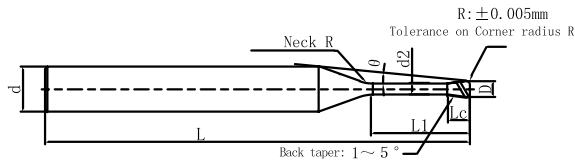
| D             | Tol         |
|---------------|-------------|
| 0.1 ≤ D ≤ 0.5 | 0<br>-0.007 |
| 0.6 ≤ D ≤ 0.9 | 0<br>-0.01  |
| 1.0 ≤ D ≤ 6.0 | 0<br>-0.015 |

(mm)

Cutting Parameters ※ P519

# SPM200-RN2

2 Flutes with Extended Neck, Corner Radius



Φ4 or higher does not have backdraft shape



Please refer to page 149

| Ordering Code             | Mill | r    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |      |      |       |       | Stock |      |      |      |      |   |
|---------------------------|------|------|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|------|------|-------|-------|-------|------|------|------|------|---|
|                           |      |      |                   |              |           |                |            |       |                    | 0.5°   | 1°   | 1.5° | 2°    | 3°    |       |      |      |      |      |   |
| SPM200-RN2-0.2-0.5-0.02-V | 0.2  | 0.02 | 0.5               | 0.16         | 0.17      | 50             | 4          | 1     | 14.07              | 0.52   | 0.54 | 0.56 | 0.58  | 0.63  | ●     |      |      |      |      |   |
| SPM200-RN2-0.2-1-0.02-V   |      |      | 1                 |              |           |                |            |       | 13.23              | 1.04   | 1.08 | 1.12 | 1.16  | 1.25  | ○     |      |      |      |      |   |
| SPM200-RN2-0.2-2-0.02-V   |      |      | 2                 |              |           |                |            |       | 11.82              | 2.08   | 2.15 | 2.23 | 2.31  | 2.50  | ○     |      |      |      |      |   |
| SPM200-RN2-0.2-0.5-0.05-V |      |      | 0.05              |              |           |                |            |       | 0.5                | 14.12  | 0.52 | 0.54 | 0.56  | 0.58  | 0.62  | ○    |      |      |      |   |
| SPM200-RN2-0.2-1-0.05-V   |      |      |                   |              |           |                |            |       | 1                  | 13.28  | 1.04 | 1.08 | 1.11  | 1.15  | 1.24  | ●    |      |      |      |   |
| SPM200-RN2-0.2-1.5-0.05-V |      |      |                   |              |           |                |            |       | 1.5                | 12.53  | 1.56 | 1.61 | 1.67  | 1.73  | 1.87  | ○    |      |      |      |   |
| SPM200-RN2-0.2-2-0.05-V   |      | 2    |                   |              |           |                |            | 11.85 | 2.08               | 2.15   | 2.22 | 2.30 | 2.49  | ○     |       |      |      |      |      |   |
| SPM200-RN2-0.3-1-0.02-V   |      | 0.3  |                   |              |           |                |            | 0.02  | 1                  | 0.24   | 0.27 | 50   | 2     | 13.09 | 1.06  | 1.12 | 1.17 | 1.23 | 1.33 | ○ |
| SPM200-RN2-0.3-2-0.02-V   |      |      |                   |              |           |                |            |       | 2                  |  |      |      |       | 11.67 | 2.11  | 2.21 | 2.29 | 2.38 | 2.57 | ○ |
| SPM200-RN2-0.3-3-0.02-V   |      |      | 3                 |              |           |                |            |       | 10.53              |  |      |      |       | 3.16  | 3.28  | 3.40 | 3.53 | 3.81 | ○    |   |
| SPM200-RN2-0.3-1-0.05-V   |      |      | 0.05              |              |           |                |            |       | 1                  |  |      |      |       | 13.14 | 1.06  | 1.12 | 1.17 | 1.22 | 1.32 | ○ |
| SPM200-RN2-0.3-1.5-0.05-V |      |      |                   |              |           |                |            |       | 1.5                |  |      |      |       | 12.38 | 1.59  | 1.66 | 1.73 | 1.80 | 1.94 | ● |
| SPM200-RN2-0.3-2-0.05-V   | 2    |      |                   | 11.71        | 2.11      | 2.21           | 2.29       |       | 2.37               |  |      |      |       | 2.56  | ○     |      |      |      |      |   |
| SPM200-RN2-0.3-2.5-0.05-V | 2.5  |      |                   | 11.11        | 2.64      | 2.75           | 2.84       | 2.95  | 3.18               |  |      |      | ●     |       |       |      |      |      |      |   |
| SPM200-RN2-0.3-3-0.05-V   | 3    |      |                   | 10.56        | 3.16      | 3.28           | 3.40       | 3.52  | 3.81               |  |      |      | ○     |       |       |      |      |      |      |   |
| SPM200-RN2-0.4-1-0.02-V   | 0.4  |      |                   | 0.02         | 1         | 0.32           | 0.37       | 50    | 2                  |  |      |      | 13.04 | 1.06  | 1.12  | 1.17 | 1.23 | 1.33 | ○    |   |
| SPM200-RN2-0.4-2-0.02-V   |      |      | 2                 |              | 11.60     |                |            |       |                    |  |      |      | 2.11  | 2.21  | 2.29  | 2.38 | 2.57 | ○    |      |   |
| SPM200-RN2-0.4-3-0.02-V   |      |      | 3                 |              | 10.44     |                |            |       |                    |  |      |      | 3.16  | 3.28  | 3.40  | 3.53 | 3.81 | ○    |      |   |
| SPM200-RN2-0.4-4-0.02-V   |      |      | 4                 |              | 9.49      |                |            |       |                    |  |      |      | 4.20  | 4.35  | 4.51  | 4.68 | 5.06 | ○    |      |   |
| SPM200-RN2-0.4-1-0.05-V   |      | 0.05 | 1                 |              | 13.09     |                |            |       |                    | 1.06   | 1.12 | 1.17 | 1.22  | 1.32  | ○     |      |      |      |      |   |
| SPM200-RN2-0.4-1.5-0.05-V |      |      | 1.5               |              | 12.32     |                |            |       |                    | 1.59   | 1.66 | 1.73 | 1.80  | 1.94  | ○     |      |      |      |      |   |
| SPM200-RN2-0.4-2-0.05-V   |      |      | 2                 | 11.64        | 2.11      |                |            |       | 2.21               | 2.29   | 2.37 | 2.56 | ○     |       |       |      |      |      |      |   |
| SPM200-RN2-0.4-2.5-0.05-V |      |      | 2.5               | 11.03        | 2.64      |                |            |       | 2.75               | 2.84   | 2.95 | 3.18 | ○     |       |       |      |      |      |      |   |
| SPM200-RN2-0.4-3-0.05-V   |      |      | 3                 | 10.47        | 3.16      |                |            |       | 3.28               | 3.40   | 3.52 | 3.81 | ○     |       |       |      |      |      |      |   |

● Stock ○ Available upon Order

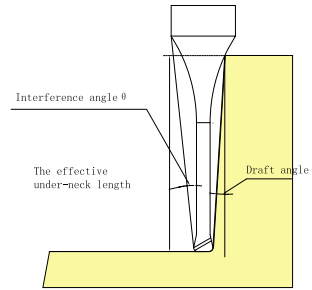
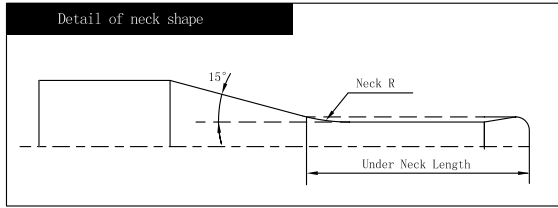
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SPM200-RN2

2 Flutes with Extended Neck, Corner Raidus



Please refer to page 149

» Continue

| Ordering Code             | Mill | r    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |      |      |      |      | Stock |
|---------------------------|------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|------|------|------|------|-------|
|                           |      |      |                   |              |           |                |            |      |                    | 0.5°   | 1°   | 1.5° | 2°   | 3°   |       |
| SPM200-RN2-0.4-3.5-0.05-V | 0.4  | 0.05 | 3.5               | 0.32         | 0.37      | 50             | 4          | 2    | 9.97               | 3.68   | 3.82 | 3.95 | 4.10 | 4.43 | ○     |
| SPM200-RN2-0.4-4-0.05-V   |      |      | 4                 |              |           |                |            |      | 9.52               | 4.20   | 4.35 | 4.51 | 4.67 | 5.05 | ○     |
| SPM200-RN2-0.4-1-0.1-V    |      | 0.1  | 1                 |              |           |                |            |      | 13.17              | 1.06   | 1.11 | 1.16 | 1.21 | 1.31 | ○     |
| SPM200-RN2-0.4-2-0.1-V    |      |      | 2                 |              |           |                |            |      | 11.70              | 2.11   | 2.20 | 2.28 | 2.37 | 2.55 | ○     |
| SPM200-RN2-0.4-3-0.1-V    |      |      | 3                 |              |           |                |            |      | 10.53              | 3.16   | 3.28 | 3.39 | 3.52 | 3.79 | ○     |
| SPM200-RN2-0.4-4-0.1-V    |      |      | 4                 |              |           |                |            |      | 9.56               | 4.20   | 4.35 | 4.50 | 4.67 | 5.04 | ●     |
| SPM200-RN2-0.5-1-0.02-V   | 0.5  | 0.02 | 1                 | 0.4          | 0.47      | 50             | 4          | 2    | 13.00              | 1.06   | 1.12 | 1.17 | 1.23 | 1.33 | ○     |
| SPM200-RN2-0.5-2-0.02-V   |      |      | 2                 |              |           |                |            |      | 11.53              | 2.11   | 2.21 | 2.29 | 2.38 | 2.57 | ●     |
| SPM200-RN2-0.5-3-0.02-V   |      |      | 3                 |              |           |                |            |      | 10.35              | 3.16   | 3.28 | 3.40 | 3.53 | 3.81 | ○     |
| SPM200-RN2-0.5-4-0.02-V   |      |      | 4                 |              |           |                |            |      | 9.39               | 4.20   | 4.35 | 4.51 | 4.68 | 5.06 | ○     |
| SPM200-RN2-0.5-6-0.02-V   |      |      | 6                 |              |           |                |            |      | 7.92               | 6.27   | 6.49 | 6.73 | 6.98 | 7.54 | ●     |
| SPM200-RN2-0.5-1-0.05-V   |      |      | 0.05              |              |           |                |            |      | 1                  | 13.05  | 1.06 | 1.12 | 1.17 | 1.22 | 1.32  |
| SPM200-RN2-0.5-2-0.05-V   |      | 2    |                   |              |           |                |            |      | 11.56              | 2.11   | 2.21 | 2.29 | 2.37 | 2.56 | ○     |
| SPM200-RN2-0.5-3-0.05-V   |      | 3    |                   |              |           |                |            |      | 10.38              | 3.16   | 3.28 | 3.40 | 3.52 | 3.81 | ○     |
| SPM200-RN2-0.5-4-0.05-V   |      | 4    |                   |              |           |                |            |      | 9.42               | 4.20   | 4.35 | 4.51 | 4.67 | 5.05 | ○     |
| SPM200-RN2-0.5-5-0.05-V   |      | 5    |                   |              |           |                |            |      | 8.62               | 5.24   | 5.42 | 5.61 | 5.82 | 6.29 | ○     |
| SPM200-RN2-0.5-6-0.05-V   |      | 6    |                   |              |           |                |            |      | 7.94               | 6.27   | 6.49 | 6.72 | 6.97 | 7.53 | ○     |
| SPM200-RN2-0.5-1-0.1-V    |      | 0.1  | 1                 |              |           |                |            |      | 13.13              | 1.06   | 1.11 | 1.16 | 1.21 | 1.31 | ○     |
| SPM200-RN2-0.5-2-0.1-V    |      |      | 2                 |              |           |                |            |      | 11.63              | 2.11   | 2.20 | 2.28 | 2.37 | 2.55 | ●     |
| SPM200-RN2-0.5-3-0.1-V    |      |      | 3                 |              |           |                |            |      | 10.44              | 3.16   | 3.28 | 3.39 | 3.52 | 3.79 | ○     |
| SPM200-RN2-0.5-4-0.1-V    |      |      | 4                 |              |           |                |            |      | 9.46               | 4.20   | 4.35 | 4.50 | 4.67 | 5.04 | ○     |
| SPM200-RN2-0.5-5-0.1-V    |      |      | 5                 |              |           |                |            |      | 8.65               | 5.24   | 5.42 | 5.61 | 5.82 | 6.28 | ○     |
| SPM200-RN2-0.5-6-0.1-V    |      |      | 6                 |              |           |                |            |      | 7.97               | 6.27   | 6.49 | 6.72 | 6.97 | 7.52 | ○     |
| SPM200-RN2-0.6-2-0.02-V   |      | 0.6  | 0.02              |              |           |                |            |      | 2                  | 0.48   | 0.57 | 50   | 4    | 4    | 11.24 |

● Stock ○ Available upon Order

|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

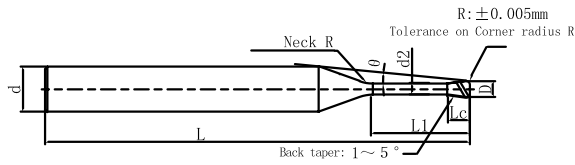
(mm)

Cutting Parameters ※ P529

# SPM200-RN2

2 Flutes with Extended Neck, Corner Raidus

Φ4 or higher does not have backdraft shape



Please refer to page 149

» Continue

| Ordering Code            | Mill | r    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |   |
|--------------------------|------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|---|
|                          |      |      |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |   |
| SPM200-RN2-0.6-4-0.02-V  | 0.6  | 0.02 | 4                 | 0.48         | 0.57      | 50             | 4          | 4    | 9.15               | 4.29   | 4.51  | 4.69  | 4.86  | 5.26  | ○     |   |
| SPM200-RN2-0.6-6-0.02-V  |      |      | 6                 |              |           |                |            |      |                    | 7.71   | 6.40  | 6.66  | 6.90  | 7.16  | 7.74  | ○ |
| SPM200-RN2-0.6-2-0.05-V  |      | 0.05 | 2                 |              |           |                |            |      |                    | 11.27  | 2.17  | 2.31  | 2.43  | 2.55  | 2.76  | ○ |
| SPM200-RN2-0.6-4-0.05-V  |      |      | 4                 |              |           |                |            |      |                    | 9.18   | 4.29  | 4.51  | 4.68  | 4.86  | 5.25  | ● |
| SPM200-RN2-0.6-6-0.05-V  |      | 6    | 7.73              |              |           |                |            |      |                    | 6.40   | 6.66  | 6.90  | 7.16  | 7.74  | ○     |   |
| SPM200-RN2-0.6-8-0.05-V  |      | 8    | 6.68              |              |           |                |            |      |                    | 8.49   | 8.80  | 9.12  | 9.46  | 10.22 | ○     |   |
| SPM200-RN2-0.6-10-0.05-V |      | 10   | 5.88              |              |           |                |            |      |                    | 10.57  | 10.94 | 11.33 | 11.76 | 12.71 | ○     |   |
| SPM200-RN2-0.6-2-0.1-V   |      | 0.1  | 2                 |              |           |                |            |      |                    | 11.34  | 2.16  | 2.30  | 2.43  | 2.54  | 2.75  | ● |
| SPM200-RN2-0.6-4-0.1-V   |      |      | 4                 |              |           |                |            |      |                    | 9.22   | 4.29  | 4.50  | 4.68  | 4.85  | 5.24  | ● |
| SPM200-RN2-0.6-6-0.1-V   |      |      | 6                 |              |           |                |            |      |                    | 7.76   | 6.39  | 6.66  | 6.90  | 7.15  | 7.72  | ○ |
| SPM200-RN2-0.6-8-0.1-V   |      |      | 8                 |              |           |                |            |      |                    | 6.70   | 8.48  | 8.80  | 9.11  | 9.45  | 10.21 | ○ |
| SPM200-RN2-0.6-10-0.1-V  |      |      | 10                |              |           |                |            |      |                    | 5.89   | 10.57 | 10.94 | 11.33 | 11.75 | 12.70 | ○ |
| SPM200-RN2-0.7-4-0.05-V  | 0.7  |      | 0.05              | 4            | 0.56      | 0.67           | 50         | 4    | 4                  | 9.07   | 4.29  | 4.51  | 4.68  | 4.86  | 5.25  | ○ |
| SPM200-RN2-0.7-6-0.05-V  |      | 6    |                   | 7.62         |           |                |            |      |                    |  | 6.40  | 6.66  | 6.90  | 7.16  | 7.74  | ○ |
| SPM200-RN2-0.7-4-0.1-V   |      | 0.1  | 4                 | 9.11         |           |                |            |      |                    |  | 4.29  | 4.50  | 4.68  | 4.85  | 5.24  | ○ |
| SPM200-RN2-0.7-6-0.1-V   |      |      | 6                 | 7.65         |           |                |            |      |                    |  | 6.39  | 6.66  | 6.90  | 7.15  | 7.72  | ○ |
| SPM200-RN2-0.8-4-0.02-V  | 0.8  | 0.02 | 4                 | 0.64         | 0.76      | 50             | 4          | 4    | 8.96               | 4.27   | 4.47  | 4.65  | 4.82  | 5.21  | ○     |   |
| SPM200-RN2-0.8-6-0.02-V  |      |      | 6                 |              |           |                |            |      |                    | 7.51   | 6.37  | 6.63  | 6.87  | 7.12  | 7.70  | ○ |
| SPM200-RN2-0.8-4-0.05-V  |      | 0.05 | 4                 |              |           |                |            |      |                    | 8.99   | 4.27  | 4.47  | 4.65  | 4.82  | 5.21  | ○ |
| SPM200-RN2-0.8-6-0.05-V  |      |      | 6                 |              |           |                |            |      |                    | 7.52   | 6.37  | 6.63  | 6.86  | 7.12  | 7.69  | ○ |
| SPM200-RN2-0.8-8-0.05-V  |      |      | 8                 |              |           |                |            |      |                    | 6.47   | 8.45  | 8.76  | 9.08  | 9.42  | 10.18 | ○ |
| SPM200-RN2-0.8-12-0.05-V |      |      | 12                |              |           |                |            |      |                    | 5.05   | 12.61 | 13.04 | 13.51 | 14.02 | 15.15 | ○ |
| SPM200-RN2-0.8-4-0.1-V   |      | 0.1  | 4                 |              |           |                |            |      |                    | 9.03   | 4.26  | 4.47  | 4.64  | 4.81  | 5.19  | ● |
| SPM200-RN2-0.8-6-0.1-V   |      |      | 6                 |              |           |                |            |      |                    | 7.55   | 6.37  | 6.62  | 6.86  | 7.11  | 7.68  | ○ |

● Stock ○ Available upon Order

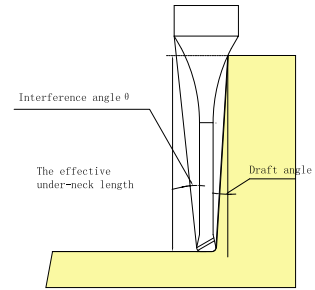
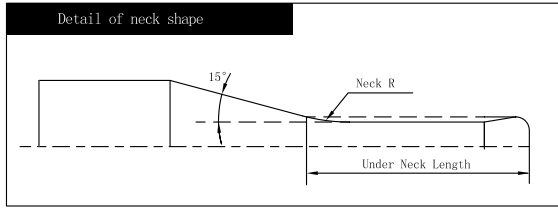
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SPM200-RN2

2 Flutes with Extended Neck, Corner Raidus



Please refer to page 149

» Continue

| Ordering Code           | Mill | r    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |   |
|-------------------------|------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|---|
|                         |      |      |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |   |
| SPM200-RN2-0.8-8-0.1-V  | 0.8  | 0.1  | 8                 | 0.64         | 0.76      | 50             | 4          | 4    | 6.49               | 8.45   | 8.76  | 9.07  | 9.41  | 10.17 | ○     |   |
| SPM200-RN2-0.8-12-0.1-V |      |      | 12                |              |           | 55             |            |      | 5.06               | 12.60  | 13.04 | 13.51 | 14.01 | 15.14 | ○     |   |
| SPM200-RN2-0.8-4-0.2-V  |      | 0.2  | 4                 |              |           | 50             |            |      | 9.12               | 4.26   | 4.46  | 4.63  | 4.80  | 5.17  | ●     |   |
| SPM200-RN2-0.8-6-0.2-V  |      |      | 6                 |              |           | 50             |            |      | 7.62               | 6.36   | 6.61  | 6.85  | 7.10  | 7.66  | ○     |   |
| SPM200-RN2-0.8-8-0.2-V  |      |      | 8                 |              |           | 50             |            |      | 6.54               | 8.45   | 8.75  | 9.06  | 9.40  | 10.14 | ○     |   |
| SPM200-RN2-0.8-12-0.2-V |      |      | 12                |              |           | 55             |            |      | 5.09               | 12.60  | 13.03 | 13.50 | 14.00 | 15.11 | ○     |   |
| SPM200-RN2-1-2-0.02-V   | 1    | 0.02 | 2                 | 0.8          | 0.96      | 50             | 4          | 4    | 10.92              | 2.15   | 2.28  | 2.40  | 2.52  | 2.73  | ○     |   |
| SPM200-RN2-1-4-0.02-V   |      |      | 4                 |              |           | 50             |            |      | 8.72               | 4.27   | 4.47  | 4.65  | 4.82  | 5.21  | ○     |   |
| SPM200-RN2-1-6-0.02-V   |      |      | 6                 |              |           | 50             |            |      | 7.26               | 6.37   | 6.63  | 6.87  | 7.12  | 7.70  | ○     |   |
| SPM200-RN2-1-8-0.02-V   |      |      | 8                 |              |           | 50             |            |      | 6.22               | 8.46   | 8.77  | 9.08  | 9.42  | 10.19 | ○     |   |
| SPM200-RN2-1-10-0.02-V  |      |      | 10                |              |           | 50             |            |      | 5.44               | 10.53  | 10.91 | 11.30 | 11.72 | 12.67 | ○     |   |
| SPM200-RN2-1-12-0.02-V  |      |      | 12                |              |           | 55             |            |      | 4.83               | 12.61  | 13.05 | 13.52 | 14.02 | 15.16 | ○     |   |
| SPM200-RN2-1-2-0.05-V   |      | 0.05 | 2                 |              |           | 50             |            |      | 10.96              | 2.15   | 2.28  | 2.40  | 2.51  | 2.72  | ○     |   |
| SPM200-RN2-1-3-0.05-V   |      |      | 3                 |              |           | 50             |            |      | 9.73               | 3.21   | 3.38  | 3.53  | 3.67  | 3.96  | ○     |   |
| SPM200-RN2-1-4-0.05-V   |      |      | 4                 |              |           | 50             |            |      | 8.75               | 4.27   | 4.47  | 4.65  | 4.82  | 5.21  | ●     |   |
| SPM200-RN2-1-5-0.05-V   |      |      | 5                 |              |           | 50             |            |      | 7.95               | 5.32   | 5.55  | 5.75  | 5.97  | 6.45  | ○     |   |
| SPM200-RN2-1-6-0.05-V   |      |      | 6                 |              |           | 50             |            |      | 7.28               | 6.37   | 6.63  | 6.86  | 7.12  | 7.69  | ●     |   |
| SPM200-RN2-1-8-0.05-V   |      |      | 8                 |              |           | 50             |            |      | 6.23               | 8.45   | 8.76  | 9.08  | 9.42  | 10.18 | ○     |   |
| SPM200-RN2-1-10-0.05-V  |      |      | 10                |              |           | 50             |            |      | 5.45               | 10.53  | 10.90 | 11.30 | 11.72 | 12.67 | ○     |   |
| SPM200-RN2-1-12-0.05-V  |      |      | 12                |              |           | 55             |            |      | 4.84               | 12.61  | 13.04 | 13.51 | 14.02 | 15.15 | ○     |   |
| SPM200-RN2-1-16-0.05-V  |      |      | 16                |              |           | 60             |            |      | 3.95               | 16.74  | 17.32 | 17.95 | 18.62 | 20.12 | ○     |   |
| SPM200-RN2-1-20-0.05-V  |      |      | 20                |              |           | 60             |            |      | 3.34               | 20.88  | 21.60 | 22.38 | 23.22 | 25.10 | ○     |   |
| SPM200-RN2-1-2-0.1-V    |      |      | 0.1               |              |           | 2              |            |      | 50                 | 11.03  | 2.14  | 2.27  | 2.39  | 2.50  | 2.71  | ○ |
| SPM200-RN2-1-3-0.1-V    |      |      |                   |              |           | 3              |            |      | 50                 | 9.79   | 3.21  | 3.38  | 3.53  | 3.66  | 3.95  | ○ |

● Stock ○ Available upon Order

|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

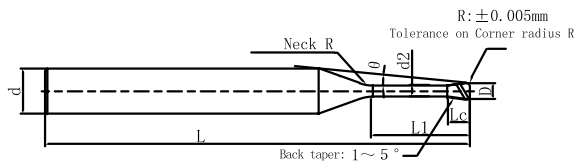
(mm)

Cutting Parameters ※ P529



# SPM200-RN2

2 Flutes with Extended Neck, Corner Raidus



Φ4 or higher does not have backdraft shape



Please refer to page 149

» Continue

| Ordering Code         | Mill | r   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |   |
|-----------------------|------|-----|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|-------|-------|-------|-------|-------|---|
|                       |      |     |                   |              |           |                |            |       |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |   |
| SPM200-RN2-1-4-0.1-V  | 1    | 0.1 | 4                 | 0.8          | 0.96      | 50             | 4          | 4     | 8.80               | 4.26   | 4.47  | 4.64  | 4.81  | 5.19  | ●     |   |
| SPM200-RN2-1-5-0.1-V  |      |     | 5                 |              |           | 50             |            |       | 7.99               | 5.32   | 5.55  | 5.75  | 5.96  | 6.44  | ●     |   |
| SPM200-RN2-1-6-0.1-V  |      |     | 6                 |              |           | 50             |            |       | 7.31               | 6.37   | 6.62  | 6.86  | 7.11  | 7.68  | ●     |   |
| SPM200-RN2-1-8-0.1-V  |      |     | 8                 |              |           | 50             |            |       | 6.25               | 8.45   | 8.76  | 9.07  | 9.41  | 10.17 | ○     |   |
| SPM200-RN2-1-10-0.1-V |      |     | 10                |              |           | 50             |            |       | 5.46               | 10.53  | 10.90 | 11.29 | 11.71 | 12.65 | ●     |   |
| SPM200-RN2-1-12-0.1-V |      |     | 12                |              |           | 55             |            |       | 4.85               | 12.60  | 13.04 | 13.51 | 14.01 | 15.14 | ○     |   |
| SPM200-RN2-1-16-0.1-V |      |     | 16                |              |           | 60             |            |       | 3.96               | 16.74  | 17.32 | 17.94 | 18.61 | 20.11 | ●     |   |
| SPM200-RN2-1-20-0.1-V |      |     | 20                |              |           | 60             |            |       | 3.35               | 20.87  | 21.60 | 22.37 | 23.21 | 25.08 | ○     |   |
| SPM200-RN2-1-2-0.2-V  |      |     | 0.2               |              |           | 2              |            |       | 50                 | 11.17  | 2.14  | 2.26  | 2.38  | 2.48  | 2.68  | ○ |
| SPM200-RN2-1-3-0.2-V  |      |     |                   |              |           | 3              |            |       | 50                 | 9.90   | 3.20  | 3.37  | 3.51  | 3.65  | 3.93  | ○ |
| SPM200-RN2-1-4-0.2-V  |      | 4   |                   | 50           | 8.89      | 4.26           | 4.46       | 4.63  | 4.80               | 5.17   | ●     |       |       |       |       |   |
| SPM200-RN2-1-5-0.2-V  |      | 5   |                   | 50           | 8.06      | 5.31           | 5.54       | 5.74  | 5.95               | 6.41   | ●     |       |       |       |       |   |
| SPM200-RN2-1-6-0.2-V  |      | 6   |                   | 50           | 7.37      | 6.36           | 6.61       | 6.85  | 7.10               | 7.66   | ●     |       |       |       |       |   |
| SPM200-RN2-1-8-0.2-V  |      | 8   |                   | 50           | 6.30      | 8.45           | 8.75       | 9.06  | 9.40               | 10.14  | ●     |       |       |       |       |   |
| SPM200-RN2-1-10-0.2-V |      | 10  |                   | 50           | 5.50      | 10.53          | 10.89      | 11.28 | 11.70              | 12.63  | ○     |       |       |       |       |   |
| SPM200-RN2-1-12-0.2-V |      | 12  |                   | 55           | 4.88      | 12.60          | 13.03      | 13.50 | 14.00              | 15.11  | ○     |       |       |       |       |   |
| SPM200-RN2-1-16-0.2-V |      | 16  |                   | 60           | 3.98      | 16.74          | 17.31      | 17.93 | 18.59              | 20.09  | ○     |       |       |       |       |   |
| SPM200-RN2-1-20-0.2-V |      | 20  |                   | 60           | 3.36      | 20.87          | 21.59      | 22.36 | 23.19              | 25.06  | ○     |       |       |       |       |   |
| SPM200-RN2-1-2-0.3-V  |      | 0.3 | 2                 | 50           | 11.32     | 2.13           | 2.25       | 2.36  | 2.47               | 2.66   | ○     |       |       |       |       |   |
| SPM200-RN2-1-3-0.3-V  |      |     | 3                 | 50           | 10.01     | 3.20           | 3.36       | 3.50  | 3.63               | 3.90   | ○     |       |       |       |       |   |
| SPM200-RN2-1-4-0.3-V  | 4    |     | 50                | 8.98         | 4.25      | 4.45           | 4.62       | 4.78  | 5.15               | ○  |       |       |       |       |       |   |
| SPM200-RN2-1-5-0.3-V  | 5    |     | 50                | 8.14         | 5.31      | 5.53           | 5.73       | 5.93  | 6.39               | ○  |       |       |       |       |       |   |
| SPM200-RN2-1-6-0.3-V  | 6    |     | 50                | 7.44         | 6.36      | 6.61           | 6.84       | 7.08  | 7.63               | ○  |       |       |       |       |       |   |
| SPM200-RN2-1-8-0.3-V  | 8    |     | 50                | 6.35         | 8.44      | 8.75           | 9.05       | 9.38  | 10.12              | ○  |       |       |       |       |       |   |

● Stock ○ Available upon Order

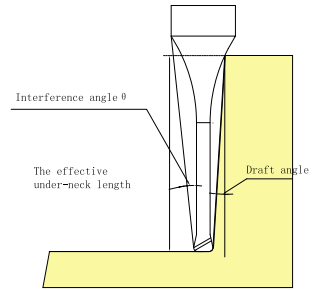
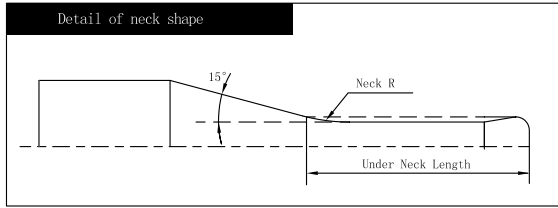
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SPM200-RN2

2 Flutes with Extended Neck, Corner Radius



Please refer to page 149

» Continue

| Ordering Code            | Mill | r   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |   |
|--------------------------|------|-----|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|---|
|                          |      |     |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |   |
| SPM200-RN2-1-10-0.3-V    | 1    | 0.3 | 10                | 0.8          | 0.96      | 50             | 4          | 4    | 5.53               | 10.52  | 10.89 | 11.27 | 11.68 | 12.60 | ○     |   |
| SPM200-RN2-1-12-0.3-V    |      |     | 12                |              |           | 12.60          |            |      |                    | 13.03  | 13.49 | 13.98 | 15.09 | ○     |       |   |
| SPM200-RN2-1-16-0.3-V    |      |     | 16                |              |           | 16.73          |            |      |                    | 17.30  | 17.92 | 18.58 | 20.06 | ○     |       |   |
| SPM200-RN2-1-20-0.3-V    |      |     | 20                |              |           | 20.87          |            |      |                    | 21.58  | 22.35 | 23.18 | 25.04 | ○     |       |   |
| SPM200-RN2-1.25-5-0.1-V  | 1.25 | 0.1 | 5                 | 1            | 1.20      | 50             | 4          | 4    | 7.68               | 5.30   | 5.52  | 5.72  | 5.93  | 6.40  | ○     |   |
| SPM200-RN2-1.25-10-0.1-V |      |     | 10                |              |           | 10.50          |            |      |                    | 10.87  | 11.26 | 11.68 | 12.62 | ○     |       |   |
| SPM200-RN2-1.25-15-0.1-V |      |     | 15                |              |           | 15.68          |            |      |                    | 16.22  | 16.80 | 17.43 | 18.83 | ○     |       |   |
| SPM200-RN2-1.25-20-0.1-V |      |     | 20                |              |           | 20.84          |            |      |                    | 21.57  | 22.34 | 23.18 | 25.05 | ○     |       |   |
| SPM200-RN2-1.25-5-0.2-V  |      | 0.2 | 5                 |              |           | 50             |            |      |                    | 7.75   | 5.29  | 5.51  | 5.71  | 5.91  | 6.38  | ● |
| SPM200-RN2-1.25-10-0.2-V |      |     | 10                |              |           | 50             |            |      |                    | 5.21   | 10.50 | 10.86 | 11.25 | 11.66 | 12.59 | ○ |
| SPM200-RN2-1.25-15-0.2-V |      |     | 15                |              |           | 55             |            |      |                    | 3.92   | 15.67 | 16.21 | 16.79 | 17.41 | 18.81 | ○ |
| SPM200-RN2-1.25-20-0.2-V |      |     | 20                |              |           | 60             |            |      |                    | 3.14   | 20.84 | 21.56 | 22.33 | 23.16 | 25.02 | ○ |
| SPM200-RN2-1.25-5-0.3-V  |      | 0.3 | 5                 |              |           | 50             |            |      |                    | 7.83   | 5.29  | 5.50  | 5.70  | 5.90  | 6.35  | ○ |
| SPM200-RN2-1.25-10-0.3-V |      |     | 10                |              |           | 50             |            |      |                    | 5.24   | 10.50 | 10.86 | 11.24 | 11.65 | 12.57 | ○ |
| SPM200-RN2-1.25-15-0.3-V |      |     | 15                |              |           | 55             |            |      |                    | 3.94   | 15.67 | 16.20 | 16.78 | 17.40 | 18.78 | ○ |
| SPM200-RN2-1.25-20-0.3-V |      |     | 20                |              |           | 60             |            |      |                    | 3.15   | 20.84 | 21.55 | 22.32 | 23.15 | 25.00 | ○ |
| SPM200-RN2-1.5-4-0.1-V   | 1.5  | 0.1 | 4                 | 1.2          | 1.44      | 50             | 4          | 4    | 8.17               | 4.23   | 4.42  | 4.58  | 4.75  | 5.13  | ○     |   |
| SPM200-RN2-1.5-6-0.1-V   |      |     | 6                 |              |           | 6.66           |            |      |                    | 6.32   | 6.57  | 6.80  | 7.05  | 7.62  | ○     |   |
| SPM200-RN2-1.5-8-0.1-V   |      |     | 8                 |              |           | 5.62           |            |      |                    | 8.41   | 8.71  | 9.02  | 9.35  | 10.10 | ○     |   |
| SPM200-RN2-1.5-12-0.1-V  |      |     | 12                |              |           | 4.28           |            |      |                    | 12.55  | 12.98 | 13.45 | 13.95 | 15.07 | ○     |   |
| SPM200-RN2-1.5-15-0.1-V  |      | 15  | 3.63              |              |           | 15.65          |            |      |                    | 16.19  | 16.77 | 17.40 | 18.80 | ○     |       |   |
| SPM200-RN2-1.5-20-0.1-V  |      | 20  | 2.90              |              |           | 20.82          |            |      |                    | 21.54  | 22.32 | 23.15 | -     | ○     |       |   |
| SPM200-RN2-1.5-4-0.2-V   |      | 0.2 | 4                 |              |           | 50             |            |      |                    | 8.26   | 4.23  | 4.41  | 4.57  | 4.74  | 5.10  | ● |
| SPM200-RN2-1.5-6-0.2-V   |      |     | 6                 |              |           | 50             |            |      |                    | 6.72   | 6.32  | 6.56  | 6.79  | 7.04  | 7.59  | ● |

● Stock ○ Available upon Order

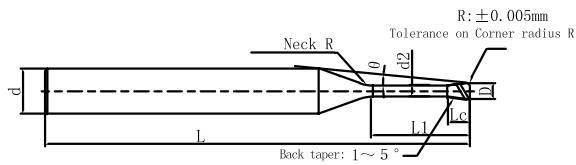
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SPM200-RN2

2 Flutes with Extended Neck, Corner Radius



Φ4 or higher does not have backdraft shape



Please refer to page 149

» Continue

| Ordering Code            | Mill | r   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|--------------------------|------|-----|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                          |      |     |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SPM200-RN2-1.5-8-0.2-V   | 1.5  | 0.2 | 8                 | 1.2          | 1.44      | 50             | 4          | 4    | 5.66               | 8.40   | 8.70  | 9.01  | 9.34  | 10.08 | ○     |
| SPM200-RN2-1.5-12-0.2-V  |      |     | 12                |              |           | 55             |            |      | 4.31               | 12.55  | 12.98 | 13.44 | 13.94 | 15.05 | ●     |
| SPM200-RN2-1.5-15-0.2-V  |      |     | 15                |              |           | 55             |            |      | 3.65               | 15.65  | 16.19 | 16.76 | 17.38 | 18.78 | ○     |
| SPM200-RN2-1.5-20-0.2-V  |      |     | 20                |              |           | 60             |            |      | 2.91               | 20.82  | 21.53 | 22.31 | 23.13 | -     | ○     |
| SPM200-RN2-1.5-4-0.3-V   |      | 0.3 | 4                 |              |           | 50             |            |      | 8.36               | 4.22   | 4.40  | 4.56  | 4.72  | 5.08  | ○     |
| SPM200-RN2-1.5-6-0.3-V   |      |     | 6                 |              |           | 50             |            |      | 6.78               | 6.31   | 6.55  | 6.78  | 7.02  | 7.57  | ○     |
| SPM200-RN2-1.5-8-0.3-V   |      |     | 8                 |              |           | 50             |            |      | 5.71               | 8.40   | 8.69  | 8.99  | 9.32  | 10.05 | ○     |
| SPM200-RN2-1.5-12-0.3-V  |      |     | 12                |              |           | 55             |            |      | 4.33               | 12.54  | 12.97 | 13.43 | 13.92 | 15.03 | ○     |
| SPM200-RN2-1.5-15-0.3-V  |      | 15  | 55                |              |           | 3.67           |            |      | 15.64              | 16.18  | 16.75 | 17.37 | 18.76 | ○     |       |
| SPM200-RN2-1.5-20-0.3-V  |      | 20  | 60                |              |           | 2.92           |            |      | 20.81              | 21.53  | 22.29 | 23.12 | -     | ○     |       |
| SPM200-RN2-1.5-4-0.5-V   |      | 0.5 | 4                 |              |           | 50             |            |      | 8.55               | 4.21   | 4.39  | 4.54  | 4.69  | 5.03  | ○     |
| SPM200-RN2-1.5-6-0.5-V   |      |     | 6                 |              |           | 50             |            |      | 6.91               | 6.31   | 6.54  | 6.76  | 6.99  | 7.52  | ○     |
| SPM200-RN2-1.5-8-0.5-V   |      |     | 8                 |              |           | 50             |            |      | 5.80               | 8.39   | 8.68  | 8.97  | 9.29  | 10.00 | ●     |
| SPM200-RN2-1.5-12-0.5-V  |      |     | 12                |              |           | 55             |            |      | 4.39               | 12.54  | 12.96 | 13.41 | 13.89 | 14.98 | ○     |
| SPM200-RN2-1.5-15-0.5-V  |      |     | 15                |              |           | 55             |            |      | 3.71               | 15.64  | 16.17 | 16.73 | 17.34 | 18.71 | ○     |
| SPM200-RN2-1.5-20-0.5-V  |      |     | 20                |              |           | 60             |            |      | 2.95               | 20.81  | 21.51 | 22.27 | 23.09 | -     | ○     |
| SPM200-RN2-1.75-5-0.1-V  | 1.75 | 0.1 | 5                 | 1.4          | 1.68      | 50             | 4          | 4    | 6.96               | 5.26   | 5.47  | 5.67  | 5.88  | 6.35  | ○     |
| SPM200-RN2-1.75-10-0.1-V |      |     | 10                |              |           | 50             |            |      | 4.53               | 10.46  | 10.82 | 11.21 | 11.63 | 12.56 | ○     |
| SPM200-RN2-1.75-15-0.1-V |      |     | 15                |              |           | 55             |            |      | 3.35               | 15.63  | 16.17 | 16.75 | 17.38 | 18.78 | ○     |
| SPM200-RN2-1.75-20-0.1-V |      |     | 20                |              |           | 60             |            |      | 2.66               | 20.80  | 21.52 | 22.29 | 23.13 | -     | ○     |
| SPM200-RN2-1.75-5-0.2-V  |      | 0.2 | 5                 |              |           | 50             |            |      | 7.03               | 5.26   | 5.47  | 5.66  | 5.86  | 6.32  | ○     |
| SPM200-RN2-1.75-10-0.2-V |      |     | 10                |              |           | 50             |            |      | 4.56               | 10.46  | 10.82 | 11.20 | 11.61 | 12.54 | ○     |
| SPM200-RN2-1.75-15-0.2-V |      |     | 15                |              |           | 55             |            |      | 3.37               | 15.63  | 16.16 | 16.74 | 17.36 | 18.75 | ○     |
| SPM200-RN2-1.75-20-0.2-V |      |     | 20                |              |           | 60             |            |      | 2.67               | 20.80  | 21.51 | 22.28 | 23.11 | -     | ○     |

● Stock ○ Available upon Order

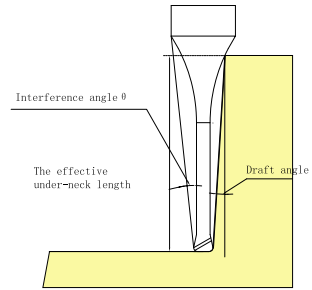
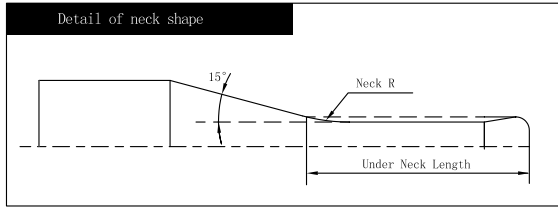
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SPM200-RN2

2 Flutes with Extended Neck, Corner Raidus



Please refer to page 149

» Continue

| Ordering Code            | Mill | r   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |      | Stock |
|--------------------------|------|-----|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|-------|-------|-------|------|-------|
|                          |      |     |                   |              |           |                |            |       |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°   |       |
| SPM200-RN2-1.75-5-0.3-V  | 1.75 | 0.3 | 5                 | 1.4          | 1.68      | 50             | 4          | 4     | 7.11               | 5.25   | 5.46  | 5.65  | 5.85  | 6.30 | ○     |
| SPM200-RN2-1.75-10-0.3-V |      |     | 10                |              |           | 4.59           |            |       | 10.45              | 10.81  | 11.19 | 11.60 | 12.51 | ○    |       |
| SPM200-RN2-1.75-15-0.3-V |      |     | 15                |              |           | 3.39           |            |       | 15.62              | 16.16  | 16.73 | 17.35 | 18.73 | ○    |       |
| SPM200-RN2-1.75-20-0.3-V |      |     | 20                |              |           | 2.69           |            |       | 20.79              | 21.51  | 22.27 | 23.10 | -     | ○    |       |
| SPM200-RN2-2-4-0.1-V     | 2    | 0.1 | 4                 | 1.6          | 1.92      | 50             | 4          | 4     | 7.36               | 4.21   | 4.38  | 4.54  | 4.71  | 5.08 | ●     |
| SPM200-RN2-2-6-0.1-V     |      |     | 6                 |              |           | 5.86           |            |       | 6.29               | 6.53   | 6.76  | 7.01  | 7.57  | ●    |       |
| SPM200-RN2-2-8-0.1-V     |      |     | 8                 |              |           | 4.87           |            |       | 8.37               | 8.66   | 8.97  | 9.31  | 10.05 | ●    |       |
| SPM200-RN2-2-12-0.1-V    |      |     | 12                |              |           | 3.64           |            |       | 12.51              | 12.94  | 13.41 | 13.91 | 15.03 | ●    |       |
| SPM200-RN2-2-16-0.1-V    |      |     | 16                |              |           | 2.90           |            |       | 16.65              | 17.22  | 17.84 | 18.51 | -     | ○    |       |
| SPM200-RN2-2-20-0.1-V    |      |     | 20                |              |           | 2.42           |            |       | 20.78              | 21.50  | 22.27 | 23.11 | -     | ○    |       |
| SPM200-RN2-2-25-0.1-V    |      |     | 25                |              |           | 2.00           |            |       | 25.95              | 26.85  | 27.82 | -     | -     | ○    |       |
| SPM200-RN2-2-30-0.1-V    |      |     | 30                |              |           | 1.70           |            |       | 31.12              | 32.20  | 33.36 | -     | -     | ○    |       |
| SPM200-RN2-2-4-0.2-V     |      | 0.2 | 4                 |              |           | 7.46           |            |       | 4.20               | 4.37   | 4.53  | 4.69  | 5.06  | ●    |       |
| SPM200-RN2-2-6-0.2-V     |      |     | 6                 |              |           | 5.93           |            |       | 6.29               | 6.52   | 6.75  | 6.99  | 7.54  | ●    |       |
| SPM200-RN2-2-8-0.2-V     |      |     | 8                 |              |           | 4.91           |            |       | 8.37               | 8.66   | 8.96  | 9.29  | 10.03 | ●    |       |
| SPM200-RN2-2-12-0.2-V    |      |     | 12                |              |           | 3.66           |            |       | 12.51              | 12.94  | 13.40 | 13.89 | 15.00 | ●    |       |
| SPM200-RN2-2-16-0.2-V    |      |     | 16                |              |           | 2.92           |            |       | 16.64              | 17.22  | 17.83 | 18.49 | -     | ○    |       |
| SPM200-RN2-2-20-0.2-V    |      |     | 20                |              |           | 2.43           |            |       | 20.78              | 21.49  | 22.26 | 23.09 | -     | ○    |       |
| SPM200-RN2-2-25-0.2-V    |      |     | 25                |              |           | 2.00           |            |       | 25.95              | 26.84  | 27.80 | -     | -     | ○    |       |
| SPM200-RN2-2-30-0.2-V    |      |     | 30                |              |           | 1.71           |            |       | 31.11              | 32.19  | 33.35 | -     | -     | ●    |       |
| SPM200-RN2-2-4-0.3-V     | 0.3  | 4   | 7.56              | 4.20         | 4.37      | 4.52           | 4.68       | 5.03  | ○                  |  |       |       |       |      |       |
| SPM200-RN2-2-6-0.3-V     |      | 6   | 5.99              | 6.28         | 6.51      | 6.74           | 6.98       | 7.52  | ○                  |  |       |       |       |      |       |
| SPM200-RN2-2-8-0.3-V     |      | 8   | 4.96              | 8.36         | 8.65      | 8.95           | 9.28       | 10.01 | ○                  |  |       |       |       |      |       |
| SPM200-RN2-2-12-0.3-V    |      | 12  | 3.69              | 12.50        | 12.93     | 13.39          | 13.88      | 14.98 | ○                  |  |       |       |       |      |       |

● Stock ○ Available upon Order

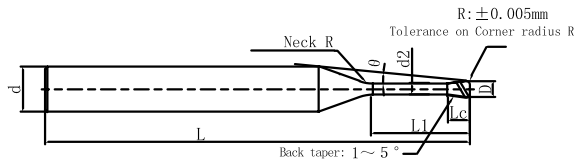
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SPM200-RN2

2 Flutes with Extended Neck, Corner Radius



Φ4 or higher does not have backdraft shape



Please refer to page 149

» Continue

| Ordering Code           | Mill | r   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|-------------------------|------|-----|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                         |      |     |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SPM200-RN2-2-16-0.3-V   | 2    | 0.3 | 16                | 1.6          | 1.92      | 55             | 4          | 4    | 2.93               | 16.64  | 17.21 | 17.82 | 18.48 | -     | ○     |
| SPM200-RN2-2-20-0.3-V   |      |     | 20                |              |           | 2.44           |            |      | 20.77              | 21.49  | 22.25 | 23.08 | -     | ○     |       |
| SPM200-RN2-2-25-0.3-V   |      |     | 25                |              |           | 2.01           |            |      | 25.94              | 26.84  | 27.79 | 28.82 | -     | ○     |       |
| SPM200-RN2-2-30-0.3-V   |      |     | 30                |              |           | 1.71           |            |      | 31.11              | 32.18  | 33.34 | -     | -     | ○     |       |
| SPM200-RN2-2-6-0.5-V    |      | 0.5 | 6                 |              |           | 50             |            |      | 6.11               | 6.28   | 6.50  | 6.71  | 6.95  | 7.47  | ○     |
| SPM200-RN2-2-8-0.5-V    |      |     | 8                 |              |           | 5.04           |            |      | 8.36               | 8.64   | 8.93  | 9.25  | 9.96  | ○     |       |
| SPM200-RN2-2-12-0.5-V   |      |     | 12                |              |           | 3.73           |            |      | 12.50              | 12.92  | 13.36 | 13.85 | 14.93 | ○     |       |
| SPM200-RN2-2-16-0.5-V   |      |     | 16                |              |           | 2.96           |            |      | 16.63              | 17.19  | 17.80 | 18.45 | -     | ○     |       |
| SPM200-RN2-2-20-0.5-V   |      | 20  | 2.46              |              |           | 20.77          |            |      | 21.47              | 22.23  | 23.05 | -     | ○     |       |       |
| SPM200-RN2-2-25-0.5-V   |      | 25  | 2.03              |              |           | 25.94          |            |      | 26.82              | 27.77  | 28.79 | -     | ○     |       |       |
| SPM200-RN2-2-30-0.5-V   |      | 30  | 1.72              |              |           | 31.10          |            |      | 32.17              | 33.31  | -     | -     | ○     |       |       |
| SPM200-RN2-2-6-0.8-V    |      | 0.8 | 6                 |              |           | 50             |            |      | 6.31               | 6.26   | 6.48  | 6.68  | 6.90  | 7.40  | ○     |
| SPM200-RN2-2-8-0.8-V    |      |     | 8                 |              |           | 5.18           |            |      | 8.35               | 8.62   | 8.90  | 9.20  | 9.88  | ○     |       |
| SPM200-RN2-2-12-0.8-V   |      |     | 12                |              |           | 3.81           |            |      | 12.49              | 12.89  | 13.33 | 13.80 | 14.86 | ○     |       |
| SPM200-RN2-2-16-0.8-V   |      |     | 16                |              |           | 3.01           |            |      | 16.62              | 17.17  | 17.77 | 18.40 | 19.83 | ○     |       |
| SPM200-RN2-2-20-0.8-V   |      |     | 20                |              |           | 2.49           |            |      | 20.76              | 21.45  | 22.20 | 23.00 | -     | ○     |       |
| SPM200-RN2-2-25-0.8-V   |      |     | 25                |              |           | 2.05           |            |      | 25.93              | 26.80  | 27.74 | 28.75 | -     | ○     |       |
| SPM200-RN2-2-30-0.8-V   |      | 30  | 1.74              |              |           | 31.09          |            |      | 32.15              | 33.28  | -     | -     | ○     |       |       |
| SPM200-RN2-2.5-10-0.1-V | 2.5  | 0.1 | 10                | 2            | 2.40      | 50             | 4          | 4    | 3.36               | 10.41  | 10.77 | 11.16 | 11.57 | 12.50 | ○     |
| SPM200-RN2-2.5-20-0.1-V |      |     | 20                |              |           | 1.89           |            |      | 20.75              | 21.47  | 22.24 | -     | -     | ○     |       |
| SPM200-RN2-2.5-30-0.1-V |      |     | 30                |              |           | 1.32           |            |      | 31.09              | 32.17  | -     | -     | -     | ○     |       |
| SPM200-RN2-2.5-10-0.2-V |      | 0.2 | 10                |              |           | 50             |            |      | 3.39               | 10.41  | 10.77 | 11.15 | 11.56 | 12.48 | ●     |
| SPM200-RN2-2.5-20-0.2-V |      |     | 20                |              |           | 1.90           |            |      | 20.75              | 21.46  | 22.23 | -     | -     | ○     |       |
| SPM200-RN2-2.5-30-0.2-V |      |     | 30                |              |           | 1.32           |            |      | 31.08              | 32.16  | -     | -     | -     | ○     |       |

● Stock ○ Available upon Order

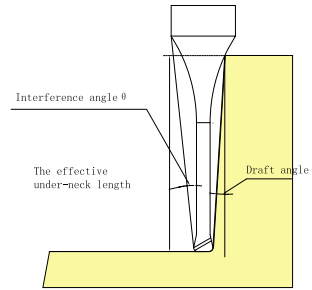
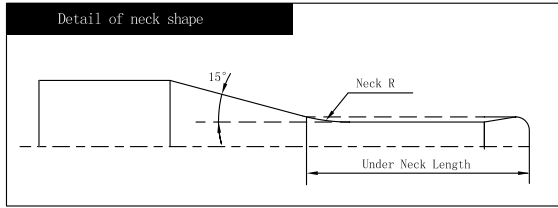
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SPM200-RN2

2 Flutes with Extended Neck, Corner Radius



Please refer to page 149

» Continue

| Ordering Code           | Mill | r   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|-------------------------|------|-----|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|-------|-------|-------|-------|-------|
|                         |      |     |                   |              |           |                |            |       |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SPM200-RN2-2.5-10-0.3-V | 2.5  | 0.3 | 10                | 2            | 2.40      | 50             | 4          | 4     | 3.42               | 10.41  | 10.76 | 11.14 | 11.54 | 12.46 | ○     |
| SPM200-RN2-2.5-20-0.3-V |      |     | 20                |              |           | 60             |            |       | 1.91               | 20.74  | 21.46 | 22.22 | -     | -     | ○     |
| SPM200-RN2-2.5-30-0.3-V |      |     | 30                |              |           | 70             |            |       | 1.32               | 31.08  | 32.15 | -     | -     | -     | ○     |
| SPM200-RN2-2.5-10-0.5-V |      | 0.5 | 10                |              |           | 50             |            |       | 3.47               | 10.40  | 10.75 | 11.12 | 11.51 | 12.41 | ●     |
| SPM200-RN2-2.5-20-0.5-V |      |     | 20                |              |           | 60             |            |       | 1.92               | 20.74  | 21.44 | 22.20 | -     | -     | ○     |
| SPM200-RN2-2.5-30-0.5-V |      |     | 30                |              |           | 70             |            |       | 1.33               | 31.07  | 32.14 | -     | -     | -     | ○     |
| SPM200-RN2-3-6-0.1-V    | 3    | 0.1 | 6                 | 2.4          | 2.88      | 50             | 6          | 4     | 7.40               | 6.25   | 6.47  | 6.70  | 6.95  | 7.50  | ●     |
| SPM200-RN2-3-8-0.1-V    |      |     | 8                 |              |           | 55             |            |       | 6.32               | 8.32   | 8.61  | 8.92  | 9.25  | 9.99  | ○     |
| SPM200-RN2-3-12-0.1-V   |      |     | 12                |              |           | 60             |            |       | 4.89               | 12.46  | 12.89 | 13.35 | 13.85 | 14.96 | ○     |
| SPM200-RN2-3-16-0.1-V   |      |     | 16                |              |           | 60             |            |       | 3.99               | 16.59  | 17.17 | 17.78 | 18.45 | 19.94 | ○     |
| SPM200-RN2-3-18-0.1-V   |      |     | 18                |              |           | 65             |            |       | 3.65               | 18.66  | 19.31 | 20.00 | 20.75 | 22.42 | ○     |
| SPM200-RN2-3-20-0.1-V   |      |     | 20                |              |           | 65             |            |       | 3.36               | 20.73  | 21.45 | 22.22 | 23.05 | 24.91 | ○     |
| SPM200-RN2-3-30-0.1-V   |      |     | 30                |              |           | 75             |            |       | 2.42               | 31.06  | 32.14 | 33.30 | 34.55 | -     | ○     |
| SPM200-RN2-3-35-0.1-V   |      |     | 35                |              |           | 80             |            |       | 2.12               | 36.23  | 37.49 | 38.84 | 40.29 | -     | ○     |
| SPM200-RN2-3-6-0.2-V    |      |     | 0.2               |              |           | 6              |            |       | 50                 | 7.46   | 6.25  | 6.46  | 6.69  | 6.93  | 7.48  |
| SPM200-RN2-3-8-0.2-V    |      | 8   |                   | 55           | 6.36      | 8.32           | 8.60       | 8.91  | 9.23               | 9.97   | ○     |       |       |       |       |
| SPM200-RN2-3-12-0.2-V   |      | 12  |                   | 60           | 4.92      | 12.45          | 12.88      | 13.34 | 13.83              | 14.94  | ○     |       |       |       |       |
| SPM200-RN2-3-16-0.2-V   |      | 16  |                   | 60           | 4.00      | 16.59          | 17.16      | 17.77 | 18.43              | 19.91  | ●     |       |       |       |       |
| SPM200-RN2-3-18-0.2-V   |      | 18  |                   | 65           | 3.66      | 18.66          | 19.30      | 19.99 | 20.73              | 22.40  | ○     |       |       |       |       |
| SPM200-RN2-3-20-0.2-V   |      | 20  |                   | 65           | 3.38      | 20.72          | 21.44      | 22.21 | 23.03              | 24.88  | ○     |       |       |       |       |
| SPM200-RN2-3-30-0.2-V   |      | 30  |                   | 75           | 2.43      | 31.06          | 32.14      | 33.29 | 34.53              | -  | ○     |       |       |       |       |
| SPM200-RN2-3-35-0.2-V   |      | 35  |                   | 80           | 2.13      | 36.23          | 37.48      | 38.83 | 40.28              | -  | ○     |       |       |       |       |
| SPM200-RN2-3-6-0.3-V    |      | 0.3 |                   | 6            | 50        | 7.53           | 6.24       | 6.46  | 6.68               | 6.92   | 7.46  | ○     |       |       |       |
| SPM200-RN2-3-8-0.3-V    |      |     | 8                 | 55           | 6.41      | 8.32           | 8.60       | 8.90  | 9.22               | 9.94   | ○     |       |       |       |       |

● Stock ○ Available upon Order

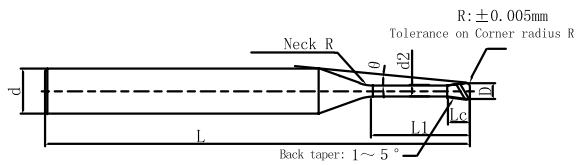
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SPM200-RN2

2 Flutes with Extended Neck, Corner Raidus



Φ4 or higher does not have backdraft shape



Please refer to page 149

» Continue

| Ordering Code         | Mill | r   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|-----------------------|------|-----|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|-------|-------|-------|-------|-------|
|                       |      |     |                   |              |           |                |            |       |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SPM200-RN2-3-12-0.3-V | 3    | 0.3 | 12                | 2.4          | 2.88      | 60             | 6          | 4     | 4.94               | 12.45  | 12.87 | 13.33 | 13.82 | 14.91 | ●     |
| SPM200-RN2-3-16-0.3-V |      |     | 16                |              |           | 4.02           |            |       | 16.59              | 17.15  | 17.76 | 18.42 | 19.89 | ○     |       |
| SPM200-RN2-3-18-0.3-V |      |     | 18                |              |           | 3.68           |            |       | 18.65              | 19.29  | 19.98 | 20.72 | 22.37 | ●     |       |
| SPM200-RN2-3-20-0.3-V |      |     | 20                |              |           | 3.39           |            |       | 20.72              | 21.43  | 22.20 | 23.02 | 24.86 | ○     |       |
| SPM200-RN2-3-30-0.3-V |      |     | 30                |              |           | 2.43           |            |       | 31.06              | 32.13  | 33.28 | 34.52 | -     | ●     |       |
| SPM200-RN2-3-35-0.3-V |      |     | 35                |              |           | 2.13           |            |       | 36.23              | 37.48  | 38.82 | 40.26 | -     | ○     |       |
| SPM200-RN2-3-8-0.5-V  |      | 0.5 | 8                 |              |           | 55             |            |       | 6.51               | 8.31   | 8.58  | 8.87  | 9.19  | 9.89  | ●     |
| SPM200-RN2-3-12-0.5-V |      |     | 12                |              |           | 5.00           |            |       | 12.44              | 12.86  | 13.31 | 13.79 | 14.87 | ●     |       |
| SPM200-RN2-3-16-0.5-V |      |     | 16                |              |           | 4.06           |            |       | 16.58              | 17.14  | 17.74 | 18.39 | 19.84 | ●     |       |
| SPM200-RN2-3-18-0.5-V |      |     | 18                |              |           | 3.71           |            |       | 18.65              | 19.28  | 19.96 | 20.69 | 22.33 | ○     |       |
| SPM200-RN2-3-20-0.5-V |      |     | 20                |              |           | 3.42           |            |       | 20.71              | 21.42  | 22.17 | 22.99 | 24.81 | ○     |       |
| SPM200-RN2-3-30-0.5-V |      |     | 30                |              |           | 2.45           |            |       | 31.05              | 32.12  | 33.26 | 34.49 | -     | ●     |       |
| SPM200-RN2-3-35-0.5-V |      | 35  | 2.14              |              |           | 36.22          |            |       | 37.46              | 38.80  | 40.23 | -     | ○     |       |       |
| SPM200-RN2-3-8-1-V    |      | 1   | 8                 |              |           | 55             |            |       | 6.76               | 8.29   | 8.55  | 8.82  | 9.11  | 9.77  | ○     |
| SPM200-RN2-3-12-1-V   |      |     | 12                |              |           | 5.15           |            |       | 12.43              | 12.83  | 13.25 | 13.71 | 14.74 | ○     |       |
| SPM200-RN2-3-16-1-V   |      |     | 16                |              |           | 4.16           |            |       | 16.56              | 17.10  | 17.69 | 18.31 | 19.72 | ○     |       |
| SPM200-RN2-3-18-1-V   |      |     | 18                |              |           | 3.79           |            |       | 18.63              | 19.24  | 19.90 | 20.61 | 22.20 | ○     |       |
| SPM200-RN2-3-20-1-V   |      |     | 20                |              |           | 3.49           |            |       | 20.70              | 21.38  | 22.12 | 22.91 | 24.69 | ○     |       |
| SPM200-RN2-3-30-1-V   |      |     | 30                |              |           | 2.48           |            |       | 31.03              | 32.08  | 33.20 | 34.41 | -     | ○     |       |
| SPM200-RN2-3-35-1-V   |      |     | 35                |              |           | 2.17           |            |       | 36.20              | 37.43  | 38.74 | 40.16 | -     | ○     |       |
| SPM200-RN2-4-8-0.1-V  | 4    |     | 0.1               | 8            | 55        | 4.90           | 8.31       | 8.59  | 8.90               | 9.23   | 9.97  | ○     |       |       |       |
| SPM200-RN2-4-12-0.1-V |      | 12  |                   | 3.66         | 12.44     | 12.87          | 13.33      | 13.83 | 14.94              | ○  |       |       |       |       |       |
| SPM200-RN2-4-16-0.1-V |      | 16  |                   | 2.91         | 16.57     | 17.15          | 17.76      | 18.43 | -                  | ○  |       |       |       |       |       |
| SPM200-RN2-4-20-0.1-V |      | 20  |                   | 2.42         | 20.71     | 21.43          | 22.20      | 23.03 | -                  | ●  |       |       |       |       |       |

● Stock ○ Available upon Order

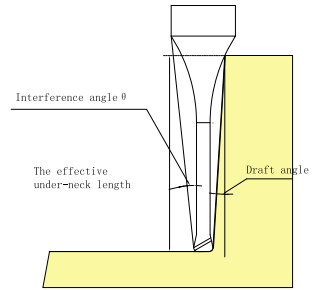
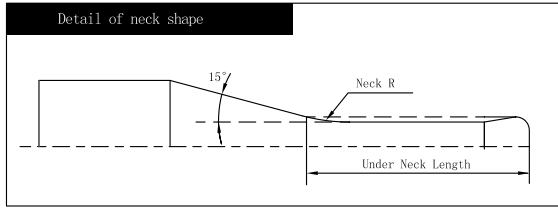
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SPM200-RN2

2 Flutes with Extended Neck, Corner Radius



Please refer to page 149

» Continue

| Ordering Code         | Mill | r   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|-----------------------|------|-----|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|-------|-------|-------|-------|-------|
|                       |      |     |                   |              |           |                |            |       |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SPM200-RN2-4-30-0.1-V | 4    | 0.1 | 30                | 3.2          | 3.86      | 75             | 6          | 4     | 1.71               | 31.05  | 32.12 | 33.28 | -     | -     | ○     |
| SPM200-RN2-4-35-0.1-V |      |     | 35                |              |           | 80             |            |       | 1.49               | 36.21  | 37.47 | -     | -     | -     | ○     |
| SPM200-RN2-4-45-0.1-V |      |     | 45                |              |           | 90             |            |       | 1.18               | 46.55  | 48.17 | -     | -     | -     | ○     |
| SPM200-RN2-4-8-0.2-V  |      | 0.2 | 8                 |              |           | 55             |            |       | 4.94               | 8.30   | 8.58  | 8.89  | 9.21  | 9.94  | ○     |
| SPM200-RN2-4-12-0.2-V |      |     | 12                |              |           | 60             |            |       | 3.68               | 12.44  | 12.86 | 13.32 | 13.81 | 14.92 | ○     |
| SPM200-RN2-4-16-0.2-V |      |     | 16                |              |           | 60             |            |       | 2.93               | 16.57  | 17.14 | 17.75 | 18.41 | -     | ○     |
| SPM200-RN2-4-20-0.2-V |      |     | 20                |              |           | 65             |            |       | 2.43               | 20.71  | 21.42 | 22.19 | 23.01 | -     | ●     |
| SPM200-RN2-4-30-0.2-V |      |     | 30                |              |           | 75             |            |       | 1.71               | 31.04  | 32.12 | 33.27 | -     | -     | ○     |
| SPM200-RN2-4-35-0.2-V |      |     | 35                |              |           | 80             |            |       | 1.49               | 36.21  | 37.47 | -     | -     | -     | ○     |
| SPM200-RN2-4-45-0.2-V |      | 45  | 90                |              |           | 1.18           |            |       | 46.55              | 48.16  | -     | -     | -     | ○     |       |
| SPM200-RN2-4-8-0.3-V  |      | 0.3 | 8                 |              |           | 55             |            |       | 4.99               | 8.30   | 8.58  | 8.88  | 9.20  | 9.92  | ○     |
| SPM200-RN2-4-12-0.3-V |      |     | 12                |              |           | 60             |            |       | 3.70               | 12.43  | 12.86 | 13.31 | 13.80 | 14.89 | ○     |
| SPM200-RN2-4-16-0.3-V |      |     | 16                |              |           | 60             |            |       | 2.94               | 16.57  | 17.13 | 17.74 | 18.40 | -     | ○     |
| SPM200-RN2-4-20-0.3-V |      |     | 20                |              |           | 65             |            |       | 2.44               | 20.70  | 21.41 | 22.18 | 23.00 | -     | ○     |
| SPM200-RN2-4-30-0.3-V |      |     | 30                |              |           | 75             |            |       | 1.72               | 31.04  | 32.11 | 33.26 | -     | -     | ○     |
| SPM200-RN2-4-35-0.3-V |      |     | 35                |              |           | 80             |            |       | 1.49               | 36.21  | 37.46 | -     | -     | -     | ○     |
| SPM200-RN2-4-45-0.3-V |      | 45  | 90                |              |           | 1.19           |            |       | 46.54              | 48.16  | -     | -     | -     | ○     |       |
| SPM200-RN2-4-12-0.5-V |      | 0.5 | 12                |              |           | 60             |            |       | 3.75               | 12.43  | 12.84 | 13.29 | 13.77 | 14.84 | ○     |
| SPM200-RN2-4-16-0.5-V |      |     | 16                |              |           | 60             |            |       | 2.97               | 16.56  | 17.12 | 17.72 | 18.37 | -     | ○     |
| SPM200-RN2-4-20-0.5-V |      |     | 20                |              |           | 65             |            |       | 2.47               | 20.70  | 21.40 | 22.15 | 22.97 | -     | ●     |
| SPM200-RN2-4-30-0.5-V | 30   |     | 75                | 1.73         | 31.03     | 32.10          | 33.24      | -     | -                  | ○  |       |       |       |       |       |
| SPM200-RN2-4-35-0.5-V | 35   |     | 80                | 1.50         | 36.20     | 37.44          | -          | -     | -                  | ○  |       |       |       |       |       |
| SPM200-RN2-4-45-0.5-V | 45   |     | 90                | 1.19         | 46.54     | 48.14          | -          | -     | -                  | ●  |       |       |       |       |       |
| SPM200-RN2-4-12-1-V   | 1    | 12  | 60                | 3.88         | 12.41     | 12.81          | 13.23      | 13.69 | 14.72              | ○  |       |       |       |       |       |

● Stock ○ Available upon Order

|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

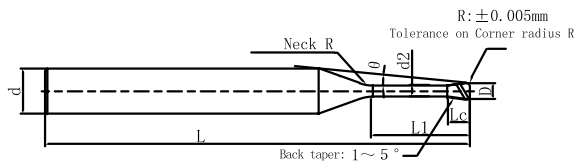
(mm)

Cutting Parameters ※ P529



# SPM200-RN2

2 Flutes with Extended Neck, Corner Radius



Φ4 or higher does not have backdraft shape



Please refer to page 149

» Continue

| Ordering Code         | Mill | r   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|-----------------------|------|-----|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                       |      |     |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SPM200-RN2-4-16-1-V   | 4    | 1   | 16                | 3.2          | 3.86      | 60             | 6          | 4    | 3.05               | 16.54  | 17.09 | 17.67 | 18.29 | 19.70 | ○     |
| SPM200-RN2-4-20-1-V   |      |     | 20                |              |           | 65             |            |      |                    | 20.68  | 21.36 | 22.10 | 22.89 | -     | ○     |
| SPM200-RN2-4-30-1-V   |      |     | 30                |              |           | 75             |            |      |                    | 31.02  | 32.06 | 33.18 | -     | -     | ○     |
| SPM200-RN2-4-35-1-V   |      |     | 35                |              |           | 80             |            |      |                    | 36.18  | 37.41 | 38.73 | -     | -     | ○     |
| SPM200-RN2-4-45-1-V   |      |     | 45                |              |           | 90             |            |      |                    | 46.52  | 48.11 | -     | -     | -     | ○     |
| SPM200-RN2-5-20-0.1-V | 5    | 0.1 | 20                | 4            | 4.85      | 65             | 6          | 4    | 1.32               | 20.70  | 21.42 | -     | -     | -     | ○     |
| SPM200-RN2-5-40-0.1-V |      |     | 40                |              |           | 85             |            |      |                    | 41.38  | -     | -     | -     | -     | ○     |
| SPM200-RN2-5-20-0.2-V |      | 0.2 | 20                |              |           | 65             |            |      |                    | 20.70  | 21.41 | -     | -     | -     | ○     |
| SPM200-RN2-5-40-0.2-V |      |     | 40                |              |           | 85             |            |      |                    | 41.37  | -     | -     | -     | -     | ○     |
| SPM200-RN2-5-20-0.3-V |      | 0.3 | 20                |              |           | 65             |            |      |                    | 20.69  | 21.41 | -     | -     | -     | ○     |
| SPM200-RN2-5-40-0.3-V |      |     | 40                |              |           | 85             |            |      |                    | 41.37  | -     | -     | -     | -     | ○     |
| SPM200-RN2-5-20-0.5-V |      | 0.5 | 20                |              |           | 65             |            |      |                    | 20.69  | 21.39 | -     | -     | -     | ○     |
| SPM200-RN2-5-40-0.5-V |      |     | 40                |              |           | 85             |            |      |                    | 41.36  | -     | -     | -     | -     | ○     |
| SPM200-RN2-5-20-1-V   |      | 1   | 20                |              |           | 65             |            |      |                    | 20.67  | 21.36 | -     | -     | -     | ○     |
| SPM200-RN2-5-40-1-V   |      |     | 40                |              |           | 85             |            |      |                    | 41.34  | -     | -     | -     | -     | ○     |
| SPM200-RN2-6-12-0.1-V | 6    | 0.1 | 12                | 4.8          | 5.85      | 50             | 6          | -    | -                  | -  | -     | -     | -     | -     | ○     |
| SPM200-RN2-6-18-0.1-V |      |     | 18                |              |           | 60             |            |      |                    | -  | -     | -     | -     | -     | ○     |
| SPM200-RN2-6-24-0.1-V |      |     | 24                |              |           | 70             |            |      |                    | -  | -     | -     | -     | -     | ○     |
| SPM200-RN2-6-35-0.1-V |      |     | 35                |              |           | 80             |            |      |                    | -  | -     | -     | -     | -     | ○     |
| SPM200-RN2-6-55-0.1-V |      |     | 55                |              |           | 100            |            |      |                    | -  | -     | -     | -     | -     | ○     |
| SPM200-RN2-6-12-0.2-V |      | 0.2 | 12                |              |           | 50             |            |      |                    | -  | -     | -     | -     | -     | ○     |
| SPM200-RN2-6-18-0.2-V |      |     | 18                |              |           | 60             |            |      |                    | -  | -     | -     | -     | -     | ○     |
| SPM200-RN2-6-24-0.2-V |      |     | 24                |              |           | 70             |            |      |                    | -  | -     | -     | -     | -     | ○     |
| SPM200-RN2-6-35-0.2-V |      |     | 35                |              |           | 80             |            |      |                    | -  | -     | -     | -     | -     | ○     |

● Stock ○ Available upon Order

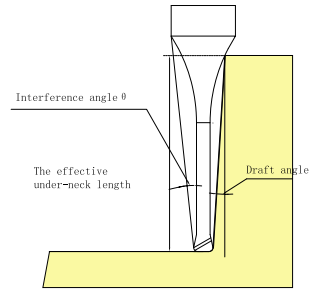
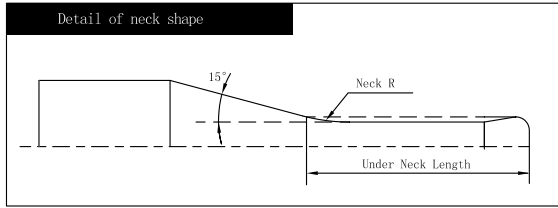
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SPM200-RN2

2 Flutes with Extended Neck, Corner Raidus



Please refer to page 149

» Continue

| Ordering Code         | Mill | r   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |    |      |    |    | Stock |
|-----------------------|------|-----|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|----|------|----|----|-------|
|                       |      |     |                   |              |           |                |            |      |                    | 0.5°   | 1° | 1.5° | 2° | 3° |       |
| SPM200-RN2-6-55-0.2-V | 6    | 0.2 | 55                | 4.8          | 5.85      | 100            | 6          | -    | -                  | -  | -  | -    | -  | -  | ○     |
| SPM200-RN2-6-12-0.3-V |      | 12  | 50                |              |           | -              |            |      | -                  | -  | -  | -    | ○  |    |       |
| SPM200-RN2-6-18-0.3-V |      | 18  | 60                |              |           | -              |            |      | -                  | -  | -  | -    | ○  |    |       |
| SPM200-RN2-6-24-0.3-V |      | 0.3 | 24                |              |           | 70             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SPM200-RN2-6-35-0.3-V |      |     | 35                |              |           | 80             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SPM200-RN2-6-55-0.3-V |      |     | 55                |              |           | 100            |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SPM200-RN2-6-18-0.5-V |      | 0.5 | 18                |              |           | 60             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SPM200-RN2-6-24-0.5-V |      |     | 24                |              |           | 70             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SPM200-RN2-6-35-0.5-V |      |     | 35                |              |           | 80             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SPM200-RN2-6-55-0.5-V |      |     | 55                |              |           | 100            |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SPM200-RN2-6-18-1-V   |      | 1   | 18                |              |           | 60             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SPM200-RN2-6-24-1-V   |      |     | 24                |              |           | 70             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SPM200-RN2-6-35-1-V   |      |     | 35                |              |           | 80             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SPM200-RN2-6-55-1-V   |      |     | 55                |              |           | 100            |            |      | -                  | -  | -  | -    | -  | ○  |       |

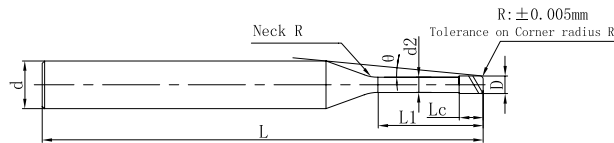
● Stock ○ Available upon Order

| R | Tol    |
|---|--------|
| R | ±0.005 |

(mm)

# SPM200-RN4

4 Flutes with Extended Neck, Corner Radius



Please refer to page 149

| Ordering Code            | Mill | r    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |      |       |       |       |       |       |       |   |
|--------------------------|------|------|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|---|
|                          |      |      |                   |              |           |                |            |       |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |      |       |       |       |       |       |       |   |
| SPM200-RN4-1-4-0.05-V    | 1    | 0.05 | 4                 | 0.8          | 0.96      | 50             |            | 4     | 4                  | 8.75   | 4.27  | 4.47  | 4.65  | 4.82  | 5.21  | ○    |       |       |       |       |       |       |   |
| SPM200-RN4-1-6-0.05-V    |      |      | 6                 |              |           | 50             |            |       |                    | 7.28   | 6.37  | 6.63  | 6.86  | 7.12  | 7.69  | ○    |       |       |       |       |       |       |   |
| SPM200-RN4-1-8-0.05-V    |      |      | 8                 |              |           | 50             |            |       |                    | 6.23   | 8.45  | 8.76  | 9.08  | 9.42  | 10.18 | ○    |       |       |       |       |       |       |   |
| SPM200-RN4-1-10-0.05-V   |      |      | 10                |              |           | 50             |            |       |                    | 5.45   | 10.53 | 10.90 | 11.30 | 11.72 | 12.67 | ○    |       |       |       |       |       |       |   |
| SPM200-RN4-1-12-0.05-V   |      |      | 12                |              |           | 60             |            |       |                    | 4.84   | 12.61 | 13.04 | 13.51 | 14.02 | 15.15 | ○    |       |       |       |       |       |       |   |
| SPM200-RN4-1-16-0.05-V   |      |      | 16                |              |           | 60             |            |       |                    | 3.95   | 16.74 | 17.32 | 17.95 | 18.62 | 20.12 | ○    |       |       |       |       |       |       |   |
| SPM200-RN4-1-20-0.05-V   |      |      | 20                |              |           | 60             |            |       |                    | 3.34   | 20.88 | 21.60 | 22.38 | 23.22 | 25.10 | ○    |       |       |       |       |       |       |   |
| SPM200-RN4-1-4-0.1-V     |      |      | 0.1               |              |           | 4              |            |       |                    |  |       | 50    |       | 4     | 4     | 8.80 | 4.26  | 4.47  | 4.64  | 4.81  | 5.19  | ○     |   |
| SPM200-RN4-1-6-0.1-V     |      |      |                   |              |           | 6              |            |       |                    |  |       | 50    |       |       |       | 7.31 | 6.37  | 6.62  | 6.86  | 7.11  | 7.68  | ○     |   |
| SPM200-RN4-1-8-0.1-V     |      |      |                   |              |           | 8              |            |       |                    |  |       | 50    |       |       |       | 6.25 | 8.45  | 8.76  | 9.07  | 9.41  | 10.17 | ○     |   |
| SPM200-RN4-1-10-0.1-V    |      | 10   |                   | 50           | 5.46      | 10.53          | 10.90      | 11.29 | 11.71              |  |       | 12.65 |       |       |       | ○    |       |       |       |       |       |       |   |
| SPM200-RN4-1-12-0.1-V    |      | 12   |                   | 60           | 4.85      | 12.60          | 13.04      | 13.51 | 14.01              |  |       | 15.14 |       |       |       | ○    |       |       |       |       |       |       |   |
| SPM200-RN4-1-16-0.1-V    |      | 16   |                   | 60           | 3.96      | 16.74          | 17.32      | 17.94 | 18.61              |  |       | 20.11 |       |       |       | ○    |       |       |       |       |       |       |   |
| SPM200-RN4-1-20-0.1-V    |      | 20   |                   | 60           | 3.35      | 20.87          | 21.60      | 22.37 | 23.21              |  |       | 25.08 |       |       |       | ○    |       |       |       |       |       |       |   |
| SPM200-RN4-1.5-4-0.05-V  |      | 1.5  |                   | 0.05         | 4         | 1.2            | 1.44       | 50    |                    |  |       | 4     |       |       |       | 4    | 8.12  | 4.23  | 4.42  | 4.59  | 4.76  | 5.14  | ○ |
| SPM200-RN4-1.5-8-0.05-V  |      |      |                   |              | 8         |                |            | 50    |                    |  |       |       |       |       |       |      | 5.60  | 8.41  | 8.71  | 9.02  | 9.36  | 10.11 | ○ |
| SPM200-RN4-1.5-12-0.05-V |      |      |                   |              | 12        |                |            | 60    |                    |  |       |       |       |       |       |      | 4.27  | 12.55 | 12.99 | 13.46 | 13.96 | 15.09 | ○ |
| SPM200-RN4-1.5-15-0.05-V |      |      | 15                |              | 60        |                |            | 3.62  |                    | 15.65  | 16.20 |       | 16.78 | 17.41 | 18.82 |      | ○     |       |       |       |       |       |   |
| SPM200-RN4-1.5-20-0.05-V |      |      | 20                |              | 60        |                |            | 2.89  |                    | 20.82  | 21.55 |       | 22.32 | 23.16 | -     |      | ○     |       |       |       |       |       |   |
| SPM200-RN4-1.5-4-0.1-V   |      |      | 0.1               | 4            |           |                |            |       |                    | 50   |       |       | 4     | 4     | 8.17  |      | 4.23  | 4.42  | 4.58  | 4.75  | 5.13  | ○     |   |
| SPM200-RN4-1.5-8-0.1-V   | 8    |      |                   | 50           |           |                |            |       |                    | 5.62   |       |       |       |       | 8.41  |      | 8.71  | 9.02  | 9.35  | 10.10 | ○     |       |   |
| SPM200-RN4-1.5-12-0.1-V  | 12   |      |                   | 60           |           |                |            |       |                    | 4.28   |       |       |       |       | 12.55 |      | 12.98 | 13.45 | 13.95 | 15.07 | ○     |       |   |
| SPM200-RN4-1.5-15-0.1-V  | 15   |      |                   | 60           |           |                |            |       |                    | 3.63   |       |       |       |       | 15.65 |      | 16.19 | 16.77 | 17.40 | 18.80 | ○     |       |   |
| SPM200-RN4-1.5-20-0.1-V  | 20   |      |                   | 60           |           |                |            |       |                    | 2.90   |       |       |       |       | 20.82 |      | 21.54 | 22.32 | 23.15 | -     | ○     |       |   |

● Stock ○ Available upon Order

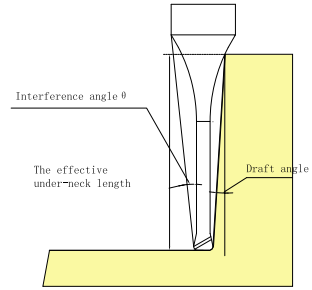
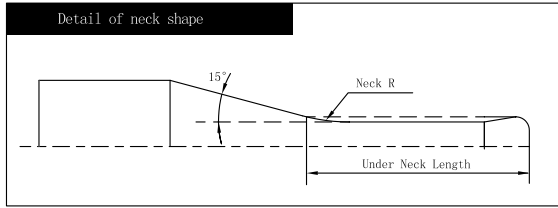
| R | Tol        |
|---|------------|
| R | ±0.005     |
| D | 0<br>-0.01 |

(mm)

Cutting Parameters ※ P551

# SPM200-RN4

4 Flutes with Extended Neck, Corner Radius



Please refer to page 149

» Continue

| Ordering Code          | Mill | r    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |   |
|------------------------|------|------|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|-------|-------|-------|-------|-------|---|
|                        |      |      |                   |              |           |                |            |       |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |   |
| SPM200-RN4-2-4-0.05-V  | 2    | 0.05 | 4                 | 1.6          | 1.92      | 50             | 4          | 4     | 7.32               | 4.21   | 4.39  | 4.55  | 4.72  | 5.09  | ○     |   |
| SPM200-RN4-2-6-0.05-V  |      |      | 6                 |              |           | 50             |            |       | 5.84               | 6.30   | 6.53  | 6.76  | 7.01  | 7.58  | ○     |   |
| SPM200-RN4-2-8-0.05-V  |      |      | 8                 |              |           | 50             |            |       | 4.85               | 8.37   | 8.67  | 8.98  | 9.31  | 10.07 | ○     |   |
| SPM200-RN4-2-12-0.05-V |      |      | 12                |              |           | 60             |            |       | 3.63               | 12.51  | 12.95 | 13.41 | 13.91 | 15.04 | ○     |   |
| SPM200-RN4-2-16-0.05-V |      |      | 16                |              |           | 60             |            |       | 2.90               | 16.65  | 17.23 | 17.85 | 18.51 | -     | ○     |   |
| SPM200-RN4-2-20-0.05-V |      |      | 20                |              |           | 60             |            |       | 2.41               | 20.78  | 21.50 | 22.28 | 23.11 | -     | ○     |   |
| SPM200-RN4-2-4-0.1-V   |      |      | 0.1               |              |           | 4              |            |       | 50                 | 7.36   | 4.21  | 4.38  | 4.54  | 4.71  | 5.08  | ○ |
| SPM200-RN4-2-6-0.1-V   |      |      |                   |              |           | 6              |            |       | 50                 | 5.86   | 6.29  | 6.53  | 6.76  | 7.01  | 7.57  | ○ |
| SPM200-RN4-2-8-0.1-V   |      |      |                   |              |           | 8              |            |       | 50                 | 4.87   | 8.37  | 8.66  | 8.97  | 9.31  | 10.05 | ○ |
| SPM200-RN4-2-12-0.1-V  |      |      |                   |              |           | 12             |            |       | 60                 | 3.64   | 12.51 | 12.94 | 13.41 | 13.91 | 15.03 | ○ |
| SPM200-RN4-2-16-0.1-V  |      | 16   |                   | 60           | 2.90      | 16.65          | 17.22      | 17.84 | 18.51              | -  | ○     |       |       |       |       |   |
| SPM200-RN4-2-20-0.1-V  |      | 20   | 60                | 2.42         | 20.78     | 21.50          | 22.27      | 23.11 | -                  | ○  |       |       |       |       |       |   |
| SPM200-RN4-2-4-0.2-V   |      | 0.2  | 4                 | 50           | 7.46      | 4.20           | 4.37       | 4.53  | 4.69               | 5.06   | ○     |       |       |       |       |   |
| SPM200-RN4-2-6-0.2-V   |      |      | 6                 | 50           | 5.93      | 6.29           | 6.52       | 6.75  | 6.99               | 7.54   | ○     |       |       |       |       |   |
| SPM200-RN4-2-8-0.2-V   |      |      | 8                 | 50           | 4.91      | 8.37           | 8.66       | 8.96  | 9.29               | 10.03  | ●     |       |       |       |       |   |
| SPM200-RN4-2-12-0.2-V  |      |      | 12                | 60           | 3.66      | 12.51          | 12.94      | 13.40 | 13.89              | 15.00  | ●     |       |       |       |       |   |
| SPM200-RN4-2-16-0.2-V  |      |      | 16                | 60           | 2.92      | 16.64          | 17.22      | 17.83 | 18.49              | -  | ○     |       |       |       |       |   |
| SPM200-RN4-2-20-0.2-V  |      |      | 20                | 60           | 2.43      | 20.78          | 21.49      | 22.26 | 23.09              | -  | ○     |       |       |       |       |   |
| SPM200-RN4-2-25-0.2-V  |      |      | 25                | 70           | 2.00      | 25.95          | 26.84      | 27.80 | -                  | -  | ○     |       |       |       |       |   |
| SPM200-RN4-2-30-0.2-V  |      | 30   | 70                | 1.71         | 31.11     | 32.19          | 33.35      | -     | -                  | ○  |       |       |       |       |       |   |
| SPM200-RN4-2-4-0.3-V   | 0.3  | 4    | 50                | 7.56         | 4.20      | 4.37           | 4.52       | 4.68  | 5.03               | ○  |       |       |       |       |       |   |
| SPM200-RN4-2-8-0.3-V   |      | 8    | 50                | 4.96         | 8.36      | 8.65           | 8.95       | 9.28  | 10.01              | ○  |       |       |       |       |       |   |
| SPM200-RN4-2-12-0.3-V  |      | 12   | 60                | 3.69         | 12.50     | 12.93          | 13.39      | 13.88 | 14.98              | ○  |       |       |       |       |       |   |
| SPM200-RN4-2-16-0.3-V  |      | 16   | 60                | 2.93         | 16.64     | 17.21          | 17.82      | 18.48 | -                  | ○  |       |       |       |       |       |   |
| SPM200-RN4-2-20-0.3-V  |      | 20   | 60                | 2.44         | 20.77     | 21.49          | 22.25      | 23.08 | -                  | ○  |       |       |       |       |       |   |

● Stock ○ Available upon Order

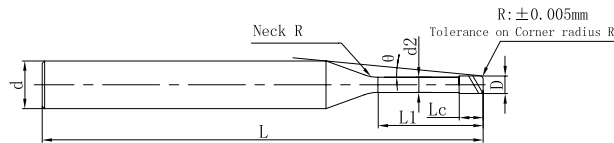
| R | Tol        |
|---|------------|
| R | ±0.005     |
| D | 0<br>-0.01 |

(mm)

Cutting Parameters ※ P551

# SPM200-RN4

4 Flutes with Extended Neck, Corner Radius



Please refer to page 149

» Continue

| Ordering Code           | Mill | r   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |   |
|-------------------------|------|-----|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|---|
|                         |      |     |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |   |
| SPM200-RN4-2-4-0.5-V    | 2    | 0.5 | 4                 | 1.6          | 1.92      | 50             |            | 4    | 7.76               | 4.19   | 4.35  | 4.50  | 4.65  | 4.98  | ○     |   |
| SPM200-RN4-2-6-0.5-V    |      |     | 6                 |              |           | 50             |            |      |                    | 6.11   | 6.28  | 6.50  | 6.71  | 6.95  | 7.47  | ○ |
| SPM200-RN4-2-8-0.5-V    |      |     | 8                 |              |           | 50             |            |      |                    | 5.04   | 8.36  | 8.64  | 8.93  | 9.25  | 9.96  | ○ |
| SPM200-RN4-2-12-0.5-V   |      |     | 12                |              |           | 60             |            |      |                    | 3.73   | 12.50 | 12.92 | 13.36 | 13.85 | 14.93 | ○ |
| SPM200-RN4-2-16-0.5-V   |      |     | 16                |              |           | 60             |            |      |                    | 2.96   | 16.63 | 17.19 | 17.80 | 18.45 | -     | ● |
| SPM200-RN4-2-20-0.5-V   |      |     | 20                |              |           | 60             |            |      |                    | 2.46   | 20.77 | 21.47 | 22.23 | 23.05 | -     | ○ |
| SPM200-RN4-2-25-0.5-V   |      |     | 25                |              |           | 70             |            |      |                    | 2.03   | 25.94 | 26.82 | 27.77 | 28.79 | -     | ○ |
| SPM200-RN4-2-30-0.5-V   |      |     | 30                |              |           | 70             |            |      |                    | 1.72   | 31.10 | 32.17 | 33.31 | -     | -     | ○ |
| SPM200-RN4-2.5-8-0.1-V  | 2.5  | 0.1 | 8                 | 2            | 2.4       | 50             | 6          | 4    | 3.98               | 8.34   | 8.63  | 8.94  | 9.27  | 10.02 | ○     |   |
| SPM200-RN4-2.5-16-0.1-V |      |     | 16                |              |           | 60             |            |      |                    | 2.29   | 16.62 | 17.19 | 17.81 | 18.47 | -     | ○ |
| SPM200-RN4-2.5-20-0.1-V |      |     | 20                |              |           | 60             |            |      |                    | 1.89   | 20.75 | 21.47 | 22.24 | -     | -     | ○ |
| SPM200-RN4-2.5-8-0.2-V  |      | 0.2 | 8                 |              |           | 50             |            |      |                    | 4.02   | 8.34  | 8.63  | 8.93  | 9.26  | 9.99  | ○ |
| SPM200-RN4-2.5-16-0.2-V |      |     | 16                |              |           | 60             |            |      |                    | 2.30   | 16.61 | 17.18 | 17.80 | 18.46 | -     | ○ |
| SPM200-RN4-2.5-20-0.2-V |      |     | 20                |              |           | 60             |            |      |                    | 1.90   | 20.75 | 21.46 | 22.23 | -     | -     | ○ |
| SPM200-RN4-2.5-12-0.3-V |      |     | 0.3               |              |           | 12             |            |      |                    | 60   | 2.95  | 12.47 | 12.90 | 13.35 | 13.84 | - |
| SPM200-RN4-2.5-20-0.3-V |      | 20  |                   |              |           | 60             |            |      |                    | 1.91   | 20.74 | 21.46 | 22.22 | -     | -     | ○ |
| SPM200-RN4-2.5-12-0.5-V |      | 0.5 | 12                |              |           | 60             |            |      |                    | 2.99   | 12.47 | 12.88 | 13.33 | 13.81 | -     | ○ |
| SPM200-RN4-2.5-20-0.5-V |      |     | 20                |              |           | 60             |            |      |                    | 1.92   | 20.74 | 21.44 | 22.20 | -     | -     | ○ |
| SPM200-RN4-3-8-0.1-V    | 3    | 0.1 | 8                 | 2.4          | 2.88      | 60             | 6          | 4    | 6.32               | 8.32   | 8.61  | 8.92  | 9.25  | 9.99  | ○     |   |
| SPM200-RN4-3-16-0.1-V   |      |     | 16                |              |           | 60             |            |      |                    | 3.99   | 16.59 | 17.17 | 17.78 | 18.45 | 19.94 | ○ |
| SPM200-RN4-3-25-0.1-V   |      |     | 25                |              |           | 70             |            |      |                    | 2.82   | 25.90 | 26.79 | 27.76 | 28.80 | -     | ○ |
| SPM200-RN4-3-30-0.1-V   |      | 30  | 80                |              |           | 2.42           |            |      |                    | 31.06  | 32.14 | 33.30 | 34.55 | -     | ●     |   |
| SPM200-RN4-3-8-0.2-V    |      | 0.2 | 8                 |              |           | 60             |            |      |                    | 6.36   | 8.32  | 8.60  | 8.91  | 9.23  | 9.97  | ○ |
| SPM200-RN4-3-12-0.2-V   |      |     | 12                |              |           | 60             |            |      |                    | 4.92   | 12.45 | 12.88 | 13.34 | 13.83 | 14.94 | ○ |

● Stock ○ Available upon Order

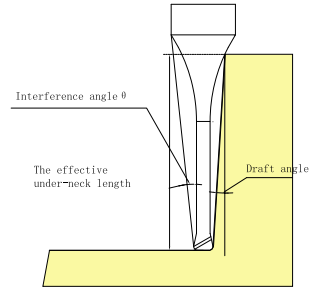
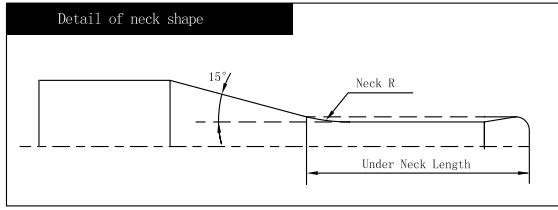
| R | Tol        |
|---|------------|
| R | ±0.005     |
| D | 0<br>-0.01 |

(mm)

Cutting Parameters ※ P551

# SPM200-RN4

4 Flutes with Extended Neck, Corner Radius



Please refer to page 149

» Continue

| Ordering Code         | Mill | r    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|-----------------------|------|------|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|-------|-------|-------|-------|-------|
|                       |      |      |                   |              |           |                |            |       |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SPM200-RN4-3-16-0.2-V | 3    | 0.2  | 16                | 2.4          | 2.88      | 60             | 6          | 4     | 4.00               | 16.59  | 17.16 | 17.77 | 18.43 | 19.91 | ●     |
| SPM200-RN4-3-20-0.2-V |      |      | 20                |              |           | 3.38           |            |       | 20.72              | 21.44  | 22.21 | 23.03 | 24.88 | ○     |       |
| SPM200-RN4-3-25-0.2-V |      |      | 25                |              |           | 2.82           |            |       | 25.89              | 26.79  | 27.75 | 28.78 | -     | ○     |       |
| SPM200-RN4-3-30-0.2-V |      |      | 30                |              |           | 2.43           |            |       | 31.06              | 32.14  | 33.29 | 34.53 | -     | ○     |       |
| SPM200-RN4-3-8-0.3-V  |      |      | 0.3               |              |           | 8              |            |       | 6.41               | 8.32   | 8.60  | 8.90  | 9.22  | 9.94  | ○     |
| SPM200-RN4-3-16-0.3-V |      | 16   |                   |              |           | 4.02           |            |       | 16.59              | 17.15  | 17.76 | 18.42 | 19.89 | ○     |       |
| SPM200-RN4-3-20-0.3-V |      | 20   |                   |              |           | 3.39           |            |       | 20.72              | 21.43  | 22.20 | 23.02 | 24.86 | ○     |       |
| SPM200-RN4-3-25-0.3-V |      | 25   |                   |              |           | 2.83           |            |       | 25.89              | 26.78  | 27.74 | 28.77 | -     | ○     |       |
| SPM200-RN4-3-30-0.3-V |      | 30   |                   |              |           | 2.43           |            |       | 31.06              | 32.13  | 33.28 | 34.52 | -     | ○     |       |
| SPM200-RN4-3-8-0.5-V  |      | 0.5  | 8                 |              |           | 6.51           |            |       | 8.31               | 8.58   | 8.87  | 9.19  | 9.89  | ○     |       |
| SPM200-RN4-3-12-0.5-V |      |      | 12                |              |           | 5.00           |            |       | 12.44              | 12.86  | 13.31 | 13.79 | 14.87 | ○     |       |
| SPM200-RN4-3-16-0.5-V |      |      | 16                |              |           | 4.06           |            |       | 16.58              | 17.14  | 17.74 | 18.39 | 19.84 | ●     |       |
| SPM200-RN4-3-20-0.5-V |      |      | 20                |              |           | 3.42           |            |       | 20.71              | 21.42  | 22.17 | 22.99 | 24.81 | ○     |       |
| SPM200-RN4-3-25-0.5-V |      |      | 25                |              |           | 2.85           |            |       | 25.88              | 26.77  | 27.72 | 28.74 | -     | ○     |       |
| SPM200-RN4-3-30-0.5-V |      | 30   | 2.45              |              |           | 31.05          |            |       | 32.12              | 33.26  | 34.49 | -     | ○     |       |       |
| SPM200-RN4-3-35-0.5-V | 35   | 2.14 | 36.22             | 37.46        | 38.80     | 40.23          | -          | ○     |                    |  |       |       |       |       |       |
| SPM200-RN4-4-12-0.1-V | 4    | 0.1  | 12                | 3.2          | 3.86      | 60             | 3.66       | 12.44 | 12.87              | 13.33  | 13.83 | 14.94 | ○     |       |       |
| SPM200-RN4-4-20-0.1-V |      |      | 20                |              |           | 2.42           | 20.71      | 21.43 | 22.20              | 23.03  | -     | ○     |       |       |       |
| SPM200-RN4-4-30-0.1-V |      |      | 30                |              |           | 1.71           | 31.05      | 32.12 | 33.28              | -  | -     | ○     |       |       |       |
| SPM200-RN4-4-40-0.1-V |      |      | 40                |              |           | 1.32           | 41.38      | 42.82 | -                  | -  | -     | ●     |       |       |       |
| SPM200-RN4-4-12-0.2-V |      | 0.2  | 12                |              |           | 3.68           | 12.44      | 12.86 | 13.32              | 13.81  | 14.92 | ●     |       |       |       |
| SPM200-RN4-4-20-0.2-V |      |      | 20                |              |           | 2.43           | 20.71      | 21.42 | 22.19              | 23.01  | -     | ●     |       |       |       |
| SPM200-RN4-4-30-0.2-V |      |      | 30                |              |           | 1.71           | 31.04      | 32.12 | 33.27              | -  | -     | ○     |       |       |       |
| SPM200-RN4-4-40-0.2-V |      |      | 40                |              |           | 1.32           | 41.38      | 42.81 | -                  | -  | -     | ○     |       |       |       |

● Stock ○ Available upon Order

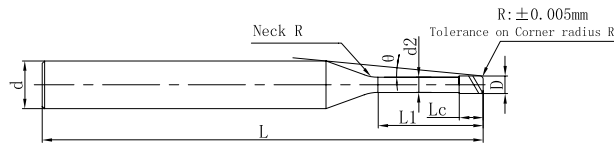
| R | Tol        |
|---|------------|
| R | ±0.005     |
| D | 0<br>-0.01 |

(mm)

Cutting Parameters ※ P551

# SPM200-RN4

4 Flutes with Extended Neck, Corner Radius



Please refer to page 149

» Continue

| Ordering Code         | Mill | r   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |   |   |   |   |   |   |
|-----------------------|------|-----|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|---|---|---|---|---|---|
|                       |      |     |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |   |   |   |   |   |   |
| SPM200-RN4-4-12-0.3-V | 4    | 0.3 | 12                | 3.2          | 3.86      | 60             | 6          | 4    | 3.70               | 12.43  | 12.86 | 13.31 | 13.80 | 14.89 | ○     |   |   |   |   |   |   |
| SPM200-RN4-4-20-0.3-V |      |     | 20                |              |           | 60             |            |      |                    | 2.44   | 20.70 | 21.41 | 22.18 | 23.00 | -     | ○ |   |   |   |   |   |
| SPM200-RN4-4-30-0.3-V |      |     | 30                |              |           | 80             |            |      |                    | 1.72   | 31.04 | 32.11 | 33.26 | -     | -     | ○ |   |   |   |   |   |
| SPM200-RN4-4-40-0.3-V |      |     | 40                |              |           | 80             |            |      |                    | 1.32   | 41.38 | 42.81 | -     | -     | -     | ○ |   |   |   |   |   |
| SPM200-RN4-4-12-0.5-V |      | 0.5 | 12                |              |           | 60             |            |      |                    | 3.75   | 12.43 | 12.84 | 13.29 | 13.77 | 14.84 | ○ |   |   |   |   |   |
| SPM200-RN4-4-20-0.5-V |      |     | 20                |              |           | 60             |            |      |                    | 2.47   | 20.70 | 21.40 | 22.15 | 22.97 | -     | ● |   |   |   |   |   |
| SPM200-RN4-4-30-0.5-V |      |     | 30                |              |           | 80             |            |      |                    | 1.73   | 31.03 | 32.10 | 33.24 | -     | -     | ○ |   |   |   |   |   |
| SPM200-RN4-4-40-0.5-V |      |     | 40                |              |           | 80             |            |      |                    | 1.33   | 41.37 | 42.79 | -     | -     | -     | ○ |   |   |   |   |   |
| SPM200-RN4-5-20-0.1-V | 5    | 0.1 | 20                | 4            | 4.85      | 70             | 6          | 4    | 1.32               | 20.70  | 21.42 | -     | -     | -     | ○     |   |   |   |   |   |   |
| SPM200-RN4-5-40-0.1-V |      |     | 40                |              |           | 90             |            |      |                    | 0.69   | 41.38 | -     | -     | -     | -     | ○ |   |   |   |   |   |
| SPM200-RN4-5-20-0.2-V |      | 0.2 | 20                |              |           | 70             |            |      |                    | 1.32   | 20.70 | 21.41 | -     | -     | -     | ○ |   |   |   |   |   |
| SPM200-RN4-5-40-0.2-V |      |     | 40                |              |           | 90             |            |      |                    | 0.69   | 41.37 | -     | -     | -     | -     | ○ |   |   |   |   |   |
| SPM200-RN4-5-20-0.3-V |      | 0.3 | 20                |              |           | 70             |            |      |                    | 1.33   | 20.69 | 21.41 | -     | -     | -     | ○ |   |   |   |   |   |
| SPM200-RN4-5-40-0.3-V |      |     | 40                |              |           | 90             |            |      |                    | 0.69   | 41.37 | -     | -     | -     | -     | ○ |   |   |   |   |   |
| SPM200-RN4-5-20-0.5-V |      | 0.5 | 20                |              |           | 70             |            |      |                    | 1.34   | 20.69 | 21.39 | -     | -     | -     | ○ |   |   |   |   |   |
| SPM200-RN4-5-40-0.5-V |      |     | 40                |              |           | 90             |            |      |                    | 0.70   | 41.36 | -     | -     | -     | -     | ○ |   |   |   |   |   |
| SPM200-RN4-5-20-1-V   |      | 1   | 20                |              |           | 70             |            |      |                    | 1.38   | 20.67 | 21.36 | -     | -     | -     | ○ |   |   |   |   |   |
| SPM200-RN4-5-40-1-V   |      |     | 40                |              |           | 90             |            |      |                    | 0.71   | 41.34 | -     | -     | -     | -     | ○ |   |   |   |   |   |
| SPM200-RN4-6-30-0.2-V |      | 6   | 0.2               |              |           | 30             |            |      |                    | 4.8  | 5.85  | 80    | 6     | 4     | -     | - | - | - | - | - | ○ |
| SPM200-RN4-6-54-0.2-V |      |     |                   |              |           | 54             |            |      |                    |  |       | 100   |       |       |       | - | - | - | - | - | ○ |
| SPM200-RN4-6-72-0.2-V |      |     |                   |              |           | 72             |            |      |                    |  |       | 120   |       |       |       | - | - | - | - | - | ○ |
| SPM200-RN4-6-30-0.3-V |      |     |                   |              |           | 30             |            |      |                    |  |       | 80    |       |       |       | - | - | - | - | - | ○ |
| SPM200-RN4-6-54-0.3-V |      |     | 0.3               |              |           | 54             |            |      |                    |  |       | 100   |       |       |       | - | - | - | - | - | ○ |
| SPM200-RN4-6-72-0.3-V |      |     |                   |              |           | 72             |            |      |                    |  |       | 120   |       |       |       | - | - | - | - | - | ○ |

● Stock ○ Available upon Order

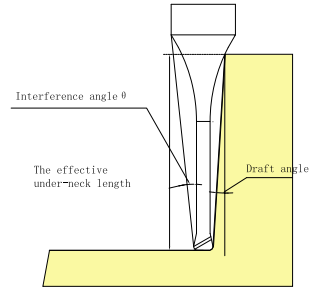
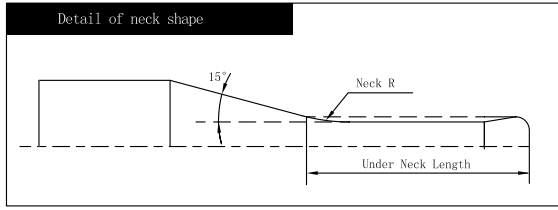
| R | Tol        |
|---|------------|
| R | ±0.005     |
| D | 0<br>-0.01 |

(mm)

Cutting Parameters ※ P551

# SPM200-RN4

4 Flutes with Extended Neck, Corner Radius



Please refer to page 149

» Continue

| Ordering Code         | Mill | r   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |    |      |    |    | Stock |
|-----------------------|------|-----|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|----|------|----|----|-------|
|                       |      |     |                   |              |           |                |            |      |                    | 0.5°   | 1° | 1.5° | 2° | 3° |       |
| SPM200-RN4-6-30-0.5-V | 6    | 0.5 | 30                | 4.8          | 5.85      | 80             | 6          | 4    | -                  | -  | -  | -    | -  | -  | ○     |
| SPM200-RN4-6-54-0.5-V |      |     | 54                |              |           | 100            |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SPM200-RN4-6-72-0.5-V |      |     | 72                |              |           | 120            |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SPM200-RN4-6-30-1-V   |      | 1   | 30                |              |           | 80             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SPM200-RN4-6-54-1-V   |      |     | 54                |              |           | 100            |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SPM200-RN4-6-72-1-V   |      |     | 72                |              |           | 120            |            |      | -                  | -  | -  | -    | -  | ○  |       |

● Stock ○ Available upon Order

| R | Tol        |
|---|------------|
| R | ±0.005     |
| D | 0<br>-0.01 |

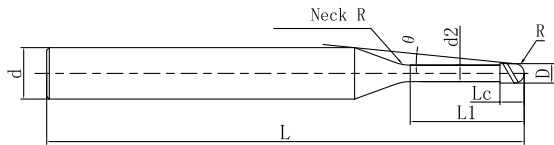
(mm)

Cutting Parameters ※ P551



# SPM200-BN2

2 Flutes with Extended Neck, Ballnose



Please refer to page 149

| Ordering Code         | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |      |      |      |      | Stock |
|-----------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|------|------|------|------|-------|
|                       |           |      |                   |              |           |                |            |      |                    | 0.5°   | 1°   | 1.5° | 2°   | 3°   |       |
| SPM200-BN2-0.1-0.2-V  | 0.1       | 0.05 | 0.2               | 0.08         | 0.08      | 50             | 4          | 1    | 14.66              | 0.2  | 0.21 | 0.22 | 0.24 | 0.26 | ○     |
| SPM200-BN2-0.1-0.3-V  |           |      | 0.3               |              |           |                |            |      | 14.48              | 0.31   | 0.33 | 0.34 | 0.36 | 0.39 | ●     |
| SPM200-BN2-0.1-0.5-V  |           |      | 0.5               |              |           |                |            |      | 14.12              | 0.52   | 0.55 | 0.57 | 0.59 | 0.64 | ●     |
| SPM200-BN2-0.2-0.5-V  | 0.2       | 0.1  | 0.5               | 0.16         | 0.17      | 50             | 4          | 1    | 14.21              | 0.51   | 0.53 | 0.55 | 0.57 | 0.61 | ●     |
| SPM200-BN2-0.2-0.75-V |           |      | 0.75              |              |           |                |            |      | 13.77              | 0.78   | 0.8  | 0.83 | 0.86 | 0.92 | ○     |
| SPM200-BN2-0.2-1-V    |           |      | 1                 |              |           |                |            |      | 13.36              | 1.04   | 1.07 | 1.11 | 1.15 | 1.23 | ●     |
| SPM200-BN2-0.2-1.25-V |           |      | 1.25              |              |           |                |            |      | 12.97              | 1.3  | 1.34 | 1.39 | 1.43 | 1.54 | ○     |
| SPM200-BN2-0.2-1.5-V  |           |      | 1.5               |              |           |                |            |      | 12.6               | 1.56   | 1.61 | 1.66 | 1.72 | 1.85 | ●     |
| SPM200-BN2-0.2-2-V    |           |      | 2                 |              |           |                |            |      | 11.92              | 2.07   | 2.14 | 2.22 | 2.3  | 2.48 | ○     |
| SPM200-BN2-0.2-2.5-V  |           |      | 2.5               |              |           |                |            |      | 11.31              | 2.59   | 2.68 | 2.77 | 2.87 | 3.1  | ○     |
| SPM200-BN2-0.2-3-V    |           |      | 3                 |              |           |                |            |      | 10.76              | 3.11   | 3.21 | 3.33 | 3.45 | 3.72 | ●     |
| SPM200-BN2-0.3-0.5-V  | 0.3       | 0.15 | 0.5               | 0.24         | 0.27      | 50             | 4          | 2    | 14.17              | 0.52   | 0.55 | 0.57 | 0.6  | 0.66 | ●     |
| SPM200-BN2-0.3-0.75-V |           |      | 0.75              |              |           |                |            |      | 13.72              | 0.79   | 0.83 | 0.87 | 0.91 | 0.98 | ○     |
| SPM200-BN2-0.3-1-V    |           |      | 1                 |              |           |                |            |      | 13.3               | 1.05   | 1.11 | 1.16 | 1.2  | 1.29 | ●     |
| SPM200-BN2-0.3-1.25-V |           |      | 1.25              |              |           |                |            |      | 12.9               | 1.32   | 1.38 | 1.44 | 1.5  | 1.61 | ○     |
| SPM200-BN2-0.3-1.5-V  |           |      | 1.5               |              |           |                |            |      | 12.53              | 1.58   | 1.66 | 1.72 | 1.78 | 1.92 | ●     |
| SPM200-BN2-0.3-2-V    |           |      | 2                 |              |           |                |            |      | 11.84              | 2.11   | 2.2  | 2.28 | 2.36 | 2.54 | ○     |
| SPM200-BN2-0.3-2.5-V  |           |      | 2.5               |              |           |                |            |      | 11.22              | 2.63   | 2.74 | 2.83 | 2.93 | 3.16 | ●     |
| SPM200-BN2-0.3-3-V    |           |      | 3                 |              |           |                |            |      | 10.66              | 3.15   | 3.27 | 3.39 | 3.51 | 3.78 | ○     |
| SPM200-BN2-0.4-0.75-V | 0.4       | 0.2  | 0.75              | 0.32         | 0.37      | 50             | 4          | 2    | 13.78              | 0.78   | 0.82 | 0.86 | 0.9  | 0.97 | ●     |
| SPM200-BN2-0.4-1-V    |           |      | 1                 |              |           |                |            |      | 13.34              | 1.05   | 1.1  | 1.15 | 1.19 | 1.28 | ●     |
| SPM200-BN2-0.4-1.5-V  |           |      | 1.5               |              |           |                |            |      | 12.55              | 1.58   | 1.65 | 1.72 | 1.78 | 1.9  | ●     |
| SPM200-BN2-0.4-2-V    |           |      | 2                 |              |           |                |            |      | 11.84              | 2.11   | 2.19 | 2.27 | 2.35 | 2.53 | ●     |
| SPM200-BN2-0.4-2.5-V  |           |      | 2.5               |              |           |                |            |      | 11.2               | 2.63   | 2.73 | 2.83 | 2.93 | 3.15 | ○     |

● Stock ○ Available upon Order

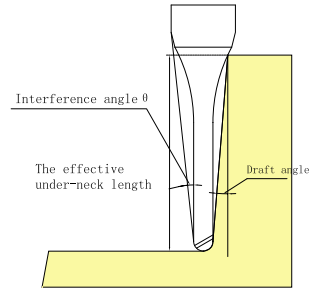
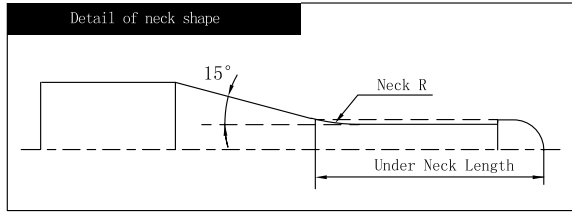
| R        | Tol    |
|----------|--------|
| R ≤ 0.25 | ±0.003 |
| R > 0.25 | ±0.005 |

(mm)

Cutting Parameters ※ P556

# SPM200-BN2

2 Flutes with Extended Neck, Ballnose



Please refer to page 149

» Continue

| Ordering Code        | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|----------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                      |           |      |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SPM200-BN2-0.4-3-V   | 0.4       | 0.2  | 3                 | 0.32         | 0.37      | 50             | 4          | 2    | 10.63              | 3.15   | 3.27  | 3.38  | 3.5   | 3.77  | ○     |
| SPM200-BN2-0.4-3.5-V |           |      | 3.5               |              |           |                |            |      |                    | 3.67   | 3.8   | 3.94  | 4.08  | 4.39  | ●     |
| SPM200-BN2-0.4-4-V   |           |      | 4                 |              |           |                |            |      |                    | 4.19   | 4.34  | 4.49  | 4.65  | 5.01  | ●     |
| SPM200-BN2-0.4-4.5-V |           |      | 4.5               |              |           |                |            |      |                    | 4.71   | 4.87  | 5.04  | 5.23  | 5.63  | ●     |
| SPM200-BN2-0.5-1-V   | 0.5       | 0.25 | 1                 | 0.4          | 0.47      | 50             | 4          | 2    | 13.39              | 1.05   | 1.09  | 1.14  | 1.19  | 1.27  | ●     |
| SPM200-BN2-0.5-1.5-V |           |      | 1.5               |              |           |                |            |      |                    | 1.58   | 1.65  | 1.71  | 1.77  | 1.89  | ○     |
| SPM200-BN2-0.5-2-V   |           |      | 2                 |              |           |                |            |      |                    | 2.1  | 2.19  | 2.27  | 2.34  | 2.51  | ●     |
| SPM200-BN2-0.5-2.5-V |           |      | 2.5               |              |           |                |            |      |                    | 2.63   | 2.73  | 2.82  | 2.92  | 3.14  | ●     |
| SPM200-BN2-0.5-3-V   |           |      | 3                 |              |           |                |            |      |                    | 3.15   | 3.27  | 3.38  | 3.49  | 3.76  | ●     |
| SPM200-BN2-0.5-4-V   |           |      | 4                 |              |           |                |            |      |                    | 4.19   | 4.34  | 4.48  | 4.64  | 5     | ●     |
| SPM200-BN2-0.5-5-V   |           |      | 5                 |              |           |                |            |      |                    | 5.23   | 5.41  | 5.59  | 5.79  | 6.24  | ●     |
| SPM200-BN2-0.5-5.5-V |           |      | 5.5               |              |           |                |            |      |                    | 6.27   | 6.48  | 6.7   | 6.94  | 7.49  | ●     |
| SPM200-BN2-0.5-6-V   |           |      | 6                 |              |           |                |            |      |                    | 8.07   | 8.27  | 8.48  | 8.69  | 9.29  | ●     |
| SPM200-BN2-0.5-8-V   |           |      | 8                 |              |           |                |            |      |                    | 10.96  | 11.16 | 11.37 | 11.58 | 12.18 | ●     |
| SPM200-BN2-0.6-1-V   | 0.6       | 0.3  | 1                 | 0.48         | 0.57      | 50             | 4          | 4    | 13.15              | 1.07   | 1.14  | 1.2   | 1.27  | 1.41  | ●     |
| SPM200-BN2-0.6-2-V   |           |      | 2                 |              |           |                |            |      |                    | 2.15   | 2.28  | 2.39  | 2.5   | 2.7   | ●     |
| SPM200-BN2-0.6-2.5-V |           |      | 2.5               |              |           |                |            |      |                    | 2.68   | 2.84  | 2.97  | 3.09  | 3.32  | ○     |
| SPM200-BN2-0.6-3-V   |           |      | 3                 |              |           |                |            |      |                    | 3.22   | 3.39  | 3.54  | 3.67  | 3.95  | ●     |
| SPM200-BN2-0.6-3.5-V |           |      | 3.5               |              |           |                |            |      |                    | 3.75   | 3.94  | 4.1   | 4.25  | 4.57  | ●     |
| SPM200-BN2-0.6-4-V   |           |      | 4                 |              |           |                |            |      |                    | 4.28   | 4.48  | 4.66  | 4.82  | 5.19  | ●     |
| SPM200-BN2-0.6-4.5-V |           |      | 4.5               |              |           |                |            |      |                    | 4.81   | 5.03  | 5.21  | 5.4   | 5.81  | ○     |
| SPM200-BN2-0.6-5-V   |           |      | 5                 |              |           |                |            |      |                    | 5.33   | 5.57  | 5.77  | 5.97  | 6.43  | ○     |
| SPM200-BN2-0.6-5.5-V |           |      | 5.5               |              |           |                |            |      |                    | 5.86   | 6.11  | 6.32  | 6.55  | 7.05  | ●     |
| SPM200-BN2-0.6-6-V   |           |      | 6                 |              |           |                |            |      |                    | 6.38   | 6.64  | 6.87  | 7.12  | 7.67  | ●     |

● Stock ○ Available upon Order

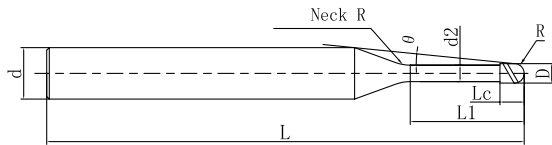
| R        | Tol    |
|----------|--------|
| R ≤ 0.25 | ±0.003 |
| R > 0.25 | ±0.005 |

(mm)

Cutting Parameters ※ P556

# SPM200-BN2

2 Flutes with Extended Neck, Ballnose



Please refer to page 149

» Continue

| Ordering Code       | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|---------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                     |           |      |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SPM200-BN2-0.6-7-V  | 0.6       | 0.3  | 7                 | 0.48         | 0.57      | 50             | 4          | 4    | 7.3                | 7.43   | 7.71  | 7.98  | 8.27  | 8.92  | ○     |
| SPM200-BN2-0.6-8-V  |           |      | 8                 |              |           |                |            |      | 6.79               | 8.48   | 8.78  | 9.09  | 9.42  | 10.16 | ○     |
| SPM200-BN2-0.6-9-V  |           |      | 9                 |              |           |                |            |      | 6.35               | 9.52   | 9.85  | 10.2  | 10.57 | 11.4  | ●     |
| SPM200-BN2-0.6-10-V |           |      | 10                |              |           |                |            |      | 5.97               | 10.56  | 10.92 | 11.31 | 11.72 | 12.65 | ●     |
| SPM200-BN2-0.6-12-V |           |      | 12                |              |           |                |            |      | 5.32               | 12.63  | 13.06 | 13.52 | 14.02 | 15.13 | ○     |
| SPM200-BN2-0.7-2-V  | 0.7       | 0.35 | 2                 | 0.56         | 0.67      | 50             | 4          | 4    | 11.6               | 2.14   | 2.27  | 2.39  | 2.49  | 2.69  | ○     |
| SPM200-BN2-0.7-4-V  |           |      | 4                 |              |           |                |            |      | 9.33               | 4.27   | 4.48  | 4.65  | 4.81  | 5.18  | ○     |
| SPM200-BN2-0.7-6-V  |           |      | 6                 |              |           |                |            |      | 7.81               | 6.38   | 6.64  | 6.87  | 7.11  | 7.66  | ○     |
| SPM200-BN2-0.7-8-V  |           |      | 8                 |              |           |                |            |      | 6.71               | 8.47   | 8.78  | 9.09  | 9.41  | 10.15 | ○     |
| SPM200-BN2-0.8-2-V  | 0.8       | 0.4  | 2                 | 0.64         | 0.76      | 50             | 4          | 4    | 11.64              | 2.12   | 2.24  | 2.35  | 2.45  | 2.63  | ●     |
| SPM200-BN2-0.8-4-V  |           |      | 4                 |              |           |                |            |      | 9.3                | 4.25   | 4.44  | 4.61  | 4.77  | 5.12  | ●     |
| SPM200-BN2-0.8-5-V  |           |      | 5                 |              |           |                |            |      | 8.45               | 5.3  | 5.53  | 5.72  | 5.92  | 6.36  | ○     |
| SPM200-BN2-0.8-6-V  |           |      | 6                 |              |           |                |            |      | 7.74               | 6.35   | 6.6   | 6.83  | 7.07  | 7.61  | ○     |
| SPM200-BN2-0.8-8-V  |           |      | 8                 |              |           |                |            |      | 6.63               | 8.44   | 8.74  | 9.04  | 9.37  | 10.09 | ●     |
| SPM200-BN2-0.8-10-V | 10        | 5.8  | 10.52             | 10.88        | 11.26     | 11.67          | 12.58      | ●    |                    |  |       |       |       |       |       |
| SPM200-BN2-0.9-2-V  | 0.9       | 0.45 | 2                 | 0.72         | 0.86      | 50             | 4          | 4    | 11.63              | 2.12   | 2.23  | 2.34  | 2.44  | 2.62  | ○     |
| SPM200-BN2-0.9-4-V  |           |      | 4                 |              |           |                |            |      | 9.24               | 4.25   | 4.44  | 4.6   | 4.76  | 5.11  | ○     |
| SPM200-BN2-0.9-6-V  |           |      | 6                 |              |           |                |            |      | 7.66               | 6.35   | 6.6   | 6.82  | 7.06  | 7.6   | ○     |
| SPM200-BN2-0.9-8-V  |           |      | 8                 |              |           |                |            |      | 6.54               | 8.44   | 8.74  | 9.04  | 9.36  | 10.08 | ○     |
| SPM200-BN2-1-2-V    | 1         | 0.5  | 2                 | 0.8          | 0.96      | 50             | 4          | 4    | 11.62              | 2.12   | 2.23  | 2.33  | 2.43  | 2.61  | ●     |
| SPM200-BN2-1-3-V    |           |      | 3                 |              |           |                |            |      | 10.25              | 3.18   | 3.34  | 3.48  | 3.6   | 3.85  | ●     |
| SPM200-BN2-1-4-V    |           |      | 4                 |              |           |                |            |      | 9.17               | 4.24   | 4.43  | 4.6   | 4.75  | 5.1   | ●     |
| SPM200-BN2-1-5-V    |           |      | 5                 |              |           |                |            |      | 8.29               | 5.3  | 5.52  | 5.71  | 5.9   | 6.34  | ●     |
| SPM200-BN2-1-6-V    |           |      | 6                 |              |           |                |            |      | 7.57               | 6.35   | 6.59  | 6.81  | 7.05  | 7.58  | ●     |

● Stock ○ Available upon Order

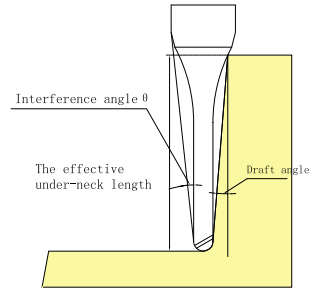
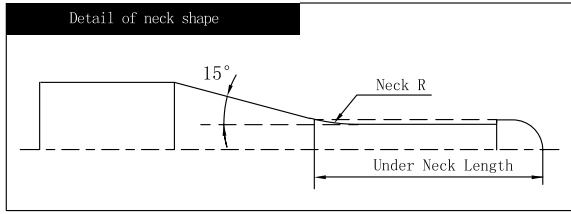
| R        | Tol    |
|----------|--------|
| R ≤ 0.25 | ±0.003 |
| R > 0.25 | ±0.005 |

(mm)

Cutting Parameters ※ P556

# SPM200-BN2

2 Flutes with Extended Neck, Ballnose



Please refer to page 149

» Continue

| Ordering Code       | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|---------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                     |           |      |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SPM200-BN2-1-7-V    | 1         | 0.5  | 7                 | 0.8          | 0.96      | 50             | 4          | 4    | 6.96               | 7.39   | 7.66  | 7.92  | 8.2   | 8.83  | ○     |
| SPM200-BN2-1-8-V    |           |      | 8                 |              |           | 50             |            |      | 6.44               | 8.44   | 8.73  | 9.03  | 9.35  | 10.07 | ●     |
| SPM200-BN2-1-9-V    |           |      | 9                 |              |           | 50             |            |      | 5.99               | 9.48   | 9.8   | 10.14 | 10.5  | 11.31 | ○     |
| SPM200-BN2-1-10-V   |           |      | 10                |              |           | 50             |            |      | 5.6                | 10.52  | 10.87 | 11.25 | 11.65 | 12.56 | ●     |
| SPM200-BN2-1-12-V   |           |      | 12                |              |           | 55             |            |      | 4.96               | 12.59  | 13.01 | 13.46 | 13.95 | 15.04 | ●     |
| SPM200-BN2-1-13-V   |           |      | 13                |              |           | 55             |            |      | 4.69               | 13.62  | 14.08 | 14.57 | 15.1  | 16.29 | ○     |
| SPM200-BN2-1-14-V   |           |      | 14                |              |           | 55             |            |      | 4.45               | 14.66  | 15.15 | 15.68 | 16.25 | 17.53 | ○     |
| SPM200-BN2-1-16-V   |           |      | 16                |              |           | 55             |            |      | 4.03               | 16.73  | 17.29 | 17.9  | 18.55 | 20.01 | ●     |
| SPM200-BN2-1-18-V   |           |      | 18                |              |           | 60             |            |      | 3.69               | 18.79  | 19.43 | 20.11 | 20.85 | 22.5  | ○     |
| SPM200-BN2-1-20-V   |           |      | 20                |              |           | 60             |            |      | 3.4                | 20.86  | 21.57 | 22.33 | 23.15 | 24.99 | ●     |
| SPM200-BN2-1.1-2-V  | 1.1       | 0.55 | 2                 | 0.88         | 1.06      | 50             | 4          | 4    | 11.61              | 2.11   | 2.22  | 2.32  | 2.42  | 2.6   | ○     |
| SPM200-BN2-1.1-4-V  |           |      | 4                 |              |           |                |            |      | 9.09               | 4.24   | 4.43  | 4.59  | 4.74  | 5.08  | ○     |
| SPM200-BN2-1.1-6-V  |           |      | 6                 |              |           |                |            |      | 7.47               | 6.34   | 6.59  | 6.81  | 7.04  | 7.57  | ○     |
| SPM200-BN2-1.1-8-V  |           |      | 8                 |              |           |                |            |      | 6.34               | 8.43   | 8.73  | 9.03  | 9.34  | 10.06 | ○     |
| SPM200-BN2-1.1-10-V |           |      | 10                |              |           |                |            |      | 5.5                | 10.51  | 10.87 | 11.24 | 11.64 | 12.54 | ○     |
| SPM200-BN2-1.2-4-V  | 1.2       | 0.6  | 4                 | 0.96         | 1.15      | 50             | 4          | 4    | 9.05               | 4.22   | 4.4   | 4.55  | 4.7   | 5.04  | ●     |
| SPM200-BN2-1.2-8-V  |           |      | 8                 |              |           |                |            |      | 6.25               | 8.41   | 8.7   | 8.99  | 9.3   | 10.01 | ○     |
| SPM200-BN2-1.2-10-V |           |      | 10                |              |           |                |            |      | 5.41               | 10.49  | 10.84 | 11.21 | 11.6  | 12.5  | ○     |
| SPM200-BN2-1.2-12-V |           |      | 12                |              |           |                |            |      | 4.77               | 12.56  | 12.97 | 13.42 | 13.9  | 14.98 | ●     |
| SPM200-BN2-1.4-8-V  | 1.4       | 0.7  | 8                 | 1.12         | 1.34      | 55             | 4          | 4    | 6.04               | 8.38   | 8.66  | 8.95  | 9.26  | 9.96  | ●     |
| SPM200-BN2-1.4-12-V |           |      | 12                |              |           |                |            |      | 4.56               | 12.53  | 12.94 | 13.38 | 13.86 | 14.93 | ○     |
| SPM200-BN2-1.4-16-V |           |      | 16                |              |           |                |            |      | 3.67               | 16.66  | 17.22 | 17.82 | 18.46 | 19.9  | ○     |
| SPM200-BN2-1.5-4-V  | 1.5       | 0.75 | 4                 | 1.2          | 1.44      | 50             | 4          | 4    | 8.82               | 4.2  | 4.36  | 4.51  | 4.65  | 4.97  | ○     |
| SPM200-BN2-1.5-6-V  |           |      | 6                 |              |           |                |            |      | 7.08               | 6.29   | 6.52  | 6.73  | 6.95  | 7.46  | ●     |

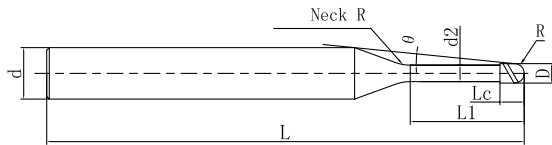
● Stock ○ Available upon Order

| R        | Tol    |
|----------|--------|
| R ≤ 0.25 | ±0.003 |
| R > 0.25 | ±0.005 |

Cutting Parameters ※ P556

# SPM200-BN2

2 Flutes with Extended Neck, Ballnose



Please refer to page 149

» Continue

| Ordering Code       | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|---------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                     |           |      |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SPM200-BN2-1.5-8-V  | 1.5       | 0.75 | 8                 | 1.2          | 1.44      | 50             | 4          | 4    | 5.92               | 8.38   | 8.66  | 8.95  | 9.25  | 9.94  | ●     |
| SPM200-BN2-1.5-10-V |           |      | 10                |              |           | 50             |            |      | 5.08               | 10.46  | 10.8  | 11.16 | 11.55 | 12.43 | ●     |
| SPM200-BN2-1.5-12-V |           |      | 12                |              |           | 55             |            |      | 4.45               | 12.53  | 12.94 | 13.38 | 13.85 | 14.92 | ●     |
| SPM200-BN2-1.5-14-V |           |      | 14                |              |           | 55             |            |      | 3.96               | 14.6   | 15.08 | 15.6  | 16.15 | 17.4  | ○     |
| SPM200-BN2-1.5-16-V |           |      | 16                |              |           | 60             |            |      | 3.57               | 16.66  | 17.22 | 17.81 | 18.45 | 19.89 | ●     |
| SPM200-BN2-1.5-18-V |           |      | 18                |              |           | 60             |            |      | 3.25               | 18.73  | 19.36 | 20.03 | 20.75 | 22.38 | ●     |
| SPM200-BN2-1.5-20-V |           |      | 20                |              |           | 60             |            |      | 2.98               | 20.8   | 21.5  | 22.25 | 23.05 | -     | ○     |
| SPM200-BN2-1.6-8-V  | 1.6       | 0.8  | 8                 | 1.28         | 1.54      | 50             | 4          | 4    | 5.8                | 8.38   | 8.66  | 8.94  | 9.25  | 9.93  | ●     |
| SPM200-BN2-1.6-12-V |           |      | 12                |              |           | 55             |            |      | 4.34               | 12.53  | 12.94 | 13.37 | 13.85 | 14.9  | ○     |
| SPM200-BN2-1.6-16-V |           |      | 16                |              |           | 55             |            |      | 3.47               | 16.66  | 17.21 | 17.81 | 18.44 | 19.88 | ○     |
| SPM200-BN2-1.6-20-V |           |      | 20                |              |           | 60             |            |      | 2.89               | 20.8   | 21.49 | 22.24 | 23.04 | -     | ○     |
| SPM200-BN2-1.8-8-V  | 1.8       | 0.9  | 8                 | 1.44         | 1.73      | 50             | 4          | 4    | 5.55               | 8.36   | 8.63  | 8.91  | 9.21  | 9.88  | ●     |
| SPM200-BN2-1.8-12-V |           |      | 12                |              |           | 55             |            |      | 4.11               | 12.5   | 12.91 | 13.34 | 13.81 | 14.85 | ○     |
| SPM200-BN2-1.8-16-V |           |      | 16                |              |           | 55             |            |      | 3.26               | 16.64  | 17.19 | 17.77 | 18.41 | 19.83 | ○     |
| SPM200-BN2-1.8-20-V |           |      | 20                |              |           | 60             |            |      | 2.7                | 20.77  | 21.46 | 22.21 | 23.01 | -     | ○     |
| SPM200-BN2-2-3-V    | 2         | 1    | 3                 | 1.6          | 1.92      | 50             | 4          | 4    | 9.72               | 3.11   | 3.22  | 3.32  | 3.42  | 3.62  | ●     |
| SPM200-BN2-2-4-V    |           |      | 4                 |              |           | 50             |            |      | 8.32               | 4.16   | 4.31  | 4.44  | 4.57  | 4.86  | ●     |
| SPM200-BN2-2-6-V    |           |      | 6                 |              |           | 50             |            |      | 6.46               | 6.26   | 6.46  | 6.66  | 6.87  | 7.35  | ●     |
| SPM200-BN2-2-8-V    |           |      | 8                 |              |           | 50             |            |      | 5.27               | 8.34   | 8.6   | 8.88  | 9.17  | 9.84  | ●     |
| SPM200-BN2-2-10-V   |           |      | 10                |              |           | 50             |            |      | 4.46               | 10.41  | 10.74 | 11.09 | 11.47 | 12.32 | ●     |
| SPM200-BN2-2-12-V   |           |      | 12                |              |           | 55             |            |      | 3.86               | 12.48  | 12.88 | 13.31 | 13.77 | 14.81 | ●     |
| SPM200-BN2-2-13-V   |           |      | 13                |              |           | 55             |            |      | 3.62               | 13.51  | 13.95 | 14.42 | 14.92 | 16.05 | ●     |
| SPM200-BN2-2-14-V   |           |      | 14                |              |           | 55             |            |      | 3.4                | 14.55  | 15.02 | 15.53 | 16.07 | 17.29 | ●     |
| SPM200-BN2-2-16-V   |           |      | 16                |              |           | 55             |            |      | 3.04               | 16.62  | 17.16 | 17.74 | 18.37 | 19.78 | ●     |

● Stock ○ Available upon Order

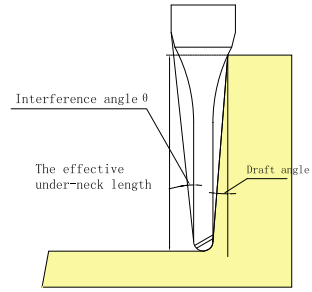
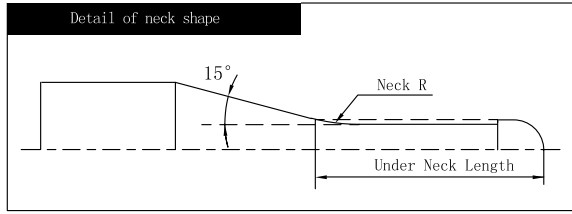
| R        | Tol    |
|----------|--------|
| R ≤ 0.25 | ±0.003 |
| R > 0.25 | ±0.005 |

(mm)

Cutting Parameters ※ P556

# SPM200-BN2

2 Flutes with Extended Neck, Ballnose



Please refer to page 149

» Continue

| Ordering Code       | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|---------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|-------|-------|-------|-------|-------|
|                     |           |      |                   |              |           |                |            |       |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SPM200-BN2-2-18-V   | 2         | 1    | 18                | 1.6          | 1.92      | 60             | 4          | 4     | 2.75               | 18.68  | 19.3  | 19.96 | 20.67 | -     | ○     |
| SPM200-BN2-2-20-V   |           |      | 20                |              |           | 60             |            |       | 2.51               | 20.75  | 21.44 | 22.18 | 22.97 | -     | ●     |
| SPM200-BN2-2-22-V   |           |      | 22                |              |           | 60             |            |       | 2.31               | 22.82  | 23.58 | 24.39 | 25.27 | -     | ○     |
| SPM200-BN2-2-25-V   |           |      | 25                |              |           | 65             |            |       | 2.06               | 25.92  | 26.79 | 27.72 | 28.72 | -     | ●     |
| SPM200-BN2-2-30-V   |           |      | 30                |              |           | 70             |            |       | 1.75               | 31.09  | 32.14 | 33.26 | -     | -     | ●     |
| SPM200-BN2-2-35-V   |           |      | 35                |              |           | 75             |            |       | 1.52               | 36.26  | 37.48 | 38.8  | -     | -     | ●     |
| SPM200-BN2-2-40-V   |           |      | 40                |              |           | 80             |            |       | 1.34               | 41.42  | 42.83 | -     | -     | -     | ○     |
| SPM200-BN2-2.5-6-V  | 2.5       | 1.25 | 6                 | 2            | 2.4       | 50             | 4          | 4     | 5.62               | 6.22   | 6.41  | 6.6   | 6.8   | 7.25  | ○     |
| SPM200-BN2-2.5-10-V |           |      | 10                |              |           | 50             |            |       | 3.69               | 10.37  | 10.69 | 11.03 | 11.4  | 12.23 | ●     |
| SPM200-BN2-2.5-15-V |           |      | 15                |              |           | 55             |            |       | 2.59               | 15.54  | 16.04 | 16.58 | 17.15 | -     | ○     |
| SPM200-BN2-2.5-20-V |           |      | 20                |              |           | 60             |            |       | 1.99               | 20.71  | 21.39 | 22.12 | -     | -     | ○     |
| SPM200-BN2-2.5-25-V |           |      | 25                |              |           | 65             |            |       | 1.62               | 25.88  | 26.74 | 27.66 | -     | -     | ●     |
| SPM200-BN2-2.5-30-V |           |      | 30                |              |           | 70             |            |       | 1.36               | 31.05  | 32.09 | -     | -     | -     | ●     |
| SPM200-BN2-3-8-V    | 3         | 1.5  | 8                 | 2.4          | 2.88      | 55             | 6          | 4     | 7.04               | 8.27   | 8.51  | 8.77  | 9.04  | 9.65  | ●     |
| SPM200-BN2-3-10-V   |           |      | 10                |              |           | 55             |            |       | 6.05               | 10.34  | 10.65 | 10.98 | 11.34 | 12.14 | ●     |
| SPM200-BN2-3-13-V   |           |      | 13                |              |           | 60             |            |       | 5                  | 13.44  | 13.86 | 14.31 | 14.79 | 15.87 | ●     |
| SPM200-BN2-3-16-V   |           |      | 16                |              |           | 60             |            |       | 4.26               | 16.55  | 17.07 | 17.63 | 18.24 | 19.6  | ●     |
| SPM200-BN2-3-20-V   |           |      | 20                |              |           | 65             |            |       | 3.56               | 20.68  | 21.35 | 22.07 | 22.84 | 24.57 | ●     |
| SPM200-BN2-3-25-V   |           |      | 25                |              |           | 70             |            |       | 2.95               | 25.85  | 26.7  | 27.61 | 28.59 | -     | ●     |
| SPM200-BN2-3-30-V   |           |      | 30                |              |           | 75             |            |       | 2.52               | 31.02  | 32.05 | 33.15 | 34.34 | -     | ●     |
| SPM200-BN2-3-35-V   |           |      | 35                |              |           | 80             |            |       | 2.2                | 36.19  | 37.39 | 38.69 | 40.08 | -     | ●     |
| SPM200-BN2-3.5-15-V |           |      | 3.5               |              |           | 1.75           |            |       | 15                 | 2.8  | 3.36  | 60    | 6     | 4     | 3.99  |
| SPM200-BN2-3.5-25-V | 25        | 70   |                   | 2.56         | 25.82     |                | 26.66      | 27.56 | 28.53              |  |       | -     |       |       | ○     |
| SPM200-BN2-3.5-35-V | 35        | 80   |                   | 1.89         | 36.16     |                | 37.36      | 38.64 | -                  |  |       | -     |       |       | ○     |

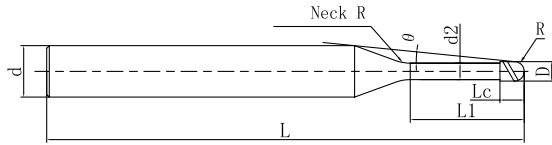
● Stock ○ Available upon Order

| R        | Tol    |
|----------|--------|
| R ≤ 0.25 | ±0.003 |
| R > 0.25 | ±0.005 |

Cutting Parameters ※ P556

# SPM200-BN2

2 Flutes with Extended Neck, Ballnose



Please refer to page 149

» Continue

| Ordering Code       | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|---------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                     |           |      |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SPM200-BN2-3.5-45-V | 3.5       | 1.75 | 45                | 2.8          | 3.36      | 90             | 6          | 4    | 1.5                | 46.5   | 48.05 | -     | -     | -     | ○     |
| SPM200-BN2-4-10-V   | 4         | 2    | 10                | 3.2          | 3.86      | 55             | 6          | 4    | 4.86               | 10.31  | 10.6  | 10.91 | 11.24 | 11.99 | ○     |
| SPM200-BN2-4-13-V   |           |      | 13                |              |           | 60             |            |      | 3.88               | 13.41  | 13.81 | 14.23 | 14.69 | 15.72 | ●     |
| SPM200-BN2-4-16-V   |           |      | 16                |              |           | 60             |            |      | 3.23               | 16.51  | 17.02 | 17.56 | 18.14 | 19.45 | ●     |
| SPM200-BN2-4-20-V   |           |      | 20                |              |           | 65             |            |      | 2.63               | 20.65  | 21.3  | 21.99 | 22.74 | -     | ●     |
| SPM200-BN2-4-25-V   |           |      | 25                |              |           | 70             |            |      | 2.14               | 25.81  | 26.64 | 27.53 | 28.49 | -     | ●     |
| SPM200-BN2-4-30-V   |           |      | 30                |              |           | 75             |            |      | 1.81               | 30.98  | 31.99 | 33.08 | -     | -     | ○     |
| SPM200-BN2-4-35-V   |           |      | 35                |              |           | 80             |            |      | 1.56               | 36.15  | 37.34 | 38.62 | -     | -     | ○     |
| SPM200-BN2-4-40-V   |           |      | 40                |              |           | 80             |            |      | 1.38               | 41.32  | 42.69 | -     | -     | -     | ●     |
| SPM200-BN2-4-45-V   |           |      | 45                |              |           | 90             |            |      | 1.23               | 46.49  | 48.04 | -     | -     | -     | ○     |
| SPM200-BN2-4-50-V   |           |      | 50                |              |           | 100            |            |      | 1.11               | 51.66  | 53.39 | -     | -     | -     | ●     |
| SPM200-BN2-5-20-V   |           |      | 5                 |              |           | 2.5            |            |      | 20                 | 4  | 4.85  | 65    | 6     | 4     | 1.48  |
| SPM200-BN2-5-25-V   | 25        | 70   |                   | 1.18         | 25.79     |                | 26.6       | -    | -                  |  |       | -     |       |       | ●     |
| SPM200-BN2-5-30-V   | 30        | 75   |                   | 0.98         | 30.96     |                | -          | -    | -                  |  |       | -     |       |       | ○     |
| SPM200-BN2-5-40-V   | 40        | 80   |                   | 0.73         | 41.29     |                | -          | -    | -                  |  |       | -     |       |       | ○     |
| SPM200-BN2-6-12-V   | 6         | 3    | 12                | 6            | 5.85      | 60             | 6          | -    | -                  | -  | -     | -     | -     | -     | ○     |
| SPM200-BN2-6-20-V   |           |      | 20                |              |           | 65             |            |      | -                  | -  | -     | -     | -     | ○     |       |
| SPM200-BN2-6-30-V   |           |      | 30                |              |           | 75             |            |      | -                  | -  | -     | -     | -     | ●     |       |
| SPM200-BN2-6-50-V   |           |      | 50                |              |           | 100            |            |      | -                  | -  | -     | -     | -     | ○     |       |

● Stock ○ Available upon Order

| R        | Tol    |
|----------|--------|
| R ≤ 0.25 | ±0.003 |
| R > 0.25 | ±0.005 |

(mm)

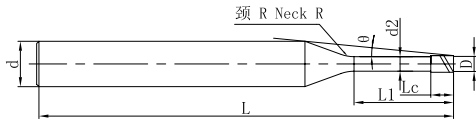
Cutting Parameters ※ P556





# SHM200-SN2 NEW

2 Flutes with Extended Neck, Square



Please refer to page 149

| Ordering Code        | Mill Dia. | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|----------------------|-----------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                      |           |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SHM200-SN2-0.1-0.3-K | 0.1       | 0.3               | 0.15         | 0.08      | 50             | 4          | 1    | 14.39              | 0.31   | 0.33  | 0.35  | 0.37  | 0.40  | ○     |
| SHM200-SN2-0.1-0.5-K |           | 0.5               |              |           |                |            |      | 14.03              | 0.52   | 0.55  | 0.58  | 0.60  | 0.65  | ○     |
| SHM200-SN2-0.1-1-K   |           | 1                 |              |           |                |            |      | 13.22              | 1.05   | 1.09  | 1.13  | 1.18  | 1.27  | ●     |
| SHM200-SN2-0.2-0.5-K | 0.2       | 0.5               | 0.3          | 0.17      | 50             | 4          | 1    | 14.03              | 0.52   | 0.54  | 0.57  | 0.59  | 0.64  | ○     |
| SHM200-SN2-0.2-1-K   |           | 1                 |              |           |                |            |      | 13.20              | 1.04   | 1.08  | 1.12  | 1.16  | 1.26  | ○     |
| SHM200-SN2-0.2-1.5-K |           | 1.5               |              |           |                |            |      | 12.45              | 1.56   | 1.62  | 1.67  | 1.74  | 1.88  | ○     |
| SHM200-SN2-0.2-2-K   | 0.2       | 2                 | 0.3          | 0.17      | 50             | 4          | 1    | 11.79              | 2.08   | 2.15  | 2.23  | 2.31  | 2.50  | ○     |
| SHM200-SN2-0.2-3-K   |           | 3                 |              |           |                |            |      | 10.65              | 3.11   | 3.22  | 3.34  | 3.46  | 3.74  | ○     |
| SHM200-SN2-0.3-1-K   |           | 1                 |              |           |                |            |      | 13.06              | 1.06   | 1.12  | 1.18  | 1.23  | 1.33  | ●     |
| SHM200-SN2-0.3-1.5-K | 0.3       | 1.5               | 0.45         | 0.27      | 50             | 4          | 2    | 12.31              | 1.59   | 1.67  | 1.74  | 1.81  | 1.95  | ○     |
| SHM200-SN2-0.3-2-K   |           | 2                 |              |           |                |            |      | 11.65              | 2.12   | 2.21  | 2.29  | 2.38  | 2.57  | ○     |
| SHM200-SN2-0.3-2.5-K |           | 2.5               |              |           |                |            |      | 11.05              | 2.64   | 2.75  | 2.85  | 2.96  | 3.20  | ●     |
| SHM200-SN2-0.3-3-K   | 0.3       | 3                 | 0.45         | 0.27      | 50             | 4          | 2    | 10.51              | 3.16   | 3.28  | 3.40  | 3.53  | 3.82  | ○     |
| SHM200-SN2-0.4-1-K   |           | 1                 |              |           |                |            |      | 13.01              | 1.06   | 1.12  | 1.18  | 1.23  | 1.33  | ●     |
| SHM200-SN2-0.4-1.5-K |           | 1.5               |              |           |                |            |      | 12.25              | 1.59   | 1.67  | 1.74  | 1.81  | 1.95  | ●     |
| SHM200-SN2-0.4-2-K   | 0.4       | 2                 | 0.6          | 0.37      | 50             | 4          | 2    | 11.57              | 2.12   | 2.21  | 2.29  | 2.38  | 2.57  | ●     |
| SHM200-SN2-0.4-2.5-K |           | 2.5               |              |           |                |            |      | 10.97              | 2.64   | 2.75  | 2.85  | 2.96  | 3.20  | ○     |
| SHM200-SN2-0.4-3-K   |           | 3                 |              |           |                |            |      | 10.42              | 3.16   | 3.28  | 3.40  | 3.53  | 3.82  | ○     |
| SHM200-SN2-0.4-3.5-K | 0.4       | 3.5               | 0.6          | 0.37      | 50             | 4          | 2    | 9.92               | 3.68   | 3.82  | 3.96  | 4.11  | 4.44  | ○     |
| SHM200-SN2-0.4-4-K   |           | 4                 |              |           |                |            |      | 9.47               | 4.20   | 4.35  | 4.51  | 4.68  | 5.06  | ○     |
| SHM200-SN2-0.4-5-K   |           | 5                 |              |           |                |            |      | 8.68               | 5.24   | 5.42  | 5.62  | 5.83  | 6.30  | ○     |
| SHM200-SN2-0.4-6-K   | 0.4       | 6                 | 0.6          | 0.37      | 50             | 4          | 2    | 8.01               | 6.27   | 6.49  | 6.73  | 6.98  | 7.55  | ○     |
| SHM200-SN2-0.4-8-K   |           | 8                 |              |           |                |            |      | 6.94               | 8.34   | 8.63  | 8.94  | 9.28  | 10.03 | ○     |
| SHM200-SN2-0.4-10-K  |           | 10                |              |           |                |            |      | 6.12               | 10.41  | 10.77 | 11.16 | 11.58 | 12.52 | ○     |

● Stock ○ Available upon Order

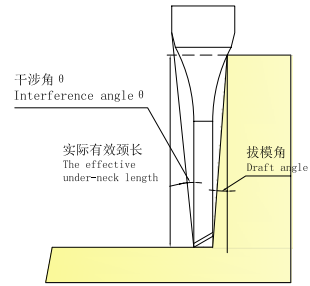
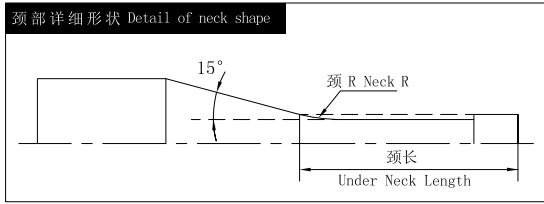
| D             | Tol         |
|---------------|-------------|
| 0.1 ≤ D ≤ 1.0 | 0<br>-0.007 |
| 1.0 < D ≤ 6.0 | 0<br>-0.01  |

(mm)

Cutting Parameters ※ P519

# SHM200-SN2 NEW

2 Flutes with Extended Neck, Square



Please refer to page 149

» Continue

| Ordering Code        | Mill Dia. | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|----------------------|-----------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                      |           |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SHM200-SN2-0.5-1-K   | 0.5       | 1                 | 0.75         | 0.47      | 50             | 4          | 2    | 12.96              | 1.06   | 1.12  | 1.18  | 1.23  | 1.33  | ○     |
| SHM200-SN2-0.5-1.5-K |           | 1.5               |              |           |                |            |      | 12.19              | 1.59   | 1.67  | 1.74  | 1.81  | 1.95  | ●     |
| SHM200-SN2-0.5-2-K   |           | 2                 |              |           |                |            |      | 11.50              | 2.12   | 2.21  | 2.29  | 2.38  | 2.57  | ○     |
| SHM200-SN2-0.5-2.5-K |           | 2.5               |              |           |                |            |      | 10.88              | 2.64   | 2.75  | 2.85  | 2.96  | 3.20  | ●     |
| SHM200-SN2-0.5-3-K   |           | 3                 |              |           |                |            |      | 10.33              | 3.16   | 3.28  | 3.40  | 3.53  | 3.82  | ●     |
| SHM200-SN2-0.5-4-K   |           | 4                 |              |           |                |            |      | 9.37               | 4.20   | 4.35  | 4.51  | 4.68  | 5.06  | ●     |
| SHM200-SN2-0.5-5-K   |           | 5                 |              |           |                |            |      | 8.58               | 5.24   | 5.42  | 5.62  | 5.83  | 6.30  | ○     |
| SHM200-SN2-0.5-6-K   |           | 6                 |              |           |                |            |      | 7.91               | 6.27   | 6.49  | 6.73  | 6.98  | 7.55  | ●     |
| SHM200-SN2-0.5-8-K   |           | 8                 |              |           |                |            |      | 6.84               | 8.34   | 8.63  | 8.94  | 9.28  | 10.03 | ○     |
| SHM200-SN2-0.5-10-K  |           | 10                |              |           |                |            |      | 6.02               | 10.41  | 10.77 | 11.16 | 11.58 | 12.52 | ○     |
| SHM200-SN2-0.6-2-K   | 0.6       | 2                 | 0.9          | 0.57      | 50             | 4          | 4    | 11.21              | 2.17   | 2.31  | 2.44  | 2.56  | 2.78  | ○     |
| SHM200-SN2-0.6-3-K   |           | 3                 |              |           |                |            |      | 10.07              | 3.24   | 3.42  | 3.58  | 3.72  | 4.02  | ●     |
| SHM200-SN2-0.6-4-K   |           | 4                 |              |           |                |            |      | 9.13               | 4.30   | 4.51  | 4.69  | 4.87  | 5.26  | ●     |
| SHM200-SN2-0.6-5-K   |           | 5                 |              |           |                |            |      | 8.36               | 5.35   | 5.59  | 5.80  | 6.02  | 6.50  | ○     |
| SHM200-SN2-0.6-6-K   |           | 6                 |              |           |                |            |      | 14.39              | 0.31   | 0.33  | 0.35  | 0.37  | 0.40  | ○     |
| SHM200-SN2-0.6-7-K   |           | 7                 |              |           |                |            |      | 14.03              | 0.52   | 0.55  | 0.58  | 0.60  | 0.65  | ○     |
| SHM200-SN2-0.6-8-K   |           | 8                 |              |           |                |            |      | 13.22              | 1.05   | 1.09  | 1.13  | 1.18  | 1.27  | ○     |
| SHM200-SN2-0.6-9-K   |           | 9                 |              |           |                |            |      | 14.03              | 0.52   | 0.54  | 0.57  | 0.59  | 0.64  | ○     |
| SHM200-SN2-0.6-10-K  |           | 10                |              |           |                |            |      | 13.20              | 1.04   | 1.08  | 1.12  | 1.16  | 1.26  | ○     |
| SHM200-SN2-0.7-2-K   |           | 0.7               |              |           |                |            |      | 2                  | 1.05   | 0.67  | 50    | 4     | 4     | 12.45 |
| SHM200-SN2-0.7-4-K   | 4         |                   | 11.79        | 2.08      | 2.15           | 2.23       | 2.31 | 2.50               |  |       |       |       |       | ○     |
| SHM200-SN2-0.7-6-K   | 6         |                   | 10.65        | 3.11      | 3.22           | 3.34       | 3.46 | 3.74               |  |       |       |       |       | ○     |
| SHM200-SN2-0.7-8-K   | 8         |                   | 13.06        | 1.06      | 1.12           | 1.18       | 1.23 | 1.33               |  |       |       |       |       | ○     |
| SHM200-SN2-0.7-10-K  | 10        |                   | 12.31        | 1.59      | 1.67           | 1.74       | 1.81 | 1.95               |  |       |       |       |       | ○     |

● Stock ○ Available upon Order

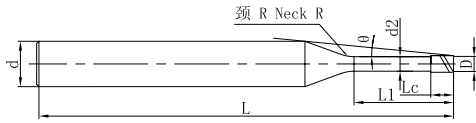
| D             | Tol         |
|---------------|-------------|
| 0.1 ≤ D ≤ 1.0 | 0<br>-0.007 |
| 1.0 < D ≤ 6.0 | 0<br>-0.01  |

(mm)

Cutting Parameters ※ P519

# SHM200-SN2 NEW

2 Flutes with Extended Neck, Square



Please refer to page 149

» Continue

| Ordering Code       | Mill Dia. | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |      |
|---------------------|-----------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|------|
|                     |           |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |      |
| SHM200-SN2-0.8-4-K  | 0.8       | 4                 | 1.2          | 0.76      | 50             | 4          | 4    | 11.65              | 2.12   | 2.21  | 2.29  | 2.38  | 2.57  | ●     |      |
| SHM200-SN2-0.8-6-K  |           | 6                 |              |           | 50             |            |      |                    | 11.05  | 2.64  | 2.75  | 2.85  | 2.96  | 3.20  | ●    |
| SHM200-SN2-0.8-8-K  |           | 8                 |              |           | 50             |            |      |                    | 10.51  | 3.16  | 3.28  | 3.40  | 3.53  | 3.82  | ○    |
| SHM200-SN2-0.8-10-K |           | 10                |              |           | 50             |            |      |                    | 13.01  | 1.06  | 1.12  | 1.18  | 1.23  | 1.33  | ○    |
| SHM200-SN2-0.8-12-K |           | 12                |              |           | 55             |            |      |                    | 12.25  | 1.59  | 1.67  | 1.74  | 1.81  | 1.95  | ○    |
| SHM200-SN2-0.9-6-K  | 0.9       | 6                 | 1.35         | 0.86      | 50             | 4          | 4    | 11.57              | 2.12   | 2.21  | 2.29  | 2.38  | 2.57  | ●     |      |
| SHM200-SN2-0.9-8-K  |           | 8                 |              |           | 50             |            |      |                    | 10.97  | 2.64  | 2.75  | 2.85  | 2.96  | 3.20  | ○    |
| SHM200-SN2-0.9-10-K |           | 10                |              |           | 50             |            |      |                    | 10.42  | 3.16  | 3.28  | 3.40  | 3.53  | 3.82  | ○    |
| SHM200-SN2-0.9-12-K |           | 12                |              |           | 55             |            |      |                    | 9.92   | 3.68  | 3.82  | 3.96  | 4.11  | 4.44  | ○    |
| SHM200-SN2-1-2-K    | 1         | 2                 | 1.5          | 0.96      | 50             | 4          | 4    | 9.47               | 4.20   | 4.35  | 4.51  | 4.68  | 5.06  | ○     |      |
| SHM200-SN2-1-3-K    |           | 3                 |              |           | 50             |            |      |                    | 8.68   | 5.24  | 5.42  | 5.62  | 5.83  | 6.30  | ●    |
| SHM200-SN2-1-4-K    |           | 4                 |              |           | 50             |            |      |                    | 8.01   | 6.27  | 6.49  | 6.73  | 6.98  | 7.55  | ●    |
| SHM200-SN2-1-5-K    |           | 5                 |              |           | 50             |            |      |                    | 6.94   | 8.34  | 8.63  | 8.94  | 9.28  | 10.03 | ●    |
| SHM200-SN2-1-6-K    |           | 6                 |              |           | 50             |            |      |                    | 6.12   | 10.41 | 10.77 | 11.16 | 11.58 | 12.52 | ●    |
| SHM200-SN2-1-7-K    |           | 7                 |              |           | 50             |            |      |                    | 12.96  | 1.06  | 1.12  | 1.18  | 1.23  | 1.33  | ●    |
| SHM200-SN2-1-8-K    |           | 8                 |              |           | 50             |            |      |                    | 12.19  | 1.59  | 1.67  | 1.74  | 1.81  | 1.95  | ●    |
| SHM200-SN2-1-9-K    |           | 9                 |              |           | 50             |            |      |                    | 11.50  | 2.12  | 2.21  | 2.29  | 2.38  | 2.57  | ○    |
| SHM200-SN2-1-10-K   |           | 10                |              |           | 50             |            |      |                    | 10.88  | 2.64  | 2.75  | 2.85  | 2.96  | 3.20  | ●    |
| SHM200-SN2-1-12-K   |           | 12                |              |           | 55             |            |      |                    | 10.33  | 3.16  | 3.28  | 3.40  | 3.53  | 3.82  | ○    |
| SHM200-SN2-1-14-K   |           | 14                |              |           | 55             |            |      |                    | 9.37   | 4.20  | 4.35  | 4.51  | 4.68  | 5.06  | ○    |
| SHM200-SN2-1-16-K   |           | 16                |              |           | 55             |            |      |                    | 8.58   | 5.24  | 5.42  | 5.62  | 5.83  | 6.30  | ●    |
| SHM200-SN2-1-20-K   |           | 20                |              |           | 60             |            |      |                    | 7.91   | 6.27  | 6.49  | 6.73  | 6.98  | 7.55  | ○    |
| SHM200-SN2-1-25-K   |           | 25                |              |           | 65             |            |      |                    |  | 8.34  | 8.63  | 8.94  | 9.28  | 10.03 | ○    |
| SHM200-SN2-1.2-6-K  |           | 1.2               |              |           | 6              |            |      |                    | 1.8  | 1.15  | 50    | 4     | 4     | 14.39 | 0.31 |

● Stock ○ Available upon Order

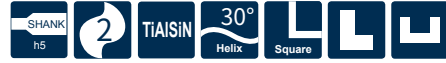
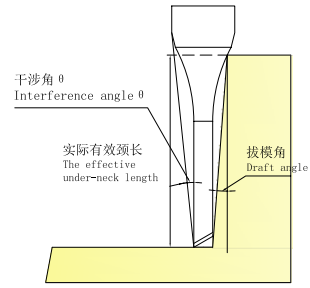
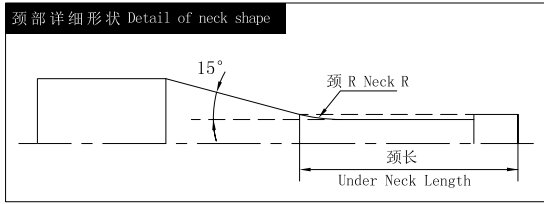
| D             | Tol         |
|---------------|-------------|
| 0.1 ≤ D ≤ 1.0 | 0<br>-0.007 |
| 1.0 < D ≤ 6.0 | 0<br>-0.01  |

(mm)

Cutting Parameters ※ P519

# SHM200-SN2 NEW

2 Flutes with Extended Neck, Square



Please refer to page 149

» Continue

| Ordering Code       | Mill Dia. | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|---------------------|-----------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                     |           |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SHM200-SN2-1.2-8-K  | 1.2       | 8                 | 1.8          | 1.15      | 50             | 4          | 4    | 14.03              | 0.52   | 0.55  | 0.58  | 0.60  | 0.65  | ○     |
| SHM200-SN2-1.2-10-K |           | 10                |              |           | 13.22          |            |      | 1.05               | 1.09   | 1.13  | 1.18  | 1.27  | ○     |       |
| SHM200-SN2-1.2-12-K |           | 12                |              |           | 14.03          |            |      | 0.52               | 0.54   | 0.57  | 0.59  | 0.64  | ○     |       |
| SHM200-SN2-1.2-16-K |           | 16                |              |           | 13.20          |            |      | 1.04               | 1.08   | 1.12  | 1.16  | 1.26  | ○     |       |
| SHM200-SN2-1.4-6-K  | 1.4       | 6                 | 2.1          | 1.34      | 50             | 4          | 4    | 12.45              | 1.56   | 1.62  | 1.67  | 1.74  | 1.88  | ●     |
| SHM200-SN2-1.4-12-K |           | 12                |              |           | 11.79          |            |      | 2.08               | 2.15   | 2.23  | 2.31  | 2.50  | ○     |       |
| SHM200-SN2-1.5-4-K  | 1.5       | 4                 | 2.25         | 1.44      | 50             | 4          | 4    | 10.65              | 3.11   | 3.22  | 3.34  | 3.46  | 3.74  | ○     |
| SHM200-SN2-1.5-6-K  |           | 6                 |              |           | 13.06          |            |      | 1.06               | 1.12   | 1.18  | 1.23  | 1.33  | ●     |       |
| SHM200-SN2-1.5-8-K  |           | 8                 |              |           | 12.31          |            |      | 1.59               | 1.67   | 1.74  | 1.81  | 1.95  | ●     |       |
| SHM200-SN2-1.5-10-K |           | 10                |              |           | 11.65          |            |      | 2.12               | 2.21   | 2.29  | 2.38  | 2.57  | ○     |       |
| SHM200-SN2-1.5-12-K |           | 12                |              |           | 11.05          |            |      | 2.64               | 2.75   | 2.85  | 2.96  | 3.20  | ○     |       |
| SHM200-SN2-1.5-14-K |           | 14                |              |           | 10.51          |            |      | 3.16               | 3.28   | 3.40  | 3.53  | 3.82  | ○     |       |
| SHM200-SN2-1.5-16-K |           | 16                |              |           | 13.01          |            |      | 1.06               | 1.12   | 1.18  | 1.23  | 1.33  | ○     |       |
| SHM200-SN2-1.5-18-K |           | 15                |              |           | 4              |            |      | 4                  | 1.67   | 1.74  | 1.81  | 1.95  | ○     |       |
| SHM200-SN2-1.5-20-K |           | 20                |              |           | 11.57          |            |      | 2.12               | 2.21   | 2.29  | 2.38  | 2.57  | ○     |       |
| SHM200-SN2-1.5-25-K |           | 25                |              |           | 10.97          |            |      | 2.64               | 2.75   | 2.85  | 2.96  | 3.20  | ○     |       |
| SHM200-SN2-1.5-30-K |           | 30                |              |           | 10.42          |            |      | 3.16               | 3.28   | 3.40  | 3.53  | 3.82  | ○     |       |
| SHM200-SN2-1.5-35-K |           | 35                |              |           | 9.92           |            |      | 3.68               | 3.82   | 3.96  | 4.11  | 4.44  | ○     |       |
| SHM200-SN2-1.5-40-K | 40        | 9.47              | 4.20         | 4.35      | 4.51           | 4.68       | 5.06 | ○                  |  |       |       |       |       |       |
| SHM200-SN2-1.6-6-K  | 1.6       | 6                 | 2.4          | 1.54      | 50             | 4          | 4    | 8.68               | 5.24   | 5.42  | 5.62  | 5.83  | 6.30  | ○     |
| SHM200-SN2-1.6-8-K  |           | 8                 |              |           | 8.01           |            |      | 6.27               | 6.49   | 6.73  | 6.98  | 7.55  | ○     |       |
| SHM200-SN2-1.8-6-K  | 1.8       | 6                 | 2.7          | 1.73      | 50             | 4          | 4    | 6.94               | 8.34   | 8.63  | 8.94  | 9.28  | 10.03 | ○     |
| SHM200-SN2-1.8-8-K  |           | 8                 |              |           | 6.12           |            |      | 10.41              | 10.77  | 11.16 | 11.58 | 12.52 | ○     |       |
| SHM200-SN2-2-4-K    | 2         | 4                 | 3            | 1.92      | 50             | 4          | 4    | 12.96              | 1.06   | 1.12  | 1.18  | 1.23  | 1.33  | ○     |

● Stock ○ Available upon Order

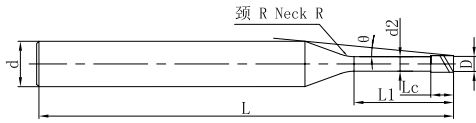
| D             | Tol         |
|---------------|-------------|
| 0.1 ≤ D ≤ 1.0 | 0<br>-0.007 |
| 1.0 < D ≤ 6.0 | 0<br>-0.01  |

(mm)

Cutting Parameters ※ P519

# SHM200-SN2 NEW

2 Flutes with Extended Neck, Square



Please refer to page 149

» Continue

| Ordering Code       | Mill Dia. | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|---------------------|-----------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                     |           |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SHM200-SN2-2-6-K    | 2         | 6                 | 3            | 1.92      | 50             | 4          | 4    | 12.19              | 1.59   | 1.67  | 1.74  | 1.81  | 1.95  | ○     |
| SHM200-SN2-2-8-K    |           | 8                 |              |           | 50             |            |      | 11.50              | 2.12   | 2.21  | 2.29  | 2.38  | 2.57  | ●     |
| SHM200-SN2-2-10-K   |           | 10                |              |           | 50             |            |      | 10.88              | 2.64   | 2.75  | 2.85  | 2.96  | 3.20  | ●     |
| SHM200-SN2-2-12-K   |           | 12                |              |           | 55             |            |      | 10.33              | 3.16   | 3.28  | 3.40  | 3.53  | 3.82  | ●     |
| SHM200-SN2-2-14-K   |           | 14                |              |           | 55             |            |      | 9.37               | 4.20   | 4.35  | 4.51  | 4.68  | 5.06  | ●     |
| SHM200-SN2-2-16-K   |           | 16                |              |           | 55             |            |      | 8.58               | 5.24   | 5.42  | 5.62  | 5.83  | 6.30  | ●     |
| SHM200-SN2-2-18-K   |           | 18                |              |           | 60             |            |      | 7.91               | 6.27   | 6.49  | 6.73  | 6.98  | 7.55  | ○     |
| SHM200-SN2-2-20-K   |           | 20                |              |           | 60             |            |      | 6.84               | 8.34   | 8.63  | 8.94  | 9.28  | 10.03 | ○     |
| SHM200-SN2-2-25-K   |           | 25                |              |           | 65             |            |      | 6.02               | 10.41  | 10.77 | 11.16 | 11.58 | 12.52 | ○     |
| SHM200-SN2-2-30-K   |           | 30                |              |           | 70             |            |      | 11.21              | 2.17   | 2.31  | 2.44  | 2.56  | 2.78  | ○     |
| SHM200-SN2-2-35-K   |           | 35                |              |           | 75             |            |      | 10.07              | 3.24   | 3.42  | 3.58  | 3.72  | 4.02  | ○     |
| SHM200-SN2-2-40-K   |           | 40                |              |           | 80             |            |      | 9.13               | 4.30   | 4.51  | 4.69  | 4.87  | 5.26  | ○     |
| SHM200-SN2-2-50-K   |           | 50                |              |           | 90             |            |      | 8.36               | 5.35   | 5.59  | 5.80  | 6.02  | 6.50  | ○     |
| SHM200-SN2-2.5-8-K  |           | 2.5               |              |           | 8              |            |      | 3.75               | 2.4  | 50    | 4     | 4     | 14.39 | 0.31  |
| SHM200-SN2-2.5-12-K | 12        |                   | 55           | 14.03     | 0.52           | 0.55       | 0.58 |                    |  | 0.60  |       |       | 0.65  | ○     |
| SHM200-SN2-2.5-16-K | 16        |                   | 55           | 13.22     | 1.05           | 1.09       | 1.13 |                    |  | 1.18  |       |       | 1.27  | ○     |
| SHM200-SN2-2.5-20-K | 20        |                   | 60           | 14.03     | 0.52           | 0.54       | 0.57 |                    |  | 0.59  |       |       | 0.64  | ○     |
| SHM200-SN2-2.5-30-K | 30        |                   | 70           | 13.20     | 1.04           | 1.08       | 1.12 |                    |  | 1.16  |       |       | 1.26  | ○     |
| SHM200-SN2-2.5-40-K | 40        |                   | 80           | 12.45     | 1.56           | 1.62       | 1.67 |                    |  | 1.74  |       |       | 1.88  | ○     |
| SHM200-SN2-2.5-50-K | 50        |                   | 90           | 11.79     | 2.08           | 2.15       | 2.23 |                    |  | 2.31  |       |       | 2.50  | ○     |
| SHM200-SN2-3-8-K    | 3         | 8                 | 4.5          | 2.88      | 55             | 6          | 4    | 10.65              | 3.11   | 3.22  | 3.34  | 3.46  | 3.74  | ○     |
| SHM200-SN2-3-12-K   |           | 12                |              |           | 60             |            |      | 13.06              | 1.06   | 1.12  | 1.18  | 1.23  | 1.33  | ○     |
| SHM200-SN2-3-16-K   |           | 16                |              |           | 60             |            |      | 12.31              | 1.59   | 1.67  | 1.74  | 1.81  | 1.95  | ●     |
| SHM200-SN2-3-20-K   |           | 20                |              |           | 65             |            |      | 11.65              | 2.12   | 2.21  | 2.29  | 2.38  | 2.57  | ○     |

● Stock ○ Available upon Order

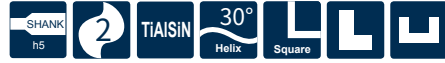
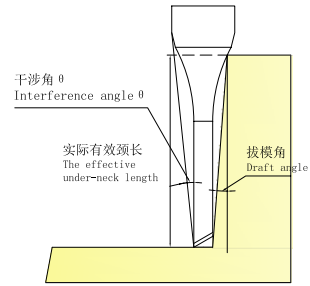
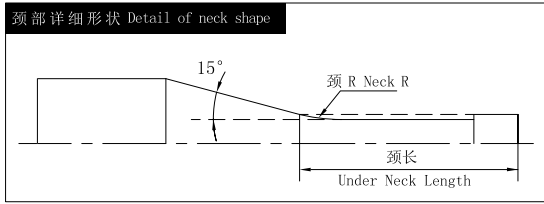
| D             | Tol         |
|---------------|-------------|
| 0.1 ≤ D ≤ 1.0 | 0<br>-0.007 |
| 1.0 < D ≤ 6.0 | 0<br>-0.01  |

(mm)

Cutting Parameters ※ P519

# SHM200-SN2 NEW

2 Flutes with Extended Neck, Square



Please refer to page 149

» Continue

| Ordering Code     | Mill Dia. | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |   |
|-------------------|-----------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|---|
|                   |           |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |   |
| SHM200-SN2-3-25-K | 3         | 25                | 4.5          | 2.88      | 70             | 6          | 4    | 11.05              | 2.64   | 2.75  | 2.85  | 2.96  | 3.20  | ○     |   |
| SHM200-SN2-3-30-K |           | 30                |              |           | 75             |            |      |                    | 10.51  | 3.16  | 3.28  | 3.40  | 3.53  | 3.82  | ○ |
| SHM200-SN2-3-40-K |           | 40                |              |           | 90             |            |      |                    | 13.01  | 1.06  | 1.12  | 1.18  | 1.23  | 1.33  | ○ |
| SHM200-SN2-3-50-K |           | 50                |              |           | 100            |            |      |                    | 4  | 4     | 1.67  | 1.74  | 1.81  | 1.95  | ○ |
| SHM200-SN2-4-12-K | 4         | 12                | 6            | 3.86      | 60             | 6          | 4    | 11.57              | 2.12   | 2.21  | 2.29  | 2.38  | 2.57  | ○     |   |
| SHM200-SN2-4-16-K |           | 16                |              |           | 60             |            |      |                    | 10.97  | 2.64  | 2.75  | 2.85  | 2.96  | 3.20  | ○ |
| SHM200-SN2-4-20-K |           | 20                |              |           | 70             |            |      |                    | 10.42  | 3.16  | 3.28  | 3.40  | 3.53  | 3.82  | ● |
| SHM200-SN2-4-25-K |           | 25                |              |           | 70             |            |      |                    | 9.92   | 3.68  | 3.82  | 3.96  | 4.11  | 4.44  | ○ |
| SHM200-SN2-4-30-K |           | 30                |              |           | 80             |            |      |                    | 9.47   | 4.20  | 4.35  | 4.51  | 4.68  | 5.06  | ○ |
| SHM200-SN2-4-35-K |           | 35                |              |           | 80             |            |      |                    | 8.68   | 5.24  | 5.42  | 5.62  | 5.83  | 6.30  | ○ |
| SHM200-SN2-4-40-K |           | 40                |              |           | 90             |            |      |                    | 8.01   | 6.27  | 6.49  | 6.73  | 6.98  | 7.55  | ○ |
| SHM200-SN2-4-50-K |           | 50                |              |           | 100            |            |      |                    | 6.94   | 8.34  | 8.63  | 8.94  | 9.28  | 10.03 | ○ |
| SHM200-SN2-5-20-K | 5         | 20                | 7.5          | 4.85      | 70             | 6          | 4    | 6.12               | 10.41  | 10.77 | 11.16 | 11.58 | 12.52 | ○     |   |
| SHM200-SN2-5-25-K |           | 25                |              |           | 70             |            |      |                    | 12.96  | 1.06  | 1.12  | 1.18  | 1.23  | 1.33  | ○ |
| SHM200-SN2-5-30-K |           | 30                |              |           | 80             |            |      |                    | 12.19  | 1.59  | 1.67  | 1.74  | 1.81  | 1.95  | ○ |
| SHM200-SN2-5-40-K |           | 40                |              |           | 90             |            |      |                    | 11.50  | 2.12  | 2.21  | 2.29  | 2.38  | 2.57  | ○ |
| SHM200-SN2-5-50-K |           | 50                |              |           | 100            |            |      |                    | 10.88  | 2.64  | 2.75  | 2.85  | 2.96  | 3.20  | ○ |
| SHM200-SN2-6-20-K | 6         | 20                | 9            | 5.85      | 70             | 6          | -    | 10.33              | 3.16   | 3.28  | 3.40  | 3.53  | 3.82  | ○     |   |
| SHM200-SN2-6-30-K |           | 30                |              |           | 80             |            |      |                    | 9.37   | 4.20  | 4.35  | 4.51  | 4.68  | 5.06  | ○ |
| SHM200-SN2-6-40-K |           | 40                |              |           | 90             |            |      |                    | 8.58   | 5.24  | 5.42  | 5.62  | 5.83  | 6.30  | ○ |
| SHM200-SN2-6-50-K |           | 50                |              |           | 100            |            |      |                    | 7.91   | 6.27  | 6.49  | 6.73  | 6.98  | 7.55  | ○ |

● Stock ○ Available upon Order

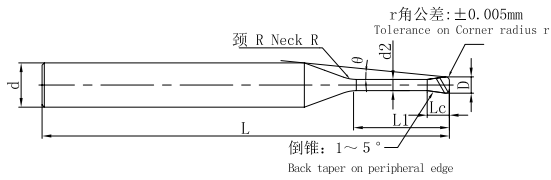
| D             | Tol         |
|---------------|-------------|
| 0.1 ≤ D ≤ 1.0 | 0<br>-0.007 |
| 1.0 < D ≤ 6.0 | 0<br>-0.01  |

(mm)

Cutting Parameters ※ P519

# SHM200-RN2 NEW

2 Flutes with Extended Neck, Corner Radius



Please refer to page 149

| Ordering Code             | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |      |       |      |      | Stock |       |      |      |      |      |      |      |   |       |      |      |      |      |       |      |      |      |      |      |   |
|---------------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|------|-------|------|------|-------|-------|------|------|------|------|------|------|---|-------|------|------|------|------|-------|------|------|------|------|------|---|
|                           |           |      |                   |              |           |                |            |      |                    | 0.5°   | 1°   | 1.5°  | 2°   | 3°   |       |       |      |      |      |      |      |      |   |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.2-0.5-0.02-K | 0.2       | 0.02 | 0.5               | 0.16         | 0.17      | 50             | 4          | 1    | 14.07              | 0.52   | 0.54 | 0.56  | 0.58 | 0.63 | ○     |       |      |      |      |      |      |      |   |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.2-1-0.02-K   |           |      | 1                 |              |           |                |            |      |                    | 1.04   | 1.08 | 1.12  | 1.16 | 1.25 | ○     |       |      |      |      |      |      |      |   |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.2-2-0.02-K   |           |      | 2                 |              |           |                |            |      |                    | 2.08   | 2.15 | 2.23  | 2.31 | 2.50 | ○     |       |      |      |      |      |      |      |   |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.2-0.5-0.05-K |           | 0.05 | 0.05              |              |           |                |            |      |                    | 0.5  | 0.24 | 0.27  | 50   | 4    | 2     | 14.12 | 0.52 | 0.54 | 0.56 | 0.58 | 0.62 | ○    |   |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.2-1-0.05-K   |           |      |                   |              |           |                |            |      |                    | 1  |      |       |      |      |       |       | 1.04 | 1.08 | 1.11 | 1.15 | 1.24 | ○    |   |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.2-1.5-0.05-K |           |      |                   |              |           |                |            |      |                    | 1.5  |      |       |      |      |       |       | 1.56 | 1.61 | 1.67 | 1.73 | 1.87 | ○    |   |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.2-2-0.05-K   |           |      |                   |              |           |                |            |      |                    | 2  |      |       |      |      |       |       | 2.08 | 2.15 | 2.22 | 2.30 | 2.49 | ○    |   |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.3-1-0.02-K   |           |      |                   |              |           |                |            |      |                    | 0.3  |      |       |      |      |       |       | 0.02 | 1    | 0.32 | 0.37 | 50   | 4    | 2 | 13.09 | 1.06 | 1.12 | 1.17 | 1.23 | 1.33  | ○    |      |      |      |      |   |
| SHM200-RN2-0.3-2-0.02-K   |           |      |                   |              |           |                |            |      |                    |  |      |       |      |      |       |       |      | 2    |      |      |      |      |   |       | 2.11 | 2.21 | 2.29 | 2.38 | 2.57  | ○    |      |      |      |      |   |
| SHM200-RN2-0.3-3-0.02-K   |           | 3    | 3.16              |              |           |                |            |      |                    |  |      |       |      |      |       |       |      | 3.28 |      |      |      |      |   |       | 3.40 | 3.53 | 3.81 | ○    |       |      |      |      |      |      |   |
| SHM200-RN2-0.3-1-0.05-K   |           | 0.05 | 0.05              |              |           |                |            |      |                    |  |      |       |      |      |       |       | 1    | 0.32 |      |      |      |      |   |       | 0.37 | 50   | 4    | 2    | 13.14 | 1.06 | 1.12 | 1.17 | 1.22 | 1.32 | ○ |
| SHM200-RN2-0.3-1.5-0.05-K |           |      |                   |              |           |                |            |      |                    |  |      |       |      |      |       |       | 1.5  |      |      |      |      |      |   |       |      |      |      |      |       | 1.59 | 1.66 | 1.73 | 1.80 | 1.94 | ○ |
| SHM200-RN2-0.3-2-0.05-K   | 2         |      |                   | 2.11         | 2.21      | 2.29           | 2.37       | 2.56 | ○                  |  |      |       |      |      |       |       |      |      |      |      |      |      |   |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.3-2.5-0.05-K | 2.5       |      |                   | 2.64         | 2.75      | 2.84           | 2.95       | 3.18 | ○                  |  |      |       |      |      |       |       |      |      |      |      |      |      |   |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.3-3-0.05-K   | 3         |      |                   | 3.16         | 3.28      | 3.40           | 3.52       | 3.81 | ○                  |  |      |       |      |      |       |       |      |      |      |      |      |      |   |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.4-1-0.02-K   | 0.4       |      |                   | 0.02         | 1         | 0.32           | 0.37       | 50   | 4                  |  | 2    | 13.04 | 1.06 | 1.12 | 1.17  | 1.23  | 1.33 |      |      |      |      |      |   |       |      |      |      |      |       | ○    |      |      |      |      |   |
| SHM200-RN2-0.4-2-0.02-K   |           | 2    | 2.11              |              | 2.21      |                |            |      |                    |  |      |       | 2.29 | 2.38 | 2.57  | ○     |      |      |      |      |      |      |   |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.4-3-0.02-K   |           | 3    | 3.16              |              | 3.28      |                |            |      |                    |  |      |       | 3.40 | 3.53 | 3.81  | ○     |      |      |      |      |      |      |   |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.4-4-0.02-K   |           | 4    | 4.20              |              | 4.35      |                |            |      |                    |  |      |       | 4.51 | 4.68 | 5.06  | ○     |      |      |      |      |      |      |   |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.4-1-0.05-K   |           | 0.05 | 0.05              | 1            | 0.32      |                |            |      |                    | 0.37   |      |       | 50   | 4    | 2     | 13.09 | 1.06 |      | 1.12 | 1.17 | 1.22 | 1.32 | ○ |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.4-1.5-0.05-K |           |      |                   | 1.5          |           |                |            |      |                    |  |      |       |      |      |       |       | 1.59 |      | 1.66 | 1.73 | 1.80 | 1.94 | ○ |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.4-2-0.05-K   |           |      |                   | 2            |           |                |            |      |                    |  |      |       |      |      |       |       | 2.11 |      | 2.21 | 2.29 | 2.37 | 2.56 | ○ |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.4-2.5-0.05-K |           |      |                   | 2.5          |           |                |            |      |                    |  |      |       |      |      |       |       | 2.64 | 2.75 | 2.84 | 2.95 | 3.18 | ○    |   |       |      |      |      |      |       |      |      |      |      |      |   |
| SHM200-RN2-0.4-3-0.05-K   |           |      |                   | 3            |           |                |            |      |                    |  |      |       |      |      |       |       | 3.16 | 3.28 | 3.40 | 3.52 | 3.81 | ○    |   |       |      |      |      |      |       |      |      |      |      |      |   |

● Stock ○ Available upon Order

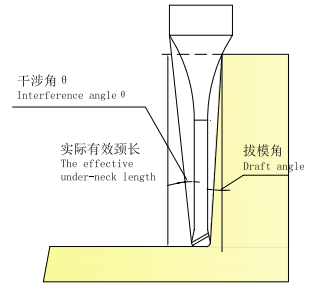
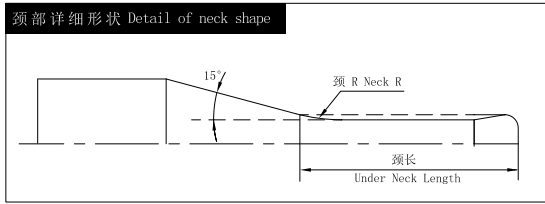
| R | Tol    |
|---|--------|
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SHM200-RN2 NEW

2 Flutes with Extended Neck, Corner Raidus



Please refer to page 149

» Continue

| Ordering Code             | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |      |      |      |      | Stock |   |
|---------------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|------|------|------|------|-------|---|
|                           |           |      |                   |              |           |                |            |      |                    | 0.5°   | 1°   | 1.5° | 2°   | 3°   |       |   |
| SHM200-RN2-0.4-3.5-0.05-K | 0.4       | 0.05 | 3.5               | 0.32         | 0.37      | 50             | 4          | 2    | 9.97               | 3.68   | 3.82 | 3.95 | 4.10 | 4.43 | ○     |   |
| SHM200-RN2-0.4-4-0.05-K   |           |      | 4                 |              |           |                |            |      |                    | 4.20   | 4.35 | 4.51 | 4.67 | 5.05 | ○     |   |
| SHM200-RN2-0.4-1-0.1-K    |           | 0.1  | 1                 |              |           |                |            |      |                    | 1.06   | 1.11 | 1.16 | 1.21 | 1.31 | ○     |   |
| SHM200-RN2-0.4-2-0.1-K    |           |      | 2                 |              |           |                |            |      |                    | 11.70  | 2.11 | 2.20 | 2.28 | 2.37 | 2.55  | ○ |
| SHM200-RN2-0.4-3-0.1-K    |           |      | 3                 |              |           |                |            |      |                    | 10.53  | 3.16 | 3.28 | 3.39 | 3.52 | 3.79  | ○ |
| SHM200-RN2-0.4-4-0.1-K    |           |      | 4                 |              |           |                |            |      |                    | 9.56   | 4.20 | 4.35 | 4.50 | 4.67 | 5.04  | ○ |
| SHM200-RN2-0.5-1-0.02-K   | 0.5       | 0.02 | 1                 | 0.4          | 0.47      | 50             | 4          | 2    | 13.00              | 1.06   | 1.12 | 1.17 | 1.23 | 1.33 | ○     |   |
| SHM200-RN2-0.5-2-0.02-K   |           |      | 2                 |              |           |                |            |      |                    | 11.53  | 2.11 | 2.21 | 2.29 | 2.38 | 2.57  | ○ |
| SHM200-RN2-0.5-3-0.02-K   |           |      | 3                 |              |           |                |            |      |                    | 10.35  | 3.16 | 3.28 | 3.40 | 3.53 | 3.81  | ○ |
| SHM200-RN2-0.5-4-0.02-K   |           | 4    | 9.39              |              |           |                |            |      |                    | 4.20   | 4.35 | 4.51 | 4.68 | 5.06 | ○     |   |
| SHM200-RN2-0.5-6-0.02-K   |           | 6    | 7.92              |              |           |                |            |      |                    | 6.27   | 6.49 | 6.73 | 6.98 | 7.54 | ○     |   |
| SHM200-RN2-0.5-1-0.05-K   |           | 0.05 | 1                 |              |           |                |            |      |                    | 13.05  | 1.06 | 1.12 | 1.17 | 1.22 | 1.32  | ○ |
| SHM200-RN2-0.5-2-0.05-K   | 2         |      | 11.56             | 2.11         | 2.21      | 2.29           | 2.37       | 2.56 | ○                  |  |      |      |      |      |       |   |
| SHM200-RN2-0.5-3-0.05-K   | 3         |      | 10.38             | 3.16         | 3.28      | 3.40           | 3.52       | 3.81 | ○                  |  |      |      |      |      |       |   |
| SHM200-RN2-0.5-4-0.05-K   | 0.5       | 0.5  | 4                 | 0.4          | 0.47      | 50             | 4          | 2    | 9.42               | 4.20   | 4.35 | 4.51 | 4.67 | 5.05 | ○     |   |
| SHM200-RN2-0.5-5-0.05-K   |           |      | 5                 |              |           |                |            |      |                    | 8.62   | 5.24 | 5.42 | 5.61 | 5.82 | 6.29  | ○ |
| SHM200-RN2-0.5-6-0.05-K   |           |      | 6                 |              |           |                |            |      |                    | 7.94   | 6.27 | 6.49 | 6.72 | 6.97 | 7.53  | ○ |
| SHM200-RN2-0.5-1-0.1-K    |           | 0.1  | 1                 |              |           |                |            |      |                    | 13.13  | 1.06 | 1.11 | 1.16 | 1.21 | 1.31  | ○ |
| SHM200-RN2-0.5-2-0.1-K    |           |      | 2                 |              |           |                |            |      |                    | 11.63  | 2.11 | 2.20 | 2.28 | 2.37 | 2.55  | ● |
| SHM200-RN2-0.5-3-0.1-K    |           |      | 3                 |              |           |                |            |      |                    | 10.44  | 3.16 | 3.28 | 3.39 | 3.52 | 3.79  | ○ |
| SHM200-RN2-0.5-4-0.1-K    | 4         |      | 9.46              | 4.20         | 4.35      | 4.50           | 4.67       | 5.04 | ○                  |  |      |      |      |      |       |   |
| SHM200-RN2-0.5-5-0.1-K    | 5         |      | 8.65              | 5.24         | 5.42      | 5.61           | 5.82       | 6.28 | ○                  |  |      |      |      |      |       |   |
| SHM200-RN2-0.5-6-0.1-K    | 6         |      | 7.97              | 6.27         | 6.49      | 6.72           | 6.97       | 7.52 | ○                  |  |      |      |      |      |       |   |
| SHM200-RN2-0.6-2-0.02-K   | 0.6       | 0.02 | 2                 | 0.48         | 0.57      | 50             | 4          | 4    | 11.24              | 2.17   | 2.31 | 2.44 | 2.55 | 2.77 | ○     |   |

● Stock ○ Available upon Order

| R | Tol    |
|---|--------|
| R | ±0.005 |

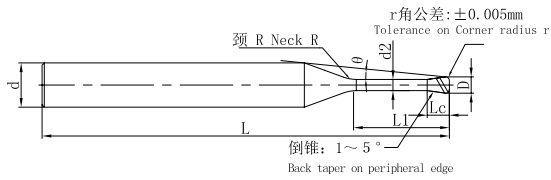
(mm)

Cutting Parameters ※ P529



# SHM200-RN2 NEW

2 Flutes with Extended Neck, Corner Radius



Please refer to page 149

» Continue

| Ordering Code            | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |   |
|--------------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|---|
|                          |           |      |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |   |
| SHM200-RN2-0.6-4-0.02-K  | 0.6       | 0.02 | 4                 | 0.48         | 0.57      | 50             | 4          | 4    | 9.15               | 4.29   | 4.51  | 4.69  | 4.86  | 5.26  | ○     |   |
| SHM200-RN2-0.6-6-0.02-K  |           |      | 6                 |              |           |                |            |      |                    | 7.71   | 6.40  | 6.66  | 6.90  | 7.16  | 7.74  | ○ |
| SHM200-RN2-0.6-2-0.05-K  |           | 0.05 | 2                 |              |           |                |            |      |                    | 11.27  | 2.17  | 2.31  | 2.43  | 2.55  | 2.76  | ○ |
| SHM200-RN2-0.6-4-0.05-K  |           |      | 4                 |              |           |                |            |      |                    | 9.18   | 4.29  | 4.51  | 4.68  | 4.86  | 5.25  | ● |
| SHM200-RN2-0.6-6-0.05-K  |           | 6    | 7.73              |              |           |                |            |      |                    | 6.40   | 6.66  | 6.90  | 7.16  | 7.74  | ○     |   |
| SHM200-RN2-0.6-8-0.05-K  |           | 8    | 6.68              |              |           |                |            |      |                    | 8.49   | 8.80  | 9.12  | 9.46  | 10.22 | ○     |   |
| SHM200-RN2-0.6-10-0.05-K |           | 10   | 5.88              |              |           |                |            |      |                    | 10.57  | 10.94 | 11.33 | 11.76 | 12.71 | ○     |   |
| SHM200-RN2-0.6-2-0.1-K   |           | 0.1  | 2                 |              |           |                |            |      |                    | 11.34  | 2.16  | 2.30  | 2.43  | 2.54  | 2.75  | ○ |
| SHM200-RN2-0.6-4-0.1-K   |           |      | 4                 |              |           |                |            |      |                    | 9.22   | 4.29  | 4.50  | 4.68  | 4.85  | 5.24  | ○ |
| SHM200-RN2-0.6-6-0.1-K   |           |      | 6                 |              |           |                |            |      |                    | 7.76   | 6.39  | 6.66  | 6.90  | 7.15  | 7.72  | ○ |
| SHM200-RN2-0.6-8-0.1-K   |           |      | 8                 |              |           |                |            |      |                    | 6.70   | 8.48  | 8.80  | 9.11  | 9.45  | 10.21 | ○ |
| SHM200-RN2-0.6-10-0.1-K  |           |      | 10                |              |           |                |            |      |                    | 5.89   | 10.57 | 10.94 | 11.33 | 11.75 | 12.70 | ○ |
| SHM200-RN2-0.7-4-0.05-K  | 0.7       | 0.05 | 4                 | 0.56         | 0.67      | 50             | 4          | 4    | 9.07               | 4.29   | 4.51  | 4.68  | 4.86  | 5.25  | ○     |   |
| SHM200-RN2-0.7-6-0.05-K  |           |      | 6                 |              |           |                |            |      |                    | 7.62   | 6.40  | 6.66  | 6.90  | 7.16  | 7.74  | ○ |
| SHM200-RN2-0.7-4-0.1-K   |           | 0.1  | 4                 |              |           |                |            |      |                    | 9.11   | 4.29  | 4.50  | 4.68  | 4.85  | 5.24  | ○ |
| SHM200-RN2-0.7-6-0.1-K   |           |      | 6                 |              |           |                |            |      |                    | 7.65   | 6.39  | 6.66  | 6.90  | 7.15  | 7.72  | ○ |
| SHM200-RN2-0.8-4-0.02-K  | 0.8       | 0.02 | 4                 | 0.64         | 0.76      | 50             | 4          | 4    | 8.96               | 4.27   | 4.47  | 4.65  | 4.82  | 5.21  | ○     |   |
| SHM200-RN2-0.8-6-0.02-K  |           |      | 6                 |              |           |                |            |      |                    | 7.51   | 6.37  | 6.63  | 6.87  | 7.12  | 7.70  | ○ |
| SHM200-RN2-0.8-4-0.05-K  |           | 0.05 | 4                 |              |           |                |            |      |                    | 8.99   | 4.27  | 4.47  | 4.65  | 4.82  | 5.21  | ○ |
| SHM200-RN2-0.8-6-0.05-K  |           |      | 6                 |              |           |                |            |      |                    | 7.52   | 6.37  | 6.63  | 6.86  | 7.12  | 7.69  | ○ |
| SHM200-RN2-0.8-8-0.05-K  |           | 8    | 6.47              |              |           |                |            |      |                    | 8.45   | 8.76  | 9.08  | 9.42  | 10.18 | ○     |   |
| SHM200-RN2-0.8-12-0.05-K |           | 12   | 5.05              |              |           |                |            |      |                    | 12.61  | 13.04 | 13.51 | 14.02 | 15.15 | ○     |   |
| SHM200-RN2-0.8-4-0.1-K   |           | 0.1  | 4                 |              |           |                |            |      |                    | 9.03   | 4.26  | 4.47  | 4.64  | 4.81  | 5.19  | ○ |
| SHM200-RN2-0.8-6-0.1-K   |           |      | 6                 |              |           |                |            |      |                    | 7.55   | 6.37  | 6.62  | 6.86  | 7.11  | 7.68  | ○ |

● Stock ○ Available upon Order

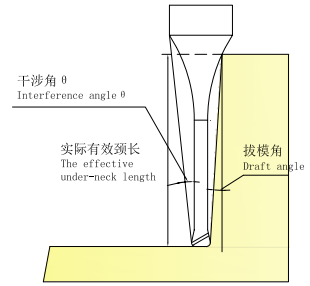
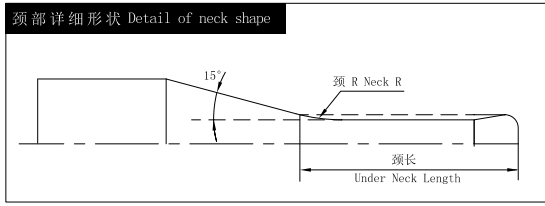
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SHM200-RN2 NEW

2 Flutes with Extended Neck, Corner Raidus



Please refer to page 149

» Continue

| Ordering Code           | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|-------------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|-------|-------|-------|-------|-------|
|                         |           |      |                   |              |           |                |            |       |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SHM200-RN2-0.8-8-0.1-K  | 0.8       | 0.1  | 8                 | 0.64         | 0.76      | 50             | 4          | 4     | 6.49               | 8.45   | 8.76  | 9.07  | 9.41  | 10.17 | ○     |
| SHM200-RN2-0.8-12-0.1-K |           |      | 12                |              |           | 55             |            |       | 5.06               | 12.60  | 13.04 | 13.51 | 14.01 | 15.14 | ○     |
| SHM200-RN2-0.8-4-0.2-K  |           | 0.2  | 4                 |              |           | 50             |            |       | 9.12               | 4.26   | 4.46  | 4.63  | 4.80  | 5.17  | ●     |
| SHM200-RN2-0.8-6-0.2-K  |           |      | 6                 |              |           | 50             |            |       | 7.62               | 6.36   | 6.61  | 6.85  | 7.10  | 7.66  | ○     |
| SHM200-RN2-0.8-8-0.2-K  |           |      | 8                 |              |           | 50             |            |       | 6.54               | 8.45   | 8.75  | 9.06  | 9.40  | 10.14 | ○     |
| SHM200-RN2-0.8-12-0.2-K |           |      | 12                |              |           | 50             |            |       | 5.09               | 12.60  | 13.03 | 13.50 | 14.00 | 15.11 | ○     |
| SHM200-RN2-1-2-0.02-K   | 1         | 0.02 | 2                 | 0.8          | 0.96      | 50             | 4          | 4     | 10.92              | 2.15   | 2.28  | 2.40  | 2.52  | 2.73  | ○     |
| SHM200-RN2-1-4-0.02-K   |           |      | 4                 |              |           | 50             |            |       | 8.72               | 4.27   | 4.47  | 4.65  | 4.82  | 5.21  | ○     |
| SHM200-RN2-1-6-0.02-K   |           |      | 6                 |              |           | 50             |            |       | 7.26               | 6.37   | 6.63  | 6.87  | 7.12  | 7.70  | ○     |
| SHM200-RN2-1-8-0.02-K   |           |      | 8                 |              |           | 50             |            |       | 6.22               | 8.46   | 8.77  | 9.08  | 9.42  | 10.19 | ○     |
| SHM200-RN2-1-10-0.02-K  |           |      | 10                |              |           | 50             |            |       | 5.44               | 10.53  | 10.91 | 11.30 | 11.72 | 12.67 | ○     |
| SHM200-RN2-1-12-0.02-K  |           |      | 12                |              |           | 55             |            |       | 4.83               | 12.61  | 13.05 | 13.52 | 14.02 | 15.16 | ○     |
| SHM200-RN2-1-2-0.05-K   |           | 0.05 | 2                 |              |           | 50             |            |       | 10.96              | 2.15   | 2.28  | 2.40  | 2.51  | 2.72  | ○     |
| SHM200-RN2-1-3-0.05-K   |           |      | 3                 |              |           | 50             |            |       | 9.73               | 3.21   | 3.38  | 3.53  | 3.67  | 3.96  | ○     |
| SHM200-RN2-1-4-0.05-K   |           |      | 4                 |              |           | 50             |            |       | 8.75               | 4.27   | 4.47  | 4.65  | 4.82  | 5.21  | ○     |
| SHM200-RN2-1-5-0.05-K   |           |      | 5                 |              |           | 50             |            |       | 7.95               | 5.32   | 5.55  | 5.75  | 5.97  | 6.45  | ○     |
| SHM200-RN2-1-6-0.05-K   |           |      | 6                 |              |           | 50             |            |       | 7.28               | 6.37   | 6.63  | 6.86  | 7.12  | 7.69  | ●     |
| SHM200-RN2-1-8-0.05-K   |           |      | 8                 |              |           | 50             |            |       | 6.23               | 8.45   | 8.76  | 9.08  | 9.42  | 10.18 | ○     |
| SHM200-RN2-1-10-0.05-K  | 10        | 50   | 5.45              | 10.53        | 10.90     | 11.30          | 11.72      | 12.67 | ○                  |  |       |       |       |       |       |
| SHM200-RN2-1-12-0.05-K  | 12        | 55   | 4.84              | 12.61        | 13.04     | 13.51          | 14.02      | 15.15 | ○                  |  |       |       |       |       |       |
| SHM200-RN2-1-16-0.05-K  | 16        | 60   | 3.95              | 16.74        | 17.32     | 17.95          | 18.62      | 20.12 | ○                  |  |       |       |       |       |       |
| SHM200-RN2-1-20-0.05-K  | 20        | 60   | 3.34              | 20.88        | 21.60     | 22.38          | 23.22      | 25.10 | ○                  |  |       |       |       |       |       |
| SHM200-RN2-1-2-0.1-K    | 0.1       | 2    | 50                | 11.03        | 2.14      | 2.27           | 2.39       | 2.50  | 2.71               | ○  |       |       |       |       |       |
| SHM200-RN2-1-3-0.1-K    |           | 3    | 50                | 9.79         | 3.21      | 3.38           | 3.53       | 3.66  | 3.95               | ○  |       |       |       |       |       |

● Stock ○ Available upon Order

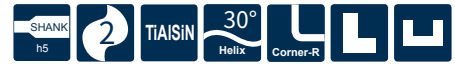
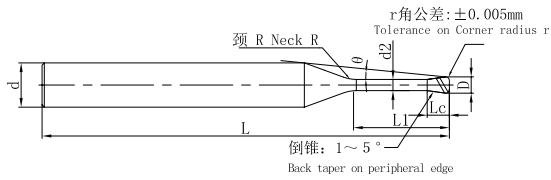
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SHM200-RN2 NEW

2 Flutes with Extended Neck, Corner Radius



Please refer to page 149

» Continue

| Ordering Code         | Mill Dia. | R   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |      |      |      |      |   |
|-----------------------|-----------|-----|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|-------|-------|-------|-------|-------|------|------|------|------|---|
|                       |           |     |                   |              |           |                |            |       |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |      |      |      |      |   |
| SHM200-RN2-1-4-0.1-K  | 1         | 0.1 | 4                 | 0.8          | 0.96      | 50             | 4          | 4     | 8.80               | 4.26   | 4.47  | 4.64  | 4.81  | 5.19  | ○     |      |      |      |      |   |
| SHM200-RN2-1-5-0.1-K  |           |     | 5                 |              |           | 50             |            |       | 7.99               | 5.32   | 5.55  | 5.75  | 5.96  | 6.44  | ●     |      |      |      |      |   |
| SHM200-RN2-1-6-0.1-K  |           |     | 6                 |              |           | 50             |            |       | 7.31               | 6.37   | 6.62  | 6.86  | 7.11  | 7.68  | ○     |      |      |      |      |   |
| SHM200-RN2-1-8-0.1-K  |           |     | 8                 |              |           | 50             |            |       | 6.25               | 8.45   | 8.76  | 9.07  | 9.41  | 10.17 | ○     |      |      |      |      |   |
| SHM200-RN2-1-10-0.1-K |           |     | 10                |              |           | 50             |            |       | 5.46               | 10.53  | 10.90 | 11.29 | 11.71 | 12.65 | ○     |      |      |      |      |   |
| SHM200-RN2-1-12-0.1-K |           |     | 12                |              |           | 55             |            |       | 4.85               | 12.60  | 13.04 | 13.51 | 14.01 | 15.14 | ○     |      |      |      |      |   |
| SHM200-RN2-1-16-0.1-K |           |     | 16                |              |           | 60             |            |       | 3.96               | 16.74  | 17.32 | 17.94 | 18.61 | 20.11 | ○     |      |      |      |      |   |
| SHM200-RN2-1-20-0.1-K |           |     | 20                |              |           | 60             |            |       | 3.35               | 20.87  | 21.60 | 22.37 | 23.21 | 25.08 | ○     |      |      |      |      |   |
| SHM200-RN2-1-2-0.2-K  |           |     | 0.2               |              |           | 2              |            |       | 0.8                | 0.96   | 50    | 4     | 4     | 11.17 | 2.14  | 2.26 | 2.38 | 2.48 | 2.68 | ○ |
| SHM200-RN2-1-3-0.2-K  |           |     |                   |              |           | 3              |            |       |                    |  | 50    |       |       | 9.90  | 3.20  | 3.37 | 3.51 | 3.65 | 3.93 | ○ |
| SHM200-RN2-1-4-0.2-K  |           | 4   |                   | 50           | 8.89      | 4.26           | 4.46       | 4.63  |                    |  | 4.80  |       |       | 5.17  | ●     |      |      |      |      |   |
| SHM200-RN2-1-5-0.2-K  |           | 5   |                   | 50           | 8.06      | 5.31           | 5.54       | 5.74  |                    |  | 5.95  |       |       | 6.41  | ○     |      |      |      |      |   |
| SHM200-RN2-1-6-0.2-K  |           | 6   |                   | 50           | 7.37      | 6.36           | 6.61       | 6.85  |                    |  | 7.10  |       |       | 7.66  | ○     |      |      |      |      |   |
| SHM200-RN2-1-8-0.2-K  |           | 8   |                   | 50           | 6.30      | 8.45           | 8.75       | 9.06  |                    |  | 9.40  |       |       | 10.14 | ○     |      |      |      |      |   |
| SHM200-RN2-1-10-0.2-K |           | 10  |                   | 50           | 5.50      | 10.53          | 10.89      | 11.28 |                    |  | 11.70 |       |       | 12.63 | ○     |      |      |      |      |   |
| SHM200-RN2-1-12-0.2-K |           | 12  |                   | 55           | 4.88      | 12.60          | 13.03      | 13.50 |                    |  | 14.00 |       |       | 15.11 | ○     |      |      |      |      |   |
| SHM200-RN2-1-16-0.2-K |           | 16  |                   | 60           | 3.98      | 16.74          | 17.31      | 17.93 |                    |  | 18.59 |       |       | 20.09 | ○     |      |      |      |      |   |
| SHM200-RN2-1-20-0.2-K |           | 20  |                   | 60           | 3.36      | 20.87          | 21.59      | 22.36 |                    |  | 23.19 |       |       | 25.06 | ○     |      |      |      |      |   |
| SHM200-RN2-1-2-0.3-K  |           | 0.3 | 2                 | 0.8          | 0.96      | 50             | 4          | 4     | 11.32              | 2.13   | 2.25  | 2.36  | 2.47  | 2.66  | ○     |      |      |      |      |   |
| SHM200-RN2-1-3-0.3-K  |           |     | 3                 |              |           | 50             |            |       | 10.01              | 3.20   | 3.36  | 3.50  | 3.63  | 3.90  | ○     |      |      |      |      |   |
| SHM200-RN2-1-4-0.3-K  | 4         |     | 50                |              |           | 8.98           |            |       | 4.25               | 4.45   | 4.62  | 4.78  | 5.15  | ○     |       |      |      |      |      |   |
| SHM200-RN2-1-5-0.3-K  | 5         |     | 50                |              |           | 8.14           |            |       | 5.31               | 5.53   | 5.73  | 5.93  | 6.39  | ○     |       |      |      |      |      |   |
| SHM200-RN2-1-6-0.3-K  | 6         |     | 50                |              |           | 7.44           |            |       | 6.36               | 6.61   | 6.84  | 7.08  | 7.63  | ○     |       |      |      |      |      |   |
| SHM200-RN2-1-8-0.3-K  | 8         |     | 50                |              |           | 6.35           |            |       | 8.44               | 8.75   | 9.05  | 9.38  | 10.12 | ○     |       |      |      |      |      |   |

● Stock ○ Available upon Order

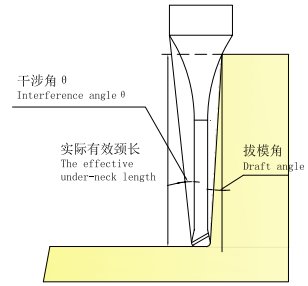
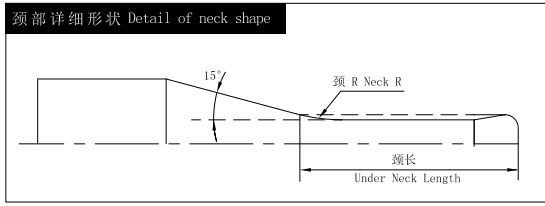
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SHM200-RN2 NEW

2 Flutes with Extended Neck, Corner Raidus



Please refer to page 149

» Continue

| Ordering Code            | Mill Dia. | R   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |       |       |       |       |       |       |       |       |       |       |   |
|--------------------------|-----------|-----|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|
|                          |           |     |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |       |       |       |       |       |       |       |       |       |       |   |
| SHM200-RN2-1-10-0.3-K    | 1         | 0.3 | 10                | 0.8          | 0.96      | 50             | 4          | 4    | 5.53               | 10.52  | 10.89 | 11.27 | 11.68 | 12.60 | ○     |       |       |       |       |       |       |       |       |       |       |   |
| SHM200-RN2-1-12-0.3-K    |           |     | 12                |              |           | 55             |            |      |                    | 4.90   | 12.60 | 13.03 | 13.49 | 13.98 | 15.09 | ○     |       |       |       |       |       |       |       |       |       |   |
| SHM200-RN2-1-16-0.3-K    |           |     | 16                |              |           | 60             |            |      |                    | 4.00   | 16.73 | 17.30 | 17.92 | 18.58 | 20.06 | ○     |       |       |       |       |       |       |       |       |       |   |
| SHM200-RN2-1-20-0.3-K    |           |     | 20                |              |           | 60             |            |      |                    | 3.37   | 20.87 | 21.58 | 22.35 | 23.18 | 25.04 | ○     |       |       |       |       |       |       |       |       |       |   |
| SHM200-RN2-1.25-5-0.1-K  | 1.25      | 0.1 | 5                 | 1            | 1.20      | 50             | 4          | 4    | 7.68               | 5.30   | 5.52  | 5.72  | 5.93  | 6.40  | ○     |       |       |       |       |       |       |       |       |       |       |   |
| SHM200-RN2-1.25-10-0.1-K |           |     | 10                |              |           | 50             |            |      |                    | 5.17   | 10.50 | 10.87 | 11.26 | 11.68 | 12.62 | ○     |       |       |       |       |       |       |       |       |       |   |
| SHM200-RN2-1.25-15-0.1-K |           |     | 15                |              |           | 55             |            |      |                    | 3.90   | 15.68 | 16.22 | 16.80 | 17.43 | 18.83 | ○     |       |       |       |       |       |       |       |       |       |   |
| SHM200-RN2-1.25-20-0.1-K |           |     | 20                |              |           | 60             |            |      |                    | 3.13   | 20.84 | 21.57 | 22.34 | 23.18 | 25.05 | ○     |       |       |       |       |       |       |       |       |       |   |
| SHM200-RN2-1.25-5-0.2-K  |           | 0.2 | 5                 |              |           | 1              |            |      |                    | 1.20   | 50    | 4     | 4     | 7.75  | 5.29  | 5.51  | 5.71  | 5.91  | 6.38  | ○     |       |       |       |       |       |   |
| SHM200-RN2-1.25-10-0.2-K |           |     | 10                |              |           |                |            |      |                    |  | 50    |       |       |       | 5.21  | 10.50 | 10.86 | 11.25 | 11.66 | 12.59 | ○     |       |       |       |       |   |
| SHM200-RN2-1.25-15-0.2-K |           |     | 15                |              |           |                |            |      |                    |  | 55    |       |       |       | 3.92  | 15.67 | 16.21 | 16.79 | 17.41 | 18.81 | ○     |       |       |       |       |   |
| SHM200-RN2-1.25-20-0.2-K |           |     | 20                |              |           |                |            |      |                    |  | 60    |       |       |       | 3.14  | 20.84 | 21.56 | 22.33 | 23.16 | 25.02 | ○     |       |       |       |       |   |
| SHM200-RN2-1.25-5-0.3-K  |           | 0.3 | 5                 |              |           |                |            |      |                    |  | 1     |       |       |       | 1.20  | 50    | 4     | 4     | 7.83  | 5.29  | 5.50  | 5.70  | 5.90  | 6.35  | ○     |   |
| SHM200-RN2-1.25-10-0.3-K |           |     | 10                |              |           |                |            |      |                    |  |       |       |       |       |       | 50    |       |       |       | 5.24  | 10.50 | 10.86 | 11.24 | 11.65 | 12.57 | ○ |
| SHM200-RN2-1.25-15-0.3-K |           |     | 15                |              |           |                |            |      |                    |  |       |       |       |       |       | 55    |       |       |       | 3.94  | 15.67 | 16.20 | 16.78 | 17.40 | 18.78 | ○ |
| SHM200-RN2-1.25-20-0.3-K |           |     | 20                |              |           |                |            |      |                    |  |       |       |       |       |       | 60    |       |       |       | 3.15  | 20.84 | 21.55 | 22.32 | 23.15 | 25.00 | ○ |
| SHM200-RN2-1.5-4-0.1-K   | 1.5       | 0.1 | 4                 | 1.2          | 1.44      |                | 50         | 4    | 4                  |  |       |       |       |       |       | 8.17  |       |       |       | 4.23  | 4.42  | 4.58  | 4.75  | 5.13  | ○     |   |
| SHM200-RN2-1.5-6-0.1-K   |           |     | 6                 |              |           |                | 50         |      |                    |  |       |       |       |       |       |       |       |       |       | 6.66  | 6.32  | 6.57  | 6.80  | 7.05  | 7.62  | ○ |
| SHM200-RN2-1.5-8-0.1-K   |           |     | 8                 |              |           |                | 50         |      |                    |  |       |       |       |       |       |       |       |       |       | 5.62  | 8.41  | 8.71  | 9.02  | 9.35  | 10.10 | ○ |
| SHM200-RN2-1.5-12-0.1-K  |           |     | 12                |              |           |                | 55         |      |                    |  |       |       |       |       |       |       |       |       |       | 4.28  | 12.55 | 12.98 | 13.45 | 13.95 | 15.07 | ○ |
| SHM200-RN2-1.5-15-0.1-K  |           |     | 15                |              |           | 55             | 3.63       |      |                    | 15.65  |       | 16.19 | 16.77 | 17.40 |       |       |       |       |       | 18.80 | ○     |       |       |       |       |   |
| SHM200-RN2-1.5-20-0.1-K  |           |     | 20                |              |           | 60             | 2.90       |      |                    | 20.82  |       | 21.54 | 22.32 | 23.15 |       |       |       |       |       | -     | ○     |       |       |       |       |   |
| SHM200-RN2-1.5-4-0.2-K   |           | 0.2 | 4                 |              |           | 1              | 1.44       |      |                    | 50   |       | 4     | 4     | 8.26  |       |       |       |       |       | 4.23  | 4.41  | 4.57  | 4.74  | 5.10  | ○     |   |
| SHM200-RN2-1.5-6-0.2-K   |           |     | 6                 |              |           |                |            |      |                    | 50   |       |       |       |       |       |       |       |       |       | 6.72  | 6.32  | 6.56  | 6.79  | 7.04  | 7.59  | ○ |

● Stock ○ Available upon Order

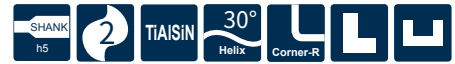
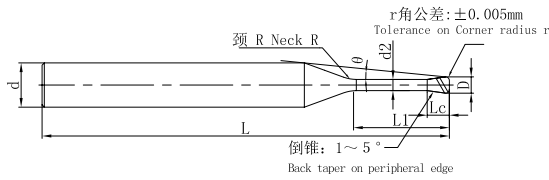
| R | Tol    |
|---|--------|
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SHM200-RN2 NEW

2 Flutes with Extended Neck, Corner Radius



Please refer to page 149

» Continue

| Ordering Code            | Mill Dia. | R   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|--------------------------|-----------|-----|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                          |           |     |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SHM200-RN2-1.5-8-0.2-K   | 1.5       | 0.2 | 8                 | 1.2          | 1.44      | 50             | 4          | 4    | 5.66               | 8.40   | 8.70  | 9.01  | 9.34  | 10.08 | ○     |
| SHM200-RN2-1.5-12-0.2-K  |           |     | 12                |              |           | 55             |            |      | 4.31               | 12.55  | 12.98 | 13.44 | 13.94 | 15.05 | ○     |
| SHM200-RN2-1.5-15-0.2-K  |           |     | 15                |              |           | 55             |            |      | 3.65               | 15.65  | 16.19 | 16.76 | 17.38 | 18.78 | ○     |
| SHM200-RN2-1.5-20-0.2-K  |           |     | 20                |              |           | 60             |            |      | 2.91               | 20.82  | 21.53 | 22.31 | 23.13 | -     | ○     |
| SHM200-RN2-1.5-4-0.3-K   |           | 0.3 | 4                 | 1.2          | 1.44      | 50             | 4          | 4    | 8.36               | 4.22   | 4.40  | 4.56  | 4.72  | 5.08  | ○     |
| SHM200-RN2-1.5-6-0.3-K   |           |     | 6                 |              |           | 50             |            |      | 6.78               | 6.31   | 6.55  | 6.78  | 7.02  | 7.57  | ○     |
| SHM200-RN2-1.5-8-0.3-K   |           |     | 8                 |              |           | 50             |            |      | 5.71               | 8.40   | 8.69  | 8.99  | 9.32  | 10.05 | ○     |
| SHM200-RN2-1.5-12-0.3-K  |           |     | 12                |              |           | 55             |            |      | 4.33               | 12.54  | 12.97 | 13.43 | 13.92 | 15.03 | ○     |
| SHM200-RN2-1.5-15-0.3-K  |           | 0.5 | 15                | 1.2          | 1.44      | 55             | 4          | 4    | 3.67               | 15.64  | 16.18 | 16.75 | 17.37 | 18.76 | ○     |
| SHM200-RN2-1.5-20-0.3-K  |           |     | 20                |              |           | 60             |            |      | 2.92               | 20.81  | 21.53 | 22.29 | 23.12 | -     | ○     |
| SHM200-RN2-1.5-4-0.5-K   |           |     | 4                 |              |           | 50             |            |      | 8.55               | 4.21   | 4.39  | 4.54  | 4.69  | 5.03  | ○     |
| SHM200-RN2-1.5-6-0.5-K   |           |     | 6                 |              |           | 50             |            |      | 6.91               | 6.31   | 6.54  | 6.76  | 6.99  | 7.52  | ○     |
| SHM200-RN2-1.5-8-0.5-K   |           | 0.5 | 8                 | 1.2          | 1.44      | 50             | 4          | 4    | 5.80               | 8.39   | 8.68  | 8.97  | 9.29  | 10.00 | ○     |
| SHM200-RN2-1.5-12-0.5-K  |           |     | 12                |              |           | 55             |            |      | 4.39               | 12.54  | 12.96 | 13.41 | 13.89 | 14.98 | ○     |
| SHM200-RN2-1.5-15-0.5-K  |           |     | 15                |              |           | 55             |            |      | 3.71               | 15.64  | 16.17 | 16.73 | 17.34 | 18.71 | ○     |
| SHM200-RN2-1.5-20-0.5-K  |           |     | 20                |              |           | 60             |            |      | 2.95               | 20.81  | 21.51 | 22.27 | 23.09 | -     | ○     |
| SHM200-RN2-1.75-5-0.1-K  | 1.75      | 0.1 | 5                 | 1.4          | 1.68      | 50             | 4          | 4    | 6.96               | 5.26   | 5.47  | 5.67  | 5.88  | 6.35  | ○     |
| SHM200-RN2-1.75-10-0.1-K |           |     | 10                |              |           | 50             |            |      | 4.53               | 10.46  | 10.82 | 11.21 | 11.63 | 12.56 | ○     |
| SHM200-RN2-1.75-15-0.1-K |           |     | 15                |              |           | 55             |            |      | 3.35               | 15.63  | 16.17 | 16.75 | 17.38 | 18.78 | ○     |
| SHM200-RN2-1.75-20-0.1-K |           |     | 20                |              |           | 60             |            |      | 2.66               | 20.80  | 21.52 | 22.29 | 23.13 | -     | ○     |
| SHM200-RN2-1.75-5-0.2-K  |           | 0.2 | 5                 | 1.4          | 1.68      | 50             | 4          | 4    | 7.03               | 5.26   | 5.47  | 5.66  | 5.86  | 6.32  | ○     |
| SHM200-RN2-1.75-10-0.2-K |           |     | 10                |              |           | 50             |            |      | 4.56               | 10.46  | 10.82 | 11.20 | 11.61 | 12.54 | ○     |
| SHM200-RN2-1.75-15-0.2-K |           |     | 15                |              |           | 55             |            |      | 3.37               | 15.63  | 16.16 | 16.74 | 17.36 | 18.75 | ○     |
| SHM200-RN2-1.75-20-0.2-K |           |     | 20                |              |           | 60             |            |      | 2.67               | 20.80  | 21.51 | 22.28 | 23.11 | -     | ○     |

● Stock ○ Available upon Order

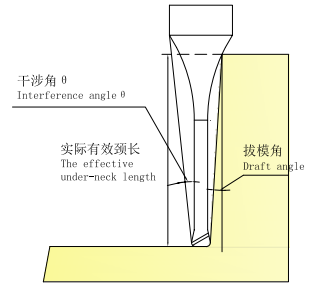
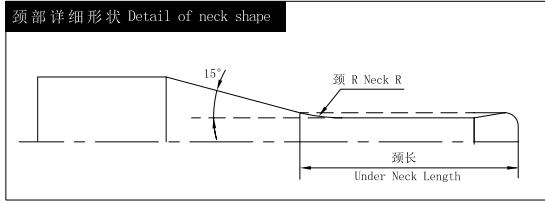
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SHM200-RN2 NEW

2 Flutes with Extended Neck, Corner Raidus



Please refer to page 149

» Continue

| Ordering Code            | Mill Dia. | R   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|--------------------------|-----------|-----|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|-------|-------|-------|-------|-------|
|                          |           |     |                   |              |           |                |            |       |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SHM200-RN2-1.75-5-0.3-K  | 1.75      | 0.3 | 5                 | 1.4          | 1.68      | 50             | 4          | 4     | 7.11               | 5.25   | 5.46  | 5.65  | 5.85  | 6.30  | ○     |
| SHM200-RN2-1.75-10-0.3-K |           |     | 10                |              |           | 4.59           |            |       | 10.45              | 10.81  | 11.19 | 11.60 | 12.51 | ○     |       |
| SHM200-RN2-1.75-15-0.3-K |           |     | 15                |              |           | 3.39           |            |       | 15.62              | 16.16  | 16.73 | 17.35 | 18.73 | ○     |       |
| SHM200-RN2-1.75-20-0.3-K |           |     | 20                |              |           | 2.69           |            |       | 20.79              | 21.51  | 22.27 | 23.10 | -     | ○     |       |
| SHM200-RN2-2-4-0.1-K     | 2         | 0.1 | 4                 | 1.6          | 1.92      | 50             | 4          | 4     | 7.36               | 4.21   | 4.38  | 4.54  | 4.71  | 5.08  | ○     |
| SHM200-RN2-2-6-0.1-K     |           |     | 6                 |              |           | 5.86           |            |       | 6.29               | 6.53   | 6.76  | 7.01  | 7.57  | ○     |       |
| SHM200-RN2-2-8-0.1-K     |           |     | 8                 |              |           | 4.87           |            |       | 8.37               | 8.66   | 8.97  | 9.31  | 10.05 | ○     |       |
| SHM200-RN2-2-12-0.1-K    |           |     | 12                |              |           | 3.64           |            |       | 12.51              | 12.94  | 13.41 | 13.91 | 15.03 | ○     |       |
| SHM200-RN2-2-16-0.1-K    |           |     | 16                |              |           | 2.90           |            |       | 16.65              | 17.22  | 17.84 | 18.51 | -     | ○     |       |
| SHM200-RN2-2-20-0.1-K    |           |     | 20                |              |           | 2.42           |            |       | 20.78              | 21.50  | 22.27 | 23.11 | -     | ○     |       |
| SHM200-RN2-2-25-0.1-K    |           |     | 25                |              |           | 2.00           |            |       | 25.95              | 26.85  | 27.82 | -     | -     | ○     |       |
| SHM200-RN2-2-30-0.1-K    |           |     | 30                |              |           | 1.70           |            |       | 31.12              | 32.20  | 33.36 | -     | -     | ○     |       |
| SHM200-RN2-2-4-0.2-K     |           | 0.2 | 4                 |              |           | 50             |            |       | 7.46               | 4.20   | 4.37  | 4.53  | 4.69  | 5.06  | ○     |
| SHM200-RN2-2-6-0.2-K     |           |     | 6                 |              |           | 50             |            |       | 5.93               | 6.29   | 6.52  | 6.75  | 6.99  | 7.54  | ●     |
| SHM200-RN2-2-8-0.2-K     |           |     | 8                 |              |           | 50             |            |       | 4.91               | 8.37   | 8.66  | 8.96  | 9.29  | 10.03 | ○     |
| SHM200-RN2-2-12-0.2-K    |           |     | 12                |              |           | 55             |            |       | 3.66               | 12.51  | 12.94 | 13.40 | 13.89 | 15.00 | ○     |
| SHM200-RN2-2-16-0.2-K    |           |     | 16                |              |           | 55             |            |       | 2.92               | 16.64  | 17.22 | 17.83 | 18.49 | -     | ○     |
| SHM200-RN2-2-20-0.2-K    |           |     | 20                |              |           | 60             |            |       | 2.43               | 20.78  | 21.49 | 22.26 | 23.09 | -     | ○     |
| SHM200-RN2-2-25-0.2-K    |           |     | 25                |              |           | 65             |            |       | 2.00               | 25.95  | 26.84 | 27.80 | -     | -     | ○     |
| SHM200-RN2-2-30-0.2-K    |           |     | 30                |              |           | 70             |            |       | 1.71               | 31.11  | 32.19 | 33.35 | -     | -     | ○     |
| SHM200-RN2-2-4-0.3-K     | 0.3       | 4   | 50                | 7.56         | 4.20      | 4.37           | 4.52       | 4.68  | 5.03               | ○  |       |       |       |       |       |
| SHM200-RN2-2-6-0.3-K     |           | 6   | 50                | 5.99         | 6.28      | 6.51           | 6.74       | 6.98  | 7.52               | ○  |       |       |       |       |       |
| SHM200-RN2-2-8-0.3-K     |           | 8   | 50                | 4.96         | 8.36      | 8.65           | 8.95       | 9.28  | 10.01              | ○  |       |       |       |       |       |
| SHM200-RN2-2-12-0.3-K    |           | 12  | 55                | 3.69         | 12.50     | 12.93          | 13.39      | 13.88 | 14.98              | ○  |       |       |       |       |       |

● Stock ○ Available upon Order

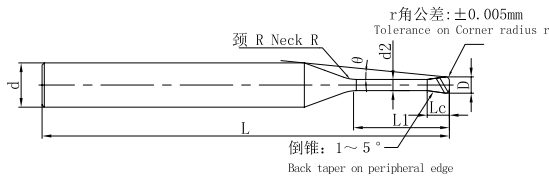
| R | Tol    |
|---|--------|
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SHM200-RN2 NEW

2 Flutes with Extended Neck, Corner Radius



Please refer to page 149

» Continue

| Ordering Code           | Mill Dia. | R   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|-------------------------|-----------|-----|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                         |           |     |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SHM200-RN2-2-16-0.3-K   | 2         | 0.3 | 16                | 1.6          | 1.92      | 55             | 4          | 4    | 2.93               | 16.64  | 17.21 | 17.82 | 18.48 | -     | ○     |
| SHM200-RN2-2-20-0.3-K   |           |     | 20                |              |           | 60             |            |      | 2.44               | 20.77  | 21.49 | 22.25 | 23.08 | -     | ○     |
| SHM200-RN2-2-25-0.3-K   |           |     | 25                |              |           | 65             |            |      | 2.01               | 25.94  | 26.84 | 27.79 | 28.82 | -     | ○     |
| SHM200-RN2-2-30-0.3-K   |           |     | 30                |              |           | 70             |            |      | 1.71               | 31.11  | 32.18 | 33.34 | -     | -     | ○     |
| SHM200-RN2-2-6-0.5-K    |           | 6   | 50                |              |           | 6.11           |            |      | 6.28               | 6.50   | 6.71  | 6.95  | 7.47  | ○     |       |
| SHM200-RN2-2-8-0.5-K    |           | 8   | 50                |              |           | 5.04           |            |      | 8.36               | 8.64   | 8.93  | 9.25  | 9.96  | ○     |       |
| SHM200-RN2-2-12-0.5-K   |           | 12  | 55                |              |           | 3.73           |            |      | 12.50              | 12.92  | 13.36 | 13.85 | 14.93 | ○     |       |
| SHM200-RN2-2-16-0.5-K   |           | 16  | 55                |              |           | 2.96           |            |      | 16.63              | 17.19  | 17.80 | 18.45 | -     | ○     |       |
| SHM200-RN2-2-20-0.5-K   |           | 20  | 60                |              |           | 2.46           |            |      | 20.77              | 21.47  | 22.23 | 23.05 | -     | ○     |       |
| SHM200-RN2-2-25-0.5-K   |           | 25  | 65                |              |           | 2.03           |            |      | 25.94              | 26.82  | 27.77 | 28.79 | -     | ○     |       |
| SHM200-RN2-2-30-0.5-K   |           | 30  | 70                |              |           | 1.72           |            |      | 31.10              | 32.17  | 33.31 | -     | -     | ○     |       |
| SHM200-RN2-2-6-0.8-K    |           | 6   | 50                |              |           | 6.31           |            |      | 6.26               | 6.48   | 6.68  | 6.90  | 7.40  | ○     |       |
| SHM200-RN2-2-8-0.8-K    |           | 8   | 50                |              |           | 5.18           |            |      | 8.35               | 8.62   | 8.90  | 9.20  | 9.88  | ○     |       |
| SHM200-RN2-2-12-0.8-K   |           | 12  | 55                |              |           | 3.81           |            |      | 12.49              | 12.89  | 13.33 | 13.80 | 14.86 | ○     |       |
| SHM200-RN2-2-16-0.8-K   |           | 16  | 55                |              |           | 3.01           |            |      | 16.62              | 17.17  | 17.77 | 18.40 | 19.83 | ○     |       |
| SHM200-RN2-2-20-0.8-K   |           | 20  | 60                |              |           | 2.49           |            |      | 20.76              | 21.45  | 22.20 | 23.00 | -     | ○     |       |
| SHM200-RN2-2-25-0.8-K   |           | 25  | 65                |              |           | 2.05           |            |      | 25.93              | 26.80  | 27.74 | 28.75 | -     | ○     |       |
| SHM200-RN2-2-30-0.8-K   |           | 30  | 70                |              |           | 1.74           |            |      | 31.09              | 32.15  | 33.28 | -     | -     | ○     |       |
| SHM200-RN2-2.5-10-0.1-K | 2.5       | 0.1 | 10                | 2            | 2.40      | 50             | 4          | 4    | 3.36               | 10.41  | 10.77 | 11.16 | 11.57 | 12.50 | ○     |
| SHM200-RN2-2.5-20-0.1-K |           |     | 20                |              |           | 60             |            |      | 1.89               | 20.75  | 21.47 | 22.24 | -     | -     | ○     |
| SHM200-RN2-2.5-30-0.1-K |           |     | 30                |              |           | 70             |            |      | 1.32               | 31.09  | 32.17 | -     | -     | -     | ○     |
| SHM200-RN2-2.5-10-0.2-K |           | 0.2 | 10                |              |           | 50             |            |      | 3.39               | 10.41  | 10.77 | 11.15 | 11.56 | 12.48 | ○     |
| SHM200-RN2-2.5-20-0.2-K |           |     | 20                |              |           | 60             |            |      | 1.90               | 20.75  | 21.46 | 22.23 | -     | -     | ○     |
| SHM200-RN2-2.5-30-0.2-K |           |     | 30                |              |           | 70             |            |      | 1.32               | 31.08  | 32.16 | -     | -     | -     | ○     |

● Stock ○ Available upon Order

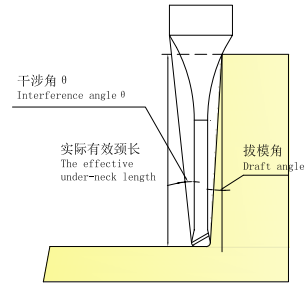
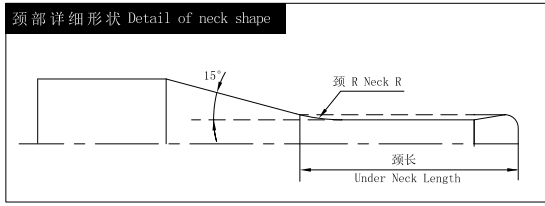
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SHM200-RN2 NEW

2 Flutes with Extended Neck, Corner Raidus



Please refer to page 149

» Continue

| Ordering Code           | Mill Dia. | R   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |      |
|-------------------------|-----------|-----|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|------|
|                         |           |     |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |      |
| SHM200-RN2-2.5-10-0.3-K | 2.5       | 0.3 | 10                | 2            | 2.40      | 50             | 4          | 4    | 3.42               | 10.41  | 10.76 | 11.14 | 11.54 | 12.46 | ○     |      |
| SHM200-RN2-2.5-20-0.3-K |           |     | 20                |              |           | 60             |            |      |                    | 1.91   | 20.74 | 21.46 | 22.22 | -     | -     | ○    |
| SHM200-RN2-2.5-30-0.3-K |           |     | 30                |              |           | 70             |            |      |                    | 1.32   | 31.08 | 32.15 | -     | -     | -     | ○    |
| SHM200-RN2-2.5-10-0.5-K |           | 0.5 | 10                |              |           | 50             |            |      |                    | 3.47   | 10.40 | 10.75 | 11.12 | 11.51 | 12.41 | ○    |
| SHM200-RN2-2.5-20-0.5-K |           |     | 20                |              |           | 60             |            |      |                    | 1.92   | 20.74 | 21.44 | 22.20 | -     | -     | ○    |
| SHM200-RN2-2.5-30-0.5-K |           |     | 30                |              |           | 70             |            |      |                    | 1.33   | 31.07 | 32.14 | -     | -     | -     | ○    |
| SHM200-RN2-3-6-0.1-K    | 3         | 0.1 | 6                 | 2.4          | 2.88      | 50             | 6          | 4    | 7.40               | 6.25   | 6.47  | 6.70  | 6.95  | 7.50  | ○     |      |
| SHM200-RN2-3-8-0.1-K    |           |     | 8                 |              |           | 55             |            |      |                    | 6.32   | 8.32  | 8.61  | 8.92  | 9.25  | 9.99  | ○    |
| SHM200-RN2-3-12-0.1-K   |           |     | 12                |              |           | 60             |            |      |                    | 4.89   | 12.46 | 12.89 | 13.35 | 13.85 | 14.96 | ○    |
| SHM200-RN2-3-16-0.1-K   |           |     | 16                |              |           | 60             |            |      |                    | 3.99   | 16.59 | 17.17 | 17.78 | 18.45 | 19.94 | ○    |
| SHM200-RN2-3-18-0.1-K   |           |     | 18                |              |           | 65             |            |      |                    | 3.65   | 18.66 | 19.31 | 20.00 | 20.75 | 22.42 | ○    |
| SHM200-RN2-3-20-0.1-K   |           |     | 20                |              |           | 65             |            |      |                    | 3.36   | 20.73 | 21.45 | 22.22 | 23.05 | 24.91 | ○    |
| SHM200-RN2-3-30-0.1-K   |           |     | 30                |              |           | 75             |            |      |                    | 2.42   | 31.06 | 32.14 | 33.30 | 34.55 | -     | ○    |
| SHM200-RN2-3-35-0.1-K   |           |     | 35                |              |           | 80             |            |      |                    | 2.12   | 36.23 | 37.49 | 38.84 | 40.29 | -     | ○    |
| SHM200-RN2-3-6-0.2-K    |           |     | 0.2               |              |           | 6              |            |      |                    | 50   | 7.46  | 6.25  | 6.46  | 6.69  | 6.93  | 7.48 |
| SHM200-RN2-3-8-0.2-K    |           | 8   |                   |              |           | 55             |            |      |                    | 6.36   | 8.32  | 8.60  | 8.91  | 9.23  | 9.97  | ○    |
| SHM200-RN2-3-12-0.2-K   |           | 12  |                   |              |           | 60             |            |      |                    | 4.92   | 12.45 | 12.88 | 13.34 | 13.83 | 14.94 | ○    |
| SHM200-RN2-3-16-0.2-K   |           | 16  |                   |              |           | 60             |            |      |                    | 4.00   | 16.59 | 17.16 | 17.77 | 18.43 | 19.91 | ○    |
| SHM200-RN2-3-18-0.2-K   |           | 18  |                   |              |           | 65             |            |      |                    | 3.66   | 18.66 | 19.30 | 19.99 | 20.73 | 22.40 | ○    |
| SHM200-RN2-3-20-0.2-K   |           | 20  |                   |              |           | 65             |            |      |                    | 3.38   | 20.72 | 21.44 | 22.21 | 23.03 | 24.88 | ○    |
| SHM200-RN2-3-30-0.2-K   |           | 30  |                   |              |           | 75             |            |      |                    | 2.43   | 31.06 | 32.14 | 33.29 | 34.53 | -     | ○    |
| SHM200-RN2-3-35-0.2-K   |           | 35  |                   |              |           | 80             |            |      |                    | 2.13   | 36.23 | 37.48 | 38.83 | 40.28 | -     | ○    |
| SHM200-RN2-3-6-0.3-K    |           | 0.3 |                   |              |           | 6              |            |      |                    | 50   | 7.53  | 6.24  | 6.46  | 6.68  | 6.92  | 7.46 |
| SHM200-RN2-3-8-0.3-K    |           |     | 8                 |              |           | 55             |            |      |                    | 6.41   | 8.32  | 8.60  | 8.90  | 9.22  | 9.94  | ○    |

● Stock ○ Available upon Order

|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

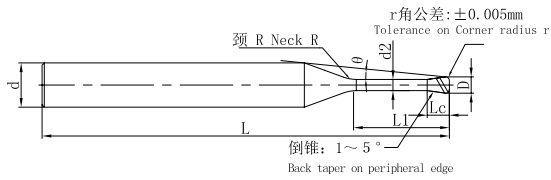
(mm)

Cutting Parameters ※ P529



# SHM200-RN2 NEW

2 Flutes with Extended Neck, Corner Radius



Please refer to page 149

» Continue

| Ordering Code         | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|-----------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                       |           |      |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SHM200-RN2-3-12-0.3-K | 2         | 0.3  | 12                | 2.4          | 2.88      | 60             | 6          | 4    | 4.94               | 12.45  | 12.87 | 13.33 | 13.82 | 14.91 | ○     |
| SHM200-RN2-3-16-0.3-K |           |      | 16                |              |           | 4.02           |            |      | 16.59              | 17.15  | 17.76 | 18.42 | 19.89 | ○     |       |
| SHM200-RN2-3-18-0.3-K |           |      | 18                |              |           | 3.68           |            |      | 18.65              | 19.29  | 19.98 | 20.72 | 22.37 | ○     |       |
| SHM200-RN2-3-20-0.3-K |           |      | 20                |              |           | 3.39           |            |      | 20.72              | 21.43  | 22.20 | 23.02 | 24.86 | ○     |       |
| SHM200-RN2-3-30-0.3-K |           |      | 30                |              |           | 2.43           |            |      | 31.06              | 32.13  | 33.28 | 34.52 | -     | ○     |       |
| SHM200-RN2-3-35-0.3-K |           |      | 35                |              |           | 2.13           |            |      | 36.23              | 37.48  | 38.82 | 40.26 | -     | ○     |       |
| SHM200-RN2-3-8-0.5-K  |           | 0.5  | 8                 |              |           | 55             |            |      | 6.51               | 8.31   | 8.58  | 8.87  | 9.19  | 9.89  | ○     |
| SHM200-RN2-3-12-0.5-K |           |      | 12                |              |           | 5.00           |            |      | 12.44              | 12.86  | 13.31 | 13.79 | 14.87 | ○     |       |
| SHM200-RN2-3-16-0.5-K |           |      | 16                |              |           | 4.06           |            |      | 16.58              | 17.14  | 17.74 | 18.39 | 19.84 | ○     |       |
| SHM200-RN2-3-18-0.5-K |           |      | 18                |              |           | 3.71           |            |      | 18.65              | 19.28  | 19.96 | 20.69 | 22.33 | ○     |       |
| SHM200-RN2-3-20-0.5-K |           |      | 20                |              |           | 3.42           |            |      | 20.71              | 21.42  | 22.17 | 22.99 | 24.81 | ○     |       |
| SHM200-RN2-3-30-0.5-K |           |      | 30                |              |           | 2.45           |            |      | 31.05              | 32.12  | 33.26 | 34.49 | -     | ○     |       |
| SHM200-RN2-3-35-0.5-K |           | 35   | 2.14              |              |           | 36.22          |            |      | 37.46              | 38.80  | 40.23 | -     | ○     |       |       |
| SHM200-RN2-3-8-1-K    |           | 1    | 8                 |              |           | 55             |            |      | 6.76               | 8.29   | 8.55  | 8.82  | 9.11  | 9.77  | ○     |
| SHM200-RN2-3-12-1-K   |           |      | 12                |              |           | 5.15           |            |      | 12.43              | 12.83  | 13.25 | 13.71 | 14.74 | ○     |       |
| SHM200-RN2-3-16-1-K   |           |      | 16                |              |           | 4.16           |            |      | 16.56              | 17.10  | 17.69 | 18.31 | 19.72 | ○     |       |
| SHM200-RN2-3-18-1-K   |           |      | 18                |              |           | 3.79           |            |      | 18.63              | 19.24  | 19.90 | 20.61 | 22.20 | ○     |       |
| SHM200-RN2-3-20-1-K   |           |      | 20                |              |           | 3.49           |            |      | 20.70              | 21.38  | 22.12 | 22.91 | 24.69 | ○     |       |
| SHM200-RN2-3-30-1-K   | 30        |      | 2.48              | 31.03        | 32.08     | 33.20          | 34.41      | -    | ○                  |  |       |       |       |       |       |
| SHM200-RN2-3-35-1-K   | 35        | 2.17 | 36.20             | 37.43        | 38.74     | 40.16          | -          | ○    |                    |  |       |       |       |       |       |
| SHM200-RN2-4-8-0.1-K  | 4         | 0.1  | 8                 | 3.2          | 3.86      | 55             | 6          | 4    | 4.90               | 8.31   | 8.59  | 8.90  | 9.23  | 9.97  | ○     |
| SHM200-RN2-4-12-0.1-K |           |      | 12                |              |           | 3.66           |            |      | 12.44              | 12.87  | 13.33 | 13.83 | 14.94 | ○     |       |
| SHM200-RN2-4-16-0.1-K |           |      | 16                |              |           | 2.91           |            |      | 16.57              | 17.15  | 17.76 | 18.43 | -     | ○     |       |
| SHM200-RN2-4-20-0.1-K |           |      | 20                |              |           | 2.42           |            |      | 20.71              | 21.43  | 22.20 | 23.03 | -     | ○     |       |

● Stock ○ Available upon Order

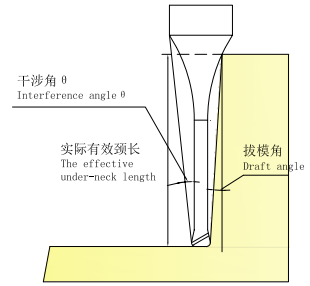
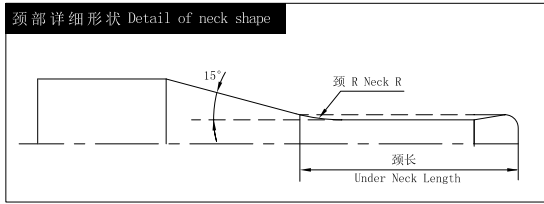
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SHM200-RN2 NEW

2 Flutes with Extended Neck, Corner Raidus



Please refer to page 149

» Continue

| Ordering Code         | Mill Dia. | R   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |   |
|-----------------------|-----------|-----|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|-------|-------|-------|-------|-------|---|
|                       |           |     |                   |              |           |                |            |       |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |   |
| SHM200-RN2-4-30-0.1-K | 4         | 0.1 | 30                | 3.2          | 3.86      | 75             | 6          | 4     | 1.71               | 31.05  | 32.12 | 33.28 | -     | -     | ○     |   |
| SHM200-RN2-4-35-0.1-K |           |     | 35                |              |           | 80             |            |       | 1.49               | 36.21  | 37.47 | -     | -     | -     | ○     |   |
| SHM200-RN2-4-45-0.1-K |           |     | 45                |              |           | 90             |            |       | 1.18               | 46.55  | 48.17 | -     | -     | -     | ○     |   |
| SHM200-RN2-4-8-0.2-K  |           | 0.2 | 8                 |              |           | 55             |            |       | 4.94               | 8.30   | 8.58  | 8.89  | 9.21  | 9.94  | ○     |   |
| SHM200-RN2-4-12-0.2-K |           |     | 12                |              |           | 60             |            |       | 3.68               | 12.44  | 12.86 | 13.32 | 13.81 | 14.92 | ○     |   |
| SHM200-RN2-4-16-0.2-K |           |     | 16                |              |           | 60             |            |       | 2.93               | 16.57  | 17.14 | 17.75 | 18.41 | -     | ○     |   |
| SHM200-RN2-4-20-0.2-K |           |     | 20                |              |           | 65             |            |       | 2.43               | 20.71  | 21.42 | 22.19 | 23.01 | -     | ○     |   |
| SHM200-RN2-4-30-0.2-K |           |     | 30                |              |           | 75             |            |       | 1.71               | 31.04  | 32.12 | 33.27 | -     | -     | ○     |   |
| SHM200-RN2-4-35-0.2-K |           |     | 35                |              |           | 80             |            |       | 1.49               | 36.21  | 37.47 | -     | -     | -     | ○     |   |
| SHM200-RN2-4-45-0.2-K |           |     | 45                |              |           | 90             |            |       | 1.18               | 46.55  | 48.16 | -     | -     | -     | ○     |   |
| SHM200-RN2-4-8-0.3-K  |           |     | 0.3               |              |           | 8              |            |       | 55                 | 4.99   | 8.30  | 8.58  | 8.88  | 9.20  | 9.92  | ○ |
| SHM200-RN2-4-12-0.3-K |           |     |                   |              |           | 12             |            |       | 60                 | 3.70   | 12.43 | 12.86 | 13.31 | 13.80 | 14.89 | ○ |
| SHM200-RN2-4-16-0.3-K |           |     |                   |              |           | 16             |            |       | 60                 | 2.94   | 16.57 | 17.13 | 17.74 | 18.40 | -     | ○ |
| SHM200-RN2-4-20-0.3-K |           | 20  |                   |              |           | 65             |            |       | 2.44               | 20.70  | 21.41 | 22.18 | 23.00 | -     | ○     |   |
| SHM200-RN2-4-30-0.3-K |           | 30  |                   |              |           | 75             |            |       | 1.72               | 31.04  | 32.11 | 33.26 | -     | -     | ○     |   |
| SHM200-RN2-4-35-0.3-K |           | 35  |                   |              |           | 80             |            |       | 1.49               | 36.21  | 37.46 | -     | -     | -     | ○     |   |
| SHM200-RN2-4-45-0.3-K |           | 45  | 90                |              |           | 1.19           |            |       | 46.54              | 48.16  | -     | -     | -     | ○     |       |   |
| SHM200-RN2-4-12-0.5-K |           | 0.5 | 12                |              |           | 60             |            |       | 3.75               | 12.43  | 12.84 | 13.29 | 13.77 | 14.84 | ○     |   |
| SHM200-RN2-4-16-0.5-K |           |     | 16                |              |           | 60             |            |       | 2.97               | 16.56  | 17.12 | 17.72 | 18.37 | -     | ○     |   |
| SHM200-RN2-4-20-0.5-K |           |     | 20                |              |           | 65             |            |       | 2.47               | 20.70  | 21.40 | 22.15 | 22.97 | -     | ○     |   |
| SHM200-RN2-4-30-0.5-K | 30        |     | 75                | 1.73         | 31.03     | 32.10          | 33.24      | -     | -                  | ○  |       |       |       |       |       |   |
| SHM200-RN2-4-35-0.5-K | 35        |     | 80                | 1.50         | 36.20     | 37.44          | -          | -     | -                  | ○  |       |       |       |       |       |   |
| SHM200-RN2-4-45-0.5-K | 45        |     | 90                | 1.19         | 46.54     | 48.14          | -          | -     | -                  | ○  |       |       |       |       |       |   |
| SHM200-RN2-4-12-1-K   | 1         | 12  | 60                | 3.88         | 12.41     | 12.81          | 13.23      | 13.69 | 14.72              | ○  |       |       |       |       |       |   |

● Stock ○ Available upon Order

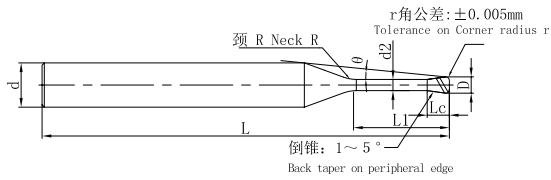
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SHM200-RN2 NEW

2 Flutes with Extended Neck, Corner Raidus



Please refer to page 149

» Continue

| Ordering Code         | Mill Dia. | R   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |   |
|-----------------------|-----------|-----|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|---|
|                       |           |     |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |   |
| SHM200-RN2-4-16-1-K   | 4         | 1   | 16                | 3.2          | 3.86      | 60             | 6          | 4    | 3.05               | 16.54  | 17.09 | 17.67 | 18.29 | 19.70 | ○     |   |
| SHM200-RN2-4-20-1-K   |           |     | 20                |              |           | 65             |            |      |                    | 20.68  | 21.36 | 22.10 | 22.89 | -     | ○     |   |
| SHM200-RN2-4-30-1-K   |           |     | 30                |              |           | 75             |            |      |                    | 1.75   | 31.02 | 32.06 | 33.18 | -     | -     | ○ |
| SHM200-RN2-4-35-1-K   |           |     | 35                |              |           | 80             |            |      |                    | 1.52   | 36.18 | 37.41 | 38.73 | -     | -     | ○ |
| SHM200-RN2-4-45-1-K   |           |     | 45                |              |           | 90             |            |      |                    | 1.20   | 46.52 | 48.11 | -     | -     | -     | ○ |
| SHM200-RN2-5-20-0.1-K | 5         | 0.1 | 20                | 4            | 4.85      | 65             | 6          | 4    | 1.32               | 20.70  | 21.42 | -     | -     | -     | ○     |   |
| SHM200-RN2-5-40-0.1-K |           |     | 40                |              |           | 85             |            |      |                    | 0.69   | 41.38 | -     | -     | -     | -     | ○ |
| SHM200-RN2-5-20-0.2-K |           | 0.2 | 20                |              |           | 65             |            |      |                    | 1.32   | 20.70 | 21.41 | -     | -     | -     | ○ |
| SHM200-RN2-5-40-0.2-K |           |     | 40                |              |           | 85             |            |      |                    | 0.69   | 41.37 | -     | -     | -     | -     | ○ |
| SHM200-RN2-5-20-0.3-K |           | 0.3 | 20                |              |           | 65             |            |      |                    | 1.33   | 20.69 | 21.41 | -     | -     | -     | ○ |
| SHM200-RN2-5-40-0.3-K |           |     | 40                |              |           | 85             |            |      |                    | 0.69   | 41.37 | -     | -     | -     | -     | ○ |
| SHM200-RN2-5-20-0.5-K |           | 0.5 | 20                |              |           | 65             |            |      |                    | 1.34   | 20.69 | 21.39 | -     | -     | -     | ○ |
| SHM200-RN2-5-40-0.5-K |           |     | 40                |              |           | 85             |            |      |                    | 0.70   | 41.36 | -     | -     | -     | -     | ○ |
| SHM200-RN2-5-20-1-K   |           | 1   | 20                |              |           | 65             |            |      |                    | 1.38   | 20.67 | 21.36 | -     | -     | -     | ○ |
| SHM200-RN2-5-40-1-K   |           |     | 40                |              |           | 85             |            |      |                    | 0.71   | 41.34 | -     | -     | -     | -     | ○ |
| SHM200-RN2-6-12-0.1-K | 6         | 0.1 | 12                | 4.8          | 5.85      | 50             | 6          | -    | -                  | -  | -     | -     | -     | -     | ○     |   |
| SHM200-RN2-6-18-0.1-K |           |     | 18                |              |           | 60             |            |      |                    | -  | -     | -     | -     | -     | ○     |   |
| SHM200-RN2-6-24-0.1-K |           |     | 24                |              |           | 70             |            |      |                    | -  | -     | -     | -     | -     | ○     |   |
| SHM200-RN2-6-35-0.1-K |           |     | 35                |              |           | 80             |            |      |                    | -  | -     | -     | -     | -     | ○     |   |
| SHM200-RN2-6-55-0.1-K |           |     | 55                |              |           | 100            |            |      |                    | -  | -     | -     | -     | -     | ○     |   |
| SHM200-RN2-6-12-0.2-K |           | 0.2 | 12                |              |           | 50             |            |      |                    | -  | -     | -     | -     | -     | ○     |   |
| SHM200-RN2-6-18-0.2-K |           |     | 18                |              |           | 60             |            |      |                    | -  | -     | -     | -     | -     | ○     |   |
| SHM200-RN2-6-24-0.2-K |           |     | 24                |              |           | 70             |            |      |                    | -  | -     | -     | -     | -     | ○     |   |
| SHM200-RN2-6-35-0.2-K |           |     | 35                |              |           | 80             |            |      |                    | -  | -     | -     | -     | -     | ○     |   |
| SHM200-RN2-6-55-0.2-K |           |     | 55                |              |           | 100            |            |      |                    | -  | -     | -     | -     | -     | ○     |   |

● Stock ○ Available upon Order

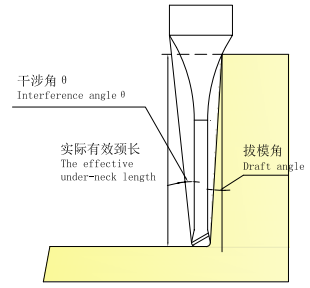
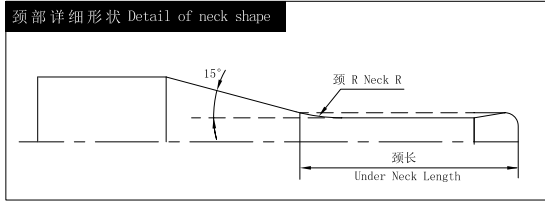
|   |        |
|---|--------|
| R | Tol    |
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SHM200-RN2 NEW

2 Flutes with Extended Neck, Corner Raidus



Please refer to page 149

» Continue

| Ordering Code         | Mill Dia. | R   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |    |      |    |    | Stock |
|-----------------------|-----------|-----|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|----|------|----|----|-------|
|                       |           |     |                   |              |           |                |            |      |                    | 0.5°   | 1° | 1.5° | 2° | 3° |       |
| SHM200-RN2-6-55-0.2-K | 6         | 0.2 | 55                | 4.8          | 5.85      | 100            | 6          | -    | -                  | -  | -  | -    | -  | -  | ○     |
| SHM200-RN2-6-12-0.3-K |           |     | 12                |              |           | 50             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SHM200-RN2-6-18-0.3-K |           |     | 18                |              |           | 60             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SHM200-RN2-6-24-0.3-K |           |     | 24                |              |           | 70             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SHM200-RN2-6-35-0.3-K |           |     | 35                |              |           | 80             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SHM200-RN2-6-55-0.3-K |           | 55  | 100               |              |           | -              |            |      | -                  | -  | -  | -    | ○  |    |       |
| SHM200-RN2-6-18-0.5-K |           | 0.5 | 18                |              |           | 60             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SHM200-RN2-6-24-0.5-K |           |     | 24                |              |           | 70             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SHM200-RN2-6-35-0.5-K |           |     | 35                |              |           | 80             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SHM200-RN2-6-55-0.5-K |           |     | 55                |              |           | 100            |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SHM200-RN2-6-18-1-K   |           |     | 1                 |              |           | 18             |            |      | 60                 | -  | -  | -    | -  | -  | ○     |
| SHM200-RN2-6-24-1-K   |           | 24  |                   |              |           | 70             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SHM200-RN2-6-35-1-K   |           | 35  |                   |              |           | 80             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SHM200-RN2-6-55-1-K   |           | 55  |                   |              |           | 100            |            |      | -                  | -  | -  | -    | -  | ○  |       |

● Stock ○ Available upon Order

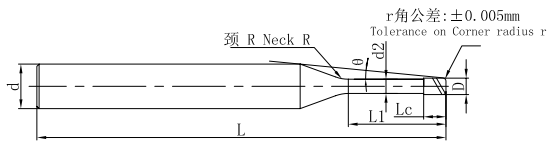
| R | Tol    |
|---|--------|
| R | ±0.005 |

(mm)

Cutting Parameters ※ P529

# SHM200-RN4 NEW

4 Flutes with Extended Neck, Corner Radius



Please refer to page 149

| Ordering Code            | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |       |       |       |       |   |
|--------------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|
|                          |           |      |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |       |       |       |       |   |
| SHM200-RN4-1-4-0.05-K    | 1         | 0.05 | 4                 | 0.8          | 0.96      | 50             | 4          | 4    | 8.75               | 4.27   | 4.47  | 4.65  | 4.82  | 5.21  | ○     |       |       |       |       |   |
| SHM200-RN4-1-6-0.05-K    |           |      | 6                 |              |           | 50             |            |      | 7.28               | 6.37   | 6.63  | 6.86  | 7.12  | 7.69  | ○     |       |       |       |       |   |
| SHM200-RN4-1-8-0.05-K    |           |      | 8                 |              |           | 50             |            |      | 6.23               | 8.45   | 8.76  | 9.08  | 9.42  | 10.18 | ○     |       |       |       |       |   |
| SHM200-RN4-1-10-0.05-K   |           |      | 10                |              |           | 50             |            |      | 5.45               | 10.53  | 10.90 | 11.30 | 11.72 | 12.67 | ○     |       |       |       |       |   |
| SHM200-RN4-1-12-0.05-K   |           |      | 12                |              |           | 60             |            |      | 4.84               | 12.61  | 13.04 | 13.51 | 14.02 | 15.15 | ○     |       |       |       |       |   |
| SHM200-RN4-1-16-0.05-K   |           |      | 16                |              |           | 60             |            |      | 3.95               | 16.74  | 17.32 | 17.95 | 18.62 | 20.12 | ○     |       |       |       |       |   |
| SHM200-RN4-1-20-0.05-K   |           |      | 20                |              |           | 60             |            |      | 3.34               | 20.88  | 21.60 | 22.38 | 23.22 | 25.10 | ○     |       |       |       |       |   |
| SHM200-RN4-1-4-0.1-K     |           |      | 0.1               |              |           | 4              |            |      | 1.2                | 1.44   | 50    | 4     | 4     | 8.80  | 4.26  | 4.47  | 4.64  | 4.81  | 5.19  | ○ |
| SHM200-RN4-1-6-0.1-K     |           |      |                   |              |           | 6              |            |      |                    |  | 50    |       |       | 7.31  | 6.37  | 6.62  | 6.86  | 7.11  | 7.68  | ○ |
| SHM200-RN4-1-8-0.1-K     |           |      |                   |              |           | 8              |            |      |                    |  | 50    |       |       | 6.25  | 8.45  | 8.76  | 9.07  | 9.41  | 10.17 | ○ |
| SHM200-RN4-1-10-0.1-K    |           |      |                   |              |           | 10             |            |      |                    |  | 50    |       |       | 5.46  | 10.53 | 10.90 | 11.29 | 11.71 | 12.65 | ○ |
| SHM200-RN4-1-12-0.1-K    |           |      |                   |              |           | 12             |            |      |                    |  | 60    |       |       | 4.85  | 12.60 | 13.04 | 13.51 | 14.01 | 15.14 | ○ |
| SHM200-RN4-1-16-0.1-K    |           |      |                   |              |           | 16             |            |      |                    |  | 60    |       |       | 3.96  | 16.74 | 17.32 | 17.94 | 18.61 | 20.11 | ○ |
| SHM200-RN4-1-20-0.1-K    |           |      |                   |              |           | 20             |            |      |                    |  | 60    |       |       | 3.35  | 20.87 | 21.60 | 22.37 | 23.21 | 25.08 | ○ |
| SHM200-RN4-1.5-4-0.05-K  | 1.5       | 0.05 |                   | 4            | 1.2       | 1.44           | 50         | 4    |                    |  | 4     |       |       | 8.12  | 4.23  | 4.42  | 4.59  | 4.76  | 5.14  | ○ |
| SHM200-RN4-1.5-8-0.05-K  |           |      | 8                 | 50           |           |                | 5.60       |      | 8.41               | 8.71   |       | 9.02  | 9.36  | 10.11 | ○     |       |       |       |       |   |
| SHM200-RN4-1.5-12-0.05-K |           |      | 12                | 60           |           |                | 4.27       |      | 12.55              | 12.99  |       | 13.46 | 13.96 | 15.09 | ○     |       |       |       |       |   |
| SHM200-RN4-1.5-15-0.05-K |           |      | 15                | 60           |           |                | 3.62       |      | 15.65              | 16.20  |       | 16.78 | 17.41 | 18.82 | ○     |       |       |       |       |   |
| SHM200-RN4-1.5-20-0.05-K |           |      | 20                | 60           |           |                | 2.89       |      | 20.82              | 21.55  |       | 22.32 | 23.16 | -     | ○     |       |       |       |       |   |
| SHM200-RN4-1.5-4-0.1-K   |           |      | 0.1               | 4            |           |                | 1.2        |      | 1.44               | 50   |       | 4     | 4     | 8.17  | 4.23  | 4.42  | 4.58  | 4.75  | 5.13  | ○ |
| SHM200-RN4-1.5-8-0.1-K   |           |      |                   | 8            |           |                |            |      |                    | 50   |       |       |       | 5.62  | 8.41  | 8.71  | 9.02  | 9.35  | 10.10 | ○ |
| SHM200-RN4-1.5-12-0.1-K  |           |      |                   | 12           |           |                |            |      |                    | 60   |       |       |       | 4.28  | 12.55 | 12.98 | 13.45 | 13.95 | 15.07 | ○ |
| SHM200-RN4-1.5-15-0.1-K  |           |      |                   | 15           |           |                |            |      |                    | 60   |       |       |       | 3.63  | 15.65 | 16.19 | 16.77 | 17.40 | 18.80 | ○ |
| SHM200-RN4-1.5-20-0.1-K  |           |      |                   | 20           |           |                |            |      |                    | 60   |       |       |       | 2.90  | 20.82 | 21.54 | 22.32 | 23.15 | -     | ○ |

● Stock ○ Available upon Order

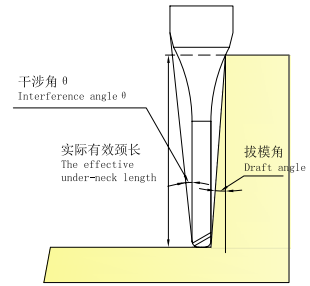
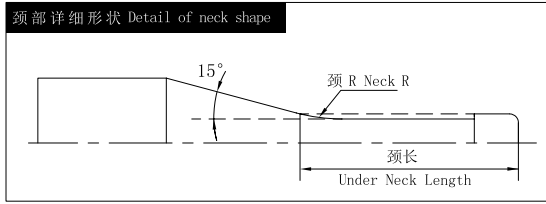
| Tol |  |
|-----|--|
| R   | ±0.005                                   |
| D   | $\begin{matrix} 0 \\ -0.01 \end{matrix}$ |

(mm)

Cutting Parameters ※ P551

# SHM200-RN4 NEW

4 Flutes with Extended Neck, Corner Raidus



Please refer to page 149

» Continue

| Ordering Code          | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|------------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|-------|-------|-------|-------|-------|
|                        |           |      |                   |              |           |                |            |       |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SHM200-RN4-2-4-0.05-K  | 2         | 0.05 | 4                 | 1.6          | 1.92      | 50             | 4          | 4     | 8.75               | 4.27   | 4.47  | 4.65  | 4.82  | 5.21  | ○     |
| SHM200-RN4-2-6-0.05-K  |           |      | 6                 |              |           | 50             |            |       | 7.28               | 6.37   | 6.63  | 6.86  | 7.12  | 7.69  | ○     |
| SHM200-RN4-2-8-0.05-K  |           |      | 8                 |              |           | 50             |            |       | 6.23               | 8.45   | 8.76  | 9.08  | 9.42  | 10.18 | ○     |
| SHM200-RN4-2-12-0.05-K |           |      | 12                |              |           | 60             |            |       | 5.45               | 10.53  | 10.90 | 11.30 | 11.72 | 12.67 | ○     |
| SHM200-RN4-2-16-0.05-K |           |      | 16                |              |           | 60             |            |       | 4.84               | 12.61  | 13.04 | 13.51 | 14.02 | 15.15 | ○     |
| SHM200-RN4-2-20-0.05-K |           |      | 20                |              |           | 60             |            |       | 3.95               | 16.74  | 17.32 | 17.95 | 18.62 | 20.12 | ○     |
| SHM200-RN4-2-4-0.1-K   |           | 0.1  | 4                 | 50           | 3.34      | 20.88          | 21.60      | 22.38 | 23.22              | 25.10  | ○     |       |       |       |       |
| SHM200-RN4-2-6-0.1-K   |           |      | 6                 | 50           | 8.80      | 4.26           | 4.47       | 4.64  | 4.81               | 5.19   | ○     |       |       |       |       |
| SHM200-RN4-2-8-0.1-K   |           |      | 8                 | 50           | 7.31      | 6.37           | 6.62       | 6.86  | 7.11               | 7.68   | ○     |       |       |       |       |
| SHM200-RN4-2-12-0.1-K  |           |      | 12                | 60           | 6.25      | 8.45           | 8.76       | 9.07  | 9.41               | 10.17  | ○     |       |       |       |       |
| SHM200-RN4-2-16-0.1-K  |           |      | 16                | 60           | 5.46      | 10.53          | 10.90      | 11.29 | 11.71              | 12.65  | ○     |       |       |       |       |
| SHM200-RN4-2-20-0.1-K  |           |      | 20                | 60           | 4.85      | 12.60          | 13.04      | 13.51 | 14.01              | 15.14  | ○     |       |       |       |       |
| SHM200-RN4-2-4-0.2-K   |           | 0.2  | 4                 | 50           | 3.96      | 16.74          | 17.32      | 17.94 | 18.61              | 20.11  | ○     |       |       |       |       |
| SHM200-RN4-2-6-0.2-K   |           |      | 6                 | 50           | 3.35      | 20.87          | 21.60      | 22.37 | 23.21              | 25.08  | ○     |       |       |       |       |
| SHM200-RN4-2-8-0.2-K   |           |      | 8                 | 50           | 8.12      | 4.23           | 4.42       | 4.59  | 4.76               | 5.14   | ○     |       |       |       |       |
| SHM200-RN4-2-12-0.2-K  |           |      | 12                | 60           | 5.60      | 8.41           | 8.71       | 9.02  | 9.36               | 10.11  | ●     |       |       |       |       |
| SHM200-RN4-2-16-0.2-K  |           |      | 16                | 60           | 4.27      | 12.55          | 12.99      | 13.46 | 13.96              | 15.09  | ○     |       |       |       |       |
| SHM200-RN4-2-20-0.2-K  |           |      | 20                | 60           | 3.62      | 15.65          | 16.20      | 16.78 | 17.41              | 18.82  | ○     |       |       |       |       |
| SHM200-RN4-2-25-0.2-K  |           | 25   | 70                | 2.89         | 20.82     | 21.55          | 22.32      | 23.16 | -                  | ○  |       |       |       |       |       |
| SHM200-RN4-2-30-0.2-K  |           | 30   | 70                | 8.17         | 4.23      | 4.42           | 4.58       | 4.75  | 5.13               | ○  |       |       |       |       |       |
| SHM200-RN4-2-4-0.3-K   | 0.3       | 4    | 50                | 5.62         | 8.41      | 8.71           | 9.02       | 9.35  | 10.10              | ○  |       |       |       |       |       |
| SHM200-RN4-2-8-0.3-K   |           | 8    | 50                | 4.28         | 12.55     | 12.98          | 13.45      | 13.95 | 15.07              | ○  |       |       |       |       |       |
| SHM200-RN4-2-12-0.3-K  |           | 12   | 60                | 3.63         | 15.65     | 16.19          | 16.77      | 17.40 | 18.80              | ○  |       |       |       |       |       |
| SHM200-RN4-2-16-0.3-K  |           | 16   | 60                | 2.90         | 20.82     | 21.54          | 22.32      | 23.15 | -                  | ○  |       |       |       |       |       |

● Stock ○ Available upon Order

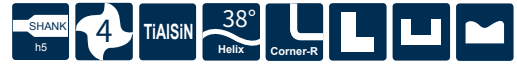
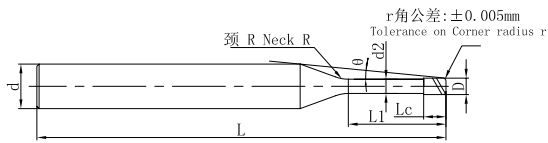
| Tol |            |
|-----|------------|
| R   | ±0.005     |
| D   | 0<br>-0.01 |

(mm)

Cutting Parameters ※ P551

# SHM200-RN4 NEW

4 Flutes with Extended Neck, Corner Radius



Please refer to page 149

» Continue

| Ordering Code           | Mill Dia. | R   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|-------------------------|-----------|-----|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                         |           |     |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SHM200-RN4-2-20-0.3-K   | 2         | 0.3 | 20                | 1.6          | 1.92      | 60             | 4          | 4    | 2.44               | 20.77  | 21.49 | 22.25 | 23.08 | -     | ○     |
| SHM200-RN4-2-4-0.5-K    |           |     | 4                 |              |           | 50             |            |      | 7.76               | 4.19   | 4.35  | 4.50  | 4.65  | 4.98  | ○     |
| SHM200-RN4-2-6-0.5-K    |           |     | 6                 |              |           | 50             |            |      | 6.11               | 6.28   | 6.50  | 6.71  | 6.95  | 7.47  | ○     |
| SHM200-RN4-2-8-0.5-K    |           |     | 8                 |              |           | 50             |            |      | 5.04               | 8.36   | 8.64  | 8.93  | 9.25  | 9.96  | ○     |
| SHM200-RN4-2-12-0.5-K   |           |     | 12                |              |           | 50             |            |      | 3.73               | 12.50  | 12.92 | 13.36 | 13.85 | 14.93 | ○     |
| SHM200-RN4-2-16-0.5-K   |           |     | 16                |              |           | 60             |            |      | 2.96               | 16.63  | 17.19 | 17.80 | 18.45 | -     | ●     |
| SHM200-RN4-2-20-0.5-K   |           |     | 20                |              |           | 60             |            |      | 2.46               | 20.77  | 21.47 | 22.23 | 23.05 | -     | ○     |
| SHM200-RN4-2-25-0.5-K   |           |     | 25                |              |           | 60             |            |      | 2.03               | 25.94  | 26.82 | 27.77 | 28.79 | -     | ○     |
| SHM200-RN4-2-30-0.5-K   |           |     | 30                |              |           | 50             |            |      | 1.72               | 31.10  | 32.17 | 33.31 | -     | -     | ○     |
| SHM200-RN4-2.5-8-0.1-K  | 2.5       | 0.1 | 8                 | 2            | 2.4       | 50             | 4          | 4    | 3.98               | 8.34   | 8.63  | 8.94  | 9.27  | 10.02 | ○     |
| SHM200-RN4-2.5-16-0.1-K |           |     | 16                |              |           | 50             |            |      | 2.29               | 16.62  | 17.19 | 17.81 | 18.47 | -     | ○     |
| SHM200-RN4-2.5-20-0.1-K |           |     | 20                |              |           | 50             |            |      | 1.89               | 20.75  | 21.47 | 22.24 | -     | -     | ○     |
| SHM200-RN4-2.5-8-0.2-K  |           |     | 8                 |              |           | 60             |            |      | 4.02               | 8.34   | 8.63  | 8.93  | 9.26  | 9.99  | ○     |
| SHM200-RN4-2.5-16-0.2-K |           |     | 16                |              |           | 60             |            |      | 2.30               | 16.61  | 17.18 | 17.80 | 18.46 | -     | ○     |
| SHM200-RN4-2.5-20-0.2-K |           |     | 20                |              |           | 60             |            |      | 1.90               | 20.75  | 21.46 | 22.23 | -     | -     | ○     |
| SHM200-RN4-2.5-12-0.3-K |           |     | 12                |              |           | 50             |            |      | 2.95               | 12.47  | 12.90 | 13.35 | 13.84 | -     | ○     |
| SHM200-RN4-2.5-20-0.3-K |           |     | 20                |              |           | 50             |            |      | 1.91               | 20.74  | 21.46 | 22.22 | -     | -     | ○     |
| SHM200-RN4-2.5-12-0.5-K |           |     | 12                |              |           | 60             |            |      | 2.99               | 12.47  | 12.88 | 13.33 | 13.81 | -     | ○     |
| SHM200-RN4-2.5-20-0.5-K |           |     | 20                |              |           | 60             |            |      | 1.92               | 20.74  | 21.44 | 22.20 | -     | -     | ○     |
| SHM200-RN4-3-8-0.1-K    | 3         | 0.1 | 8                 | 2.4          | 2.88      | 60             | 6          | 4    | 6.32               | 8.32   | 8.61  | 8.92  | 9.25  | 9.99  | ○     |
| SHM200-RN4-3-16-0.1-K   |           |     | 16                |              |           | 50             |            |      | 3.99               | 16.59  | 17.17 | 17.78 | 18.45 | 19.94 | ○     |
| SHM200-RN4-3-25-0.1-K   |           |     | 25                |              |           | 50             |            |      | 2.82               | 25.90  | 26.79 | 27.76 | 28.80 | -     | ○     |
| SHM200-RN4-3-30-0.1-K   |           |     | 30                |              |           | 60             |            |      | 2.42               | 31.06  | 32.14 | 33.30 | 34.55 | -     | ○     |
| SHM200-RN4-3-8-0.2-K    |           |     | 8                 |              |           | 60             |            |      | 6.36               | 8.32   | 8.60  | 8.91  | 9.23  | 9.97  | ○     |

● Stock ○ Available upon Order

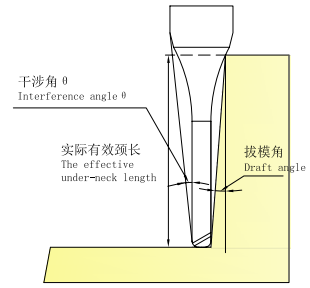
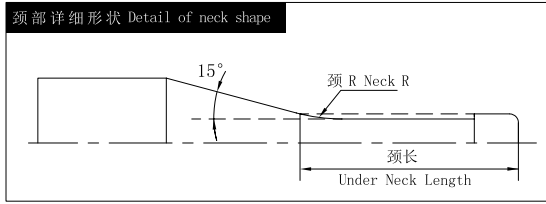
| Tol |            |
|-----|------------|
| R   | ±0.005     |
| D   | 0<br>-0.01 |

(mm)

Cutting Parameters ※ P551

# SHM200-RN4 NEW

4 Flutes with Extended Neck, Corner Raidus



Please refer to page 149

» Continue

| Ordering Code         | Mill Dia. | R   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|-----------------------|-----------|-----|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|-------|-------|-------|-------|-------|
|                       |           |     |                   |              |           |                |            |       |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SHM200-RN4-3-12-0.2-K | 3         | 0.2 | 12                | 2.4          | 2.88      | 60             | 6          | 4     | 4.92               | 12.45  | 12.88 | 13.34 | 13.83 | 14.94 | ○     |
| SHM200-RN4-3-16-0.2-K |           |     | 16                |              |           | 4.00           |            |       | 16.59              | 17.16  | 17.77 | 18.43 | 19.91 | ○     |       |
| SHM200-RN4-3-20-0.2-K |           |     | 20                |              |           | 3.38           |            |       | 20.72              | 21.44  | 22.21 | 23.03 | 24.88 | ○     |       |
| SHM200-RN4-3-25-0.2-K |           |     | 25                |              |           | 2.82           |            |       | 25.89              | 26.79  | 27.75 | 28.78 | -     | ○     |       |
| SHM200-RN4-3-30-0.2-K |           |     | 30                |              |           | 2.43           |            |       | 31.06              | 32.14  | 33.29 | 34.53 | -     | ○     |       |
| SHM200-RN4-3-8-0.3-K  |           | 0.3 | 8                 |              |           | 60             |            |       | 6.41               | 8.32   | 8.60  | 8.90  | 9.22  | 9.94  | ○     |
| SHM200-RN4-3-16-0.3-K |           |     | 16                |              |           | 60             |            |       | 4.02               | 16.59  | 17.15 | 17.76 | 18.42 | 19.89 | ○     |
| SHM200-RN4-3-20-0.3-K |           |     | 20                |              |           | 70             |            |       | 3.39               | 20.72  | 21.43 | 22.20 | 23.02 | 24.86 | ○     |
| SHM200-RN4-3-25-0.3-K |           |     | 25                |              |           | 80             |            |       | 2.83               | 25.89  | 26.78 | 27.74 | 28.77 | -     | ○     |
| SHM200-RN4-3-30-0.3-K |           |     | 30                |              |           | 80             |            |       | 2.43               | 31.06  | 32.13 | 33.28 | 34.52 | -     | ○     |
| SHM200-RN4-3-8-0.5-K  |           | 0.5 | 8                 |              |           | 60             |            |       | 6.51               | 8.31   | 8.58  | 8.87  | 9.19  | 9.89  | ○     |
| SHM200-RN4-3-12-0.5-K |           |     | 12                |              |           | 60             |            |       | 5.00               | 12.44  | 12.86 | 13.31 | 13.79 | 14.87 | ○     |
| SHM200-RN4-3-16-0.5-K |           |     | 16                |              |           | 60             |            |       | 4.06               | 16.58  | 17.14 | 17.74 | 18.39 | 19.84 | ○     |
| SHM200-RN4-3-20-0.5-K |           |     | 20                |              |           | 70             |            |       | 3.42               | 20.71  | 21.42 | 22.17 | 22.99 | 24.81 | ○     |
| SHM200-RN4-3-25-0.5-K |           |     | 25                |              |           | 70             |            |       | 2.85               | 25.88  | 26.77 | 27.72 | 28.74 | -     | ○     |
| SHM200-RN4-3-30-0.5-K | 30        |     | 80                | 2.45         | 31.05     | 32.12          | 33.26      | 34.49 | -                  | ○  |       |       |       |       |       |
| SHM200-RN4-3-35-0.5-K | 35        |     | 80                | 2.14         | 36.22     | 37.46          | 38.80      | 40.23 | -                  | ○  |       |       |       |       |       |
| SHM200-RN4-4-12-0.1-K | 4         | 0.1 | 12                | 3.2          | 3.86      | 60             | 6          | 4     | 3.66               | 12.44  | 12.87 | 13.33 | 13.83 | 14.94 | ○     |
| SHM200-RN4-4-20-0.1-K |           |     | 20                |              |           | 60             |            |       | 2.42               | 20.71  | 21.43 | 22.20 | 23.03 | -     | ○     |
| SHM200-RN4-4-30-0.1-K |           |     | 30                |              |           | 80             |            |       | 1.71               | 31.05  | 32.12 | 33.28 | -     | -     | ○     |
| SHM200-RN4-4-40-0.1-K |           | 40  | 80                |              |           | 1.32           |            |       | 41.38              | 42.82  | -     | -     | -     | ○     |       |
| SHM200-RN4-4-12-0.2-K |           | 0.2 | 12                |              |           | 60             |            |       | 3.68               | 12.44  | 12.86 | 13.32 | 13.81 | 14.92 | ○     |
| SHM200-RN4-4-20-0.2-K |           |     | 20                |              |           | 60             |            |       | 2.43               | 20.71  | 21.42 | 22.19 | 23.01 | -     | ○     |
| SHM200-RN4-4-30-0.2-K |           |     | 30                |              |           | 80             |            |       | 1.71               | 31.04  | 32.12 | 33.27 | -     | -     | ○     |

● Stock ○ Available upon Order

| Tol |  |
|-----|--|
| R   | ±0.005                                   |
| D   | $\begin{matrix} 0 \\ -0.01 \end{matrix}$ |

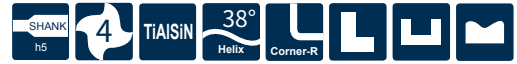
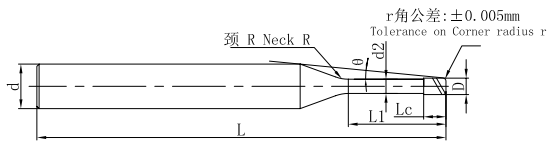
(mm)

Cutting Parameters ※ P551



# SHM200-RN4 NEW

4 Flutes with Extended Neck, Corner Radius



Please refer to page 149

» Continue

| Ordering Code         | Mill Dia. | R   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|-----------------------|-----------|-----|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                       |           |     |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SHM200-RN4-4-40-0.2-K | 4         | 0.2 | 40                | 3.2          | 3.86      | 80             | 6          | 4    | 1.32               | 41.38  | 42.81 | -     | -     | -     | ○     |
| SHM200-RN4-4-12-0.3-K |           |     | 12                |              |           | 60             |            |      | 3.70               | 12.43  | 12.86 | 13.31 | 13.80 | 14.89 | ○     |
| SHM200-RN4-4-20-0.3-K |           |     | 20                |              |           | 60             |            |      | 2.44               | 20.70  | 21.41 | 22.18 | 23.00 | -     | -     |
| SHM200-RN4-4-30-0.3-K |           | 0.3 | 30                |              |           | 80             |            |      | 1.72               | 31.04  | 32.11 | 33.26 | -     | -     | ○     |
| SHM200-RN4-4-40-0.3-K |           |     | 40                |              |           | 80             |            |      | 1.32               | 41.38  | 42.81 | -     | -     | -     | ○     |
| SHM200-RN4-4-12-0.5-K |           |     | 0.5               |              |           | 12             |            |      | 60                 | 3.75   | 12.43 | 12.84 | 13.29 | 13.77 | 14.84 |
| SHM200-RN4-4-20-0.5-K |           | 20  |                   |              |           | 60             |            |      | 2.47               | 20.70  | 21.40 | 22.15 | 22.97 | -     | ○     |
| SHM200-RN4-4-30-0.5-K |           | 30  |                   |              |           | 80             |            |      | 1.73               | 31.03  | 32.10 | 33.24 | -     | -     | ○     |
| SHM200-RN4-4-40-0.5-K |           | 40  | 80                |              |           | 1.33           |            |      | 41.37              | 42.79  | -     | -     | -     | ○     |       |
| SHM200-RN4-5-20-0.1-K | 5         | 0.1 | 20                | 4            | 4.85      | 70             | 6          | 4    | 1.32               | 20.70  | 21.42 | -     | -     | -     | ○     |
| SHM200-RN4-5-40-0.1-K |           |     | 40                |              |           | 90             |            |      | 0.69               | 41.38  | -     | -     | -     | -     | ○     |
| SHM200-RN4-5-20-0.2-K |           | 0.2 | 20                |              |           | 70             |            |      | 1.32               | 20.70  | 21.41 | -     | -     | -     | ○     |
| SHM200-RN4-5-40-0.2-K |           |     | 40                |              |           | 90             |            |      | 0.69               | 41.37  | -     | -     | -     | -     | ○     |
| SHM200-RN4-5-20-0.3-K |           | 0.3 | 20                |              |           | 70             |            |      | 1.33               | 20.69  | 21.41 | -     | -     | -     | ○     |
| SHM200-RN4-5-40-0.3-K |           |     | 40                |              |           | 90             |            |      | 0.69               | 41.37  | -     | -     | -     | -     | ○     |
| SHM200-RN4-5-20-0.5-K |           | 0.5 | 20                |              |           | 70             |            |      | 1.34               | 20.69  | 21.39 | -     | -     | -     | ○     |
| SHM200-RN4-5-40-0.5-K |           |     | 40                |              |           | 90             |            |      | 0.70               | 41.36  | -     | -     | -     | -     | ○     |
| SHM200-RN4-5-20-1-K   |           | 1   | 20                |              |           | 70             |            |      | 1.38               | 20.67  | 21.36 | -     | -     | -     | ○     |
| SHM200-RN4-5-40-1-K   | 40        |     | 90                | 0.71         | 41.34     | -              | -          | -    | -                  | ○  |       |       |       |       |       |
| SHM200-RN4-6-30-0.2-K | 6         | 0.2 | 30                | 4.8          | 5.85      | 80             | 6          | 4    | -                  | -  | -     | -     | -     | -     | ○     |
| SHM200-RN4-6-54-0.2-K |           |     | 54                |              |           | 100            |            |      | -                  | -  | -     | -     | -     | ○     |       |
| SHM200-RN4-6-72-0.2-K |           |     | 72                |              |           | 120            |            |      | -                  | -  | -     | -     | -     | ○     |       |
| SHM200-RN4-6-30-0.3-K |           | 0.3 | 30                |              |           | 80             |            |      | -                  | -  | -     | -     | -     | ○     |       |
| SHM200-RN4-6-54-0.3-K |           |     | 54                |              |           | 100            |            |      | -                  | -  | -     | -     | -     | ○     |       |

● Stock ○ Available upon Order

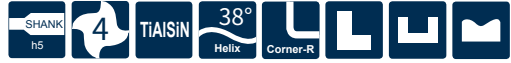
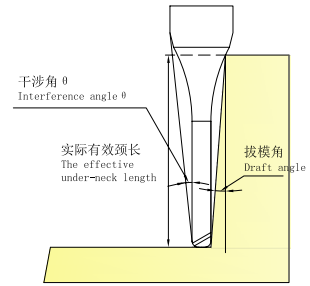
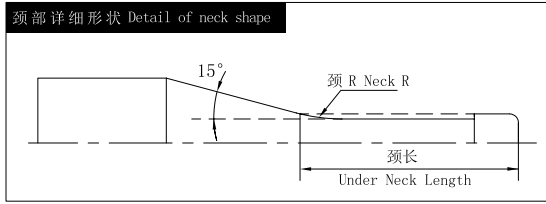
| Tol |            |
|-----|------------|
| R   | ±0.005     |
| D   | 0<br>-0.01 |

(mm)

Cutting Parameters ※ P551

# SHM200-RN4 NEW

4 Flutes with Extended Neck, Corner Radius



Please refer to page 149

» Continue

| Ordering Code         | Mill Dia. | R   | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |    |      |    |    | Stock |
|-----------------------|-----------|-----|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|----|------|----|----|-------|
|                       |           |     |                   |              |           |                |            |      |                    | 0.5°   | 1° | 1.5° | 2° | 3° |       |
| SHM200-RN4-6-72-0.3-K | 6         | 0.3 | 72                | 4.8          | 5.85      | 120            | 6          | 4    | -                  | -  | -  | -    | -  | -  | ○     |
| SHM200-RN4-6-30-0.5-K |           |     | 30                |              |           | 80             |            |      | -                  | -  | -  | -    | -  | ○  |       |
| SHM200-RN4-6-54-0.5-K |           | 0.5 | 54                |              |           | 100            |            |      | -                  | -  | -  | -    | ○  |    |       |
| SHM200-RN4-6-72-0.5-K |           |     | 72                |              |           | 120            |            |      | -                  | -  | -  | -    | ○  |    |       |
| SHM200-RN4-6-30-1-K   |           | 1   | 1                 |              |           | 30             |            |      | 80                 | -  | -  | -    | -  | ○  |       |
| SHM200-RN4-6-54-1-K   |           |     |                   |              |           | 54             |            |      | 100                | -  | -  | -    | -  | ○  |       |
| SHM200-RN4-6-72-1-K   |           |     |                   |              |           | 72             |            |      | 120                | -  | -  | -    | -  | ○  |       |
|                       |           |     |                   |              |           |                |            |      |                    |  |    |      |    |    |       |

● Stock ○ Available upon Order

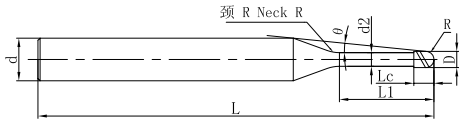
| Tol |            |
|-----|------------|
| R   | ±0.005     |
| D   | 0<br>-0.01 |

(mm)

Cutting Parameters ※ P551

# SHM200-BN2 NEW

2 Flutes with Extended Neck, Ballnose



Please refer to page 149

| Ordering Code         | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |      |      |      |      | Stock |       |      |      |      |      |      |   |
|-----------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|------|------|------|------|-------|-------|------|------|------|------|------|---|
|                       |           |      |                   |              |           |                |            |      |                    | 0.5°   | 1°   | 1.5° | 2°   | 3°   |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.1-0.2-K  | 0.1       | 0.05 | 0.2               | 0.08         | 0.08      | 50             | 4          | 1    | 14.66              | 0.2  | 0.21 | 0.22 | 0.24 | 0.26 | ○     |       |      |      |      |      |      |   |
| SHM200-BN2-0.1-0.3-K  |           |      | 14.48             |              |           |                |            |      | 0.31               | 0.33   | 0.34 | 0.36 | 0.39 | ○    |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.1-0.5-K  |           |      | 14.12             |              |           |                |            |      | 0.52               | 0.55   | 0.57 | 0.59 | 0.64 | ○    |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.2-0.5-K  | 0.2       | 0.1  | 0.5               | 0.16         | 0.17      | 50             | 4          | 1    | 14.21              | 0.51   | 0.53 | 0.55 | 0.57 | 0.61 | ●     |       |      |      |      |      |      |   |
| SHM200-BN2-0.2-0.75-K |           |      | 13.77             |              |           |                |            |      | 0.78               | 0.8  | 0.83 | 0.86 | 0.92 | ○    |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.2-1-K    |           |      | 13.36             |              |           |                |            |      | 1.04               | 1.07   | 1.11 | 1.15 | 1.23 | ○    |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.2-1.25-K |           |      | 12.97             |              |           |                |            |      | 1.3                | 1.34   | 1.39 | 1.43 | 1.54 | ○    |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.2-1.5-K  |           |      | 12.6              |              |           |                |            |      | 1.56               | 1.61   | 1.66 | 1.72 | 1.85 | ○    |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.2-2-K    |           |      | 11.92             |              |           |                |            |      | 2.07               | 2.14   | 2.22 | 2.3  | 2.48 | ○    |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.2-2.5-K  |           |      | 11.31             |              |           |                |            |      | 2.59               | 2.68   | 2.77 | 2.87 | 3.1  | ○    |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.2-3-K    |           |      | 10.76             |              |           |                |            |      | 3.11               | 3.21   | 3.33 | 3.45 | 3.72 | ○    |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.3-0.5-K  |           |      | 0.3               |              |           |                |            |      | 0.15               | 0.5  | 0.24 | 0.27 | 50   | 4    | 2     | 14.17 | 0.52 | 0.55 | 0.57 | 0.6  | 0.66 | ● |
| SHM200-BN2-0.3-0.75-K |           |      |                   |              |           |                |            |      |                    | 13.72  |      |      |      |      |       | 0.79  | 0.83 | 0.87 | 0.91 | 0.98 | ○    |   |
| SHM200-BN2-0.3-1-K    | 13.3      | 1.05 |                   | 1.11         | 1.16      | 1.2            | 1.29       | ○    |                    |  |      |      |      |      |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.3-1.25-K | 12.9      | 1.32 |                   | 1.38         | 1.44      | 1.5            | 1.61       | ○    |                    |  |      |      |      |      |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.3-1.5-K  | 12.53     | 1.58 |                   | 1.66         | 1.72      | 1.78           | 1.92       | ○    |                    |  |      |      |      |      |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.3-2-K    | 11.84     | 2.11 |                   | 2.2          | 2.28      | 2.36           | 2.54       | ○    |                    |  |      |      |      |      |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.3-2.5-K  | 11.22     | 2.63 |                   | 2.74         | 2.83      | 2.93           | 3.16       | ●    |                    |  |      |      |      |      |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.3-3-K    | 10.66     | 3.15 |                   | 3.27         | 3.39      | 3.51           | 3.78       | ○    |                    |  |      |      |      |      |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.4-0.75-K | 0.4       | 0.2  | 0.75              | 0.32         | 0.37      | 50             | 4          | 2    | 13.78              | 0.78   | 0.82 | 0.86 | 0.9  | 0.97 | ●     |       |      |      |      |      |      |   |
| SHM200-BN2-0.4-1-K    |           |      | 13.34             |              |           |                |            |      | 1.05               | 1.1  | 1.15 | 1.19 | 1.28 | ○    |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.4-1.5-K  |           |      | 12.55             |              |           |                |            |      | 1.58               | 1.65   | 1.72 | 1.78 | 1.9  | ○    |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.4-2-K    |           |      | 11.84             |              |           |                |            |      | 2.11               | 2.19   | 2.27 | 2.35 | 2.53 | ○    |       |       |      |      |      |      |      |   |
| SHM200-BN2-0.4-2.5-K  |           |      | 11.2              |              |           |                |            |      | 2.63               | 2.73   | 2.83 | 2.93 | 3.15 | ○    |       |       |      |      |      |      |      |   |

● Stock ○ Available upon Order

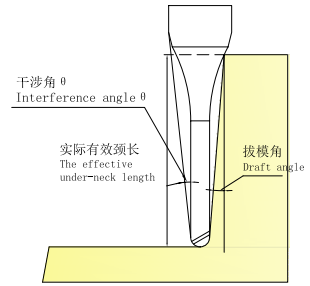
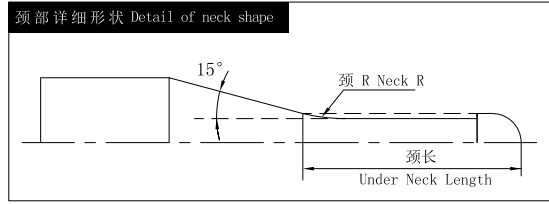
| R       | Tol    |
|---------|--------|
| R ≤ 1.0 | ±0.003 |
| R > 1.0 | ±0.005 |

(mm)

Cutting Parameters ※ P556

# SHM200-BN2 NEW

2 Flutes with Extended Neck, Ballnose



Please refer to page 149

» Continue

| Ordering Code        | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |      |      |      |      | Stock |   |
|----------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|------|------|------|------|-------|---|
|                      |           |      |                   |              |           |                |            |      |                    | 0.5°   | 1°   | 1.5° | 2°   | 3°   |       |   |
| SHM200-BN2-0.4-3-K   | 0.4       | 0.2  | 3                 | 0.32         | 0.37      | 50             | 4          | 2    | 10.63              | 3.15   | 3.27 | 3.38 | 3.5  | 3.77 | ○     |   |
| SHM200-BN2-0.4-3.5-K |           |      | 3.5               |              |           |                |            |      |                    | 3.67   | 3.8  | 3.94 | 4.08 | 4.39 | ●     |   |
| SHM200-BN2-0.4-4-K   |           |      | 4                 |              |           |                |            |      |                    | 9.65   | 4.19 | 4.34 | 4.49 | 4.65 | 5.01  | ● |
| SHM200-BN2-0.4-4.5-K |           |      | 4.5               |              |           |                |            |      |                    | 9.22   | 4.71 | 4.87 | 5.04 | 5.23 | 5.63  | ○ |
| SHM200-BN2-0.5-1-K   | 0.5       | 0.25 | 1                 | 0.4          | 0.47      | 50             | 4          | 2    | 13.39              | 1.05   | 1.09 | 1.14 | 1.19 | 1.27 | ○     |   |
| SHM200-BN2-0.5-1.5-K |           |      | 1.5               |              |           |                |            |      |                    | 12.56  | 1.58 | 1.65 | 1.71 | 1.77 | 1.89  | ○ |
| SHM200-BN2-0.5-2-K   |           |      | 2                 |              |           |                |            |      |                    | 11.83  | 2.1  | 2.19 | 2.27 | 2.34 | 2.51  | ● |
| SHM200-BN2-0.5-2.5-K |           |      | 2.5               |              |           |                |            |      |                    | 11.18  | 2.63 | 2.73 | 2.82 | 2.92 | 3.14  | ○ |
| SHM200-BN2-0.5-3-K   |           |      | 3                 |              |           |                |            |      |                    | 10.6   | 3.15 | 3.27 | 3.38 | 3.49 | 3.76  | ● |
| SHM200-BN2-0.5-4-K   |           |      | 4                 |              |           |                |            |      |                    | 9.6  | 4.19 | 4.34 | 4.48 | 4.64 | 5     | ● |
| SHM200-BN2-0.5-5-K   |           |      | 5                 |              |           |                |            |      |                    | 8.77   | 5.23 | 5.41 | 5.59 | 5.79 | 6.24  | ○ |
| SHM200-BN2-0.5-5.5-K |           |      | 5.5               |              |           |                |            |      |                    | 8.4  | 5.75 | 5.94 | 6.15 | 6.37 | 6.86  | ○ |
| SHM200-BN2-0.5-6-K   |           |      | 6                 |              |           |                |            |      |                    | 8.07   | 6.27 | 6.48 | 6.7  | 6.94 | 7.49  | ○ |
| SHM200-BN2-0.5-8-K   |           |      | 8                 |              |           |                |            |      |                    | 6.96   | 8.33 | 8.62 | 8.92 | 9.24 | 9.97  | ○ |
| SHM200-BN2-0.6-1-K   | 0.6       | 0.3  | 1                 | 0.48         | 0.57      | 50             | 4          | 4    | 13.15              | 1.07   | 1.14 | 1.2  | 1.27 | 1.41 | ○     |   |
| SHM200-BN2-0.6-2-K   |           |      | 2                 |              |           |                |            |      |                    | 11.61  | 2.15 | 2.28 | 2.39 | 2.5  | 2.7   | ● |
| SHM200-BN2-0.6-2.5-K |           |      | 2.5               |              |           |                |            |      |                    | 10.96  | 2.68 | 2.84 | 2.97 | 3.09 | 3.32  | ○ |
| SHM200-BN2-0.6-3-K   |           |      | 3                 |              |           |                |            |      |                    | 10.38  | 3.22 | 3.39 | 3.54 | 3.67 | 3.95  | ● |
| SHM200-BN2-0.6-3.5-K |           |      | 3.5               |              |           |                |            |      |                    | 9.86   | 3.75 | 3.94 | 4.1  | 4.25 | 4.57  | ● |
| SHM200-BN2-0.6-4-K   |           |      | 4                 |              |           |                |            |      |                    | 9.39   | 4.28 | 4.48 | 4.66 | 4.82 | 5.19  | ● |
| SHM200-BN2-0.6-4.5-K |           |      | 4.5               |              |           |                |            |      |                    | 8.97   | 4.81 | 5.03 | 5.21 | 5.4  | 5.81  | ○ |
| SHM200-BN2-0.6-5-K   |           |      | 5                 |              |           |                |            |      |                    | 8.57   | 5.33 | 5.57 | 5.77 | 5.97 | 6.43  | ○ |
| SHM200-BN2-0.6-5.5-K |           |      | 5.5               |              |           |                |            |      |                    | 8.22   | 5.86 | 6.11 | 6.32 | 6.55 | 7.05  | ○ |
| SHM200-BN2-0.6-6-K   |           |      | 6                 |              |           |                |            |      |                    | 7.89   | 6.38 | 6.64 | 6.87 | 7.12 | 7.67  | ● |

● Stock ○ Available upon Order

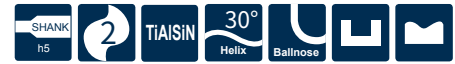
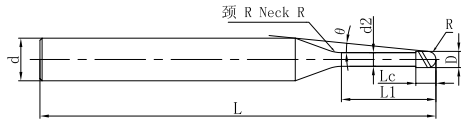
| R       | Tol    |
|---------|--------|
| R ≤ 1.0 | ±0.003 |
| R > 1.0 | ±0.005 |

(mm)

Cutting Parameters ※ P556

# SHM200-BN2 NEW

2 Flutes with Extended Neck, Ballnose



Please refer to page 149

» Continue

| Ordering Code       | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|---------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                     |           |      |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SHM200-BN2-0.6-7-K  | 0.6       | 0.3  | 7                 | 0.48         | 0.57      | 50             | 4          | 4    | 7.3                | 7.43   | 7.71  | 7.98  | 8.27  | 8.92  | ○     |
| SHM200-BN2-0.6-8-K  |           |      | 8                 |              |           |                |            |      | 6.79               | 8.48   | 8.78  | 9.09  | 9.42  | 10.16 | ○     |
| SHM200-BN2-0.6-9-K  |           |      | 9                 |              |           |                |            |      | 6.35               | 9.52   | 9.85  | 10.2  | 10.57 | 11.4  | ○     |
| SHM200-BN2-0.6-10-K |           |      | 10                |              |           |                |            |      | 5.97               | 10.56  | 10.92 | 11.31 | 11.72 | 12.65 | ○     |
| SHM200-BN2-0.6-12-K |           |      | 12                |              |           |                |            |      | 5.32               | 12.63  | 13.06 | 13.52 | 14.02 | 15.13 | ○     |
| SHM200-BN2-0.7-2-K  | 0.7       | 0.35 | 2                 | 0.56         | 0.67      | 50             | 4          | 4    | 11.6               | 2.14   | 2.27  | 2.39  | 2.49  | 2.69  | ○     |
| SHM200-BN2-0.7-4-K  |           |      | 4                 |              |           |                |            |      | 9.33               | 4.27   | 4.48  | 4.65  | 4.81  | 5.18  | ○     |
| SHM200-BN2-0.7-6-K  |           |      | 6                 |              |           |                |            |      | 7.81               | 6.38   | 6.64  | 6.87  | 7.11  | 7.66  | ○     |
| SHM200-BN2-0.7-8-K  |           |      | 8                 |              |           |                |            |      | 6.71               | 8.47   | 8.78  | 9.09  | 9.41  | 10.15 | ○     |
| SHM200-BN2-0.8-2-K  | 0.8       | 0.4  | 2                 | 0.64         | 0.76      | 50             | 4          | 4    | 11.64              | 2.12   | 2.24  | 2.35  | 2.45  | 2.63  | ●     |
| SHM200-BN2-0.8-4-K  |           |      | 4                 |              |           |                |            |      | 9.3                | 4.25   | 4.44  | 4.61  | 4.77  | 5.12  | ●     |
| SHM200-BN2-0.8-5-K  |           |      | 5                 |              |           |                |            |      | 8.45               | 5.3  | 5.53  | 5.72  | 5.92  | 6.36  | ○     |
| SHM200-BN2-0.8-6-K  |           |      | 6                 |              |           |                |            |      | 7.74               | 6.35   | 6.6   | 6.83  | 7.07  | 7.61  | ○     |
| SHM200-BN2-0.8-8-K  |           |      | 8                 |              |           |                |            |      | 6.63               | 8.44   | 8.74  | 9.04  | 9.37  | 10.09 | ○     |
| SHM200-BN2-0.8-10-K |           |      | 10                |              |           |                |            |      | 5.8                | 10.52  | 10.88 | 11.26 | 11.67 | 12.58 | ○     |
| SHM200-BN2-0.9-2-K  | 0.9       | 0.45 | 2                 | 0.72         | 0.86      | 50             | 4          | 4    | 11.63              | 2.12   | 2.23  | 2.34  | 2.44  | 2.62  | ○     |
| SHM200-BN2-0.9-4-K  |           |      | 4                 |              |           |                |            |      | 9.24               | 4.25   | 4.44  | 4.6   | 4.76  | 5.11  | ○     |
| SHM200-BN2-0.9-6-K  |           |      | 6                 |              |           |                |            |      | 7.66               | 6.35   | 6.6   | 6.82  | 7.06  | 7.6   | ○     |
| SHM200-BN2-0.9-8-K  |           |      | 8                 |              |           |                |            |      | 6.54               | 8.44   | 8.74  | 9.04  | 9.36  | 10.08 | ○     |
| SHM200-BN2-1-2-K    | 1         | 0.5  | 2                 | 0.8          | 0.96      | 50             | 4          | 4    | 11.62              | 2.12   | 2.23  | 2.33  | 2.43  | 2.61  | ●     |
| SHM200-BN2-1-3-K    |           |      | 3                 |              |           | 10.25          |            |      | 3.18               | 3.34   | 3.48  | 3.6   | 3.85  | ●     |       |
| SHM200-BN2-1-4-K    |           |      | 4                 |              |           | 9.17           |            |      | 4.24               | 4.43   | 4.6   | 4.75  | 5.1   | ●     |       |
| SHM200-BN2-1-5-K    |           |      | 5                 |              |           | 8.29           |            |      | 5.3                | 5.52   | 5.71  | 5.9   | 6.34  | ●     |       |
| SHM200-BN2-1-6-K    |           |      | 6                 |              |           | 7.57           |            |      | 6.35               | 6.59   | 6.81  | 7.05  | 7.58  | ●     |       |

● Stock ○ Available upon Order

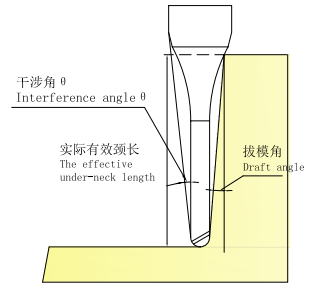
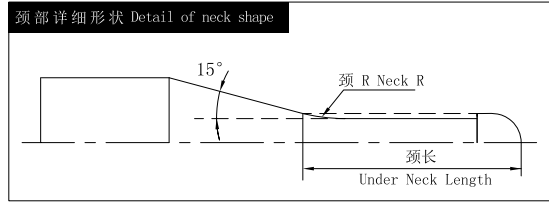
| R       | Tol    |
|---------|--------|
| R ≤ 1.0 | ±0.003 |
| R > 1.0 | ±0.005 |

(mm)

Cutting Parameters ※ P556

# SHM200-BN2 NEW

2 Flutes with Extended Neck, Ballnose



Please refer to page 149

» Continue

| Ordering Code       | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|---------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                     |           |      |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SHM200-BN2-1-7-K    | 1         | 0.5  | 7                 | 0.8          | 0.96      | 50             | 4          | 4    | 6.96               | 7.39   | 7.66  | 7.92  | 8.2   | 8.83  | ○     |
| SHM200-BN2-1-8-K    |           |      | 8                 |              |           | 50             |            |      | 6.44               | 8.44   | 8.73  | 9.03  | 9.35  | 10.07 | ●     |
| SHM200-BN2-1-9-K    |           |      | 9                 |              |           | 50             |            |      | 5.99               | 9.48   | 9.8   | 10.14 | 10.5  | 11.31 | ○     |
| SHM200-BN2-1-10-K   |           |      | 10                |              |           | 50             |            |      | 5.6                | 10.52  | 10.87 | 11.25 | 11.65 | 12.56 | ●     |
| SHM200-BN2-1-12-K   |           |      | 12                |              |           | 55             |            |      | 4.96               | 12.59  | 13.01 | 13.46 | 13.95 | 15.04 | ●     |
| SHM200-BN2-1-13-K   |           |      | 13                |              |           | 55             |            |      | 4.69               | 13.62  | 14.08 | 14.57 | 15.1  | 16.29 | ○     |
| SHM200-BN2-1-14-K   |           |      | 14                |              |           | 55             |            |      | 4.45               | 14.66  | 15.15 | 15.68 | 16.25 | 17.53 | ○     |
| SHM200-BN2-1-16-K   |           |      | 16                |              |           | 55             |            |      | 4.03               | 16.73  | 17.29 | 17.9  | 18.55 | 20.01 | ○     |
| SHM200-BN2-1-18-K   |           |      | 18                |              |           | 60             |            |      | 3.69               | 18.79  | 19.43 | 20.11 | 20.85 | 22.5  | ○     |
| SHM200-BN2-1-20-K   |           |      | 20                |              |           | 60             |            |      | 3.4                | 20.86  | 21.57 | 22.33 | 23.15 | 24.99 | ○     |
| SHM200-BN2-1.1-2-K  | 1.1       | 0.55 | 2                 | 0.88         | 1.06      | 50             | 4          | 4    | 11.61              | 2.11   | 2.22  | 2.32  | 2.42  | 2.6   | ○     |
| SHM200-BN2-1.1-4-K  |           |      | 4                 |              |           |                |            |      | 9.09               | 4.24   | 4.43  | 4.59  | 4.74  | 5.08  | ○     |
| SHM200-BN2-1.1-6-K  |           |      | 6                 |              |           |                |            |      | 7.47               | 6.34   | 6.59  | 6.81  | 7.04  | 7.57  | ○     |
| SHM200-BN2-1.1-8-K  |           |      | 8                 |              |           |                |            |      | 6.34               | 8.43   | 8.73  | 9.03  | 9.34  | 10.06 | ○     |
| SHM200-BN2-1.1-10-K |           |      | 10                |              |           |                |            |      | 5.5                | 10.51  | 10.87 | 11.24 | 11.64 | 12.54 | ○     |
| SHM200-BN2-1.2-4-K  | 1.2       | 0.6  | 4                 | 0.96         | 1.15      | 50             | 4          | 4    | 9.05               | 4.22   | 4.4   | 4.55  | 4.7   | 5.04  | ●     |
| SHM200-BN2-1.2-8-K  |           |      | 8                 |              |           |                |            |      | 6.25               | 8.41   | 8.7   | 8.99  | 9.3   | 10.01 | ○     |
| SHM200-BN2-1.2-10-K |           |      | 10                |              |           |                |            |      | 5.41               | 10.49  | 10.84 | 11.21 | 11.6  | 12.5  | ○     |
| SHM200-BN2-1.2-12-K |           |      | 12                |              |           |                |            |      | 4.77               | 12.56  | 12.97 | 13.42 | 13.9  | 14.98 | ○     |
| SHM200-BN2-1.4-8-K  | 1.4       | 0.7  | 8                 | 1.12         | 1.34      | 50             | 4          | 4    | 6.04               | 8.38   | 8.66  | 8.95  | 9.26  | 9.96  | ○     |
| SHM200-BN2-1.4-12-K |           |      | 12                |              |           |                |            |      | 4.56               | 12.53  | 12.94 | 13.38 | 13.86 | 14.93 | ○     |
| SHM200-BN2-1.4-16-K |           |      | 16                |              |           |                |            |      | 3.67               | 16.66  | 17.22 | 17.82 | 18.46 | 19.9  | ○     |
| SHM200-BN2-1.5-4-K  | 1.5       | 0.75 | 4                 | 1.2          | 1.44      | 50             | 4          | 4    | 8.82               | 4.2  | 4.36  | 4.51  | 4.65  | 4.97  | ○     |
| SHM200-BN2-1.5-6-K  |           |      | 6                 |              |           |                |            |      | 7.08               | 6.29   | 6.52  | 6.73  | 6.95  | 7.46  | ○     |

● Stock ○ Available upon Order

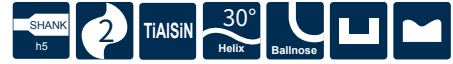
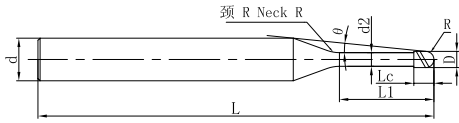
| R       | Tol    |
|---------|--------|
| R ≤ 1.0 | ±0.003 |
| R > 1.0 | ±0.005 |

(mm)

Cutting Parameters ※ P556

# SHM200-BN2 NEW

2 Flutes with Extended Neck, Ballnose



Please refer to page 149

» Continue

| Ordering Code       | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck  | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |      |       |       |       |       |   |
|---------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|-------|--------------------|--|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|---|
|                     |           |      |                   |              |           |                |            |       |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |      |       |       |       |       |   |
| SHM200-BN2-1.5-8-K  | 1.5       | 0.75 | 8                 | 1.2          | 1.44      | 50             | 4          | 4     | 5.92               | 8.38   | 8.66  | 8.95  | 9.25  | 9.94  | ○     |      |       |       |       |       |   |
| SHM200-BN2-1.5-10-K |           |      | 10                |              |           | 50             |            |       | 5.08               | 10.46  | 10.8  | 11.16 | 11.55 | 12.43 | ○     |      |       |       |       |       |   |
| SHM200-BN2-1.5-12-K |           |      | 12                |              |           | 55             |            |       | 4.45               | 12.53  | 12.94 | 13.38 | 13.85 | 14.92 | ○     |      |       |       |       |       |   |
| SHM200-BN2-1.5-14-K |           |      | 14                |              |           | 55             |            |       | 3.96               | 14.6   | 15.08 | 15.6  | 16.15 | 17.4  | ○     |      |       |       |       |       |   |
| SHM200-BN2-1.5-16-K |           |      | 16                |              |           | 60             |            |       | 3.57               | 16.66  | 17.22 | 17.81 | 18.45 | 19.89 | ○     |      |       |       |       |       |   |
| SHM200-BN2-1.5-18-K |           |      | 18                |              |           | 60             |            |       | 3.25               | 18.73  | 19.36 | 20.03 | 20.75 | 22.38 | ○     |      |       |       |       |       |   |
| SHM200-BN2-1.5-20-K |           |      | 20                |              |           | 60             |            |       | 2.98               | 20.8   | 21.5  | 22.25 | 23.05 | -     | ○     |      |       |       |       |       |   |
| SHM200-BN2-1.6-8-K  | 1.6       | 0.8  | 8                 | 1.28         | 1.54      | 50             | 4          | 4     | 5.8                | 8.38   | 8.66  | 8.94  | 9.25  | 9.93  | ○     |      |       |       |       |       |   |
| SHM200-BN2-1.6-12-K |           |      | 12                |              |           | 55             |            |       | 4.34               | 12.53  | 12.94 | 13.37 | 13.85 | 14.9  | ○     |      |       |       |       |       |   |
| SHM200-BN2-1.6-16-K |           |      | 16                |              |           | 55             |            |       | 3.47               | 16.66  | 17.21 | 17.81 | 18.44 | 19.88 | ○     |      |       |       |       |       |   |
| SHM200-BN2-1.6-20-K |           |      | 20                |              |           | 60             |            |       | 2.89               | 20.8   | 21.49 | 22.24 | 23.04 | -     | ○     |      |       |       |       |       |   |
| SHM200-BN2-1.8-8-K  |           |      | 1.8               |              |           | 0.9            |            |       | 8                  | 1.44   | 1.73  | 50    | 4     | 4     | 5.55  | 8.36 | 8.63  | 8.91  | 9.21  | 9.88  | ○ |
| SHM200-BN2-1.8-12-K |           |      |                   |              |           |                |            |       | 8                  |  |       | 55    |       |       | 4.11  | 12.5 | 12.91 | 13.34 | 13.81 | 14.85 | ○ |
| SHM200-BN2-1.8-16-K | 16        | 55   |                   | 3.26         | 16.64     |                | 17.19      | 17.77 | 18.41              |  |       | 19.83 |       |       | ○     |      |       |       |       |       |   |
| SHM200-BN2-1.8-20-K | 20        | 60   |                   | 2.7          | 20.77     |                | 21.46      | 22.21 | 23.01              |  |       | -     |       |       | ○     |      |       |       |       |       |   |
| SHM200-BN2-2-3-K    | 2         | 1    |                   | 3            | 1.6       |                | 1.92       | 50    | 4                  |  |       | 4     |       |       | 9.72  | 3.11 | 3.22  | 3.32  | 3.42  | 3.62  | ○ |
| SHM200-BN2-2-4-K    |           |      | 4                 | 50           |           | 8.32           |            | 4.16  |                    | 4.31   | 4.44  |       | 4.57  | 4.86  | ●     |      |       |       |       |       |   |
| SHM200-BN2-2-6-K    |           |      | 6                 | 50           |           | 6.46           |            | 6.26  |                    | 6.46   | 6.66  |       | 6.87  | 7.35  | ●     |      |       |       |       |       |   |
| SHM200-BN2-2-8-K    |           |      | 8                 | 50           |           | 5.27           |            | 8.34  |                    | 8.6  | 8.88  |       | 9.17  | 9.84  | ●     |      |       |       |       |       |   |
| SHM200-BN2-2-10-K   |           |      | 10                | 50           |           | 4.46           |            | 10.41 |                    | 10.74  | 11.09 |       | 11.47 | 12.32 | ●     |      |       |       |       |       |   |
| SHM200-BN2-2-12-K   |           |      | 12                | 55           |           | 3.86           |            | 12.48 |                    | 12.88  | 13.31 |       | 13.77 | 14.81 | ●     |      |       |       |       |       |   |
| SHM200-BN2-2-13-K   |           |      | 13                | 55           |           | 3.62           |            | 13.51 |                    | 13.95  | 14.42 |       | 14.92 | 16.05 | ○     |      |       |       |       |       |   |
| SHM200-BN2-2-14-K   |           |      | 14                | 55           |           | 3.4            |            | 14.55 |                    | 15.02  | 15.53 |       | 16.07 | 17.29 | ○     |      |       |       |       |       |   |
| SHM200-BN2-2-16-K   |           |      | 16                | 55           |           | 3.04           |            | 16.62 |                    | 17.16  | 17.74 |       | 18.37 | 19.78 | ●     |      |       |       |       |       |   |

● Stock ○ Available upon Order

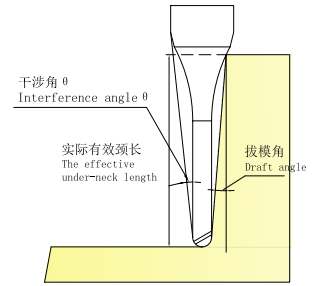
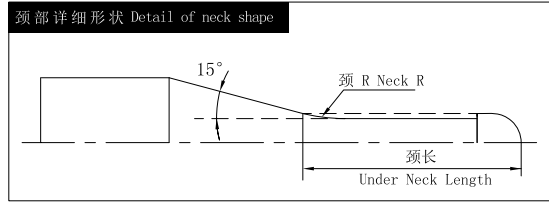
| R       | Tol    |
|---------|--------|
| R ≤ 1.0 | ±0.003 |
| R > 1.0 | ±0.005 |

(mm)

Cutting Parameters ※ P556

# SHM200-BN2 NEW

2 Flutes with Extended Neck, Ballnose



Please refer to page 149

» Continue

| Ordering Code       | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|---------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                     |           |      |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SHM200-BN2-2-18-K   | 2         | 1    | 18                | 1.6          | 1.92      | 60             | 4          | 4    | 2.75               | 18.68  | 19.3  | 19.96 | 20.67 | -     | ○     |
| SHM200-BN2-2-20-K   |           |      | 20                |              |           | 60             |            |      | 2.51               | 20.75  | 21.44 | 22.18 | 22.97 | -     | ○     |
| SHM200-BN2-2-22-K   |           |      | 22                |              |           | 60             |            |      | 2.31               | 22.82  | 23.58 | 24.39 | 25.27 | -     | ○     |
| SHM200-BN2-2-25-K   |           |      | 25                |              |           | 65             |            |      | 2.06               | 25.92  | 26.79 | 27.72 | 28.72 | -     | ○     |
| SHM200-BN2-2-30-K   |           |      | 30                |              |           | 70             |            |      | 1.75               | 31.09  | 32.14 | 33.26 | -     | -     | ○     |
| SHM200-BN2-2-35-K   |           |      | 35                |              |           | 75             |            |      | 1.52               | 36.26  | 37.48 | 38.8  | -     | -     | ○     |
| SHM200-BN2-2-40-K   |           |      | 40                |              |           | 80             |            |      | 1.34               | 41.42  | 42.83 | -     | -     | -     | ○     |
| SHM200-BN2-2.5-6-K  | 2.5       | 1.25 | 6                 | 2            | 2.4       | 50             | 4          | 4    | 5.62               | 6.22   | 6.41  | 6.6   | 6.8   | 7.25  | ○     |
| SHM200-BN2-2.5-10-K |           |      | 10                |              |           | 50             |            |      | 3.69               | 10.37  | 10.69 | 11.03 | 11.4  | 12.23 | ○     |
| SHM200-BN2-2.5-15-K |           |      | 15                |              |           | 55             |            |      | 2.59               | 15.54  | 16.04 | 16.58 | 17.15 | -     | ○     |
| SHM200-BN2-2.5-20-K |           |      | 20                |              |           | 60             |            |      | 1.99               | 20.71  | 21.39 | 22.12 | -     | -     | ○     |
| SHM200-BN2-2.5-25-K |           |      | 25                |              |           | 65             |            |      | 1.62               | 25.88  | 26.74 | 27.66 | -     | -     | ○     |
| SHM200-BN2-2.5-30-K |           |      | 30                |              |           | 70             |            |      | 1.36               | 31.05  | 32.09 | -     | -     | -     | ○     |
| SHM200-BN2-3-8-K    | 3         | 1.5  | 8                 | 2.4          | 2.88      | 55             | 6          | 4    | 7.04               | 8.27   | 8.51  | 8.77  | 9.04  | 9.65  | ○     |
| SHM200-BN2-3-10-K   |           |      | 10                |              |           | 55             |            |      | 6.05               | 10.34  | 10.65 | 10.98 | 11.34 | 12.14 | ○     |
| SHM200-BN2-3-13-K   |           |      | 13                |              |           | 60             |            |      | 5                  | 13.44  | 13.86 | 14.31 | 14.79 | 15.87 | ○     |
| SHM200-BN2-3-16-K   |           |      | 16                |              |           | 60             |            |      | 4.26               | 16.55  | 17.07 | 17.63 | 18.24 | 19.6  | ●     |
| SHM200-BN2-3-20-K   |           |      | 20                |              |           | 65             |            |      | 3.56               | 20.68  | 21.35 | 22.07 | 22.84 | 24.57 | ○     |
| SHM200-BN2-3-25-K   |           |      | 25                |              |           | 70             |            |      | 2.95               | 25.85  | 26.7  | 27.61 | 28.59 | -     | ○     |
| SHM200-BN2-3-30-K   |           |      | 30                |              |           | 75             |            |      | 2.52               | 31.02  | 32.05 | 33.15 | 34.34 | -     | ○     |
| SHM200-BN2-3-35-K   |           |      | 35                |              |           | 80             |            |      | 2.2                | 36.19  | 37.39 | 38.69 | 40.08 | -     | ○     |
| SHM200-BN2-3.5-15-K | 3.5       | 1.75 | 15                | 2.8          | 3.36      | 60             | 6          | 4    | 3.99               | 15.49  | 15.96 | 16.48 | 17.03 | 18.27 | ○     |
| SHM200-BN2-3.5-25-K |           |      | 25                |              |           | 70             |            |      | 2.56               | 25.82  | 26.66 | 27.56 | 28.53 | -     | ○     |
| SHM200-BN2-3.5-35-K |           |      | 35                |              |           | 80             |            |      | 1.89               | 36.16  | 37.36 | 38.64 | -     | -     | ○     |

● Stock ○ Available upon Order

| R       | Tol    |
|---------|--------|
| R ≤ 1.0 | ±0.003 |
| R > 1.0 | ±0.005 |

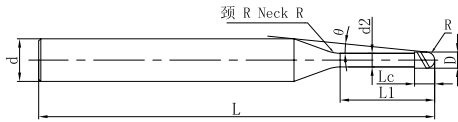
(mm)

Cutting Parameters ※ P556



# SHM200-BN2 NEW

2 Flutes with Extended Neck, Ballnose



Please refer to page 149

» Continue

| Ordering Code       | Mill Dia. | R    | Under Neck Length | Flute Length | Neck Dia. | Overall Length | Shank Dia. | Neck | Interference Angle | The effective under-neck length for the various draft angles |       |       |       |       | Stock |
|---------------------|-----------|------|-------------------|--------------|-----------|----------------|------------|------|--------------------|--|-------|-------|-------|-------|-------|
|                     |           |      |                   |              |           |                |            |      |                    | 0.5°   | 1°    | 1.5°  | 2°    | 3°    |       |
| SHM200-BN2-3.5-45-K | 3.5       | 1.75 | 45                | 2.8          | 3.36      | 90             | 6          | 4    | 1.5                | 46.5   | 48.05 | -     | -     | -     | ○     |
| SHM200-BN2-4-10-K   | 4         | 2    | 10                | 3.2          | 3.86      | 55             | 6          | 4    | 4.86               | 10.31  | 10.6  | 10.91 | 11.24 | 11.99 | ○     |
| SHM200-BN2-4-13-K   |           |      | 13                |              |           | 60             |            |      | 3.88               | 13.41  | 13.81 | 14.23 | 14.69 | 15.72 | ○     |
| SHM200-BN2-4-16-K   |           |      | 16                |              |           | 60             |            |      | 3.23               | 16.51  | 17.02 | 17.56 | 18.14 | 19.45 | ○     |
| SHM200-BN2-4-20-K   |           |      | 20                |              |           | 65             |            |      | 2.63               | 20.65  | 21.3  | 21.99 | 22.74 | -     | ○     |
| SHM200-BN2-4-25-K   |           |      | 25                |              |           | 70             |            |      | 2.14               | 25.81  | 26.64 | 27.53 | 28.49 | -     | ●     |
| SHM200-BN2-4-30-K   |           |      | 30                |              |           | 75             |            |      | 1.81               | 30.98  | 31.99 | 33.08 | -     | -     | ○     |
| SHM200-BN2-4-35-K   |           |      | 35                |              |           | 80             |            |      | 1.56               | 36.15  | 37.34 | 38.62 | -     | -     | ○     |
| SHM200-BN2-4-40-K   |           |      | 40                |              |           | 80             |            |      | 1.38               | 41.32  | 42.69 | -     | -     | -     | ○     |
| SHM200-BN2-4-45-K   |           |      | 45                |              |           | 90             |            |      | 1.23               | 46.49  | 48.04 | -     | -     | -     | ○     |
| SHM200-BN2-4-50-K   |           |      | 50                |              |           | 100            |            |      | 1.11               | 51.66  | 53.39 | -     | -     | -     | ○     |
| SHM200-BN2-5-20-K   | 5         | 2.5  | 20                | 4            | 4.85      | 65             | 6          | 4    | 1.48               | 20.62  | 21.25 | -     | -     | -     | ○     |
| SHM200-BN2-5-25-K   |           |      | 25                |              |           | 70             |            |      | 1.18               | 25.79  | 26.6  | -     | -     | -     | ●     |
| SHM200-BN2-5-30-K   |           |      | 30                |              |           | 75             |            |      | 0.98               | 30.96  | -     | -     | -     | -     | ○     |
| SHM200-BN2-5-40-K   |           |      | 40                |              |           | 80             |            |      | 0.73               | 41.29  | -     | -     | -     | -     | ○     |
| SHM200-BN2-6-12-K   | 6         | 3    | 12                | 6            | 5.85      | 60             | 6          | -    | -                  | -  | -     | -     | -     | -     | ○     |
| SHM200-BN2-6-20-K   |           |      | 20                |              |           | 65             |            |      | -                  | -  | -     | -     | -     | ○     |       |
| SHM200-BN2-6-30-K   |           |      | 30                |              |           | 75             |            |      | -                  | -  | -     | -     | -     | ○     |       |
| SHM200-BN2-6-50-K   |           |      | 50                |              |           | 100            |            |      | -                  | -  | -     | -     | -     | ○     |       |

● Stock ○ Available upon Order

| R       | Tol    |
|---------|--------|
| R ≤ 1.0 | ±0.003 |
| R > 1.0 | ±0.005 |

(mm)

Cutting Parameters ※ P556

## Recommended Cutting Data

UP210- SS2/S2/SL2 /SH2/R2/RH2

Side Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm)   | 3     | 4     | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|----------------------|-------|-------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | $ap \leq 1.5D$     | 180      | $\frac{n}{(\min-1)}$ | 19110 | 14330 | 9550 | 7170 | 5730 | 4780 | 3580 | 2870 |
|           |   | $ae \leq 0.15D$    |          | $V_f$ (mm/min)       | 1070  | 1030  | 920  | 930  | 920  | 860  | 860  | 860  |
|           | Alloy Steel (35-48HRC)                    | $ap \leq 1D$       | 130      | $\frac{n}{(\min-1)}$ | 13800 | 10350 | 6900 | 5180 | 4140 | 3450 | 2590 | 2070 |
|           |   | $ae \leq 0.12D$    |          | $V_f$ (mm/min)       | 610   | 580   | 550  | 620  | 560  | 500  | 410  | 370  |
| <b>M</b>  | Stainless Steel                           | $ap \leq 1.5D$     | 130      | $\frac{n}{(\min-1)}$ | 13800 | 10350 | 6900 | 5180 | 4140 | 3450 | 2590 | 2070 |
|           |   | $ae \leq 0.15D$    |          | $V_f$ (mm/min)       | 690   | 660   | 590  | 650  | 610  | 590  | 490  | 460  |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | $ap \leq 1.5D$     | 160      | $\frac{n}{(\min-1)}$ | 16990 | 12740 | 8490 | 6370 | 5100 | 4250 | 3190 | 2550 |
|           |   | $ae \leq 0.15D$    |          | $V_f$ (mm/min)       | 850   | 820   | 820  | 750  | 700  | 680  | 610  | 560  |
|           | High Alloy Cast Iron (35-45HRC)           | $ap \leq 1D$       | 140      | $\frac{n}{(\min-1)}$ | 14860 | 11150 | 7430 | 5570 | 4460 | 3720 | 2790 | 2230 |
|           |   | $ae \leq 0.12D$    |          | $V_f$ (mm/min)       | 650   | 670   | 670  | 620  | 580  | 560  | 500  | 460  |

UP210- S3

Side Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm)   | 3     | 4     | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|----------------------|-------|-------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | $ap \leq 1.5D$     | 180      | $\frac{n}{(\min-1)}$ | 19110 | 14330 | 9550 | 7170 | 5730 | 4780 | 3580 | 2870 |
|           |   | $ae \leq 0.15D$    |          | $V_f$ (mm/min)       | 1610  | 1550  | 1380 | 1400 | 1380 | 1290 | 1290 | 1290 |
|           | Alloy Steel (35-48HRC)                    | $ap \leq 1D$       | 130      | $\frac{n}{(\min-1)}$ | 13800 | 10350 | 6900 | 5180 | 4140 | 3450 | 2590 | 2070 |
|           |   | $ae \leq 0.12D$    |          | $V_f$ (mm/min)       | 910   | 870   | 830  | 930  | 850  | 760  | 620  | 560  |
| <b>M</b>  | Stainless Steel                           | $ap \leq 1.5D$     | 130      | $\frac{n}{(\min-1)}$ | 13800 | 10350 | 6900 | 5180 | 4140 | 3450 | 2590 | 2070 |
|           |   | $ae \leq 0.15D$    |          | $V_f$ (mm/min)       | 1040  | 990   | 890  | 980  | 920  | 880  | 740  | 680  |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | $ap \leq 1.5D$     | 160      | $\frac{n}{(\min-1)}$ | 16990 | 12740 | 8490 | 6370 | 5100 | 4250 | 3190 | 2550 |
|           |   | $ae \leq 0.15D$    |          | $V_f$ (mm/min)       | 1270  | 1220  | 1220 | 1130 | 1060 | 1020 | 910  | 840  |
|           | High Alloy Cast Iron (35-45HRC)           | $ap \leq 1D$       | 140      | $\frac{n}{(\min-1)}$ | 14860 | 11150 | 7430 | 5570 | 4460 | 3720 | 2790 | 2230 |
|           |   | $ae \leq 0.12D$    |          | $V_f$ (mm/min)       | 980   | 1000  | 1000 | 940  | 870  | 840  | 750  | 680  |

### [Note]

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

UP210- SS4/S4/SC4/S4A/SL4 /SH4/R4/R4A/RH4

Side Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 3     | 4     | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|--------------------|-------|-------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | $ap \leq 1.5D$     | 180      | $n$ (min-1)        | 19110 | 14330 | 9550 | 7170 | 5730 | 4780 | 3580 | 2870 |
|           |   | $ae \leq 0.15D$    |          | $V_f$ (mm/min)     | 2140  | 2060  | 1830 | 1860 | 1830 | 1720 | 1720 | 1720 |
|           | Alloy Steel (35-48HRC)                    | $ap \leq 1D$       | 130      | $n$ (min-1)        | 13800 | 10350 | 6900 | 5180 | 4140 | 3450 | 2590 | 2070 |
|           |   | $ae \leq 0.12D$    |          | $V_f$ (mm/min)     | 1210  | 1160  | 1100 | 1240 | 1130 | 1010 | 830  | 750  |
| <b>M</b>  | Stainless Steel                           | $ap \leq 1.5D$     | 130      | $n$ (min-1)        | 13800 | 10350 | 6900 | 5180 | 4140 | 3450 | 2590 | 2070 |
|           |   | $ae \leq 0.15D$    |          | $V_f$ (mm/min)     | 1380  | 1330  | 1190 | 1300 | 1230 | 1170 | 980  | 910  |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | $ap \leq 1.5D$     | 160      | $n$ (min-1)        | 16990 | 12740 | 8490 | 6370 | 5100 | 4250 | 3190 | 2550 |
|           |   | $ae \leq 0.15D$    |          | $V_f$ (mm/min)     | 1700  | 1630  | 1630 | 1500 | 1410 | 1360 | 1210 | 1120 |
|           | High Alloy Cast Iron (35-45HRC)           | $ap \leq 1D$       | 140      | $n$ (min-1)        | 14860 | 11150 | 7430 | 5570 | 4460 | 3720 | 2790 | 2230 |
|           |   | $ae \leq 0.12D$    |          | $V_f$ (mm/min)     | 1310  | 1340  | 1340 | 1250 | 1160 | 1120 | 1000 | 910  |

UP210- S6

Side Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 3     | 4     | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|--------------------|-------|-------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | $ap \leq 1.5D$     | 180      | $n$ (min-1)        | 19110 | 14330 | 9550 | 7170 | 5730 | 4780 | 3580 | 2870 |
|           |   | $ae \leq 0.15D$    |          | $V_f$ (mm/min)     | 3210  | 3100  | 2750 | 2800 | 2750 | 2580 | 2580 | 2580 |
|           | Alloy Steel (35-48HRC)                    | $ap \leq 1D$       | 130      | $n$ (min-1)        | 13800 | 10350 | 6900 | 5180 | 4140 | 3450 | 2590 | 2070 |
|           |   | $ae \leq 0.12D$    |          | $V_f$ (mm/min)     | 1820  | 1740  | 1660 | 1860 | 1690 | 1510 | 1240 | 1120 |
| <b>M</b>  | Stainless Steel                           | $ap \leq 1.5D$     | 130      | $n$ (min-1)        | 13800 | 10350 | 6900 | 5180 | 4140 | 3450 | 2590 | 2070 |
|           |   | $ae \leq 0.15D$    |          | $V_f$ (mm/min)     | 2070  | 1990  | 1780 | 1960 | 1840 | 1760 | 1480 | 1370 |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | $ap \leq 1.5D$     | 160      | $n$ (min-1)        | 16990 | 12740 | 8490 | 6370 | 5100 | 4250 | 3190 | 2550 |
|           |   | $ae \leq 0.15D$    |          | $V_f$ (mm/min)     | 2550  | 2450  | 2450 | 2260 | 2110 | 2040 | 1820 | 1680 |
|           | High Alloy Cast Iron (35-45HRC)           | $ap \leq 1D$       | 140      | $n$ (min-1)        | 14860 | 11150 | 7430 | 5570 | 4460 | 3720 | 2790 | 2230 |
|           |   | $ae \leq 0.12D$    |          | $V_f$ (mm/min)     | 1960  | 2010  | 2010 | 1870 | 1740 | 1670 | 1510 | 1360 |

### [Note]

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia) .If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

UP210- SS2/S2/SL2/SH2/R2/RH2

Slot Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 3    | 4    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|--------------------|------|------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | ap≤0.8D            | 80       | n (min-1)          | 8490 | 6370 | 4250 | 3190 | 2550 | 2120 | 1590 | 1270 |
|           |   |                    |          | Vf (mm/min)        | 430  | 540  | 440  | 400  | 370  | 350  | 400  | 410  |
|           | Alloy Steel (35-48HRC)                    | ap≤0.3D            | 60       | n (min-1)          | 6370 | 4780 | 3190 | 2390 | 1910 | 1590 | 1190 | 960  |
|           |   |                    |          | Vf (mm/min)        | 260  | 310  | 270  | 230  | 220  | 220  | 230  | 230  |
| <b>M</b>  | Stainless Steel                           | ap≤0.3D            | 55       | n (min-1)          | 5840 | 4380 | 2920 | 2190 | 1750 | 1460 | 1100 | 880  |
|           |   |                    |          | Vf (mm/min)        | 140  | 160  | 200  | 200  | 200  | 190  | 170  | 160  |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | ap≤0.5D            | 55       | n (min-1)          | 5840 | 4380 | 2920 | 2190 | 1750 | 1460 | 1100 | 880  |
|           |   |                    |          | Vf (mm/min)        | 210  | 250  | 250  | 220  | 210  | 200  | 190  | 170  |
|           | High Alloy Cast Iron (35-45HRC)           | ap≤0.3D            | 50       | n (min-1)          | 5310 | 3980 | 2650 | 1990 | 1590 | 1330 | 1000 | 800  |
|           |   |                    |          | Vf (mm/min)        | 160  | 180  | 210  | 180  | 180  | 170  | 160  | 140  |

UP210- S3

Slot Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 3    | 4    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|--------------------|------|------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | ap≤0.8D            | 80       | n (min-1)          | 8490 | 6370 | 4250 | 3190 | 2550 | 2120 | 1590 | 1270 |
|           |   |                    |          | Vf (mm/min)        | 640  | 800  | 660  | 590  | 550  | 520  | 600  | 610  |
|           | Alloy Steel (35-48HRC)                    | ap≤0.3D            | 60       | n (min-1)          | 6370 | 4780 | 3190 | 2390 | 1910 | 1590 | 1190 | 960  |
|           |   |                    |          | Vf (mm/min)        | 380  | 460  | 400  | 340  | 330  | 330  | 340  | 340  |
| <b>M</b>  | Stainless Steel                           | ap≤0.3D            | 55       | n (min-1)          | 5840 | 4380 | 2920 | 2190 | 1750 | 1460 | 1100 | 880  |
|           |   |                    |          | Vf (mm/min)        | 210  | 240  | 310  | 300  | 290  | 290  | 260  | 240  |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | ap≤0.5D            | 55       | n (min-1)          | 5840 | 4380 | 2920 | 2190 | 1750 | 1460 | 1100 | 880  |
|           |   |                    |          | Vf (mm/min)        | 320  | 370  | 380  | 330  | 320  | 310  | 280  | 250  |
|           | High Alloy Cast Iron (35-45HRC)           | ap≤0.3D            | 50       | n (min-1)          | 5310 | 3980 | 2650 | 1990 | 1590 | 1330 | 1000 | 800  |
|           |   |                    |          | Vf (mm/min)        | 240  | 280  | 320  | 270  | 260  | 260  | 240  | 220  |

### [Note]

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than 4\*D (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

UP210- B2/BH2

Profile Milling: For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 4     | 5     | 6    | 7    | 8    | 9    | 10   | 11   | 12   |
|-----------|---|--------------------|----------|--------------------|-------|-------|------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | $ap \leq 0.2D$     | 160      | $n$ (min-1)        | 12740 | 10190 | 8490 | 7280 | 6370 | 5660 | 5100 | 4630 | 4250 |
|           |   | $ae \leq 0.3D$     |          | $V_f$ (mm/min)     | 1020  | 1020  | 1020 | 1020 | 1020 | 1020 | 1020 | 1020 | 1020 |
|           | Alloy Steel (35-48HRC)                    | $ap \leq 0.15D$    | 120      | $n$ (min-1)        | 9550  | 7640  | 6370 | 5460 | 4780 | 4250 | 3820 | 3470 | 3190 |
|           |   | $ae \leq 0.15D$    |          | $V_f$ (mm/min)     | 610   | 640   | 660  | 630  | 620  | 610  | 610  | 610  | 610  |
| <b>M</b>  | Stainless Steel                           | $ap \leq 0.2D$     | 110      | $n$ (min-1)        | 8760  | 7010  | 5840 | 5010 | 4380 | 3890 | 3500 | 3190 | 2920 |
|           |   | $ae \leq 0.2D$     |          | $V_f$ (mm/min)     | 610   | 630   | 640  | 630  | 630  | 620  | 630  | 640  | 640  |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | $ap \leq 0.2D$     | 140      | $n$ (min-1)        | 11150 | 8920  | 7430 | 6370 | 5570 | 4950 | 4460 | 4050 | 3720 |
|           |   | $ae \leq 0.2D$     |          | $V_f$ (mm/min)     | 780   | 800   | 820  | 800  | 800  | 790  | 800  | 810  | 820  |
|           | High Alloy Cast Iron (35-45HRC)           | $ap \leq 0.1D$     | 120      | $n$ (min-1)        | 9550  | 7640  | 6370 | 5460 | 4780 | 4250 | 3820 | 3470 | 3190 |
|           |   | $ae \leq 0.1D$     |          | $V_f$ (mm/min)     | 610   | 640   | 660  | 660  | 670  | 650  | 650  | 660  | 670  |

UP210- B4

Profile Milling: For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 4     | 5     | 6    | 7    | 8    | 9    | 10   | 11   | 12   |
|-----------|---|--------------------|----------|--------------------|-------|-------|------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | $ap \leq 0.2D$     | 160      | $n$ (min-1)        | 12740 | 10190 | 8490 | 7280 | 6370 | 5660 | 5100 | 4630 | 4250 |
|           |   | $ae \leq 0.3D$     |          | $V_f$ (mm/min)     | 2040  | 2040  | 2040 | 2040 | 2040 | 2040 | 2040 | 2040 | 2040 |
|           | Alloy Steel (35-48HRC)                    | $ap \leq 0.15D$    | 120      | $n$ (min-1)        | 9550  | 7640  | 6370 | 5460 | 4780 | 4250 | 3820 | 3470 | 3190 |
|           |   | $ae \leq 0.15D$    |          | $V_f$ (mm/min)     | 1220  | 1280  | 1330 | 1270 | 1240 | 1220 | 1220 | 1210 | 1210 |
| <b>M</b>  | Stainless Steel                           | $ap \leq 0.2D$     | 110      | $n$ (min-1)        | 8760  | 7010  | 5840 | 5010 | 4380 | 3890 | 3500 | 3190 | 2920 |
|           |   | $ae \leq 0.2D$     |          | $V_f$ (mm/min)     | 1230  | 1260  | 1290 | 1260 | 1260 | 1250 | 1260 | 1270 | 1290 |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | $ap \leq 0.2D$     | 140      | $n$ (min-1)        | 11150 | 8920  | 7430 | 6370 | 5570 | 4950 | 4460 | 4050 | 3720 |
|           |   | $ae \leq 0.2D$     |          | $V_f$ (mm/min)     | 1560  | 1610  | 1640 | 1610 | 1610 | 1590 | 1610 | 1620 | 1640 |
|           | High Alloy Cast Iron (35-45HRC)           | $ap \leq 0.1D$     | 120      | $n$ (min-1)        | 9550  | 7640  | 6370 | 5460 | 4780 | 4250 | 3820 | 3470 | 3190 |
|           |   | $ae \leq 0.1D$     |          | $V_f$ (mm/min)     | 1220  | 1280  | 1330 | 1310 | 1340 | 1310 | 1300 | 1320 | 1340 |

## 【Note】

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia) .If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

UP210- L60/L90/L120

Chamfer Milling: For Steel, Cast Iron



| Workpiece |   | Vc<br>m/min | Tool Diameter<br>(mm) | 4     | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|---|-------------|-----------------------|-------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel,<br>Alloy Steel<br>(<35HRC)        | 130         | $n$<br>(min-1)        | 10350 | 6900 | 5175 | 4140 | 3450 | 2588 | 2070 |
|           |   |             | $V_f$<br>(mm/min)     | 414   | 33   | 311  | 414  | 442  | 435  | 406  |
|           | Alloy Steel<br>(35-48HRC)                       | 90          | $n$<br>(min-1)        | 7166  | 4777 | 3583 | 2866 | 2389 | 1791 | 1433 |
|           |   |             | $V_f$<br>(mm/min)     | 229   | 191  | 172  | 172  | 239  | 229  | 241  |
| <b>M</b>  | Stainless Steel                                 | 80          | $n$<br>(min-1)        | 6369  | 4246 | 3185 | 2548 | 2123 | 1592 | 1274 |
|           |   |             | $V_f$<br>(mm/min)     | 204   | 170  | 153  | 153  | 212  | 204  | 214  |
| <b>K</b>  | Gray Cast Iron<br>Nodular Cast Iron<br>(<32HRC) | 100         | $n$<br>(min-1)        | 7962  | 5308 | 3981 | 3185 | 2654 | 1990 | 1592 |
|           |   |             | $V_f$<br>(mm/min)     | 318   | 255  | 239  | 318  | 340  | 334  | 312  |
|           | High Alloy Cast<br>Iron<br>(35-45HRC)           | 150         | $n$<br>(min-1)        | 11943 | 7962 | 5971 | 4777 | 3981 | 2986 | 2389 |
|           |   |             | $V_f$<br>(mm/min)     | 621   | 573  | 597  | 611  | 669  | 585  | 602  |

SP210- S3/C3

Side Milling : For Steel, Cast Iron



| Workpiece |   | Cutting<br>Depth<br>(mm) | Vc<br>m/min | Tool Diameter<br>(mm) | 3     | 4     | 6     | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------------|-------------|-----------------------|-------|-------|-------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel,<br>Alloy Steel<br>(<35HRC)        | $ap \leq 1.5D$           | 200         | $n$<br>(min-1)        | 21230 | 15920 | 10620 | 7960 | 6370 | 5310 | 3980 | 3190 |
|           |   | $ae \leq 0.15D$          |             | $V_f$<br>(mm/min)     | 2040  | 1960  | 1690  | 1670 | 1620 | 1590 | 1490 | 1480 |
|           | Alloy Steel<br>(35-48HRC)                       | $ap \leq 1D$             | 150         | $n$<br>(min-1)        | 15920 | 11940 | 7960  | 5970 | 4780 | 3980 | 2990 | 2390 |
|           |   | $ae \leq 0.12D$          |             | $V_f$<br>(mm/min)     | 1290  | 1180  | 1080  | 1160 | 1050 | 930  | 760  | 680  |
| <b>M</b>  | Stainless Steel                                 | $ap \leq 1.5D$           | 150         | $n$<br>(min-1)        | 15920 | 11940 | 7960  | 5970 | 4780 | 3980 | 2990 | 2390 |
|           |   | $ae \leq 0.15D$          |             | $V_f$<br>(mm/min)     | 1580  | 1330  | 1150  | 1220 | 1130 | 1080 | 900  | 820  |
| <b>K</b>  | Gray Cast Iron<br>Nodular Cast Iron<br>(<32HRC) | $ap \leq 1.5D$           | 170         | $n$<br>(min-1)        | 18050 | 13540 | 9020  | 6770 | 5410 | 4510 | 3380 | 2710 |
|           |   | $ae \leq 0.15D$          |             | $V_f$<br>(mm/min)     | 1620  | 1500  | 1440  | 1300 | 1200 | 1150 | 1020 | 930  |
|           | High Alloy Cast<br>Iron<br>(35-45HRC)           | $ap \leq 1D$             | 150         | $n$<br>(min-1)        | 15920 | 11940 | 7960  | 5970 | 4780 | 3980 | 2990 | 2390 |
|           |   | $ae \leq 0.12D$          |             | $V_f$<br>(mm/min)     | 1290  | 1250  | 1190  | 1090 | 1000 | 960  | 850  | 770  |

### [Note]

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

SP210- C4/CN4/R4/RH4/S4

Side Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 3     | 4     | 6     | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|--------------------|-------|-------|-------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | $ap \leq 1.5D$     | 200      | $n$ (min-1)        | 21230 | 15920 | 10620 | 7960 | 6370 | 5310 | 3980 | 3190 |
|           |   | $ae \leq 0.15D$    |          | $V_f$ (mm/min)     | 2720  | 2610  | 2250  | 2230 | 2170 | 2120 | 1990 | 1980 |
|           | Alloy Steel (35-48HRC)                    | $ap \leq 1D$       | 150      | $n$ (min-1)        | 15920 | 11940 | 7960  | 5970 | 4780 | 3980 | 2990 | 2390 |
|           |   | $ae \leq 0.12D$    |          | $V_f$ (mm/min)     | 1720  | 1580  | 1430  | 1550 | 1400 | 1240 | 1020 | 910  |
| <b>M</b>  | Stainless Steel                           | $ap \leq 1.5D$     | 150      | $n$ (min-1)        | 15920 | 11940 | 7960  | 5970 | 4780 | 3980 | 2990 | 2390 |
|           |   | $ae \leq 0.15D$    |          | $V_f$ (mm/min)     | 2100  | 1770  | 1530  | 1620 | 1510 | 1430 | 1190 | 1100 |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | $ap \leq 1.5D$     | 170      | $n$ (min-1)        | 18050 | 13540 | 9020  | 6770 | 5410 | 4510 | 3380 | 2710 |
|           |   | $ae \leq 0.15D$    |          | $V_f$ (mm/min)     | 2170  | 2000  | 1910  | 1730 | 1600 | 1530 | 1350 | 1250 |
|           | High Alloy Cast Iron (35-45HRC)           | $ap \leq 1D$       | 150      | $n$ (min-1)        | 15920 | 11940 | 7960  | 5970 | 4780 | 3980 | 2990 | 2390 |
|           |   | $ae \leq 0.12D$    |          | $V_f$ (mm/min)     | 1720  | 1670  | 1590  | 1460 | 1340 | 1270 | 1140 | 1020 |

SP210- S3/C3

Slot Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 3    | 4    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|--------------------|------|------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | $ap \leq 1D$       | 80       | $n$ (min-1)        | 8490 | 6370 | 4250 | 3190 | 2550 | 2120 | 1590 | 1270 |
|           |   |                    |          | $V_f$ (mm/min)     | 790  | 920  | 730  | 640  | 590  | 570  | 640  | 650  |
|           | Alloy Steel (35-48HRC)                    | $ap \leq 0.5D$     | 60       | $n$ (min-1)        | 6370 | 4780 | 3190 | 2390 | 1910 | 1590 | 1190 | 960  |
|           |   |                    |          | $V_f$ (mm/min)     | 500  | 550  | 450  | 370  | 360  | 360  | 370  | 370  |
| <b>M</b>  | Stainless Steel                           | $ap \leq 0.3D$     | 55       | $n$ (min-1)        | 5840 | 4380 | 2920 | 2190 | 1750 | 1460 | 1100 | 880  |
|           |   |                    |          | $V_f$ (mm/min)     | 320  | 320  | 350  | 340  | 320  | 320  | 280  | 260  |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | $ap \leq 0.8D$     | 55       | $n$ (min-1)        | 5840 | 4380 | 2920 | 2190 | 1750 | 1460 | 1100 | 880  |
|           |   |                    |          | $V_f$ (mm/min)     | 420  | 450  | 420  | 360  | 340  | 340  | 310  | 280  |
|           | High Alloy Cast Iron (35-45HRC)           | $ap \leq 0.5D$     | 50       | $n$ (min-1)        | 5310 | 3980 | 2650 | 1990 | 1590 | 1330 | 1000 | 800  |
|           |   |                    |          | $V_f$ (mm/min)     | 330  | 350  | 360  | 300  | 290  | 290  | 260  | 240  |

## 【Note】

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia) .If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

SP210- C4/CN4/R4/RH4/S4

Slot Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 3    | 4    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|--------------------|------|------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | ap≤1D              | 80       | n (min-1)          | 8490 | 6370 | 4250 | 3190 | 2550 | 2120 | 1590 | 1270 |
|           |   |                    |          | Vf (mm/min)        | 1050 | 1220 | 970  | 850  | 790  | 760  | 850  | 870  |
|           | Alloy Steel (35-48HRC)                    | ap≤0.5D            | 60       | n (min-1)          | 6370 | 4780 | 3190 | 2390 | 1910 | 1590 | 1190 | 960  |
|           |   |                    |          | Vf (mm/min)        | 660  | 730  | 600  | 500  | 470  | 480  | 490  | 500  |
| <b>M</b>  | Stainless Steel                           | ap≤0.3D            | 55       | n (min-1)          | 5840 | 4380 | 2920 | 2190 | 1750 | 1460 | 1100 | 880  |
|           |   |                    |          | Vf (mm/min)        | 420  | 420  | 470  | 450  | 430  | 430  | 380  | 350  |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | ap≤0.8D            | 55       | n (min-1)          | 5840 | 4380 | 2920 | 2190 | 1750 | 1460 | 1100 | 880  |
|           |   |                    |          | Vf (mm/min)        | 560  | 600  | 560  | 480  | 460  | 450  | 410  | 370  |
|           | High Alloy Cast Iron (35-45HRC)           | ap≤0.5D            | 50       | n (min-1)          | 5310 | 3980 | 2650 | 1990 | 1590 | 1330 | 1000 | 800  |
|           |   |                    |          | Vf (mm/min)        | 450  | 460  | 480  | 400  | 380  | 380  | 350  | 320  |

SP210- B2/BH2

Profile Milling: For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 1     | 2     | 3     | 4     | 6     | 8    | 10   | 12   |
|-----------|---|--------------------|----------|--------------------|-------|-------|-------|-------|-------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | ap≤0.04D           | 220      | n (min-1)          | 50000 | 35030 | 23360 | 17520 | 11680 | 8760 | 7010 | 5840 |
|           |   | ae≤0.04D           |          | Vf (mm/min)        | 2800  | 2800  | 2800  | 2800  | 2800  | 2800 | 2800 | 2800 |
|           | Alloy Steel (35-48HRC)                    | ap≤0.02D           | 180      | n (min-1)          | 50000 | 28660 | 19110 | 14330 | 9550  | 7170 | 5730 | 4780 |
|           |   | ae≤0.02D           |          | Vf (mm/min)        | 1950  | 2010  | 1990  | 2010  | 2010  | 2010 | 2000 | 2000 |
| <b>M</b>  | Stainless Steel                           | ap≤0.04D           | 220      | n (min-1)          | 50000 | 35030 | 23360 | 17520 | 11680 | 8760 | 7010 | 5840 |
|           |   | ae≤0.04D           |          | Vf (mm/min)        | 2520  | 2450  | 2570  | 2630  | 2570  | 2540 | 2520 | 2530 |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | ap≤0.04D           | 220      | n (min-1)          | 50000 | 35030 | 23360 | 17520 | 11680 | 8760 | 7010 | 5840 |
|           |   | ae≤0.04D           |          | Vf (mm/min)        | 2520  | 2450  | 2570  | 2630  | 2570  | 2540 | 2520 | 2530 |
|           | High Alloy Cast Iron (35-45HRC)           | ap≤0.04D           | 220      | n (min-1)          | 50000 | 35030 | 23360 | 17520 | 11680 | 8760 | 7010 | 5840 |
|           |   | ae≤0.04D           |          | Vf (mm/min)        | 2380  | 2450  | 2430  | 2450  | 2450  | 2450 | 2440 | 2440 |

### [Note]

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than 4\*D (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.



## Recommended Cutting Data

PP300- C2

Side Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm)                  | 3     | 4     | 6     | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|-------------------------------------|-------|-------|-------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | $ap \leq 1.5D$     | 200      | $\frac{n}{(\text{min}-1)}$          | 21220 | 15910 | 10610 | 7950 | 6370 | 5300 | 3980 | 3180 |
|           |   | $ae \leq 0.15D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1910  | 1750  | 1380  | 1350 | 1270 | 1220 | 1110 | 1080 |
|           | Alloy Steel (35-48HRC)                    | $ap \leq 1D$       | 150      | $\frac{n}{(\text{min}-1)}$          | 15910 | 11940 | 7960  | 5970 | 4770 | 3980 | 2980 | 2390 |
|           |   | $ae \leq 0.12D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1270  | 1070  | 950   | 950  | 810  | 720  | 600  | 520  |
| <b>M</b>  | Stainless Steel                           | $ap \leq 1.5D$     | 150      | $\frac{n}{(\text{min}-1)}$          | 15910 | 11940 | 7960  | 5970 | 4770 | 3980 | 2980 | 2390 |
|           |   | $ae \leq 0.15D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1430  | 2390  | 1910  | 1910 | 1810 | 1670 | 1370 | 1240 |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | $ap \leq 1.5D$     | 180      | $\frac{n}{(\text{min}-1)}$          | 19100 | 14320 | 9550  | 7160 | 5730 | 4770 | 3580 | 2860 |
|           |   | $ae \leq 0.15D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1720  | 1430  | 1240  | 1070 | 970  | 950  | 820  | 740  |
|           | High Alloy Cast Iron (35-45HRC)           | $ap \leq 1D$       | 150      | $\frac{n}{(\text{min}-1)}$          | 15910 | 11940 | 7960  | 5970 | 4770 | 3980 | 2980 | 2390 |
|           |   | $ae \leq 0.12D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1270  | 1190  | 1030  | 890  | 810  | 760  | 660  | 570  |

PP300- C2

Slot Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm)                  | 3     | 4    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|-------------------------------------|-------|------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | $ap \leq 1.0D$     | 100      | $\frac{n}{(\text{min}-1)}$          | 10610 | 7960 | 5300 | 3980 | 3180 | 2650 | 1990 | 1590 |
|           |   |                    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 760   | 870  | 690  | 600  | 570  | 500  | 560  | 560  |
|           | Alloy Steel (35-48HRC)                    | $ap \leq 0.5D$     | 80       | $\frac{n}{(\text{min}-1)}$          | 8490  | 6370 | 4240 | 3180 | 2550 | 2120 | 1590 | 1270 |
|           |   |                    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 510   | 570  | 470  | 380  | 360  | 340  | 350  | 340  |
| <b>M</b>  | Stainless Steel                           | $ap \leq 0.3D$     | 70       | $\frac{n}{(\text{min}-1)}$          | 7430  | 5570 | 3710 | 2780 | 2230 | 1860 | 1390 | 1110 |
|           |   |                    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 370   | 330  | 330  | 310  | 290  | 300  | 250  | 230  |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | $ap \leq 0.8D$     | 80       | $\frac{n}{(\text{min}-1)}$          | 8490  | 6370 | 4240 | 3180 | 2550 | 2120 | 1590 | 1270 |
|           |   |                    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 510   | 510  | 470  | 380  | 370  | 350  | 320  | 280  |
|           | High Alloy Cast Iron (35-45HRC)           | $ap \leq 0.5D$     | 70       | $\frac{n}{(\text{min}-1)}$          | 7430  | 5570 | 3710 | 2780 | 2230 | 1860 | 1390 | 1110 |
|           |   |                    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 390   | 390  | 370  | 310  | 290  | 280  | 260  | 230  |

## 【Note】

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 * D$  (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

PP300- C3

Side Milling : For Steel, Cast Iron



| Workpiece |  | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm)                  | 3     | 4     | 6     | 8    | 10   | 12   | 16   | 20   |
|-----------|--|--------------------|----------|-------------------------------------|-------|-------|-------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)           | $ap \leq 1.5D$     | 200      | $\frac{n}{(\min-1)}$                | 21220 | 15910 | 10610 | 7950 | 6370 | 5300 | 3980 | 3180 |
|           |  | $ae \leq 0.15D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 2860  | 2630  | 2070  | 2030 | 1910 | 1830 | 1670 | 1620 |
|           | Alloy Steel (35-48HRC)                       | $ap \leq 1D$       | 150      | $\frac{n}{(\min-1)}$                | 15910 | 11940 | 7960  | 5970 | 4770 | 3980 | 2980 | 2390 |
|           |  | $ae \leq 0.12D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1910  | 1610  | 1430  | 1430 | 1220 | 1070 | 890  | 790  |
| <b>M</b>  | Stainless Steel                              | $ap \leq 1.5D$     | 150      | $\frac{n}{(\min-1)}$                | 15910 | 11940 | 7960  | 5970 | 4770 | 3980 | 2980 | 2390 |
|           |  | $ae \leq 0.15D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 2150  | 1790  | 1430  | 1430 | 1360 | 1250 | 1030 | 930  |
| <b>K</b>  | Gray Cast Iron<br>Nodular Cast Iron (<32HRC) | $ap \leq 1.5D$     | 180      | $\frac{n}{(\min-1)}$                | 19100 | 14320 | 9550  | 7160 | 5730 | 4770 | 3580 | 2860 |
|           |  | $ae \leq 0.15D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 2580  | 2150  | 1860  | 1610 | 1460 | 1430 | 1230 | 1120 |
|           | High Alloy Cast Iron (35-45HRC)              | $ap \leq 1D$       | 150      | $\frac{n}{(\min-1)}$                | 15910 | 11940 | 7960  | 5970 | 4770 | 3980 | 2980 | 2390 |
|           |  | $ae \leq 0.12D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1910  | 1790  | 1550  | 1340 | 1220 | 1130 | 980  | 860  |

PP300- C3

Slot Milling : For Steel, Cast Iron



| Workpiece |  | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm)                  | 3     | 4    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|--|--------------------|----------|-------------------------------------|-------|------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)           | $ap \leq 1.0D$     | 100      | $\frac{n}{(\min-1)}$                | 10610 | 7960 | 5300 | 3980 | 3180 | 2650 | 1990 | 1590 |
|           |  |                    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1140  | 1310 | 1030 | 890  | 860  | 760  | 840  | 840  |
|           | Alloy Steel (35-48HRC)                       | $ap \leq 0.5D$     | 80       | $\frac{n}{(\min-1)}$                | 8490  | 6370 | 4240 | 3180 | 2550 | 2120 | 1590 | 1270 |
|           |  |                    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 760   | 860  | 700  | 570  | 530  | 510  | 520  | 520  |
| <b>M</b>  | Stainless Steel                              | $ap \leq 0.3D$     | 70       | $\frac{n}{(\min-1)}$                | 7430  | 5570 | 3710 | 2780 | 2230 | 1860 | 1390 | 1110 |
|           |  |                    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 560   | 500  | 500  | 470  | 440  | 450  | 380  | 350  |
| <b>K</b>  | Gray Cast Iron<br>Nodular Cast Iron (<32HRC) | $ap \leq 0.8D$     | 80       | $\frac{n}{(\min-1)}$                | 8490  | 6370 | 4240 | 3180 | 2550 | 2120 | 1590 | 1270 |
|           |  |                    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 760   | 760  | 700  | 570  | 550  | 530  | 480  | 420  |
|           | High Alloy Cast Iron (35-45HRC)              | $ap \leq 0.5D$     | 70       | $\frac{n}{(\min-1)}$                | 7430  | 5570 | 3710 | 2780 | 2230 | 1860 | 1390 | 1110 |
|           |  |                    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 580   | 580  | 560  | 460  | 430  | 420  | 400  | 350  |

### [Note]

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 * D$  (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

PP300- C4/R4

Side Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm)                  | 3     | 4     | 6     | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|-------------------------------------|-------|-------|-------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | $ap \leq 1.5D$     | 200      | $\frac{n}{(\min-1)}$                | 21220 | 15910 | 10610 | 7950 | 6370 | 5300 | 3980 | 3180 |
|           |   | $ae \leq 0.15D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 3820  | 3500  | 2760  | 2710 | 2550 | 2440 | 2230 | 2160 |
|           | Alloy Steel (35-48HRC)                    | $ap \leq 1D$       | 150      | $\frac{n}{(\min-1)}$                | 15910 | 11940 | 7960  | 5970 | 4770 | 3980 | 2980 | 2390 |
|           |   | $ae \leq 0.12D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 2550  | 2150  | 1910  | 1910 | 1620 | 1430 | 1190 | 1050 |
| <b>M</b>  | Stainless Steel                           | $ap \leq 1.5D$     | 150      | $\frac{n}{(\min-1)}$                | 15910 | 11940 | 7960  | 5970 | 4770 | 3980 | 2980 | 2390 |
|           |   | $ae \leq 0.15D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 2860  | 2390  | 1910  | 1910 | 1810 | 1670 | 1370 | 1240 |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | $ap \leq 1.5D$     | 180      | $\frac{n}{(\min-1)}$                | 19100 | 14320 | 9550  | 7160 | 5730 | 4770 | 3580 | 2860 |
|           |   | $ae \leq 0.15D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 3440  | 2860  | 2480  | 2150 | 1950 | 1910 | 1650 | 1490 |
|           | High Alloy Cast Iron (35-45HRC)           | $ap \leq 1D$       | 150      | $\frac{n}{(\min-1)}$                | 15910 | 11940 | 7960  | 5970 | 4770 | 3980 | 2980 | 2390 |
|           |   | $ae \leq 0.12D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 2550  | 2390  | 2070  | 1790 | 1620 | 1510 | 1310 | 1150 |

PP300- C4/R4

Slot Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm)                  | 3     | 4    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|-------------------------------------|-------|------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | $ap \leq 1.0D$     | 100      | $\frac{n}{(\min-1)}$                | 10610 | 7960 | 5300 | 3980 | 3180 | 2650 | 1990 | 1590 |
|           |   |                    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1530  | 1750 | 1380 | 1190 | 1150 | 1010 | 1110 | 1120 |
|           | Alloy Steel (35-48HRC)                    | $ap \leq 0.5D$     | 80       | $\frac{n}{(\min-1)}$                | 8490  | 6370 | 4240 | 3180 | 2550 | 2120 | 1590 | 1270 |
|           |   |                    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1020  | 1150 | 930  | 760  | 710  | 680  | 700  | 690  |
| <b>M</b>  | Stainless Steel                           | $ap \leq 0.3D$     | 70       | $\frac{n}{(\min-1)}$                | 7430  | 5570 | 3710 | 2780 | 2230 | 1860 | 1390 | 1110 |
|           |   |                    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 740   | 670  | 670  | 620  | 590  | 590  | 510  | 470  |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | $ap \leq 0.8D$     | 80       | $\frac{n}{(\min-1)}$                | 8490  | 6370 | 4240 | 3180 | 2550 | 2120 | 1590 | 1270 |
|           |   |                    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1020  | 1020 | 930  | 760  | 730  | 700  | 640  | 560  |
|           | High Alloy Cast Iron (35-45HRC)           | $ap \leq 0.5D$     | 70       | $\frac{n}{(\min-1)}$                | 7430  | 5570 | 3710 | 2780 | 2230 | 1860 | 1390 | 1110 |
|           |   |                    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 770   | 780  | 740  | 610  | 580  | 560  | 530  | 470  |

## 【Note】

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

PP300-SPEED-3D/3DN

Side milling/Trochoidal milling: for Steel, Cast Iron



| Workpiece |  | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm)                  | 6    | 8    | 10   | 12   | 14   | 16   | 20   |
|-----------|--|--------------------|----------|-------------------------------------|------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)           | $ap \leq 3D$       | 180      | $\frac{n}{(\min-1)}$                | 9550 | 7160 | 5730 | 4770 | 4090 | 3580 | 2860 |
|           |  | $ae \leq 0.05D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 2290 | 2290 | 2860 | 2860 | 2860 | 2680 | 2140 |
|           | Alloy Steel (35-48HRC)                       | $ap \leq 3D$       | 110      | $\frac{n}{(\min-1)}$                | 5830 | 4370 | 3500 | 2910 | 2500 | 2190 | 1750 |
|           |  | $ae \leq 0.05D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1160 | 1040 | 1400 | 1450 | 1370 | 1420 | 1310 |
| <b>M</b>  | Stainless Steel                              | $ap \leq 3D$       | 110      | $\frac{n}{(\min-1)}$                | 5830 | 4370 | 3500 | 2910 | 2500 | 2190 | 1750 |
|           |  | $ae \leq 0.05D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1160 | 1040 | 1400 | 1450 | 1370 | 1420 | 1310 |
| <b>K</b>  | Gray Cast Iron<br>Nodular Cast Iron (<32HRC) | $ap \leq 3D$       | 180      | $\frac{n}{(\min-1)}$                | 9550 | 7160 | 5730 | 4770 | 4090 | 3580 | 2860 |
|           |  | $ae \leq 0.05D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 2290 | 2290 | 2860 | 2860 | 2860 | 2680 | 2140 |
|           | High Alloy Cast Iron (35-45HRC)              | $ap \leq 3D$       | 110      | $\frac{n}{(\min-1)}$                | 5830 | 4370 | 3500 | 2910 | 2500 | 2190 | 1750 |
|           |  | $ae \leq 0.05D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1160 | 1040 | 1400 | 1450 | 1370 | 1420 | 1310 |

PP300-SPEED-5D

Side milling/Trochoidal milling: for Steel, Cast Iron



| Workpiece |  | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm)                  | 6    | 8    | 10   | 12   | 14   | 16   | 20   |
|-----------|--|--------------------|----------|-------------------------------------|------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)           | $ap \leq 5D$       | 180      | $\frac{n}{(\min-1)}$                | 9550 | 7160 | 5730 | 4770 | 4090 | 3580 | 2860 |
|           |  | $ae \leq 0.05D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 2290 | 2290 | 2860 | 2860 | 2860 | 2680 | 2140 |
|           | Alloy Steel (35-48HRC)                       | $ap \leq 5D$       | 110      | $\frac{n}{(\min-1)}$                | 5830 | 4370 | 3500 | 2910 | 2500 | 2190 | 1750 |
|           |  | $ae \leq 0.05D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1160 | 1040 | 1400 | 1450 | 1370 | 1420 | 1310 |
| <b>M</b>  | Stainless Steel                              | $ap \leq 5D$       | 110      | $\frac{n}{(\min-1)}$                | 5830 | 4370 | 3500 | 2910 | 2500 | 2190 | 1750 |
|           |  | $ae \leq 0.05D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1160 | 1040 | 1400 | 1450 | 1370 | 1420 | 1310 |
| <b>K</b>  | Gray Cast Iron<br>Nodular Cast Iron (<32HRC) | $ap \leq 5D$       | 180      | $\frac{n}{(\min-1)}$                | 9550 | 7160 | 5730 | 4770 | 4090 | 3580 | 2860 |
|           |  | $ae \leq 0.05D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 2290 | 2290 | 2860 | 2860 | 2860 | 2680 | 2140 |
|           | High Alloy Cast Iron (35-45HRC)              | $ap \leq 5D$       | 110      | $\frac{n}{(\min-1)}$                | 5830 | 4370 | 3500 | 2910 | 2500 | 2190 | 1750 |
|           |  | $ae \leq 0.05D$    |          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1160 | 1040 | 1400 | 1450 | 1370 | 1420 | 1310 |

**【Note】**

1. Use machine and holder with high rigidity.
2. Adjust the speed, feed and cutting depth according to actual cutting condition.

## Recommended Cutting Data

UPR210- S4

Side Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm)   | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|----------------------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | $ap \leq 1.5D$     | 140      | $\frac{n}{(\min-1)}$ | 7430 | 5570 | 4460 | 3720 | 2790 | 2230 |
|           |   | $ae \leq 0.3D$     |          | $V_f$ (mm/min)       | 1070 | 1070 | 1070 | 1070 | 1000 | 900  |
|           | Alloy Steel (35-48HRC)                    | $ap \leq 1D$       | 120      | $\frac{n}{(\min-1)}$ | 6370 | 4780 | 3820 | 3190 | 2390 | 1910 |
|           |   | $ae \leq 0.25D$    |          | $V_f$ (mm/min)       | 630  | 660  | 690  | 700  | 570  | 535  |
| <b>M</b>  | Stainless Steel                           | $ap \leq 1.5D$     | 110      | $\frac{n}{(\min-1)}$ | 5840 | 4380 | 3500 | 2920 | 2190 | 1750 |
|           |   | $ae \leq 0.3D$     |          | $V_f$ (mm/min)       | 580  | 610  | 630  | 640  | 525  | 490  |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | $ap \leq 1.5D$     | 140      | $\frac{n}{(\min-1)}$ | 7430 | 5570 | 4460 | 3720 | 2790 | 2230 |
|           |   | $ae \leq 0.3D$     |          | $V_f$ (mm/min)       | 1070 | 1070 | 1070 | 1070 | 1000 | 900  |
|           | High Alloy Cast Iron (35-45HRC)           | $ap \leq 1D$       | 120      | $\frac{n}{(\min-1)}$ | 6370 | 4780 | 3820 | 3190 | 2390 | 1910 |
|           |   | $ae \leq 0.25D$    |          | $V_f$ (mm/min)       | 630  | 660  | 690  | 700  | 570  | 535  |
| <b>H</b>  | Alloy Steel Hardened Steel (<55HRC)       | $ap \leq 1D$       | 100      | $\frac{n}{(\min-1)}$ | 5300 | 3980 | 3190 | 2650 | 1990 | 1590 |
|           |   | $ae \leq 0.125D$   |          | $V_f$ (mm/min)       | 530  | 480  | 450  | 420  | 400  | 380  |

UPR210- S4

Slot Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm)   | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|----------------------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | $ap \leq 1D$       | 120      | $\frac{n}{(\min-1)}$ | 6370 | 4780 | 3820 | 3190 | 2390 | 1910 |
|           |   |                    |          | $V_f$ (mm/min)       | 640  | 630  | 610  | 640  | 570  | 535  |
|           | Alloy Steel (35-48HRC)                    | $ap \leq 0.75D$    | 100      | $\frac{n}{(\min-1)}$ | 5310 | 4000 | 3190 | 2650 | 1990 | 1590 |
|           |   |                    |          | $V_f$ (mm/min)       | 430  | 400  | 450  | 425  | 360  | 320  |
| <b>M</b>  | Stainless Steel                           | $ap \leq 0.75D$    | 90       | $\frac{n}{(\min-1)}$ | 4775 | 3580 | 2865 | 2385 | 1790 | 1432 |
|           |   |                    |          | $V_f$ (mm/min)       | 382  | 160  | 190  | 210  | 200  | 190  |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | $ap \leq 1D$       | 120      | $\frac{n}{(\min-1)}$ | 6370 | 4780 | 3820 | 3190 | 2390 | 1910 |
|           |   |                    |          | $V_f$ (mm/min)       | 640  | 630  | 610  | 640  | 570  | 535  |
|           | High Alloy Cast Iron (35-45HRC)           | $ap \leq 0.75D$    | 100      | $\frac{n}{(\min-1)}$ | 5310 | 4000 | 3190 | 2650 | 1990 | 1590 |
|           |   |                    |          | $V_f$ (mm/min)       | 430  | 400  | 450  | 425  | 360  | 320  |

## 【Note】

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

UPN210- S4

Side Milling : For Steel, Cast Iron



| Workpiece |  | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|--|--------------------|----------|--------------------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)           | $ap \leq 1.5D$     | 130      | $n$ (min-1)        | 6900 | 5180 | 4140 | 3450 | 2590 | 2070 |
|           |  | $ae \leq 0.3D$     |          | $Vf$ (mm/min)      | 990  | 990  | 990  | 990  | 930  | 830  |
|           | Alloy Steel (35-48HRC)                       | $ap \leq 1D$       | 110      | $n$ (min-1)        | 5840 | 4380 | 3500 | 2920 | 2190 | 1750 |
|           |  | $ae \leq 0.25D$    |          | $Vf$ (mm/min)      | 580  | 610  | 630  | 640  | 525  | 490  |
| <b>M</b>  | Stainless Steel                              | $ap \leq 1.5D$     | 130      | $n$ (min-1)        | 6900 | 5180 | 4140 | 3450 | 2590 | 2070 |
|           |  | $ae \leq 0.3D$     |          | $Vf$ (mm/min)      | 280  | 310  | 330  | 350  | 310  | 290  |
| <b>K</b>  | Gray Cast Iron<br>Nodular Cast Iron (<32HRC) | $ap \leq 1.5D$     | 130      | $n$ (min-1)        | 6900 | 5180 | 4140 | 3450 | 2590 | 2070 |
|           |  | $ae \leq 0.3D$     |          | $Vf$ (mm/min)      | 990  | 990  | 990  | 990  | 930  | 830  |
|           | High Alloy Cast Iron (35-45HRC)              | $ap \leq 1D$       | 110      | $n$ (min-1)        | 5840 | 4380 | 3500 | 2920 | 2190 | 1750 |
|           |  | $ae \leq 0.25D$    |          | $Vf$ (mm/min)      | 580  | 610  | 630  | 640  | 525  | 490  |
| <b>H</b>  | Alloy Steel Hardened Steel (<55HRC)          | $ap \leq 1D$       | 90       | $n$ (min-1)        | 4780 | 3580 | 2870 | 2390 | 1790 | 1430 |
|           |  | $ae \leq 0.125D$   |          | $Vf$ (mm/min)      | 480  | 430  | 400  | 380  | 360  | 345  |

### 【Note】

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

UPN210- S4

Slot Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm)    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|-----------------------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | $ap \leq 0.8D$     | 120      | $\frac{n}{(min-1)}$   | 6370 | 4780 | 3820 | 3190 | 2390 | 1910 |
|           |   |                    |          | $\frac{Vf}{(mm/min)}$ | 640  | 630  | 610  | 640  | 570  | 535  |
| <b>M</b>  | Stainless Steel                           | $ap \leq 0.8D$     | 100      | $\frac{n}{(min-1)}$   | 5310 | 4000 | 3190 | 2650 | 1990 | 1590 |
|           |   |                    |          | $\frac{Vf}{(mm/min)}$ | 430  | 400  | 450  | 425  | 360  | 320  |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | $ap \leq 0.8D$     | 120      | $\frac{n}{(min-1)}$   | 6370 | 4780 | 3820 | 3190 | 2390 | 1910 |
|           |   |                    |          | $\frac{Vf}{(mm/min)}$ | 640  | 630  | 610  | 640  | 570  | 535  |
| <b>K</b>  | High Alloy Cast Iron (35-45HRC)           | $ap \leq 0.5D$     | 100      | $\frac{n}{(min-1)}$   | 5310 | 4000 | 3190 | 2650 | 1990 | 1590 |
|           |   |                    |          | $\frac{Vf}{(mm/min)}$ | 430  | 400  | 450  | 425  | 360  | 320  |

UPR300-S3/S4

Side Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm)    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|-----------------------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | $ap \leq 1.5D$     | 160      | $\frac{n}{(min-1)}$   | 8490 | 6370 | 5090 | 4240 | 3180 | 2550 |
|           |   | $ae \leq 0.4D$     |          | $\frac{Vf}{(mm/min)}$ | 790  | 820  | 1040 | 1020 | 940  | 880  |
|           | Alloy Steel (35-48HRC)                    | $ap \leq 1.5D$     | 150      | $\frac{n}{(min-1)}$   | 7960 | 5970 | 4770 | 3980 | 2980 | 2390 |
|           |   | $ae \leq 0.3D$     |          | $\frac{Vf}{(mm/min)}$ | 670  | 680  | 880  | 840  | 780  | 720  |
| <b>M</b>  | Stainless Steel                           | $ap \leq 1.5D$     | 115      | $\frac{n}{(min-1)}$   | 6100 | 4580 | 3660 | 3050 | 2290 | 1830 |
|           |   | $ae \leq 0.4D$     |          | $\frac{Vf}{(mm/min)}$ | 570  | 590  | 750  | 730  | 680  | 630  |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | $ap \leq 1.5D$     | 150      | $\frac{n}{(min-1)}$   | 7960 | 5970 | 4770 | 3980 | 2980 | 2390 |
|           |   | $ae \leq 0.5D$     |          | $\frac{Vf}{(mm/min)}$ | 880  | 910  | 1170 | 1110 | 1030 | 930  |
|           | High Alloy Cast Iron (35-45HRC)           | $ap \leq 1.5D$     | 130      | $\frac{n}{(min-1)}$   | 6900 | 5170 | 4140 | 3450 | 2590 | 2070 |
|           |   | $ae \leq 0.4D$     |          | $\frac{Vf}{(mm/min)}$ | 520  | 530  | 680  | 660  | 610  | 570  |
| <b>H</b>  | Alloy Steel Hardened Steel (<55HRC)       | $ap \leq 1.5D$     | 140      | $\frac{n}{(min-1)}$   | 7430 | 5570 | 4460 | 3710 | 2790 | 2230 |
|           |   | $ae \leq 0.3D$     |          | $\frac{Vf}{(mm/min)}$ | 620  | 640  | 820  | 790  | 720  | 670  |

## 【Note】

1. Use machine and holder with high rigidity.
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia). If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

UPR300-S3/S4

Slot Milling : For Steel, Cast Iron



| Workpiece |   | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|---|--------------------|----------|--------------------|------|------|------|------|------|------|
| <b>P</b>  | Carbon Steel, Alloy Steel (<35HRC)        | $ap \leq 1D$       | 130      | $n$ (min-1)        | 6900 | 5175 | 4140 | 3450 | 2590 | 2070 |
|           |   |                    |          | Vf (mm/min)        | 510  | 530  | 680  | 660  | 610  | 570  |
| <b>M</b>  | Alloy Steel (35-48HRC)                    | $ap \leq 0.75D$    | 120      | $n$ (min-1)        | 6370 | 4780 | 3820 | 3185 | 2390 | 1910 |
|           |   |                    |          | Vf (mm/min)        | 430  | 440  | 560  | 540  | 500  | 460  |
| <b>M</b>  | Stainless Steel                           | $ap \leq 0.75D$    | 90       | $n$ (min-1)        | 4780 | 3580 | 2870 | 2390 | 1790 | 1430 |
|           |   |                    |          | Vf (mm/min)        | 360  | 370  | 470  | 460  | 430  | 395  |
| <b>K</b>  | Gray Cast Iron Nodular Cast Iron (<32HRC) | $ap \leq 1D$       | 120      | $n$ (min-1)        | 6370 | 4780 | 3820 | 3185 | 2390 | 1910 |
|           |   |                    |          | Vf (mm/min)        | 570  | 590  | 750  | 710  | 660  | 595  |
| <b>K</b>  | High Alloy Cast Iron (35-45HRC)           | $ap \leq 1D$       | 100      | $n$ (min-1)        | 5310 | 3980 | 3185 | 2650 | 1990 | 1590 |
|           |   |                    |          | Vf (mm/min)        | 320  | 325  | 420  | 410  | 375  | 350  |
| <b>H</b>  | Alloy Steel Hardened Steel (<55HRC)       | $ap \leq 0.3D$     | 110      | $n$ (min-1)        | 5840 | 4380 | 3500 | 2920 | 2190 | 1750 |
|           |   |                    |          | Vf (mm/min)        | 390  | 400  | 515  | 500  | 450  | 420  |

## 【Note】

- 1、 Use machine and holder with high rigidity .
- 2、 Adjust the speed, feed and cutting depth according to actual cutting condition.
- 3、 The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.



## Recommended Cutting Data

US200-S2/R2

Side Milling: Stainless Steel



| Workpiece |                 | Cutting Depth (mm) | Vc m/min          | Tool Diameter (mm) | 1            | 2               | 4              | 6     | 8     | 10   | 12   | 16   | 20   |
|-----------|-----------------|--------------------|-------------------|--------------------|--------------|-----------------|----------------|-------|-------|------|------|------|------|
| <b>M</b>  | Stainless Steel |                    |                   |                    | $ap \leq 1D$ | 100<br>(80-120) | $n$<br>(min-1) | 25000 | 15900 | 7960 | 5300 | 3980 | 3180 |
|           |                 | $ae \leq 0.1D$     | $V_f$<br>(mm/min) | 220                | 254          |                 | 340            | 340   | 365   | 330  | 300  | 245  | 230  |

US200-S2/R2

Slot Milling: Stainless Steel



| Workpiece |                 | Cutting Depth (mm) | Vc m/min          | Tool Diameter (mm) | 1              | 2             | 4              | 6     | 8    | 10   | 12   | 16   | 20   |
|-----------|-----------------|--------------------|-------------------|--------------------|----------------|---------------|----------------|-------|------|------|------|------|------|
| <b>M</b>  | Stainless Steel |                    |                   |                    | $ap \leq 0.1D$ | 45<br>(35-55) | $n$<br>(min-1) | 14330 | 7165 | 3580 | 2390 | 1790 | 1430 |
|           |                 | $ae \leq 1D$       | $V_f$<br>(mm/min) | 200                | 140            |               | 120            | 155   | 155  | 155  | 155  | 135  | 120  |

US200- R3

Side Milling: Stainless Steel



| Workpiece |                 | Cutting Depth (mm) | Vc m/min          | Tool Diameter (mm) | 1            | 2               | 4              | 6     | 8     | 10   | 12   | 16   | 20   |
|-----------|-----------------|--------------------|-------------------|--------------------|--------------|-----------------|----------------|-------|-------|------|------|------|------|
| <b>M</b>  | Stainless Steel |                    |                   |                    | $ap \leq 1D$ | 100<br>(80-120) | $n$<br>(min-1) | 25000 | 15900 | 7960 | 5300 | 3980 | 3180 |
|           |                 | $ae \leq 0.1D$     | $V_f$<br>(mm/min) | 525                | 480          |                 | 525            | 510   | 550   | 500  | 450  | 370  | 340  |

US200-R3

Slot Milling: Stainless Steel



| Workpiece |                 | Cutting Depth (mm) | Vc m/min          | Tool Diameter (mm) | 1              | 2             | 4              | 6     | 8    | 10   | 12   | 16   | 20   |
|-----------|-----------------|--------------------|-------------------|--------------------|----------------|---------------|----------------|-------|------|------|------|------|------|
| <b>M</b>  | Stainless Steel |                    |                   |                    | $ap \leq 0.1D$ | 45<br>(35-55) | $n$<br>(min-1) | 14330 | 7165 | 3580 | 2390 | 1790 | 1430 |
|           |                 | $ae \leq 1D$       | $V_f$<br>(mm/min) | 300                | 215            |               | 180            | 235   | 235  | 230  | 230  | 200  | 180  |

### [Note]

1. Use machine and holder with high rigidity.
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia). If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

US200-SS4/S4/SN4/R4

Side Milling: Stainless Steel



| Workpiece |                 | Cutting Depth (mm) | Vc m/min        | Tool Diameter (mm) | 1     | 2     | 4    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|-----------------|--------------------|-----------------|--------------------|-------|-------|------|------|------|------|------|------|------|
| <b>M</b>  | Stainless Steel | $ap \leq 1D$       | 100<br>(80-120) | $n$<br>(min-1)     | 25000 | 15900 | 7960 | 5300 | 3980 | 3180 | 2650 | 1990 | 1590 |
|           |                 | $ae \leq 0.1D$     |                 | $V_f$<br>(mm/min)  | 700   | 635   | 700  | 680  | 730  | 660  | 600  | 490  | 460  |

US200-R4

Slot Milling: Stainless Steel



| Workpiece |                 | Cutting Depth (mm) | Vc m/min      | Tool Diameter (mm) | 1     | 2    | 4    | 6    | 8    | 10   | 12   | 16  | 20  |
|-----------|-----------------|--------------------|---------------|--------------------|-------|------|------|------|------|------|------|-----|-----|
| <b>M</b>  | Stainless Steel | $ap \leq 0.1D$     | 45<br>(35-55) | $n$<br>(min-1)     | 14330 | 7165 | 3580 | 2390 | 1790 | 1430 | 1195 | 895 | 715 |
|           |                 | $ae \leq 1D$       |               | $V_f$<br>(mm/min)  | 400   | 280  | 240  | 310  | 310  | 310  | 310  | 270 | 240 |

US200- B2

Profile Milling: Stainless Steel



| Workpiece |                 | Cutting Depth (mm) | Vc m/min        | Tool Diameter (mm) | 1     | 2     | 4    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|-----------------|--------------------|-----------------|--------------------|-------|-------|------|------|------|------|------|------|------|
| <b>M</b>  | Stainless Steel | $ap \leq 0.2D$     | 100<br>(80-120) | $n$<br>(min-1)     | 25000 | 15900 | 7960 | 5300 | 3980 | 3180 | 2650 | 1990 | 1590 |
|           |                 | $ae \leq 0.2D$     |                 | $V_f$<br>(mm/min)  | 525   | 480   | 510  | 550  | 560  | 540  | 560  | 520  | 510  |

US200-B4

Profile Milling: Stainless Steel



| Workpiece |                 | Cutting Depth (mm) | Vc m/min        | Tool Diameter (mm) | 1     | 2     | 4    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|-----------------|--------------------|-----------------|--------------------|-------|-------|------|------|------|------|------|------|------|
| <b>M</b>  | Stainless Steel | $ap \leq 0.2D$     | 100<br>(80-120) | $n$<br>(min-1)     | 25000 | 15900 | 7960 | 5300 | 3980 | 3180 | 2650 | 1990 | 1590 |
|           |                 | $ae \leq 0.2D$     |                 | $V_f$<br>(mm/min)  | 560   | 955   | 1020 | 1100 | 1110 | 1080 | 1115 | 1030 | 1020 |

### [Note]

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

US260-S2

Side Milling: Stainless Steel



| Workpiece |                 | Cutting Depth (mm) | Vc m/min       | Tool Diameter (mm) | 0.5          | 0.8     | 1           | 1.5   | 2     | 3     | 4     | 6     | 8    |
|-----------|-----------------|--------------------|----------------|--------------------|--------------|---------|-------------|-------|-------|-------|-------|-------|------|
| <b>M</b>  | Stainless Steel |                    |                |                    | $ap \leq 1D$ | 25 -150 | $n$ (min-1) | 18000 | 15000 | 13000 | 11000 | 10000 | 9500 |
|           |                 | $ae \leq 0.1D$     | $V_f$ (mm/min) | 500                | 800          |         | 1000        | 1200  | 1500  | 1800  | 2200  | 2500  | 2800 |

US260-S2

Face Milling: Stainless Steel



| Workpiece |                 | Cutting Depth (mm) | Vc m/min       | Tool Diameter (mm) | 0.5            | 0.8     | 1           | 1.5   | 2     | 3     | 4     | 6     | 8    |
|-----------|-----------------|--------------------|----------------|--------------------|----------------|---------|-------------|-------|-------|-------|-------|-------|------|
| <b>M</b>  | Stainless Steel |                    |                |                    | $ap \leq 0.1D$ | 25 -150 | $n$ (min-1) | 18000 | 15000 | 13000 | 11000 | 10000 | 9500 |
|           |                 | $ae \leq 1D$       | $V_f$ (mm/min) | 400                | 700            |         | 900         | 1100  | 1400  | 1700  | 2100  | 2200  | 2500 |

US260-SS4A/SS4B、S4A/S4B

Side Milling: Stainless Steel



| Workpiece |                 | Cutting Depth (mm) | Vc m/min       | Tool Diameter (mm) | 1            | 1.5     | 2           | 3     | 4     | 6     | 8    | 10   | 12   |
|-----------|-----------------|--------------------|----------------|--------------------|--------------|---------|-------------|-------|-------|-------|------|------|------|
| <b>M</b>  | Stainless Steel |                    |                |                    | $ap \leq 1D$ | 40 -180 | $n$ (min-1) | 13000 | 11000 | 10000 | 9500 | 9000 | 8000 |
|           |                 | $ae \leq 0.1D$     | $V_f$ (mm/min) | 1400               | 1700         |         | 2200        | 2700  | 3000  | 3500  | 3800 | 4000 | 4200 |

US260-SS4A/SS4B、S4A/S4B

Face Milling: Stainless Steel



| Workpiece |                 | Cutting Depth (mm) | Vc m/min       | Tool Diameter (mm) | 1              | 1.5     | 2           | 3     | 4     | 6     | 8    | 10   | 12   |
|-----------|-----------------|--------------------|----------------|--------------------|----------------|---------|-------------|-------|-------|-------|------|------|------|
| <b>M</b>  | Stainless Steel |                    |                |                    | $ap \leq 0.1D$ | 40 -180 | $n$ (min-1) | 13000 | 11000 | 10000 | 9500 | 9000 | 8000 |
|           |                 | $ae \leq 1D$       | $V_f$ (mm/min) | 1300               | 1600           |         | 2100        | 2600  | 2800  | 3200  | 3500 | 3800 | 4000 |

## 【Note】

1. Use machine and holder with high rigidity.
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia). If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

US260-R4/RS4

Side Milling: Stainless Steel



| Workpiece |                 | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 1     | 1.5   | 2     | 3    | 4    | 6    | 8    | 10   | 12   |
|-----------|-----------------|--------------------|----------|--------------------|-------|-------|-------|------|------|------|------|------|------|
| <b>M</b>  | Stainless Steel | $ap \leq 1D$       | 40 - 180 | $n$ (min-1)        | 13000 | 11000 | 10000 | 9500 | 9000 | 8000 | 6000 | 5000 | 4500 |
|           |                 | $ae \leq 0.1D$     |          | $V_f$ (mm/min)     | 1500  | 1800  | 2400  | 3000 | 3200 | 3600 | 3800 | 4000 | 4200 |

US260-R4/RS4

Face Milling: Stainless Steel



| Workpiece |                 | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 1     | 1.5   | 2     | 3    | 4    | 6    | 8    | 10   | 12   |
|-----------|-----------------|--------------------|----------|--------------------|-------|-------|-------|------|------|------|------|------|------|
| <b>M</b>  | Stainless Steel | $ap \leq 0.1D$     | 40 - 180 | $n$ (min-1)        | 13000 | 11000 | 10000 | 9500 | 9000 | 8000 | 6000 | 5000 | 4500 |
|           |                 | $ae \leq 1D$       |          | $V_f$ (mm/min)     | 1500  | 1800  | 2400  | 3000 | 3200 | 3600 | 3800 | 4000 | 4200 |

**[Note]**

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

SS600-S4/R4

Side Milling: High Strength Steel



| Workpiece |                 | Cutting Depth (mm) | Vc m/min          | Tool Diameter (mm) | 2              | 3              | 4              | 5     | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|-----------------|--------------------|-------------------|--------------------|----------------|----------------|----------------|-------|------|------|------|------|------|------|
| <b>M</b>  | Stainless Steel |                    |                   |                    | $ap \leq 1.5D$ | 80<br>(60~110) | $n$<br>(min-1) | 10000 | 7430 | 6730 | 5095 | 4245 | 3185 | 2545 |
|           |                 | $ae \leq 0.25D$    | $V_f$<br>(mm/min) | 700                | 595            |                | 510            | 510   | 510  | 510  | 510  | 485  | 445  | 430  |
| <b>S</b>  | Titanium Alloys | $ap \leq 1.5D$     | 60<br>(40~100)    | $n$<br>(min-1)     | 7960           | 6369           | 4780           | 3821  | 3185 | 2390 | 1910 | 1590 | 1195 | 955  |
|           |                 | $ae \leq 0.25D$    |                   | $V_f$<br>(mm/min)  | 398            | 350            | 285            | 270   | 320  | 335  | 354  | 350  | 310  | 305  |

SS600-S4/R4

Slot Milling: High Strength Steel



| Workpiece |                 | Cutting Depth (mm) | Vc m/min          | Tool Diameter (mm) | 2              | 3             | 4              | 5    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|-----------------|--------------------|-------------------|--------------------|----------------|---------------|----------------|------|------|------|------|------|------|------|
| <b>M</b>  | Stainless Steel |                    |                   |                    | $ap \leq 1.5D$ | 60<br>(50~70) | $n$<br>(min-1) | 7960 | 6369 | 4775 | 3821 | 3185 | 2390 | 1910 |
|           |                 | $ae \leq 1D$       | $V_f$<br>(mm/min) | 398                | 350            |               | 285            | 270  | 320  | 335  | 345  | 350  | 310  | 305  |
| <b>S</b>  | Titanium Alloys | $ap \leq 1.5D$     | 40<br>(30~60)     | $n$<br>(min-1)     | 6369           | 4246          | 3185           | 2550 | 2120 | 1590 | 1270 | 1060 | 792  | 635  |
|           |                 | $ae \leq 1D$       |                   | $V_f$<br>(mm/min)  | 254            | 241           | 190            | 190  | 190  | 190  | 200  | 210  | 190  | 190  |

SS600-B4

Profile Milling: High Strength Steel



| Workpiece |                 | Cutting Depth (mm) | Vc m/min          | Tool Diameter (mm) | 6              | 8               | 10             | 12   | 16   | 20   |
|-----------|-----------------|--------------------|-------------------|--------------------|----------------|-----------------|----------------|------|------|------|
| <b>M</b>  | Stainless Steel |                    |                   |                    | $ap \leq 0.2D$ | 100<br>(80~120) | $n$<br>(min-1) | 5300 | 3980 | 3180 |
|           |                 | $ae \leq 0.2D$     | $V_f$<br>(mm/min) | 1100               | 1100           |                 | 1080           | 1050 | 1030 | 1020 |
| <b>S</b>  | Titanium Alloys | $ap \leq 0.2D$     | 70<br>(60~80)     | $n$<br>(min-1)     | 3715           | 2785            | 2230           | 1860 | 1390 | 1110 |
|           |                 | $ae \leq 0.2D$     |                   | $V_f$<br>(mm/min)  | 670            | 610             | 535            | 480  | 445  | 352  |

**[Note]**

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia). If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

UA100-S2/SH2/R2/RH2

Side Milling: Aluminium Alloys



| Workpiece |  | Cutting Depth (mm) | Vc m/min        | Tool Diameter (mm) | 1     | 2     | 4     | 6     | 8     | 10   | 12   | 16   | 20   |
|-----------|--|--------------------|-----------------|--------------------|-------|-------|-------|-------|-------|------|------|------|------|
| N         | Wrought Aluminum Alloys<br>Cast Aluminum Alloys (Si<12%) | $ap \leq 1.5D$     | 150<br>(60-350) | $n$<br>(min-1)     | 16000 | 12700 | 12000 | 10600 | 10000 | 9500 | 9280 | 7000 | 5600 |
|           |  | $ae \leq 0.2D$     |                 | $V_f$<br>(mm/min)  | 580   | 710   | 1200  | 1280  | 1390  | 1720 | 2400 | 2500 | 2450 |
|           | Copper Alloy (<HB200)                                    | $ap \leq 1.5D$     | 150<br>(60-350) | $n$<br>(min-1)     | 16000 | 12700 | 12000 | 10600 | 10000 | 9500 | 9280 | 7000 | 5600 |
|           |  | $ae \leq 0.2D$     |                 | $V_f$<br>(mm/min)  | 520   | 650   | 1070  | 1150  | 1250  | 1550 | 2170 | 2250 | 2200 |

UA100-S2/SH2/R2/RH2

Slot Milling: Aluminium Alloys



| Workpiece |  | Cutting Depth (mm) | Vc m/min        | Tool Diameter (mm) | 1     | 2     | 4    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|--|--------------------|-----------------|--------------------|-------|-------|------|------|------|------|------|------|------|
| N         | Wrought Aluminum Alloys<br>Cast Aluminum Alloys (Si<12%) | $ap \leq 0.5D$     | 150<br>(60-350) | $n$<br>(min-1)     | 16000 | 10000 | 9000 | 8000 | 7800 | 8000 | 6800 | 5000 | 4000 |
|           |  | $ae = 1D$          |                 | $V_f$<br>(mm/min)  | 400   | 500   | 810  | 920  | 1100 | 1280 | 1300 | 1310 | 1200 |
|           | Copper Alloy (<HB200)                                    | $ap \leq 0.5D$     | 150<br>(60-350) | $n$<br>(min-1)     | 16000 | 10000 | 9000 | 8000 | 7800 | 8000 | 6800 | 5000 | 4000 |
|           |  | $ae = 1D$          |                 | $V_f$<br>(mm/min)  | 380   | 450   | 800  | 830  | 1000 | 1150 | 1130 | 1000 | 1080 |

UA100-SL2

Side Milling: Aluminium Alloys



| Workpiece |  | Cutting Depth (mm) | Vc m/min        | Tool Diameter (mm) | 1     | 2     | 4    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|--|--------------------|-----------------|--------------------|-------|-------|------|------|------|------|------|------|------|
| N         | Wrought Aluminum Alloys<br>Cast Aluminum Alloys (Si<12%) | $ap \leq 2.5D$     | 150<br>(60-350) | $n$<br>(min-1)     | 16000 | 10000 | 9000 | 8000 | 7800 | 8000 | 6800 | 5000 | 4000 |
|           |  | $ae \leq 0.15D$    |                 | $V_f$<br>(mm/min)  | 400   | 500   | 810  | 920  | 1100 | 1280 | 1300 | 1310 | 1200 |
|           | Copper Alloy (<HB200)                                    | $ap \leq 2.5D$     | 150<br>(60-350) | $n$<br>(min-1)     | 16000 | 10000 | 9000 | 8000 | 7800 | 8000 | 6800 | 5000 | 4000 |
|           |  | $ae \leq 0.15D$    |                 | $V_f$<br>(mm/min)  | 380   | 450   | 800  | 830  | 1000 | 1150 | 1130 | 1000 | 1080 |

**[Note]**

1. Use machine and holder with high rigidity.
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia). If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

UA100-S3/SH3/R3/RH3

Side Milling: Aluminium Alloys



| Workpiece |  | Cutting Depth (mm) | Vc m/min        | Tool Diameter (mm) | 1     | 2     | 4     | 6     | 8     | 10   | 12   | 16   | 20   |
|-----------|--|--------------------|-----------------|--------------------|-------|-------|-------|-------|-------|------|------|------|------|
| N         | Wrought Aluminum Alloys<br>Cast Aluminum Alloys (Si<12%) | ap≤1.5D            | 150<br>(60-350) | n<br>(min-1)       | 16000 | 13000 | 12000 | 10600 | 10000 | 9500 | 9280 | 7000 | 5600 |
|           |  | ae≤0.2D            |                 | Vf<br>(mm/min)     | 650   | 850   | 1430  | 1530  | 1670  | 2050 | 2800 | 3000 | 3150 |
|           | Copper Alloy (<HB200)                                    | ap≤1.5D            | 150<br>(60-350) | n<br>(min-1)       | 16000 | 13000 | 12000 | 10600 | 10000 | 9500 | 9280 | 7000 | 5600 |
|           |  | ae≤0.2D            |                 | Vf<br>(mm/min)     | 720   | 900   | 1200  | 1200  | 1500  | 1800 | 2225 | 2500 | 3000 |

UA100-S3/SH3/R3/RH3

Slot Milling: Aluminium Alloys



| Workpiece |  | Cutting Depth (mm) | Vc m/min        | Tool Diameter (mm) | 1     | 2     | 4    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|--|--------------------|-----------------|--------------------|-------|-------|------|------|------|------|------|------|------|
| N         | Wrought Aluminum Alloys<br>Cast Aluminum Alloys (Si<12%) | ap≤0.5D            | 150<br>(60-350) | n<br>(min-1)       | 16000 | 10000 | 9000 | 8000 | 7800 | 8000 | 6800 | 5000 | 4000 |
|           |  | ae=1D              |                 | Vf<br>(mm/min)     | 450   | 570   | 960  | 1050 | 1300 | 1500 | 1620 | 1680 | 1800 |
|           | Copper Alloy (<HB200)                                    | ap≤0.5D            | 150<br>(60-350) | n<br>(min-1)       | 16000 | 10000 | 9000 | 8000 | 7800 | 8000 | 6800 | 5000 | 4000 |
|           |  | ae=1D              |                 | Vf<br>(mm/min)     | 450   | 520   | 860  | 830  | 960  | 1240 | 1500 | 1550 | 1510 |

UA100- SL3

Side Milling: Aluminium Alloys



| Workpiece |  | Cutting Depth (mm) | Vc m/min        | Tool Diameter (mm) | 1     | 2     | 4    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|--|--------------------|-----------------|--------------------|-------|-------|------|------|------|------|------|------|------|
| N         | Wrought Aluminum Alloys<br>Cast Aluminum Alloys (Si<12%) | ap≤2.5D            | 150<br>(60-350) | n<br>(min-1)       | 16000 | 10000 | 9000 | 8000 | 7800 | 8000 | 6800 | 5000 | 4000 |
|           |  | ae≤0.15D           |                 | Vf<br>(mm/min)     | 450   | 570   | 960  | 1050 | 1300 | 1500 | 1620 | 1680 | 1800 |
|           | Copper Alloy (<HB200)                                    | ap≤2.5D            | 150<br>(60-350) | n<br>(min-1)       | 16000 | 10000 | 9000 | 8000 | 7800 | 8000 | 6800 | 5000 | 4000 |
|           |  | ae≤0.15D           |                 | Vf<br>(mm/min)     | 450   | 520   | 860  | 830  | 960  | 1240 | 1500 | 1550 | 1510 |

## 【Note】

- 1、 Use machine and holder with high rigidity .
- 2、 Adjust the speed, feed and cutting depth according to actual cutting condition.
- 3、 The milling conditions should be applied for the tool overhang length less than 4\*D (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

UA100-B2

Profile Milling : Aluminium Alloys



| Workpiece |  | Cutting Depth (mm) | Vc m/min          | Tool Diameter (mm) | 1              | 2               | 4              | 6     | 8     | 10    | 12    | 16   |
|-----------|--|--------------------|-------------------|--------------------|----------------|-----------------|----------------|-------|-------|-------|-------|------|
| N         | Wrought Aluminum Alloys<br>Cast Aluminum Alloys (Si<12%) |                    |                   |                    | $ap \leq 0.3D$ | 150<br>(60-350) | $n$<br>(min-1) | 19000 | 15900 | 11900 | 10600 | 8000 |
|           |  | $ae \leq 0.3D$     | $V_f$<br>(mm/min) | 950                | 1600           |                 | 1900           | 2500  | 2550  | 3200  | 3800  | 4450 |
|           | Copper Alloy (<HB200)                                    | $ap \leq 0.3D$     | 150<br>(60-350)   | $n$<br>(min-1)     | 19000          | 15900           | 11900          | 10600 | 8000  | 7950  | 7950  | 7000 |
|           |  | $ae \leq 0.3D$     |                   | $V_f$<br>(mm/min)  | 860            | 1430            | 1720           | 2300  | 2300  | 2850  | 3450  | 4010 |

SA100-S3

Side Milling: Aluminium Alloys



| Workpiece |  | Cutting Depth (mm) | Vc m/min          | Tool Diameter (mm) | 2              | 4               | 6              | 8     | 10    | 12    |
|-----------|--|--------------------|-------------------|--------------------|----------------|-----------------|----------------|-------|-------|-------|
| N         | Wrought Aluminum Alloys<br>Cast Aluminum Alloys (Si<12%) |                    |                   |                    | $ap \leq 1.5D$ | 150<br>(60-350) | $n$<br>(min-1) | 14000 | 12000 | 10000 |
|           |  | $ae \leq 0.2D$     | $V_f$<br>(mm/min) | 2000               | 3000           |                 | 3500           | 4000  | 4500  | 5000  |
|           | Copper Alloy (<HB200)                                    | $ap \leq 1.5D$     | 150<br>(60-350)   | $n$<br>(min-1)     | 14000          | 12000           | 10000          | 9000  | 8500  | 8000  |
|           |  | $ae \leq 0.2D$     |                   | $V_f$<br>(mm/min)  | 2000           | 3000            | 3500           | 4000  | 4500  | 5000  |

SA100-S3

Slot Milling: Aluminium Alloys



| Workpiece |  | Cutting Depth (mm) | Vc m/min          | Tool Diameter (mm) | 2            | 4               | 6              | 8     | 10    | 12   |
|-----------|--|--------------------|-------------------|--------------------|--------------|-----------------|----------------|-------|-------|------|
| N         | Wrought Aluminum Alloys<br>Cast Aluminum Alloys (Si<12%) |                    |                   |                    | $ap \leq 1D$ | 150<br>(60-350) | $n$<br>(min-1) | 11500 | 10000 | 9300 |
|           |  | $ae \leq 1D$       | $V_f$<br>(mm/min) | 1000               | 1500         |                 | 2000           | 2500  | 3500  | 4000 |
|           | Copper Alloy (<HB200)                                    | $ap \leq 1D$       | 150<br>(60-350)   | $n$<br>(min-1)     | 11500        | 10000           | 9300           | 8750  | 8000  | 7450 |
|           |  | $ae \leq 1D$       |                   | $V_f$<br>(mm/min)  | 1000         | 1500            | 2000           | 2500  | 3500  | 4000 |

### [Note]

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.



## Recommended Cutting Data

SA210-WR

Side Milling: Aluminium Alloys



| Workpiece |              | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 16    | 20    | 25    |
|-----------|--------------|--------------------|----------|--------------------|-------|-------|-------|
| <b>N</b>  | Copper Alloy | $ap \leq 0.75D$    | 950      | $n$ (min-1)        | 18000 | 16000 | 12000 |
|           |              | $ae \leq 1D$       |          | $v_f$ (mm/min)     | 8100  | 7200  | 5760  |

SA210-WR

Slot Milling: Aluminium Alloys



| Workpiece |              | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 16    | 20    | 25    |
|-----------|--------------|--------------------|----------|--------------------|-------|-------|-------|
| <b>N</b>  | Copper Alloy | $ap \leq 0.75D$    | 800      | $n$ (min-1)        | 15000 | 12000 | 10000 |
|           |              |                    |          | $v_f$ (mm/min)     | 5400  | 4680  | 3900  |

SA210-NR

Side Milling: Aluminium Alloys



| Workpiece |              | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 6     | 8     | 10   | 12   | 16   | 20   |
|-----------|--------------|--------------------|----------|--------------------|-------|-------|------|------|------|------|
| <b>N</b>  | Copper Alloy | $ap \leq 2D$       | 200 -300 | $n$ (min-1)        | 13000 | 11000 | 9500 | 8000 | 6500 | 5500 |
|           |              | $ae \leq 0.5D$     |          | $v_f$ (mm/min)     | 2500  | 3500  | 4500 | 5000 | 5500 | 6000 |

SA210-NR

Slot Milling: Aluminium Alloys



| Workpiece |              | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 6     | 8    | 10   | 12   | 16   | 20   |
|-----------|--------------|--------------------|----------|--------------------|-------|------|------|------|------|------|
| <b>N</b>  | Copper Alloy | $ap \leq 1.5D$     | 200 -300 | $n$ (min-1)        | 11000 | 9500 | 8000 | 7500 | 6000 | 5000 |
|           |              | $ae \leq 1D$       |          | $v_f$ (mm/min)     | 2000  | 2500 | 3000 | 4000 | 4500 | 5000 |

## 【Note】

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $3 \cdot D$  (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

SA300-RN2

Side Milling : Aluminium Alloys



| Workpiece |                            | Cutting Depth (mm) | Vc m/min                            | Tool Diameter (mm) | 6               | 8                 | 10                         | 12    | 16    | 20    | 25    | 32    |
|-----------|----------------------------|--------------------|-------------------------------------|--------------------|-----------------|-------------------|----------------------------|-------|-------|-------|-------|-------|
| <b>N</b>  | Aluminium Alloy 7075, 7050 |                    |                                     |                    | $ap \leq 0.15D$ | 835<br>(370~1300) | $\frac{n}{(\text{min}-1)}$ | 20000 | 20000 | 20000 | 20000 | 20000 |
|           |                            | $ae \leq 0.5D$     | $\frac{Vf}{(\text{mm}/\text{min})}$ | 3200               | 4000            |                   |                            | 5200  | 6000  | 6600  | 6800  | 7560  |

SA300-RN2

Slot Milling : Aluminium Alloys



| Workpiece |                            | Cutting Depth (mm) | Vc m/min                            | Tool Diameter (mm) | 6              | 8                | 10                         | 12    | 16    | 20    | 25    | 32   |
|-----------|----------------------------|--------------------|-------------------------------------|--------------------|----------------|------------------|----------------------------|-------|-------|-------|-------|------|
| <b>N</b>  | Aluminium Alloy 7075, 7050 |                    |                                     |                    | $ap \leq 0.2D$ | 385<br>(300~471) | $\frac{n}{(\text{min}-1)}$ | 16000 | 15000 | 12000 | 10000 | 8000 |
|           |                            | $ae = 1D$          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 3200               | 3600           |                  |                            | 3360  | 3200  | 3040  | 2940  | 3000 |

SA300-S3/RN3

Side Milling : Aluminium Alloys



| Workpiece |                            | Cutting Depth (mm) | Vc m/min                            | Tool Diameter (mm) | 6               | 8                 | 10                         | 12    | 16    | 20    | 25    | 32    |
|-----------|----------------------------|--------------------|-------------------------------------|--------------------|-----------------|-------------------|----------------------------|-------|-------|-------|-------|-------|
| <b>N</b>  | Aluminium Alloy 7075, 7050 |                    |                                     |                    | $ap \leq 0.25D$ | 785<br>(370~1200) | $\frac{n}{(\text{min}-1)}$ | 20000 | 20000 | 20000 | 20000 | 20000 |
|           |                            | $ae \leq 0.5D$     | $\frac{Vf}{(\text{mm}/\text{min})}$ | 4800               | 6000            |                   |                            | 7200  | 8400  | 9000  | 9000  | 10000 |

SA300-S3/RN3

Slot Milling : Aluminium Alloys



| Workpiece |                            | Cutting Depth (mm) | Vc m/min                            | Tool Diameter (mm) | 6              | 8                | 10                         | 12    | 16    | 20    | 25    | 32   |
|-----------|----------------------------|--------------------|-------------------------------------|--------------------|----------------|------------------|----------------------------|-------|-------|-------|-------|------|
| <b>N</b>  | Aluminium Alloy 7075, 7050 |                    |                                     |                    | $ap \leq 0.2D$ | 400<br>(300~500) | $\frac{n}{(\text{min}-1)}$ | 16000 | 15000 | 12000 | 10000 | 8000 |
|           |                            | $ae = 1D$          | $\frac{Vf}{(\text{mm}/\text{min})}$ | 4800               | 5400           |                  |                            | 5040  | 4800  | 4560  | 4410  | 4500 |

SA300-BN2

Profile Milling : Aluminium Alloys



| Workpiece |                            | Cutting Depth (mm) | Vc m/min                            | Tool Diameter (mm) | 6               | 8                | 10                         | 12    | 16    | 20    |
|-----------|----------------------------|--------------------|-------------------------------------|--------------------|-----------------|------------------|----------------------------|-------|-------|-------|
| <b>N</b>  | Aluminium Alloy 7075, 7050 |                    |                                     |                    | $ap \leq 0.75D$ | 550<br>(500~600) | $\frac{n}{(\text{min}-1)}$ | 25000 | 20000 | 20000 |
|           |                            | $Ae < 0.5D$        | $\frac{Vf}{(\text{mm}/\text{min})}$ | 4000               | 3500            |                  |                            | 3000  | 2500  | 2000  |

### [Note]

1. When the milling cutter is clamped, the maximum T.I.R. should be controlled below 0.005mm.
2. Please pay attention to use machine and holder with high rigidity .
3. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
4. The milling conditions should be applied for the tool overhang length less than 3\*D (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

DNM100-RS 1/RS2/ RS3

Side Milling : Compound Material、Aluminium Alloy



| Workpiece |                   | Cutting Depth (mm) | Vc m/min         | Tool Diameter (mm)                  | 2     | 4     | 6     | 8     | 10    | 12    | 16   |
|-----------|-------------------|--------------------|------------------|-------------------------------------|-------|-------|-------|-------|-------|-------|------|
| <b>N</b>  | Compound Material | $ap \leq 1.5D$     | 400<br>(100~450) | $\frac{n}{(\min-1)}$                | 18000 | 16000 | 13270 | 11775 | 11145 | 10615 | 8000 |
|           |                   | $ae \leq 0.2D$     |                  | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1800  | 2400  | 2650  | 2350  | 2230  | 2120  | 2400 |
|           | Aluminium Alloy   | $ap \leq 1.5D$     | 150<br>(100~250) | $\frac{n}{(\min-1)}$                | 16000 | 12000 | 12000 | 10000 | 8000  | 8000  | 5000 |
|           |                   | $ae \leq 0.1D$     |                  | $\frac{Vf}{(\text{mm}/\text{min})}$ | 2000  | 2000  | 2400  | 2000  | 1600  | 1600  | 1500 |

DNM100-RS1/RS2/ RS3

Face Milling : Compound Material、Aluminium Alloy



| Workpiece |                   | Cutting Depth (mm) | Vc m/min         | Tool Diameter (mm)                  | 2     | 4     | 6     | 8     | 10    | 12    | 16   |
|-----------|-------------------|--------------------|------------------|-------------------------------------|-------|-------|-------|-------|-------|-------|------|
| <b>N</b>  | Compound Material | $ap \leq 0.1D$     | 400<br>(100~450) | $\frac{n}{(\min-1)}$                | 18000 | 16000 | 13270 | 11775 | 11145 | 10615 | 8000 |
|           |                   | $ae \leq 0.6D$     |                  | $\frac{Vf}{(\text{mm}/\text{min})}$ | 1800  | 2400  | 2650  | 2350  | 2230  | 2120  | 2400 |
|           | Aluminium Alloy   | $ap \leq 0.1D$     | 150<br>(100~250) | $\frac{n}{(\min-1)}$                | 16000 | 12000 | 12000 | 10000 | 8000  | 8000  | 5000 |
|           |                   | $ae \leq 0.6D$     |                  | $\frac{Vf}{(\text{mm}/\text{min})}$ | 2000  | 2000  | 2400  | 2000  | 1600  | 1600  | 1500 |

## 【Note】

- 1、 Use machine and holder with high rigidity .
- 2、 Adjust the speed, feed and cutting depth according to actual cutting condition.
- 3、 The milling conditions should be applied for the tool overhang length less than 4\*D (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

SG200- S2/SN2/R2/RN2

Side Milling :Graphite



| Workpiece |                                    | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 2     | 4     | 6     | 8    | 10   | 12   |
|-----------|------------------------------------|--------------------|----------|--------------------|-------|-------|-------|------|------|------|
| N         | For High silicon Aluminum (Si>12%) | $ap \leq 1D$       | 200      | $n$ (min-1)        | 31850 | 15920 | 10620 | 7960 | 6370 | 5310 |
|           |                                    | $ae \leq 0.15D$    |          | $v_f$ (mm/min)     | 1910  | 1590  | 1270  | 1120 | 1080 | 1380 |
|           | Graphite                           | $ap \leq 1.5D$     | 250      | $n$ (min-1)        | 39810 | 19900 | 13270 | 9950 | 7960 | 6640 |
|           |                                    | $ae \leq 0.5D$     |          | $v_f$ (mm/min)     | 3980  | 2790  | 2390  | 2190 | 2390 | 2390 |

SG200-S3

Side Milling :Graphite



| Workpiece |                                    | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 2     | 4     | 6     | 8    | 10   | 12   |
|-----------|------------------------------------|--------------------|----------|--------------------|-------|-------|-------|------|------|------|
| N         | For High silicon Aluminum (Si>12%) | $ap \leq 1D$       | 200      | $n$ (min-1)        | 31850 | 15920 | 10620 | 7960 | 6370 | 5310 |
|           |                                    | $ae \leq 0.15D$    |          | $v_f$ (mm/min)     | 2870  | 2390  | 1910  | 1670 | 1620 | 2070 |
|           | Graphite                           | $ap \leq 1.5D$     | 250      | $n$ (min-1)        | 39810 | 19900 | 13270 | 9950 | 7960 | 6640 |
|           |                                    | $ae \leq 0.5D$     |          | $v_f$ (mm/min)     | 5970  | 4180  | 3580  | 3280 | 3580 | 3580 |

SG200- S4/R4/RN4

Side Milling :Graphite



| Workpiece |                                    | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 2     | 4     | 6     | 8    | 10   | 12   |
|-----------|------------------------------------|--------------------|----------|--------------------|-------|-------|-------|------|------|------|
| N         | For High silicon Aluminum (Si>12%) | $ap \leq 1D$       | 200      | $n$ (min-1)        | 31850 | 15920 | 10620 | 7960 | 6370 | 5310 |
|           |                                    | $ae \leq 0.15D$    |          | $v_f$ (mm/min)     | 3820  | 3190  | 2550  | 2230 | 2170 | 2760 |
|           | Graphite                           | $ap \leq 1.5D$     | 250      | $n$ (min-1)        | 39810 | 19900 | 13270 | 9950 | 7960 | 6640 |
|           |                                    | $ae \leq 0.5D$     |          | $v_f$ (mm/min)     | 7960  | 5570  | 4780  | 4380 | 4780 | 4780 |

**[Note]**

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

SG200- S2/SN2/R2/RN2

Slot Milling :Graphite



| Workpiece |                                    | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 2     | 4     | 6     | 8    | 10   | 12   |
|-----------|------------------------------------|--------------------|----------|--------------------|-------|-------|-------|------|------|------|
| N         | For High silicon Aluminum (Si>12%) | $ap \leq 0.5D$     | 180      | $n$ (min-1)        | 28660 | 14330 | 9550  | 7170 | 5730 | 4780 |
|           |                                    |                    |          | $vf$ (mm/min)      | 1150  | 1150  | 960   | 860  | 800  | 860  |
|           | Graphite                           | $ap \leq 0.5D$     | 200      | $n$ (min-1)        | 31850 | 15920 | 10620 | 7960 | 6370 | 5310 |
|           |                                    |                    |          | $vf$ (mm/min)      | 1910  | 1430  | 1380  | 1350 | 1400 | 1590 |

SG200-S3

Slot Milling :Graphite



| Workpiece |                                    | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 2     | 4     | 6     | 8    | 10   | 12   |
|-----------|------------------------------------|--------------------|----------|--------------------|-------|-------|-------|------|------|------|
| N         | For High silicon Aluminum (Si>12%) | $ap \leq 0.5D$     | 180      | $n$ (min-1)        | 28660 | 14330 | 9550  | 7170 | 5730 | 4780 |
|           |                                    |                    |          | $vf$ (mm/min)      | 1720  | 1720  | 1430  | 1290 | 1200 | 1290 |
|           | Graphite                           | $ap \leq 0.5D$     | 200      | $n$ (min-1)        | 31850 | 15920 | 10620 | 7960 | 6370 | 5310 |
|           |                                    |                    |          | $vf$ (mm/min)      | 2870  | 2150  | 2070  | 2030 | 2100 | 2390 |

SG200-B2/BN2

Profile Milling :Graphite



| Workpiece |                                    | Cutting Depth (mm) | Vc m/min | Tool Diameter (mm) | 2     | 4     | 6     | 8    | 10   | 12   |
|-----------|------------------------------------|--------------------|----------|--------------------|-------|-------|-------|------|------|------|
| N         | For High silicon Aluminum (Si>12%) | $ap \leq 0.3D$     | 200      | $n$ (min-1)        | 31850 | 15920 | 10620 | 7960 | 6370 | 5310 |
|           |                                    | $ae \leq 0.3D$     |          | $vf$ (mm/min)      | 2040  | 1430  | 1270  | 1270 | 1400 | 1380 |
|           | Graphite                           | $ap \leq 0.5D$     | 250      | $n$ (min-1)        | 39810 | 19900 | 13270 | 9950 | 7960 | 6640 |
|           |                                    | $ae \leq 0.4D$     |          | $vf$ (mm/min)      | 2790  | 1990  | 1860  | 1790 | 1910 | 1990 |

SG200-M-RN4/B2/BN2

Profile Milling :Graphite



| Workpiece |          | Cutting Depth (mm)                                   | Cutting Application  | $n$ (min-1) | Feed Spd (mm/min) |
|-----------|----------|--|----------------------|-------------|-------------------|
| N         | Graphite | $0.03 \leq ap \leq 0.05$<br>$0.03 \leq ae \leq 0.05$ | General Condition    | 10000~15000 | 2000~3000         |
|           |          |  | High Speed Condition | 25000~32000 | 3500~4500         |

## 【Note】

1. Use machine and holder with high rigidity .
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than 4\*D (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

ST210—S4/R4/RN4

Side Milling: Titanium Alloys



| Workpiece |                 | Cutting Depth (mm) | Vc m/min       | Tool Diameter (mm) | 2     | 3    | 4    | 5    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|-----------------|--------------------|----------------|--------------------|-------|------|------|------|------|------|------|------|------|------|
| <b>S</b>  | Titanium Alloy  | $ap \leq 1.5D$     | 60<br>(40~100) | $n$<br>(min-1)     | 9555  | 6370 | 4780 | 3820 | 3185 | 2390 | 1910 | 1590 | 1195 | 955  |
|           |                 | $ae \leq 0.25D$    |                | $vf$<br>(mm/min)   | 380   | 305  | 285  | 305  | 320  | 335  | 345  | 350  | 310  | 305  |
| <b>M</b>  | Stainless Steel | $ap \leq 1.5D$     | 80<br>(60~110) | $n$<br>(min-1)     | 12740 | 8490 | 6370 | 5095 | 4245 | 3185 | 2545 | 2020 | 1590 | 1275 |
|           |                 | $ae \leq 0.25D$    |                | $vf$<br>(mm/min)   | 760   | 575  | 510  | 510  | 510  | 510  | 510  | 485  | 445  | 430  |

ST210-S4/R4/RN4

Slot Milling: Titanium Alloys



| Workpiece |                 | Cutting Depth (mm) | Vc m/min      | Tool Diameter (mm) | 2    | 3    | 4    | 5    | 6    | 8    | 10   | 12   | 16   | 20  |
|-----------|-----------------|--------------------|---------------|--------------------|------|------|------|------|------|------|------|------|------|-----|
| <b>S</b>  | Titanium Alloy  | $ap \leq 1D$       | 40<br>(30~60) | $n$<br>(min-1)     | 6370 | 4245 | 3185 | 2545 | 2120 | 1590 | 1270 | 1060 | 795  | 635 |
|           |                 | $ae \leq 1D$       |               | $vf$<br>(mm/min)   | 255  | 200  | 190  | 170  | 170  | 190  | 200  | 210  | 190  | 190 |
| <b>M</b>  | Stainless Steel | $ap \leq 1D$       | 60<br>(50~70) | $n$<br>(min-1)     | 9555 | 6370 | 4775 | 3820 | 3185 | 2390 | 1910 | 1590 | 1195 | 955 |
|           |                 | $ae \leq 1D$       |               | $vf$<br>(mm/min)   | 380  | 305  | 285  | 305  | 320  | 335  | 345  | 350  | 310  | 305 |

## Recommended Cutting Data

ST210—RL5

Side Milling: Titanium Alloy



| Workpiece |                | Cutting Depth (mm)     | Vc m/min      | Tool Diameter (mm) | 16  | 20  | 25  |
|-----------|----------------|------------------------|---------------|--------------------|-----|-----|-----|
| <b>S</b>  | Titanium Alloy | $ap \leq 0.7 \cdot Lc$ | 50<br>(40-60) | $n$<br>(min-1)     | 980 | 780 | 620 |
|           |                | $ae \leq 0.1D$         |               | $vf$<br>(mm/min)   | 390 | 370 | 300 |

Remark: Lc is the length of the edge

## 【Note】

1. Pls pay attention to use machine and holder with high rigidity .
2. Please adjust the speed,feed and cutting depth according to actual cutting conditions.

ST210-B4

Profile Milling: Titanium Alloys



| Workpiece |                | Cutting Depth (mm) | Vc m/min      | Tool Diameter (mm) | 2    | 3    | 4    | 5    | 6    | 8    | 10   | 12   | 16   | 20   |
|-----------|----------------|--------------------|---------------|--------------------|------|------|------|------|------|------|------|------|------|------|
| <b>S</b>  | Titanium Alloy | $ap \leq 0.2D$     | 70<br>(60~80) | $n$<br>(min-1)     | 8000 | 6300 | 5580 | 4500 | 3715 | 2785 | 2230 | 1860 | 1390 | 1120 |
|           |                | $ae \leq 0.3D$     |               | $vf$<br>(mm/min)   | 800  | 1000 | 1000 | 800  | 670  | 610  | 535  | 480  | 445  | 360  |

## 【Note】

1. When the milling cutter is clamped, the maximum T.I.R. should be controlled below 0.01mm.
2. Pls pay attention to use machine and holder with high rigidity .
3. Please adjust the speed,feed and cutting depth according to actual cutting conditions.
4. The milling conditions are for an end mill where the tool overhang length is less than  $4 \cdot D$  (mill dia ).When the tool overhang length is longer, please adjust the speed,feed and cutting depth.

## Recommended Cutting Data

SM200-TP2

Profile Milling: Titanium Alloys



| Workpiece |                | Cutting Depth (mm) | Tool Diameter (mm) | 1        | 1.5   | 2         | 3     |
|-----------|----------------|--------------------|--------------------|----------|-------|-----------|-------|
| <b>S</b>  | Titanium Alloy | ap=0.05D           | $n$<br>(min-1)     | 37900    | 30600 | 23700     | 15800 |
|           |                | ae=0.3D            | $vf$<br>(mm/min)   | 860~1150 | 1390  | 1080~1430 | 1430  |

SM200-RO2/RO3/VH2/VH3/WI2/WI3/IM2/IM3/KL2

Profile Milling: Zirconia



| Workpiece |          | Cutting Depth (mm) | Tool Diameter (mm) | 0.6         | 1           | 2     |
|-----------|----------|--------------------|--------------------|-------------|-------------|-------|
| <b>N</b>  | Zirconia | ap=0.05D           | $n$<br>(min-1)     | 26800~29200 | 23000~25600 | 18300 |
|           |          | ae=0.3D            | $vf$<br>(mm/min)   | 320~350     | 460~510     | 730   |

SM200-Z12/Z13

Profile Milling: Zirconia, Titanium Alloys



| Workpiece |                | Cutting Depth (mm) | Tool Diameter (mm) | 1           | 2       | 3     |
|-----------|----------------|--------------------|--------------------|-------------|---------|-------|
| <b>N</b>  | Zirconia       | ap=0.05D           | $n$<br>(min-1)     | 23000~25600 | 18300   | --    |
|           |                | ae=0.3D            | $vf$<br>(mm/min)   | 460~510     | 730     | --    |
| <b>S</b>  | Titanium Alloy | ap=0.05D           | $n$<br>(min-1)     | --          | 18300   | 12200 |
|           |                | ae=0.3D            | $vf$<br>(mm/min)   | --          | 690~920 | 920   |



## Recommended Cutting Data

SM200-AM2/AM3

Profile Milling: Zirconia



| Workpiece |          | Cutting Depth (mm) | Tool Diameter (mm) | 0.6         | 1           |
|-----------|----------|--------------------|--------------------|-------------|-------------|
| <b>N</b>  | Zirconia | ap=0.05D           | $n$<br>(min-1)     | 26800~29200 | 23000~25600 |
|           |          | ae=0.3D            | $vf$<br>(mm/min)   | 320~350     | 460~510     |

SM200-AR2/AR3/XT2

Profile Milling: Zirconia、Titanium Alloys



| Workpiece |                | Cutting Depth (mm) | Tool Diameter (mm) | 0.6         | 1           | 1.5   | 2       | 3     |
|-----------|----------------|--------------------|--------------------|-------------|-------------|-------|---------|-------|
| <b>N</b>  | Zirconia       | ap=0.05D           | $n$<br>(min-1)     | 26800~29200 | 23000~25600 | --    | 18300   | --    |
|           |                | ae=0.3D            | $vf$<br>(mm/min)   | 320~350     | 460~510     | --    | 730     | --    |
| <b>S</b>  | Titanium Alloy | ap=0.05D           | $n$<br>(min-1)     | --          | 29200       | 23600 | 18300   | 12200 |
|           |                | ae=0.3D            | $vf$<br>(mm/min)   | --          | 550~7440    | 890   | 690~920 | 920   |

**[Note]**

1. Please select the corresponding machine tool and shank according to the type of cutting tool.
2. Adjust the speed, feed and cutting depth according to actual cutting condition.
3. The milling conditions should be applied for the tool overhang length less than 4\*D (mill dia). If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

SN200-R4/RH4

Side Milling: Heat Resistant Super Alloy



| Workpiece |                    | Cutting Depth (mm) | Vc m/min   | Tool Diameter (mm) | 1    | 2    | 3    | 4    | 5    | 6    | 8   | 10  | 12  | 16  | 20  |
|-----------|--------------------|--------------------|------------|--------------------|------|------|------|------|------|------|-----|-----|-----|-----|-----|
| S         | TA Titanium Alloys | $ap \leq 1D$       | 25 (15-35) | $n$ (min-1)        | 7900 | 3980 | 2650 | 1990 | 1592 | 1325 | 995 | 795 | 660 | 495 | 400 |
|           |                    | $ae \leq 0.1D$     |            | vf (mm/min)        | 550  | 280  | 210  | 160  | 125  | 160  | 160 | 190 | 185 | 160 | 160 |
|           | TC Titanium Alloys | $ap \leq 1D$       | 20 (15-30) | $n$ (min-1)        | 6370 | 3180 | 2100 | 1590 | 1270 | 1060 | 795 | 635 | 530 | 400 | 320 |
|           |                    | $ae \leq 0.1D$     |            | vf (mm/min)        | 470  | 240  | 170  | 130  | 120  | 125  | 125 | 150 | 145 | 125 | 140 |
|           | TB Titanium Alloys | $ap \leq 1D$       | 25 (15-30) | $n$ (min-1)        | 7900 | 3980 | 2650 | 1990 | 1592 | 1325 | 995 | 795 | 660 | 495 | 400 |
|           |                    | $ae \leq 0.1D$     |            | vf (mm/min)        | 550  | 280  | 210  | 160  | 125  | 160  | 160 | 190 | 185 | 160 | 160 |

SN200-R4/RH4

Slot Milling: Heat Resistant Super Alloy



| Workpiece |                    | Cutting Depth (mm) | Vc m/min   | Tool Diameter (mm) | 1    | 2    | 3    | 4    | 5    | 6    | 8   | 10  | 12  | 16  | 20  |
|-----------|--------------------|--------------------|------------|--------------------|------|------|------|------|------|------|-----|-----|-----|-----|-----|
| S         | TA Titanium Alloys | $ap \leq 0.5D$     | 20 (10-30) | $n$ (min-1)        | 6370 | 3180 | 2100 | 1590 | 1270 | 1060 | 795 | 635 | 530 | 400 | 320 |
|           |                    | $ae \leq 1D$       |            | vf (mm/min)        | 280  | 230  | 160  | 120  | 120  | 105  | 95  | 90  | 95  | 80  | 65  |
|           | TC Titanium Alloys | $ap \leq 0.5D$     | 15 (10-25) | $n$ (min-1)        | 4750 | 2380 | 1590 | 1190 | 950  | 795  | 600 | 475 | 400 | 300 | 240 |
|           |                    | $ae \leq 1D$       |            | vf (mm/min)        | 220  | 200  | 120  | 80   | 80   | 65   | 60  | 60  | 60  | 60  | 55  |
|           | TB Titanium Alloys | $ap \leq 0.5D$     | 20 (10-30) | $n$ (min-1)        | 6370 | 3180 | 2100 | 1590 | 1270 | 1060 | 795 | 635 | 530 | 400 | 320 |
|           |                    | $ae \leq 1D$       |            | vf (mm/min)        | 280  | 230  | 160  | 120  | 120  | 105  | 95  | 90  | 95  | 80  | 65  |

### 【Note】

1. When the milling cutter is clamped, the maximum T.I.R. should be controlled below 0.01mm.
2. Pls pay attention to use machine and holder with high rigidity.
3. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
4. The milling conditions are for an end mill where the tool overhang length is less than  $4 \cdot D$  (mill dia). When the tool overhang length is longer, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

SN200-B4/BH4

Profile Milling: Titanium Alloys



| Workpiece | Cutting Depth (mm) | Vc m/min        | Tool Diameter (mm) | 2                | 3    | 4    | 5    | 6    | 8    | 10   | 12   |      |
|-----------|--------------------|-----------------|--------------------|------------------|------|------|------|------|------|------|------|------|
| <b>S</b>  | TA Titanium Alloys | $ap \leq 0.04D$ | 40<br>(30-50)      | $n$<br>(min-1)   | 6370 | 4250 | 3180 | 2550 | 2120 | 1590 | 1270 | 1060 |
|           |                    | $ae \leq 0.04D$ |                    | $vf$<br>(mm/min) | 500  | 420  | 350  | 300  | 255  | 285  | 305  | 340  |
|           | TC Titanium Alloys | $ap \leq 0.04D$ | 35<br>(25-45)      | $n$<br>(min-1)   | 5570 | 3710 | 2780 | 2230 | 1855 | 1390 | 1115 | 930  |
|           |                    | $ae \leq 0.04D$ |                    | $vf$<br>(mm/min) | 440  | 360  | 270  | 260  | 220  | 220  | 265  | 260  |
|           | TB Titanium Alloys | $ap \leq 0.03D$ | 40<br>(30-50)      | $n$<br>(min-1)   | 6370 | 4250 | 3180 | 2550 | 2120 | 1590 | 1270 | 1060 |
|           |                    | $ae \leq 0.03D$ |                    | $vf$<br>(mm/min) | 500  | 420  | 350  | 300  | 255  | 285  | 305  | 320  |

STB200-B4

Profile Milling: Titanium Alloys



| Workpiece | Cutting Depth (mm)         | Vc m/min        | Tool Diameter (mm) | 3                | 4     | 5    | 6    | 8    |      |
|-----------|----------------------------|-----------------|--------------------|------------------|-------|------|------|------|------|
| <b>M</b>  | Stainless Steel            | $ap \leq 0.2D$  | 100<br>(80-120)    | $n$<br>(min-1)   | 10600 | 7960 | 6370 | 5300 | 3980 |
|           |                            | $ae \leq 0.2D$  |                    | $vf$<br>(mm/min) | 1160  | 1020 | 1020 | 1100 | 1100 |
| <b>S</b>  | Heat Resistant Super Alloy | $ap \leq 0.03D$ | 35<br>(25-45)      | $n$<br>(min-1)   | 3715  | 2785 | 2225 | 1855 | 1390 |
|           |                            | $ae \leq 0.03D$ |                    | $vf$<br>(mm/min) | 295   | 245  | 230  | 220  | 220  |
|           | Titanium Alloy             | $ap \leq 0.2D$  | 70<br>(60-80)      | $n$<br>(min-1)   | 7430  | 5570 | 4450 | 3715 | 2785 |
|           |                            | $ae \leq 0.3D$  |                    | $vf$<br>(mm/min) | 740   | 670  | 715  | 670  | 610  |

### 【Note】

1. When the milling cutter is clamped, the maximum T.I.R. should be controlled below 0.01mm.
2. Pls pay attention to use machine and holder with high rigidity .
3. Please adjust the speed,feed and cutting depth according to actual cutting conditions.
4. The milling conditions are for an end mill where the tool overhang length is less than  $4 * D$  (mill dia ).When the tool overhang length is longer, please adjust the speed,feed and cutting depth.

## Recommended Cutting Data

SD200-CN

Side Milling: Compound material



| Workpiece |                   | Cutting Depth (mm) | Vc m/min         | Tool Diameter (mm)                  | 2     | 4    | 6    | 8    | 10   | 12   |
|-----------|-------------------|--------------------|------------------|-------------------------------------|-------|------|------|------|------|------|
| N         | Carbon fibre CFRP | $ap \leq 2D$       | 140<br>(80-200)  | $\frac{n}{(\min-1)}$                | 15000 | 8000 | 7430 | 5570 | 4460 | 3715 |
|           |                   | $ae \leq 0.2D$     |                  | $\frac{vf}{(\text{mm}/\text{min})}$ | 900   | 480  | 445  | 445  | 445  | 370  |
|           | Glass fibre CFRP  | $ap \leq 2D$       | 150<br>(100-200) | $\frac{n}{(\min-1)}$                | 15000 | 8000 | 7960 | 5970 | 4775 | 3980 |
|           |                   | $ae \leq 0.2D$     |                  | $\frac{vf}{(\text{mm}/\text{min})}$ | 900   | 480  | 475  | 475  | 475  | 400  |

SD200-CN

Slot Milling: Compound material



| Workpiece |                   | Cutting Depth (mm) | Vc m/min         | Tool Diameter (mm)                  | 2     | 4    | 6    | 8    | 10   | 12   |
|-----------|-------------------|--------------------|------------------|-------------------------------------|-------|------|------|------|------|------|
| N         | Carbon fibre CFRP | $ap \leq 1D$       | 120<br>(80-160)  | $\frac{n}{(\min-1)}$                | 15000 | 8000 | 6370 | 4775 | 3820 | 3185 |
|           |                   | $ae \leq 1D$       |                  | $\frac{vf}{(\text{mm}/\text{min})}$ | 600   | 320  | 255  | 285  | 305  | 320  |
|           | Glass fibre CFRP  | $ap \leq 1D$       | 150<br>(100-200) | $\frac{n}{(\min-1)}$                | 15000 | 8000 | 7960 | 5970 | 4775 | 3980 |
|           |                   | $ae \leq 1D$       |                  | $\frac{vf}{(\text{mm}/\text{min})}$ | 600   | 320  | 320  | 360  | 380  | 400  |

### 【Note】

1. Please attention to use machine and holder with high rigidity .
2. Please adjust the speed,feed and cutting depth according to actual cutting conditions.
3. The milling conditions are for an end mill where the tool overhang length is less than  $4 \cdot D$  (mill dia ).When the tool overhang length is longer, please adjust the speed,feed and cutting depth.

## Recommended Cutting Data

SH260- S2/SN2/R2/RN2-H

Slot Milling: Alloy Steel, Hardened Steel



| Workpiece |                           | Cutting Depth (mm) | Cutting Condition (mm)              | Tool Diameter(mm) |       |      |      |      |      |
|-----------|---------------------------|--------------------|-------------------------------------|-------------------|-------|------|------|------|------|
|           |                           |                    |                                     | 2                 | 4     | 6    | 8    | 10   | 12   |
| <b>P</b>  | Alloy Steel (30-45HRC)    | ae=1D              | $\frac{n}{(\min-1)}$                | 20000             | 10350 | 8500 | 6600 | 5250 | 4400 |
|           |                           | ap≤0.05D           | $\frac{vf}{(\text{mm}/\text{min})}$ | 520               | 550   | 630  | 610  | 580  | 580  |
| <b>H</b>  | Hardened Steel (45-55HRC) | ae=1D              | $\frac{n}{(\min-1)}$                | 16000             | 8300  | 5200 | 3800 | 3100 | 2800 |
|           |                           | ap≤0.02D           | $\frac{vf}{(\text{mm}/\text{min})}$ | 380               | 410   | 340  | 320  | 300  | 300  |
|           | Hardened Steel (55-60HRC) | ae=1D              | $\frac{n}{(\min-1)}$                | 13500             | 6800  | 4600 | 3000 | 2400 | 2000 |
|           |                           | ap≤0.01D           | $\frac{vf}{(\text{mm}/\text{min})}$ | 240               | 240   | 230  | 190  | 180  | 170  |

SH260- S2/SN2/R2/RN2-H

Side Milling: Alloy Steel, Hardened Steel



| Workpiece |                           | Cutting Depth (mm) | Cutting Condition (mm)              | Tool Diameter(mm) |       |      |      |      |      |
|-----------|---------------------------|--------------------|-------------------------------------|-------------------|-------|------|------|------|------|
|           |                           |                    |                                     | 2                 | 4     | 6    | 8    | 10   | 12   |
| <b>P</b>  | Alloy Steel (30-45HRC)    | ap≤0.8D            | $\frac{n}{(\min-1)}$                | 20000             | 10350 | 8500 | 6600 | 5250 | 4400 |
|           |                           | ae≤0.03D           | $\frac{vf}{(\text{mm}/\text{min})}$ | 720               | 750   | 880  | 610  | 820  | 820  |
| <b>H</b>  | Hardened Steel (45-55HRC) | ap≤0.5D            | $\frac{n}{(\min-1)}$                | 16000             | 8300  | 5200 | 3800 | 3100 | 2800 |
|           |                           | ae≤0.03D           | $\frac{vf}{(\text{mm}/\text{min})}$ | 540               | 570   | 520  | 460  | 420  | 420  |
|           | Hardened Steel (55-60HRC) | ap≤0.5D            | $\frac{n}{(\min-1)}$                | 13500             | 6800  | 4600 | 3000 | 2400 | 2000 |
|           |                           | ae≤0.01D           | $\frac{vf}{(\text{mm}/\text{min})}$ | 340               | 360   | 350  | 270  | 250  | 250  |

### 【Note】

1. Please attention to use machine and holder with high rigidity .
2. Please adjust the speed,feed and cutting depth according to actual cutting conditions.
3. The milling conditions are for an end mill where the tool overhang length is less than 4\*D (mill dia ).When the tool overhang length is longer, please adjust the speed,feed and cutting depth.

## Recommended Cutting Data

SH260- S4/S4A/SH4/SH4A/SL4/SL4A/SN4/R4/R4A/RH4/RN4-H

Side Milling :Alloy Steel, Hardened Steel



| Workpiece | Cutting Depth (mm)        | Cutting Application               | Cutting Condition (mm) | Tool Diameter(mm) |       |       |      |      |      |      |
|-----------|---------------------------|-----------------------------------|------------------------|-------------------|-------|-------|------|------|------|------|
|           |                           |                                   |                        | 2                 | 4     | 6     | 8    | 10   | 12   |      |
| <b>P</b>  | Alloy Steel (30-45HRC)    | $ap \leq 1.2D$<br>$ae \leq 0.08D$ | General Condition      | $n$ (min-1)       | 14000 | 7200  | 4800 | 3600 | 2900 | 2400 |
|           |                           |                                   |                        | $vf$ (mm/min)     | 800   | 900   | 1000 | 1100 | 1050 | 1000 |
|           |                           |                                   | High Speed Condition   | $n$ (min-1)       | 20000 | 10000 | 7000 | 5200 | 4200 | 3600 |
|           |                           |                                   |                        | $vf$ (mm/min)     | 1200  | 1400  | 1600 | 1800 | 1600 | 1500 |
| <b>H</b>  | Hardened Steel (45-55HRC) | $ap \leq 1.0D$<br>$ae \leq 0.04D$ | General Condition      | $n$ (min-1)       | 12500 | 6400  | 4200 | 3200 | 2500 | 2100 |
|           |                           |                                   |                        | $vf$ (mm/min)     | 500   | 600   | 700  | 800  | 700  | 640  |
|           |                           |                                   | High Speed Condition   | $n$ (min-1)       | 18000 | 9200  | 6100 | 4600 | 3600 | 3000 |
|           |                           |                                   |                        | $vf$ (mm/min)     | 900   | 1150  | 1300 | 1400 | 1300 | 1200 |
|           | Hardened Steel (55-60HRC) | $ap \leq 0.8D$<br>$ae \leq 0.02D$ | General Condition      | $n$ (min-1)       | 11000 | 5600  | 3700 | 2800 | 2200 | 1900 |
|           |                           |                                   |                        | $vf$ (mm/min)     | 440   | 500   | 580  | 630  | 570  | 550  |
|           |                           |                                   | High Speed Condition   | $n$ (min-1)       | 15000 | 8000  | 5300 | 4000 | 3200 | 2700 |
|           |                           |                                   |                        | $vf$ (mm/min)     | 790   | 900   | 1040 | 1100 | 1000 | 900  |

SH260- S6/SH6/SL6-H

Side Milling :Alloy Steel, Hardened Steel



| Workpiece | Cutting Depth (mm)        | Cutting Condition (mm)            | Tool Diameter(mm) |      |      |      |      |      |      |
|-----------|---------------------------|-----------------------------------|-------------------|------|------|------|------|------|------|
|           |                           |                                   | 6                 | 8    | 10   | 12   | 16   | 20   |      |
| <b>P</b>  | Alloy Steel (30-45HRC)    | $ap \leq 1.5D$<br>$ae \leq 0.05D$ | $n$ (min-1)       | 6200 | 4800 | 4000 | 3200 | 2400 | 1600 |
|           |                           |                                   | $vf$ (mm/min)     | 1674 | 1584 | 1560 | 1440 | 1296 | 960  |
| <b>H</b>  | Hardened Steel (45-55HRC) | $ap \leq 1.5D$<br>$ae \leq 0.03D$ | $n$ (min-1)       | 4500 | 3600 | 3000 | 2400 | 1800 | 1200 |
|           |                           |                                   | $vf$ (mm/min)     | 1215 | 1188 | 1170 | 1080 | 972  | 720  |
|           | Hardened Steel (55-60HRC) | $ap \leq 1.5D$<br>$ae \leq 0.02D$ | $n$ (min-1)       | 3100 | 2400 | 2000 | 1600 | 1200 | 800  |
|           |                           |                                   | $vf$ (mm/min)     | 744  | 720  | 720  | 627  | 576  | 432  |

### 【Note】

1. Please attention to use machine and holder with high rigidity .
2. Please adjust the speed,feed and cutting depth according to actual cutting conditions.
3. The milling conditions are for an end mill where the tool overhang length is less than  $4 \cdot D$  (mill dia ).When the tool overhang length is longer, please adjust the speed,feed and cutting depth.

## Recommended Cutting Data

SH260-B2/BH2/BN2-H

Profile Milling : Alloy Steel ,Hardened Steel



| Workpiece | Cutting Depth (mm)        | Cutting Application      | Cutting Condition (mm) | Tool Diameter(mm) |       |       |       |      |      |      |
|-----------|---------------------------|--------------------------|------------------------|-------------------|-------|-------|-------|------|------|------|
|           |                           |                          |                        | 2                 | 4     | 6     | 8     | 10   | 12   |      |
| <b>P</b>  | Alloy Steel (30-45HRC)    | ap=0.05~0.1D<br>ae≤0.02D | General Condition      | n (min-1)         | 20000 | 10300 | 6900  | 5100 | 4100 | 3400 |
|           |                           |                          |                        | vf (mm/min)       | 1500  | 1650  | 1650  | 1700 | 1700 | 1750 |
|           |                           |                          | High Speed Condition   | n (min-1)         | 35000 | 17500 | 11600 | 8700 | 7000 | 6000 |
|           |                           |                          |                        | vf (mm/min)       | 2600  | 2700  | 2700  | 2850 | 2850 | 2900 |
| <b>H</b>  | Hardened Steel (45-55HRC) | ap=0.05~0.1D<br>ae≤0.02D | General Condition      | n (min-1)         | 15900 | 8000  | 5300  | 4000 | 3200 | 2600 |
|           |                           |                          |                        | vf (mm/min)       | 1200  | 1300  | 1300  | 1350 | 1350 | 1400 |
|           |                           |                          | High Speed Condition   | n (min-1)         | 28600 | 14300 | 9500  | 7200 | 5700 | 4500 |
|           |                           |                          |                        | vf (mm/min)       | 2200  | 2300  | 2300  | 2350 | 2350 | 2400 |
|           | Hardened Steel (55-60HRC) | ap=0.05~0.1D<br>ae≤0.02D | General Condition      | n (min-1)         | 12000 | 6000  | 4000  | 2900 | 2400 | 2100 |
|           |                           |                          |                        | vf (mm/min)       | 900   | 960   | 960   | 920  | 920  | 900  |
|           |                           |                          | High Speed Condition   | n (min-1)         | 25400 | 12700 | 8500  | 6400 | 5000 | 1900 |
|           |                           |                          |                        | vf (mm/min)       | 1800  | 1800  | 1800  | 1500 | 1500 | 1500 |

## 【Note】

- 1、 Please attention to use machine and holder with high rigidity .
- 2、 Please adjust the speed,feed and cutting depth according to actual cutting conditions.
- 3、 The milling conditions should be applied for the tool overhang length less than 4\*D (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.

## Recommended Cutting Data

SH360- S2

Slot Milling : Alloy Steels, Pre-hardened Steel, Hardened Steel



| Workpiece | Cutting Depth (mm)                         | Cutting Condition (mm) | Tool Diameter(mm) |       |       |      |      |      |      |
|-----------|--|------------------------|-------------------|-------|-------|------|------|------|------|
|           |  |                        | 2                 | 4     | 6     | 8    | 10   | 12   |      |
| H         | Alloy Steel, Pre-hardened Steel (30-45HRC) | Ae=1.0D<br>Ap≤0.05D    | n<br>(min-1)      | 20000 | 10350 | 8500 | 6600 | 5250 | 4400 |
|           |  |                        | vf<br>(mm/min)    | 520   | 550   | 630  | 610  | 580  | 580  |
|           | Alloy Steel, Hardened Steel (45-55HRC)     | Ae=1.0D<br>Ap≤0.02D    | n<br>(min-1)      | 16000 | 8300  | 5200 | 3800 | 3100 | 2800 |
|           |  |                        | vf<br>(mm/min)    | 380   | 410   | 340  | 320  | 300  | 300  |
|           | Alloy Steel, Hardened Steel (55-65HRC)     | Ae=1.0D<br>Ap≤0.01D    | n<br>(min-1)      | 13500 | 6800  | 4600 | 3000 | 2400 | 2000 |
|           |  |                        | vf<br>(mm/min)    | 240   | 240   | 230  | 190  | 180  | 170  |

SH360- S2

Side Milling : Alloy Steels, Pre-hardened Steel, Hardened Steel



| Workpiece | Cutting Depth (mm)                         | Cutting Condition (mm) | Tool Diameter(mm) |       |       |      |      |      |      |
|-----------|--|------------------------|-------------------|-------|-------|------|------|------|------|
|           |  |                        | 2                 | 4     | 6     | 8    | 10   | 12   |      |
| H         | Alloy Steel, Pre-hardened Steel (30-45HRC) | Ap≤1.5D<br>Ae≤0.03D    | n<br>(min-1)      | 20000 | 10350 | 8500 | 6600 | 5250 | 4400 |
|           |  |                        | vf<br>(mm/min)    | 720   | 750   | 880  | 610  | 820  | 820  |
|           | Alloy Steel, Hardened Steel (45-55HRC)     | Ap≤1.5D<br>Ae≤0.03D    | n<br>(min-1)      | 16000 | 8300  | 5200 | 3800 | 3100 | 2800 |
|           |  |                        | vf<br>(mm/min)    | 540   | 570   | 520  | 460  | 420  | 420  |
|           | Alloy Steel, Hardened Steel (55-65HRC)     | Ap≤1.5D<br>Ae≤0.01D    | n<br>(min-1)      | 13500 | 6800  | 4600 | 3000 | 2400 | 2000 |
|           |  |                        | vf<br>(mm/min)    | 340   | 360   | 350  | 270  | 250  | 250  |

### 【Note】

1. Please attention to use machine and holder with high rigidity .
2. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
3. The milling conditions should be applied for the tool overhang length less than 4\*D (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.
4. Recommended Coolant: Oil Mist, Cutting Oil.



## Recommended Cutting Data

SH360- S4A、SH4A、R4、RH4、S6、SL6

Side Milling : Alloy Steels, Pre-hardened Steel, Hardened Steel



| Workpiece                              | Cutting Depth (mm)                         | Cutting Application  | Cutting Condition (mm) | Tool Diameter(mm) |       |       |       |      |      |      |      |
|--|--|----------------------|------------------------|-------------------|-------|-------|-------|------|------|------|------|
|  |  |                      |                        | 2                 | 4     | 6     | 8     | 10   | 12   | 16   | 20   |
| <b>H</b>                               | Alloy Steel, Pre-hardened Steel (30-45HRC) | General Condition    | $n$ (min-1)            | 15000             | 8000  | 5300  | 4000  | 3200 | 2700 | 200  | 1600 |
|  |  |                      | $vf$ (mm/min)          | 680               | 840   | 870   | 890   | 830  | 780  | 760  | 720  |
|  |  | High Speed Condition | $n$ (min-1)            | 40000             | 20000 | 13000 | 10000 | 8000 | 6600 | 5000 | 4000 |
|  |  |                      | $vf$ (mm/min)          | 2910              | 3360  | 4390  | 4500  | 4320 | 3960 | 6750 | 3600 |
|  | Alloy Steel, Hardened Steel (45-55HRC)     | General Condition    | $n$ (min-1)            | 13000             | 6000  | 4200  | 3200  | 2500 | 2100 | 1600 | 1300 |
|  |  |                      | $vf$ (mm/min)          | 520               | 520   | 870   | 890   | 830  | 780  | 760  | 720  |
| High Speed Condition                   |  | $n$ (min-1)          | 32000                  | 16000             | 11000 | 8000  | 6400  | 5300 | 400  | 3200 |      |
|  |  | $vf$ (mm/min)        | 1830                   | 2110              | 3270  | 3170  | 3040  | 2800 | 2640 | 2530 |      |
| Alloy Steel, Hardened Steel (55-65HRC) | General Condition                          | $n$ (min-1)          | 9600                   | 4800              | 3200  | 2400  | 1900  | 1600 | 1200 | 1000 |      |
|  |  | $vf$ (mm/min)        | 350                    | 380               | 600   | 600   | 570   | 540  | 520  | 500  |      |
|  | High Speed Condition                       | $n$ (min-1)          | 24000                  | 12000             | 8000  | 6000  | 4800  | 4000 | 3000 | 2400 |      |
|  |  | $vf$ (mm/min)        | 1250                   | 1440              | 2160  | 2160  | 2070  | 1920 | 1800 | 1730 |      |

## 【Note】

- 1、 Please attention to use machine and holder with high rigidity .
- 2、 Please adjust the speed, feed and cutting depth according to actual cutting conditions.
- 3、 The milling conditions should be applied for the tool overhang length less than  $4 \cdot D$  (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.
- 4、 Recommended Coolant: Oil Mist, Cutting Oil.

## Recommended Cutting Data

SH360-B2、BH2

Profile Milling: Alloy Steels, Pre-hardened Steel, Hardened Steel



| Workpiece                                    | Cutting Depth (mm)      | Cutting Application  | Cutting Condition (mm) | Ball Radius R (mm) |       |       |      |      |      |      |  |
|--|-------------------------|----------------------|------------------------|--------------------|-------|-------|------|------|------|------|--|
|  |                         |                      |                        | R1                 | R2    | R3    | R4   | R5   | R6   | R8   |  |
| H Alloy Steel, Pre-hardened Steel (30-45HRC) | Ap=0.05~0.1<br>Ae≤0.02D | General Condition    | $n$ (min-1)            | 20000              | 10300 | 6900  | 5100 | 4100 | 3400 | 2550 |  |
|  |                         |                      | $vf$ (mm/min)          | 1500               | 1650  | 1650  | 1700 | 1700 | 1750 | 1750 |  |
|  |                         | High Speed Condition | $n$ (min-1)            | 35000              | 17500 | 11600 | 8700 | 7000 | 6000 | 4500 |  |
|  |                         |                      | $vf$ (mm/min)          | 2600               | 2700  | 2700  | 2850 | 2850 | 2900 | 2900 |  |
| H Alloy Steel, Hardened Steel (45-55HRC)     | Ap=0.05~0.1<br>Ae≤0.02D | General Condition    | $n$ (min-1)            | 15900              | 8000  | 5300  | 4000 | 3200 | 2600 | 1950 |  |
|  |                         |                      | $vf$ (mm/min)          | 1200               | 1300  | 1300  | 1350 | 1350 | 1400 | 1400 |  |
|  |                         | High Speed Condition | $n$ (min-1)            | 28600              | 14300 | 9500  | 7200 | 5700 | 4500 | 3380 |  |
|  |                         |                      | $vf$ (mm/min)          | 2200               | 2300  | 2300  | 2350 | 2350 | 2400 | 2400 |  |
| H Alloy Steel, Hardened Steel (55-65HRC)     | Ap=0.05~0.1<br>Ae≤0.02D | General Condition    | $n$ (min-1)            | 12000              | 6000  | 4000  | 2900 | 2400 | 2100 | 1600 |  |
|  |                         |                      | $vf$ (mm/min)          | 900                | 960   | 960   | 920  | 920  | 900  | 900  |  |
|  |                         | High Speed Condition | $n$ (min-1)            | 25400              | 12700 | 8500  | 6400 | 5000 | 1900 | 1450 |  |
|  |                         |                      | $vf$ (mm/min)          | 1800               | 1800  | 1800  | 1500 | 1500 | 1500 | 1500 |  |

### 【Note】

1. Please attention to use machine and holder with high rigidity .
2. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
3. The milling conditions should be applied for the tool overhang length less than 4\*D (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.
4. Recommended Coolant: Oil Mist, Cutting Oil.

## Recommended Cutting Data

SH360-B4、BH4

Profile Milling: Alloy Steels, Pre-hardened Steel, Hardened Steel



| Workpiece                              | Cutting Depth (mm)  | Cutting Application  | Cutting Condition (mm) | Ball Radius R (mm) |       |      |      |      |      |      |  |
|--|---|----------------------|------------------------|--------------------|-------|------|------|------|------|------|--|
|  |   |                      |                        | R1                 | R2    | R3   | R4   | R5   | R6   | R8   |  |
| <b>H</b>                               | Alloy Steel, Pre-hardened Steel (30-45HRC)<br>Ap=0.05~0.1<br>Ae≤0.02D | General Condition    | n (min-1)              | 29460              | 14700 | 9800 | 7360 | 5890 | 4900 | 3680 |  |
|  |   |                      | vf (mm/min)            | 2700               | 3000  | 3100 | 3010 | 3100 | 3100 | 3100 |  |
|  |   | High Speed Condition | n (min-1)              | 23880              | 11940 | 7930 | 5970 | 4780 | 3980 | 3000 |  |
|  |   |                      | vf (mm/min)            | 2100               | 2100  | 2250 | 2250 | 2250 | 2300 | 2300 |  |
|  | Alloy Steel, Hardened Steel (45-55HRC)                                | General Condition    | n (min-1)              | 21000              | 10350 | 6900 | 5175 | 4140 | 3450 | 2600 |  |
|  |   |                      | vf (mm/min)            | 2520               | 2480  | 2480 | 2270 | 2150 | 2070 | 2070 |  |
| High Speed Condition                   |   | n (min-1)            | 29460                  | 14700              | 9800  | 7360 | 5890 | 4900 | 3400 |      |  |
|  |   | vf (mm/min)          | 2360                   | 2640               | 2660  | 2650 | 2590 | 2700 | 2700 |      |  |
| Alloy Steel, Hardened Steel (55-65HRC) | General Condition   | n (min-1)            | 15120                  | 7560               | 5040  | 3780 | 3020 | 2520 | 1600 |      |  |
|  |   | vf (mm/min)          | 1210                   | 1210               | 1310  | 1280 | 1200 | 1210 | 1210 |      |  |
|  | High Speed Condition  | n (min-1)            | 23880                  | 11940              | 7930  | 5970 | 4780 | 3980 | 1450 |      |  |
|  |   | vf (mm/min)          | 1720                   | 1760               | 1850  | 1860 | 1870 | 1910 | 1910 |      |  |

**[Note]**

1. Please attention to use machine and holder with high rigidity .
2. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
3. The milling conditions should be applied for the tool overhang length less than 4\*D (mill dia ).If the tool overhang length is too long, please adjust the speed, feed and cutting depth.
4. Recommended Coolant: Oil Mist, Cutting Oil.

## Recommended Cutting Data

FH200-R4/RN4-H

Face Milling :Alloy Steels, Hardened Steel



| Workpiece                                      | Cutting Depth (mm) | Vc m/min | Cutting Condition (mm) | Tool Diameter(mm) |       |       |      |      |      |      |
|--|--------------------|----------|------------------------|-------------------|-------|-------|------|------|------|------|
|  |                    |          |                        | 1                 | 2     | 4     | 6    | 8    | 10   | 12   |
| <b>P</b> Alloy Steel (< 48HRC)                 | $ap \leq 0.03D$    | 150      | $n$ (min-1)            | 40000             | 24000 | 12000 | 8000 | 6500 | 5000 | 4500 |
|  | $ae \leq 0.5D$     |          | $vf$ (mm/min)          | 2640              | 3120  | 3840  | 5760 | 5760 | 5800 | 5200 |
| <b>H</b> Alloy Steel Hardened Steel (45-55HRC) | $ap \leq 0.025D$   | 125      | $n$ (min-1)            | 33000             | 20000 | 10000 | 7000 | 5500 | 4000 | 3500 |
|  | $ae \leq 0.5D$     |          | $vf$ (mm/min)          | 2200              | 2600  | 3200  | 4800 | 4800 | 4400 | 3800 |
| Alloy Steel Hardened Steel (55-65HRC)          | $ap \leq 0.02D$    | 90       | $n$ (min-1)            | 23000             | 14000 | 7200  | 5000 | 3600 | 3000 | 2500 |
|  | $ae \leq 0.5D$     |          | $vf$ (mm/min)          | 2000              | 2500  | 2800  | 3500 | 3300 | 3000 | 2600 |

## 【Note】

1. It's a normal phenomenon that the cutting edge turns red during processing. As long as the machine has no obvious vibration or the cutting tool has no obvious collapse, it can continue to be used.
2. It is not suitable for large cutting depth and side milling.
3. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
4. Air blow or oil mist is recommended for good chip evacuation.

FH200-R6/RN6/RH6-H

Face Milling : Alloy Steels, Hardened Steel



| Workpiece                                      | Cutting Depth (mm) | Vc m/min | Cutting Condition (mm) | Tool Diameter(mm) |           |           |           |           |           |
|--|--------------------|----------|------------------------|-------------------|-----------|-----------|-----------|-----------|-----------|
|  |                    |          |                        | 6                 | 8         | 10        | 12        | 16        | 20        |
| <b>P</b> Alloy Steel (< 48HRC)                 | $ap \leq 0.035D$   | 60-90    | $n$ (min-1)            | 3200-4800         | 2400-3600 | 1900-2900 | 1600-2400 | 1200-1800 | 950-1450  |
|  | $ae \leq 0.5D$     |          | $vf$ (mm/min)          | 2200-3000         | 2200-3000 | 2200-3000 | 2200-3000 | 2500-3500 | 2500-3500 |
| <b>H</b> Alloy Steel Hardened Steel (45-55HRC) | $ap \leq 0.035D$   | 60-90    | $n$ (min-1)            | 3200-4800         | 2400-3600 | 1900-2900 | 1600-2400 | 1200-1800 | 950-1450  |
|  | $ae \leq 0.5D$     |          | $vf$ (mm/min)          | 1920-2880         | 1950-2920 | 1950-2950 | 1920-2880 | 2160-3240 | 2280-3480 |

## 【Note】

1. It's a normal phenomenon that the cutting edge turns red during processing. As long as the machine has no obvious vibration or the cutting tool has no obvious collapse, it can continue to be used.
2. The cutting speed is negatively correlated with the tool life. It is suggested that the cutting speed should be selected between 60-80m / min in order to pursue high tool life.
3. Due to the special shape of the cutting edge, there will be corresponding tool contour marks on the surface of the workpiece, which can be easily removed by subsequent semi finishing.
4. There is no cutting edge in the center of tool, so it is not allowed to cut vertically. The tool should be cut horizontally or obliquely from the edge of the workpiece.
5. It is not suitable for large cutting depth and side milling.

# Programming Data

FH200-R6/RN6/RH6-H

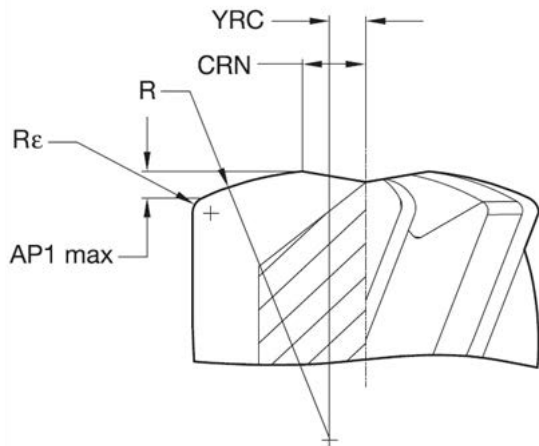
| Geometrical Parameters  |         |      |                |      |      | Ramping Guide For Circular and Linear Ramping      |         |                                       |       |       |      |      |
|---|---------|------|----------------|------|------|--|---------|---------------------------------------|-------|-------|------|------|
|   |         |      |                |      |      | Circular Interpolation                             |         | Linear Ramping                        |       |       |      |      |
|   |         |      |                |      |      | Optimal Range of Circle Diameter for A Single Pass |         | Calculated Length Per Ramp Angle (mm) |       |       |      |      |
| diameter  | Ap1 max | R    | R <sub>ε</sub> | YRC  | CRN  | Smallest   | largest | Ramp Angle(degree)                    |       |       |      |      |
| [mm]  | [mm]    | [mm] | [mm]           | [mm] | [mm] |  |         | 1°                                    | 2°    | 3°    | 4°   | 5°   |
| 6   | 0.20    | 9    | 0.375          | 0.75 | 1.26 | 8.52   | 12.00   | 11.51                                 | 5.75  | 3.83  | 2.87 | 2.30 |
| 8   | 0.27    | 12   | 0.500          | 1.00 | 1.68 | 11.36  | 16.00   | 15.34                                 | 7.67  | 5.11  | 3.83 | 3.06 |
| 10  | 0.33    | 15   | 0.625          | 1.25 | 2.10 | 14.20  | 20.00   | 19.18                                 | 9.58  | 6.39  | 4.79 | 3.83 |
| 12  | 0.40    | 18   | 0.750          | 1.50 | 2.52 | 17.04  | 24.00   | 23.01                                 | 11.50 | 7.66  | 5.74 | 4.59 |
| 16  | 0.54    | 24   | 1.000          | 2.00 | 3.36 | 22.72  | 32.00   | 30.68                                 | 15.34 | 10.22 | 7.66 | 6.12 |
| 20  | 0.67    | 30   | 1.250          | 2.00 | 4.2  | 28.40  | 40.00   | 38.35                                 | 19.17 | 12.77 | 9.57 | 7.65 |
| Recommended Percentage of Programmed Feed Rate To Use While Ramping |         |      |                |      |      |  |         | 100%                                  | 70%   | 50%   | 30%  | 10%  |

R=the head radius size.

YRC=distance from centreline to the crown of the R radius.

CRN=distance from centreline to the start of the cutting edge. This dimension can also help determine the minimum circle size when helical ramping.

R<sub>ε</sub>=the shoulder radius or radius at the corner of the cutter.



FH200-H schematic diagram of 6 flute endmill shaeer blade

## Recommended Cutting Data (General type)

SPM200-SN2/SHM200-SN2

2 Flute, Standard Length

Micro Diameter Endmills for Deep Machining

| Workpiece Material                 |                        |        | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|------------------------------------|------------------------|--------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                    |                        |        | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH,Ferrite,Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut(ap) |                        |        | 1.00                                  |           | 0.90                                 |           | 0.70                                   |           | 1.20                  |           | 0.50                       |           | 0.45                       |           |
| Mill Dia. (mm)                     | Under Neck Length (mm) | ap     | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 0.1                                | 0.3                    | 0.006  | 45,000                                | 450       | 45,000                               | 428       | 43,740                                 | 313       | 50,000                | 500       | 38,475                     | 230       | 36,045                     | 187       |
|                                    | 0.5                    | 0.004  | 45,000                                | 450       | 45,000                               | 428       | 43,740                                 | 313       | 50,000                | 500       | 38,475                     | 230       | 36,045                     | 187       |
|                                    | 1                      | 0.003  | 45,000                                | 410       | 43,740                               | 387       | 39,330                                 | 284       | 50,000                | 455       | 34,650                     | 209       | 32,445                     | 168       |
| 0.2                                | 0.5                    | 0.02   | 40,500                                | 574       | 36,450                               | 517       | 34,425                                 | 363       | 45,000                | 637       | 30,375                     | 271       | 28,350                     | 218       |
|                                    | 1                      | 0.014  | 40,500                                | 574       | 36,450                               | 517       | 34,425                                 | 363       | 45,000                | 637       | 30,375                     | 271       | 28,350                     | 218       |
|                                    | 1.5                    | 0.008  | 36,450                                | 473       | 32,805                               | 425       | 30,983                                 | 326       | 43,740                | 567       | 27,338                     | 244       | 25,515                     | 196       |
|                                    | 2                      | 0.005  | 32,400                                | 378       | 29,160                               | 340       | 27,540                                 | 257       | 38,880                | 454       | 24,300                     | 193       | 22,680                     | 155       |
| 0.3                                | 3                      | 0.003  | 32,400                                | 340       | 29,160                               | 306       | 27,540                                 | 231       | 38,880                | 409       | 24,300                     | 174       | 22,680                     | 140       |
|                                    | 1                      | 0.021  | 36,000                                | 510       | 32,400                               | 459       | 30,600                                 | 322       | 43,200                | 612       | 27,000                     | 240       | 25,200                     | 194       |
|                                    | 1.5                    | 0.021  | 36,000                                | 510       | 32,400                               | 459       | 30,600                                 | 322       | 43,200                | 612       | 27,000                     | 240       | 25,200                     | 194       |
|                                    | 2                      | 0.012  | 32,400                                | 420       | 29,160                               | 378       | 27,540                                 | 290       | 38,880                | 504       | 24,300                     | 217       | 22,680                     | 175       |
|                                    | 2.5                    | 0.01   | 32,400                                | 420       | 29,160                               | 378       | 27,540                                 | 290       | 38,880                | 504       | 24,300                     | 217       | 22,680                     | 175       |
| 0.4                                | 3                      | 0.008  | 32,400                                | 420       | 29,160                               | 378       | 27,540                                 | 290       | 38,880                | 504       | 24,300                     | 217       | 22,680                     | 175       |
|                                    | 1                      | 0.04   | 28,800                                | 635       | 25,920                               | 572       | 24,480                                 | 401       | 34,560                | 762       | 21,600                     | 300       | 20,160                     | 241       |
|                                    | 1.5                    | 0.028  | 28,800                                | 635       | 25,920                               | 572       | 24,480                                 | 401       | 34,560                | 762       | 21,600                     | 300       | 20,160                     | 241       |
|                                    | 2                      | 0.028  | 28,800                                | 635       | 25,920                               | 572       | 24,480                                 | 401       | 34,560                | 762       | 21,600                     | 300       | 20,160                     | 241       |
|                                    | 2.5                    | 0.022  | 25,920                                | 523       | 23,328                               | 471       | 22,032                                 | 361       | 31,104                | 627       | 19,440                     | 269       | 18,144                     | 217       |
|                                    | 3                      | 0.016  | 25,920                                | 523       | 23,328                               | 471       | 22,032                                 | 361       | 31,104                | 627       | 19,440                     | 269       | 18,144                     | 217       |
|                                    | 3.5                    | 0.012  | 25,920                                | 523       | 23,328                               | 471       | 22,032                                 | 361       | 31,104                | 627       | 19,440                     | 269       | 18,144                     | 217       |
|                                    | 4                      | 0.01   | 25,920                                | 523       | 23,328                               | 471       | 22,032                                 | 361       | 31,104                | 627       | 19,440                     | 269       | 18,144                     | 217       |
|                                    | 5                      | 0.01   | 23,040                                | 407       | 20,736                               | 365       | 19,584                                 | 234       | 27,648                | 488       | 17,280                     | 207       | 16,128                     | 163       |
|                                    | 6                      | 0.006  | 23,040                                | 407       | 20,736                               | 365       | 19,584                                 | 234       | 27,648                | 488       | 17,280                     | 207       | 16,128                     | 163       |
| 0.5                                | 8                      | 0.003  | 20,160                                | 310       | 18,144                               | 279       | 17,136                                 | 180       | 24,192                | 372       | 15,120                     | 155       | 14,112                     | 118       |
|                                    | 10                     | 0.002  | 17,280                                | 228       | 15,552                               | 205       | 14,688                                 | 132       | 20,736                | 274       | 12,960                     | 114       | 12,096                     | 86        |
|                                    | 1                      | 0.05   | 28,800                                | 635       | 25,920                               | 572       | 24,480                                 | 482       | 34,560                | 762       | 21,600                     | 300       | 20,160                     | 241       |
|                                    | 1.5                    | 0.05   | 28,800                                | 635       | 25,920                               | 572       | 24,480                                 | 482       | 34,560                | 762       | 21,600                     | 300       | 20,160                     | 241       |
|                                    | 2                      | 0.035  | 28,800                                | 635       | 25,920                               | 572       | 24,480                                 | 482       | 34,560                | 762       | 21,600                     | 300       | 20,160                     | 241       |
|                                    | 2.5                    | 0.03   | 25,920                                | 523       | 23,328                               | 471       | 22,032                                 | 397       | 31,104                | 627       | 19,440                     | 269       | 18,144                     | 217       |
|                                    | 3                      | 0.02   | 25,920                                | 523       | 23,328                               | 471       | 22,032                                 | 397       | 31,104                | 627       | 19,440                     | 269       | 18,144                     | 217       |
|                                    | 4                      | 0.02   | 25,920                                | 523       | 23,328                               | 471       | 22,032                                 | 361       | 31,104                | 627       | 19,440                     | 269       | 18,144                     | 217       |
| 5                                  | 0.013                  | 25,920 | 523                                   | 23,328    | 471                                  | 22,032    | 361                                    | 31,104    | 627                   | 19,440    | 269                        | 18,144    | 217                        |           |
| 6                                  | 0.013                  | 23,040 | 407                                   | 20,736    | 365                                  | 19,584    | 234                                    | 27,648    | 488                   | 17,280    | 207                        | 16,128    | 163                        |           |

【Note】 Please refer to P523

## Recommended Cutting Data (General type)

SPM200-SN2/SHM200-SN2

2 Flute, Standard Length

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                 |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|------------------------------------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                    |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH,Ferrite,Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut(ap) |                        |       | 1.00                                  |           | 0.90                                 |           | 0.70                                   |           | 1.20                  |           | 0.50                       |           | 0.45                       |           |
| Mill Dia. (mm)                     | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 0.5                                | 8                      | 0.008 | 23,040                                | 348       | 20,736                               | 313       | 19,584                                 | 222       | 27,648                | 418       | 17,280                     | 175       | 16,128                     | 132       |
|                                    | 10                     | 0.004 | 20,160                                | 270       | 18,144                               | 243       | 17,136                                 | 157       | 24,192                | 324       | 15,120                     | 135       | 14,112                     | 103       |
| 0.6                                | 2                      | 0.042 | 28,800                                | 907       | 25,920                               | 816       | 24,480                                 | 572       | 34,560                | 1,089     | 21,600                     | 428       | 20,160                     | 345       |
|                                    | 3                      | 0.035 | 25,920                                | 746       | 23,328                               | 671       | 22,032                                 | 516       | 31,104                | 896       | 19,440                     | 385       | 18,144                     | 311       |
|                                    | 4                      | 0.024 | 25,920                                | 746       | 23,328                               | 671       | 22,032                                 | 516       | 31,104                | 896       | 19,440                     | 385       | 18,144                     | 311       |
|                                    | 5                      | 0.02  | 25,920                                | 746       | 23,328                               | 671       | 22,032                                 | 516       | 31,104                | 896       | 19,440                     | 385       | 18,144                     | 311       |
|                                    | 6                      | 0.015 | 25,920                                | 746       | 23,328                               | 671       | 22,032                                 | 516       | 31,104                | 896       | 19,440                     | 385       | 18,144                     | 311       |
|                                    | 7                      | 0.015 | 23,040                                | 644       | 20,736                               | 580       | 19,584                                 | 445       | 27,648                | 773       | 17,280                     | 332       | 16,128                     | 268       |
|                                    | 8                      | 0.015 | 23,040                                | 581       | 20,736                               | 523       | 19,584                                 | 335       | 27,648                | 697       | 17,280                     | 295       | 16,128                     | 232       |
|                                    | 9                      | 0.012 | 23,040                                | 581       | 20,736                               | 523       | 19,584                                 | 335       | 27,648                | 697       | 17,280                     | 295       | 16,128                     | 232       |
|                                    | 10                     | 0.009 | 23,040                                | 581       | 20,736                               | 523       | 19,584                                 | 335       | 27,648                | 697       | 17,280                     | 295       | 16,128                     | 232       |
|                                    | 0.7                    | 2     | 0.07                                  | 28,800    | 907                                  | 25,920    | 816                                    | 24,480    | 572                   | 34,560    | 1,089                      | 21,600    | 428                        | 20,160    |
| 4                                  |                        | 0.049 | 25,920                                | 746       | 23,328                               | 671       | 22,032                                 | 516       | 31,104                | 896       | 19,440                     | 385       | 18,144                     | 311       |
| 6                                  |                        | 0.018 | 25,920                                | 746       | 23,328                               | 671       | 22,032                                 | 516       | 31,104                | 896       | 19,440                     | 385       | 18,144                     | 311       |
| 8                                  |                        | 0.018 | 23,040                                | 581       | 20,736                               | 523       | 19,584                                 | 335       | 27,648                | 697       | 17,280                     | 295       | 16,128                     | 232       |
| 10                                 |                        | 0.018 | 23,040                                | 581       | 20,736                               | 523       | 19,584                                 | 335       | 27,648                | 697       | 17,280                     | 295       | 16,128                     | 232       |
| 0.8                                | 4                      | 0.056 | 28,800                                | 907       | 25,920                               | 816       | 24,480                                 | 702       | 34,560                | 1,089     | 21,600                     | 619       | 20,160                     | 380       |
|                                    | 6                      | 0.032 | 25,920                                | 746       | 23,328                               | 671       | 22,032                                 | 610       | 31,104                | 896       | 21,600                     | 599       | 18,144                     | 341       |
|                                    | 8                      | 0.02  | 25,920                                | 746       | 23,328                               | 671       | 22,032                                 | 516       | 31,104                | 896       | 19,440                     | 385       | 18,144                     | 311       |
|                                    | 10                     | 0.02  | 23,040                                | 581       | 20,736                               | 523       | 19,584                                 | 335       | 27,648                | 697       | 17,280                     | 295       | 16,128                     | 232       |
|                                    | 12                     | 0.012 | 23,040                                | 581       | 20,736                               | 523       | 19,584                                 | 335       | 27,648                | 697       | 17,280                     | 295       | 16,128                     | 232       |
| 0.9                                | 6                      | 0.036 | 25,920                                | 895       | 23,328                               | 806       | 22,032                                 | 618       | 31,104                | 985       | 19,440                     | 500       | 18,144                     | 373       |
|                                    | 8                      | 0.023 | 25,920                                | 820       | 23,328                               | 738       | 22,032                                 | 567       | 31,104                | 985       | 19,440                     | 462       | 18,144                     | 341       |
|                                    | 10                     | 0.023 | 23,040                                | 581       | 20,736                               | 523       | 19,584                                 | 335       | 27,648                | 697       | 17,280                     | 295       | 16,128                     | 232       |
|                                    | 12                     | 0.023 | 23,040                                | 581       | 20,736                               | 523       | 19,584                                 | 335       | 27,648                | 697       | 17,280                     | 295       | 16,128                     | 232       |
| 1                                  | 2                      | 0.1   | 25,920                                | 1,220     | 23,328                               | 1,098     | 22,032                                 | 1,035     | 31,104                | 1,465     | 20,637                     | 907       | 18,144                     | 761       |
|                                    | 3                      | 0.085 | 25,920                                | 1,220     | 23,328                               | 1,098     | 22,032                                 | 1,035     | 31,104                | 1,465     | 20,637                     | 907       | 18,144                     | 761       |
|                                    | 4                      | 0.07  | 25,920                                | 1,220     | 23,328                               | 1,098     | 22,032                                 | 969       | 31,104                | 1,465     | 20,637                     | 867       | 18,144                     | 689       |
|                                    | 5                      | 0.055 | 25,920                                | 1,220     | 23,328                               | 1,098     | 22,032                                 | 925       | 31,104                | 1,465     | 20,637                     | 784       | 18,144                     | 617       |
|                                    | 6                      | 0.04  | 23,328                                | 1,008     | 20,995                               | 907       | 19,829                                 | 813       | 27,994                | 1,210     | 18,630                     | 671       | 16,330                     | 419       |
|                                    | 7                      | 0.04  | 23,328                                | 1,008     | 20,995                               | 907       | 19,829                                 | 753       | 27,994                | 1,210     | 18,630                     | 633       | 16,330                     | 419       |
|                                    | 8                      | 0.04  | 23,328                                | 1,008     | 20,995                               | 907       | 19,829                                 | 753       | 27,994                | 1,210     | 18,630                     | 560       | 16,330                     | 419       |

【Note】 Please refer to P523

# Recommended Cutting Data (General type)

SPM200-SN2/SHM200-SN2

2 Flute, Standard Length

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                    |                              |       | P   |              |  |              |  |              | N                        |              | H                             |              |                               |              |
|---------------------------------------|------------------------------|-------|---|--------------|--|--------------|--|--------------|--------------------------|--------------|-------------------------------|--------------|-------------------------------|--------------|
|                                       |                              |       | Carbon Steel,<br>Alloy Steel<br>(180~250HB) |              | Alloy Steels,<br>Tool Steels<br>(25~35HRC) |              | PH,Ferrite,Martensite<br>Steel<br>(35~45HRC) |              | Copper,<br>Copper Alloys |              | Hardened Steels<br>(45~55HRC) |              | Hardened Steels<br>(55~65HRC) |              |
| Ratio to standard depth of<br>cut(ap) |                              |       | 1.00  |              | 0.90                                       |              | 0.70   |              | 1.20                     |              | 0.50                          |              | 0.45                          |              |
| Mill<br>Dia.<br>(mm)                  | Under Neck<br>Length<br>(mm) | ap    | n<br>r/min                                  | Vf<br>mm/min | n<br>r/min                                 | Vf<br>mm/min | n<br>r/min                                   | Vf<br>mm/min | n<br>r/min               | Vf<br>mm/min | n<br>r/min                    | Vf<br>mm/min | n<br>r/min                    | Vf<br>mm/min |
| 1                                     | 9                            | 0.033 | 23,328                                      | 1,008        | 20,995                                     | 907          | 19,829                                       | 696          | 27,994                   | 1,210        | 17,496                        | 519          | 16,330                        | 419          |
|                                       | 10                           | 0.025 | 23,328                                      | 1,008        | 20,995                                     | 907          | 19,829                                       | 696          | 27,994                   | 1,210        | 17,496                        | 519          | 16,330                        | 419          |
|                                       | 12                           | 0.025 | 20,736                                      | 784          | 18,662                                     | 706          | 17,626                                       | 452          | 24,883                   | 941          | 15,552                        | 399          | 14,515                        | 313          |
|                                       | 14                           | 0.025 | 20,736                                      | 784          | 18,662                                     | 706          | 17,626                                       | 452          | 24,883                   | 941          | 15,552                        | 399          | 14,515                        | 313          |
|                                       | 16                           | 0.015 | 20,736                                      | 671          | 18,662                                     | 605          | 17,626                                       | 428          | 24,883                   | 806          | 15,552                        | 336          | 14,515                        | 255          |
|                                       | 20                           | 0.01  | 18,621                                      | 549          | 20,111                                     | 494          | 15,828                                       | 313          | 22,345                   | 659          | 13,966                        | 275          | 13,035                        | 203          |
|                                       | 25                           | 0.005 | 15,750                                      | 427          | 17,010                                     | 384          | 13,388                                       | 243          | 18,900                   | 512          | 11,813                        | 213          | 11,025                        | 158          |
| 1.2                                   | 6                            | 0.084 | 23,040                                      | 1,089        | 20,736                                     | 980          | 19,584                                       | 783          | 27,648                   | 1,307        | 17,280                        | 513          | 16,128                        | 414          |
|                                       | 8                            | 0.048 | 20,736                                      | 896          | 18,662                                     | 806          | 17,626                                       | 705          | 24,883                   | 1,075        | 15,552                        | 462          | 14,515                        | 373          |
|                                       | 10                           | 0.03  | 20,736                                      | 896          | 18,662                                     | 806          | 17,626                                       | 670          | 24,883                   | 1,075        | 15,552                        | 462          | 14,515                        | 373          |
|                                       | 12                           | 0.03  | 20,736                                      | 896          | 18,662                                     | 806          | 17,626                                       | 618          | 24,883                   | 1,075        | 15,552                        | 462          | 14,515                        | 373          |
|                                       | 16                           | 0.02  | 18,432                                      | 796          | 16,589                                     | 716          | 15,667                                       | 550          | 22,118                   | 955          | 13,824                        | 410          | 12,902                        | 331          |
| 1.4                                   | 6                            | 0.1   | 20,160                                      | 952          | 18,144                                     | 858          | 17,136                                       | 601          | 24,192                   | 1,143        | 15,120                        | 449          | 14,112                        | 363          |
|                                       | 12                           | 0.035 | 18,144                                      | 784          | 16,330                                     | 706          | 15,422                                       | 541          | 21,773                   | 941          | 13,608                        | 404          | 12,701                        | 326          |
| 1.5                                   | 4                            | 0.11  | 20,160                                      | 1,047        | 18,144                                     | 943          | 17,136                                       | 721          | 24,192                   | 1,257        | 15,120                        | 583          | 14,112                        | 434          |
|                                       | 6                            | 0.11  | 20,160                                      | 1,047        | 18,144                                     | 943          | 17,136                                       | 721          | 24,192                   | 1,257        | 15,120                        | 561          | 14,112                        | 434          |
|                                       | 8                            | 0.08  | 18,144                                      | 862          | 16,330                                     | 846          | 15,422                                       | 649          | 21,773                   | 1,034        | 13,608                        | 484          | 12,701                        | 374          |
|                                       | 10                           | 0.06  | 18,144                                      | 784          | 16,330                                     | 776          | 15,422                                       | 649          | 21,773                   | 1,034        | 13,608                        | 484          | 12,701                        | 374          |
|                                       | 12                           | 0.06  | 18,144                                      | 784          | 16,330                                     | 706          | 15,422                                       | 649          | 21,773                   | 941          | 13,608                        | 404          | 12,701                        | 326          |
|                                       | 14                           | 0.038 | 18,144                                      | 784          | 16,330                                     | 706          | 15,422                                       | 649          | 21,773                   | 941          | 13,608                        | 404          | 12,701                        | 326          |
|                                       | 16                           | 0.038 | 16,128                                      | 609          | 14,515                                     | 549          | 13,709                                       | 352          | 19,354                   | 732          | 12,096                        | 311          | 11,290                        | 244          |
|                                       | 18                           | 0.038 | 16,128                                      | 609          | 14,515                                     | 549          | 13,709                                       | 352          | 19,354                   | 732          | 12,096                        | 311          | 11,290                        | 244          |
|                                       | 20                           | 0.038 | 16,128                                      | 609          | 14,515                                     | 549          | 13,709                                       | 352          | 19,354                   | 732          | 12,096                        | 311          | 11,290                        | 244          |
|                                       | 25                           | 0.023 | 12,096                                      | 392          | 10,886                                     | 353          | 10,282                                       | 250          | 14,515                   | 471          | 9,072                         | 196          | 8,467                         | 149          |
|                                       | 30                           | 0.015 | 10,080                                      | 266          | 10,886                                     | 239          | 8,568  | 160          | 12,096                   | 320          | 7,560                         | 125          | 7,056                         | 101          |
|                                       | 35                           | 0.01  | 10,080                                      | 266          | 10,886                                     | 239          | 8,568  | 160          | 12,096                   | 320          | 7,560                         | 125          | 7,056                         | 101          |
| 40                                    | 0.005                        | 8,064 | 142   | 7,258        | 128  | 6,854        | 86   | 9,677        | 171                      | 6,048        | 67                            | 5,645        | 54                            |              |
| 1.6                                   | 6                            | 0.11  | 18,720                                      | 1,081        | 16,848                                     | 1,017        | 15,912                                       | 683          | 22,464                   | 1,179        | 14,040                        | 509          | 13,104                        | 410          |
|                                       | 8                            | 0.11  | 18,720                                      | 1,081        | 16,848                                     | 885          | 15,912                                       | 621          | 22,464                   | 1,179        | 14,040                        | 509          | 13,104                        | 410          |
| 1.8                                   | 6                            | 0.13  | 18,720                                      | 1,081        | 16,848                                     | 1,061        | 15,912                                       | 683          | 22,464                   | 1,179        | 14,040                        | 556          | 13,104                        | 448          |
|                                       | 8                            | 0.13  | 18,720                                      | 1,081        | 16,848                                     | 973          | 15,912                                       | 621          | 22,464                   | 1,179        | 14,040                        | 556          | 13,104                        | 448          |
| 2                                     | 4                            | 0.2   | 15,120                                      | 1,057        | 13,608                                     | 943          | 12,852                                       | 661          | 18,144                   | 1,257        | 11,340                        | 493          | 10,584                        | 399          |

【Note】 Please refer to P523



## Recommended Cutting Data (General type)

SPM200-SN2/SHM200-SN2

2 Flute, Standard Length

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                 |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|------------------------------------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                    |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut(ap) |                        |       | 1.00                                  |           | 0.90                                 |           | 0.70                                     |           | 1.20                  |           | 0.50                       |           | 0.45                       |           |
| Mill Dia. (mm)                     | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 2                                  | 6                      | 0.2   | 15,120                                | 1,057     | 13,608                               | 943       | 12,852                                   | 661       | 18,144                | 1,257     | 11,340                     | 493       | 10,584                     | 399       |
|                                    | 8                      | 0.14  | 15,120                                | 1,057     | 13,608                               | 943       | 12,852                                   | 661       | 18,144                | 1,257     | 11,340                     | 493       | 10,584                     | 399       |
|                                    | 10                     | 0.14  | 15,120                                | 1,057     | 13,608                               | 943       | 12,852                                   | 661       | 18,144                | 1,257     | 11,340                     | 493       | 10,584                     | 399       |
|                                    | 12                     | 0.1   | 13,608                                | 862       | 12,247                               | 776       | 11,567                                   | 595       | 16,330                | 1,034     | 10,206                     | 444       | 9,526                      | 358       |
|                                    | 14                     | 0.08  | 13,608                                | 862       | 12,247                               | 776       | 11,567                                   | 595       | 16,330                | 1,034     | 10,206                     | 444       | 9,526                      | 326       |
|                                    | 16                     | 0.08  | 13,608                                | 823       | 12,247                               | 776       | 11,567                                   | 541       | 16,330                | 941       | 10,206                     | 404       | 9,526                      | 326       |
|                                    | 18                     | 0.05  | 13,608                                | 823       | 12,247                               | 776       | 11,567                                   | 541       | 16,330                | 941       | 10,206                     | 404       | 9,526                      | 326       |
|                                    | 20                     | 0.05  | 13,608                                | 784       | 12,247                               | 706       | 11,567                                   | 541       | 16,330                | 941       | 10,206                     | 404       | 9,526                      | 326       |
|                                    | 25                     | 0.05  | 12,096                                | 609       | 10,886                               | 549       | 10,282                                   | 352       | 14,515                | 732       | 9,072                      | 311       | 8,467                      | 244       |
|                                    | 30                     | 0.03  | 12,096                                | 609       | 10,886                               | 549       | 10,282                                   | 352       | 14,515                | 732       | 9,072                      | 311       | 8,467                      | 244       |
|                                    | 35                     | 0.02  | 10,584                                | 437       | 9,526                                | 393       | 8,996                                    | 254       | 12,701                | 525       | 7,938                      | 205       | 7,409                      | 167       |
|                                    | 40                     | 0.01  | 10,584                                | 437       | 9,526                                | 393       | 8,996                                    | 254       | 12,701                | 525       | 7,938                      | 205       | 7,409                      | 167       |
| 50                                 | 0.005                  | 9,072 | 266                                   | 8,165     | 239                                  | 7,711     | 155                                      | 10,886    | 320                   | 6,804     | 125                        | 6,350     | 101                        |           |
| 2.5                                | 8                      | 0.18  | 12,960                                | 1,122     | 11,664                               | 1,011     | 11,016                                   | 708       | 15,552                | 1,347     | 9,720                      | 578       | 9,072                      | 427       |
|                                    | 12                     | 0.18  | 12,960                                | 1,122     | 11,664                               | 1,011     | 11,016                                   | 644       | 15,552                | 1,134     | 9,720                      | 529       | 9,072                      | 388       |
|                                    | 16                     | 0.1   | 11,664                                | 966       | 10,498                               | 869       | 9,914                                    | 580       | 13,997                | 1,008     | 8,748                      | 476       | 8,165                      | 349       |
|                                    | 20                     | 0.1   | 11,664                                | 840       | 10,498                               | 756       | 9,914                                    | 580       | 13,997                | 1,008     | 8,748                      | 476       | 8,165                      | 349       |
|                                    | 30                     | 0.06  | 10,368                                | 653       | 9,331                                | 588       | 8,813                                    | 392       | 12,442                | 783       | 7,776                      | 307       | 7,258                      | 248       |
|                                    | 40                     | 0.03  | 9,072                                 | 469       | 8,165                                | 422       | 7,711                                    | 282       | 10,886                | 563       | 6,804                      | 221       | 6,350                      | 178       |
| 50                                 | 0.01                   | 9,072 | 469                                   | 8,165     | 422                                  | 7,711     | 282                                      | 10,886    | 563                   | 6,804     | 221                        | 6,350     | 178                        |           |
| 3                                  | 8                      | 0.3   | 11,520                                | 997       | 10,368                               | 897       | 9,792                                    | 629       | 13,824                | 1,198     | 9,540                      | 513       | 8,064                      | 380       |
|                                    | 12                     | 0.21  | 11,520                                | 997       | 10,368                               | 897       | 9,792                                    | 629       | 13,824                | 1,198     | 9,540                      | 513       | 8,064                      | 380       |
|                                    | 16                     | 0.15  | 10,368                                | 895       | 9,331                                | 738       | 8,813                                    | 567       | 12,442                | 1,030     | 8,505                      | 462       | 7,258                      | 341       |
|                                    | 20                     | 0.12  | 10,368                                | 820       | 9,331                                | 738       | 8,813                                    | 567       | 12,442                | 896       | 8,505                      | 462       | 7,258                      | 341       |
|                                    | 25                     | 0.08  | 10,368                                | 820       | 9,331                                | 738       | 8,813                                    | 567       | 12,442                | 896       | 8,505                      | 462       | 7,258                      | 341       |
|                                    | 30                     | 0.08  | 10,368                                | 746       | 9,331                                | 671       | 8,813                                    | 567       | 12,442                | 896       | 8,505                      | 462       | 7,258                      | 312       |
|                                    | 40                     | 0.05  | 9,216                                 | 663       | 8,294                                | 597       | 7,834                                    | 458       | 11,059                | 796       | 6,912                      | 342       | 6,451                      | 276       |
| 50                                 | 0.02                   | 8,064 | 417                                   | 7,258     | 375                                  | 6,854     | 250                                      | 9,677     | 500                   | 6,048     | 196                        | 5,645     | 158                        |           |
| 4                                  | 12                     | 0.4   | 8,460                                 | 1,692     | 7,614                                | 1,372     | 7,191                                    | 1,222     | 10,350                | 2,070     | 6,345                      | 812       | 5,922                      | 655       |
|                                    | 16                     | 0.28  | 8,460                                 | 1,692     | 7,614                                | 1,372     | 7,191                                    | 1,222     | 10,350                | 2,070     | 6,345                      | 812       | 5,922                      | 655       |
|                                    | 20                     | 0.28  | 7,614                                 | 1,523     | 6,853                                | 1,234     | 6,472                                    | 1,100     | 9,315                 | 1,863     | 5,711                      | 731       | 5,330                      | 590       |
|                                    | 25                     | 0.16  | 7,614                                 | 1,372     | 6,853                                | 1,110     | 6,472                                    | 990       | 9,315                 | 1,677     | 5,711                      | 731       | 5,330                      | 590       |

【Note】 Please refer to P523

## Recommended Cutting Data (General type)

SPM200-SN2/SHM200-SN2

2 Flute, Standard Length

Micro Diameter Endmills for Deep Machining

» Continuation

| Workpiece Material                    |                              |      | P   |              |  |              |  |              | N                        |              | H                             |              |                               |              |
|---------------------------------------|------------------------------|------|---|--------------|--|--------------|--|--------------|--------------------------|--------------|-------------------------------|--------------|-------------------------------|--------------|
|                                       |                              |      | Carbon Steel,<br>Alloy Steel<br>(180~250HB) |              | Alloy Steels,<br>Tool Steels<br>(25~35HRC) |              | PH,Ferrite,Martensite<br>Steel<br>(35~45HRC) |              | Copper,<br>Copper Alloys |              | Hardened Steels<br>(45~55HRC) |              | Hardened Steels<br>(55~65HRC) |              |
| Ratio to standard depth of<br>cut(ap) |                              |      | 1.00  |              | 0.90                                       |              | 0.70   |              | 1.20                     |              | 0.50                          |              | 0.45                          |              |
| Mill<br>Dia.<br>(mm)                  | Under Neck<br>Length<br>(mm) | ap   | n<br>r/min                                  | Vf<br>mm/min | n<br>r/min                                 | Vf<br>mm/min | n<br>r/min                                   | Vf<br>mm/min | n<br>r/min               | Vf<br>mm/min | n<br>r/min                    | Vf<br>mm/min | n<br>r/min                    | Vf<br>mm/min |
| 4                                     | 30                           | 0.16 | 7,614                                       | 1,372        | 6,853                                      | 1,110        | 6,472  | 990          | 9,315                    | 1,677        | 5,711                         | 731          | 5,330                         | 590          |
|                                       | 35                           | 0.1  | 6,853                                       | 1,234        | 6,168                                      | 999          | 5,825  | 891          | 8,223                    | 1,481        | 5,140                         | 658          | 4,797                         | 530          |
|                                       | 40                           | 0.1  | 6,853                                       | 1,234        | 6,168                                      | 999          | 5,825  | 891          | 8,223                    | 1,481        | 5,140                         | 658          | 4,797                         | 530          |
|                                       | 50                           | 0.06 | 5,922                                       | 846          | 5,330                                      | 761          | 5,034  | 592          | 7,106                    | 1,015        | 4,442                         | 398          | 4,145                         | 321          |
| 5                                     | 20                           | 0.3  | 6,761                                       | 1,487        | 6,085                                      | 1,338        | 5,747  | 946          | 8,113                    | 1,622        | 5,071                         | 635          | 4,732                         | 514          |
|                                       | 25                           | 0.3  | 6,084                                       | 1,216        | 5,476                                      | 1,094        | 5,171  | 851          | 7,301                    | 1,459        | 4,563                         | 572          | 4,259                         | 462          |
|                                       | 30                           | 0.2  | 6,084                                       | 1,095        | 5,476                                      | 985          | 5,171  | 766          | 7,301                    | 1,315        | 4,563                         | 516          | 4,259                         | 416          |
|                                       | 40                           | 0.15 | 5,476                                       | 986          | 4,928                                      | 887          | 4,654  | 690          | 6,571                    | 1,184        | 4,107                         | 464          | 3,833                         | 374          |
|                                       | 50                           | 0.1  | 5,476                                       | 986          | 4,928                                      | 887          | 4,654  | 690          | 6,571                    | 1,184        | 4,107                         | 464          | 3,833                         | 374          |
| 6                                     | 20                           | 0.5  | 5,564                                       | 1,333        | 5,008                                      | 1,200        | 4,730  | 932          | 6,676                    | 1,466        | 4,173                         | 689          | 3,894                         | 506          |
|                                       | 30                           | 0.4  | 5,058                                       | 1,211        | 4,552                                      | 1,091        | 4,299  | 848          | 6,070                    | 1,332        | 3,794                         | 626          | 3,541                         | 460          |
|                                       | 40                           | 0.3  | 5,058                                       | 998          | 4,552                                      | 898          | 4,299  | 762          | 6,070                    | 1,199        | 3,794                         | 563          | 3,541                         | 413          |
|                                       | 50                           | 0.2  | 4,500                                       | 887          | 4,050                                      | 798          | 3,825  | 621          | 5,400                    | 981          | 3,375                         | 464          | 3,150                         | 341          |

**[Note]**

1. For different materials, adjust the cutting depth (ap) according to the cutting depth factors in the above table. E.g. for hardened steels (45~55HRC), ap\*0.5.
2. Use the appropriate coolant such as air cooling or emulsion for the work material and machining shape.
3. In actual machining, the condition should be adjusted according to the machining shape, purpose and the machine type.
4. If the rpm of the machine is lower than the data in the above table, the feed rate should also be lowered in the same ratio.

## Recommended Cutting Data (High Precision)

SPM200-SN2/SHM200-SN2

2 Flute, Standard Length

Micro Diameter Endmills for Deep Machining

| Workpiece Material                 |                        |        | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|------------------------------------|------------------------|--------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                    |                        |        | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH,Ferrite,Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut(ap) |                        |        | 1.00                                  |           | 0.90                                 |           | 0.70                                   |           | 1.20                  |           | 0.50                       |           | 0.45                       |           |
| Mill Dia. (mm)                     | Under Neck Length (mm) | ap     | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 0.1                                | 0.3                    | 0.006  | 50,000                                | 350       | 45,000                               | 299       | 43,740                                 | 218       | 50,000                | 350       | 38,475                     | 160       | 36,045                     | 130       |
|                                    | 0.5                    | 0.004  | 50,000                                | 350       | 45,000                               | 299       | 43,740                                 | 218       | 50,000                | 350       | 38,475                     | 160       | 36,045                     | 130       |
|                                    | 1                      | 0.003  | 50,000                                | 318       | 43,740                               | 271       | 39,330                                 | 198       | 50,000                | 318       | 34,650                     | 146       | 32,445                     | 116       |
| 0.2                                | 0.5                    | 0.015  | 40,500                                | 401       | 36,450                               | 361       | 34,425                                 | 254       | 45,000                | 446       | 30,375                     | 189       | 28,350                     | 152       |
|                                    | 1                      | 0.011  | 40,500                                | 401       | 36,450                               | 361       | 34,425                                 | 254       | 45,000                | 446       | 30,375                     | 189       | 28,350                     | 152       |
|                                    | 1.5                    | 0.006  | 36,450                                | 330       | 32,805                               | 297       | 30,983                                 | 228       | 43,740                | 397       | 27,338                     | 170       | 25,515                     | 137       |
|                                    | 2                      | 0.004  | 32,400                                | 265       | 29,160                               | 238       | 27,540                                 | 180       | 38,880                | 317       | 24,300                     | 149       | 22,680                     | 132       |
| 0.3                                | 3                      | 0.002  | 32,400                                | 238       | 29,160                               | 214       | 27,540                                 | 161       | 38,880                | 285       | 24,300                     | 149       | 22,680                     | 120       |
|                                    | 1                      | 0.021  | 36,000                                | 408       | 32,400                               | 367       | 30,600                                 | 257       | 43,200                | 490       | 27,000                     | 216       | 25,200                     | 174       |
|                                    | 1.5                    | 0.021  | 36,000                                | 408       | 32,400                               | 367       | 30,600                                 | 257       | 43,200                | 490       | 27,000                     | 216       | 25,200                     | 174       |
|                                    | 2                      | 0.012  | 32,400                                | 336       | 29,160                               | 302       | 27,540                                 | 231       | 38,880                | 403       | 24,300                     | 173       | 22,680                     | 140       |
|                                    | 2.5                    | 0.01   | 32,400                                | 336       | 29,160                               | 302       | 27,540                                 | 231       | 38,880                | 403       | 24,300                     | 173       | 22,680                     | 140       |
| 0.4                                | 3                      | 0.008  | 32,400                                | 336       | 29,160                               | 302       | 27,540                                 | 231       | 38,880                | 403       | 24,300                     | 162       | 22,680                     | 131       |
|                                    | 1                      | 0.04   | 28,800                                | 572       | 25,920                               | 514       | 24,480                                 | 361       | 34,560                | 686       | 21,600                     | 267       | 20,160                     | 217       |
|                                    | 1.5                    | 0.028  | 28,800                                | 572       | 25,920                               | 514       | 24,480                                 | 361       | 34,560                | 686       | 21,600                     | 267       | 20,160                     | 217       |
|                                    | 2                      | 0.028  | 28,800                                | 572       | 25,920                               | 514       | 24,480                                 | 361       | 34,560                | 686       | 21,600                     | 267       | 20,160                     | 217       |
|                                    | 2.5                    | 0.022  | 25,920                                | 418       | 23,328                               | 376       | 22,032                                 | 288       | 31,104                | 501       | 19,440                     | 215       | 18,144                     | 173       |
|                                    | 3                      | 0.016  | 25,920                                | 418       | 23,328                               | 376       | 22,032                                 | 288       | 31,104                | 501       | 19,440                     | 215       | 18,144                     | 173       |
|                                    | 3.5                    | 0.012  | 25,920                                | 418       | 23,328                               | 376       | 22,032                                 | 288       | 31,104                | 501       | 19,440                     | 215       | 18,144                     | 173       |
|                                    | 4                      | 0.01   | 25,920                                | 418       | 23,328                               | 376       | 22,032                                 | 288       | 31,104                | 501       | 19,440                     | 215       | 18,144                     | 173       |
|                                    | 5                      | 0.01   | 23,040                                | 284       | 20,736                               | 256       | 19,584                                 | 187       | 27,648                | 365       | 17,280                     | 166       | 16,128                     | 130       |
| 0.5                                | 6                      | 0.006  | 23,040                                | 284       | 20,736                               | 256       | 19,584                                 | 187       | 27,648                | 365       | 17,280                     | 166       | 16,128                     | 130       |
|                                    | 8                      | 0.003  | 20,160                                | 216       | 18,144                               | 195       | 17,136                                 | 144       | 24,192                | 260       | 15,120                     | 127       | 14,112                     | 115       |
|                                    | 10                     | 0.002  | 17,280                                | 159       | 15,552                               | 143       | 14,688                                 | 105       | 20,736                | 191       | 12,960                     | 93        | 12,096                     | 85        |
|                                    | 1                      | 0.05   | 28,800                                | 572       | 25,920                               | 514       | 24,480                                 | 401       | 34,560                | 686       | 21,600                     | 269       | 20,160                     | 217       |
|                                    | 1.5                    | 0.05   | 28,800                                | 572       | 25,920                               | 514       | 24,480                                 | 401       | 34,560                | 686       | 21,600                     | 269       | 20,160                     | 217       |
|                                    | 2                      | 0.035  | 28,800                                | 572       | 25,920                               | 514       | 24,480                                 | 401       | 34,560                | 686       | 21,600                     | 269       | 20,160                     | 217       |
|                                    | 2.5                    | 0.03   | 25,920                                | 418       | 23,328                               | 376       | 22,032                                 | 319       | 31,104                | 501       | 19,440                     | 215       | 18,144                     | 173       |
|                                    | 3                      | 0.02   | 25,920                                | 418       | 23,328                               | 376       | 22,032                                 | 319       | 31,104                | 501       | 19,440                     | 215       | 18,144                     | 173       |
| 4                                  | 0.02                   | 25,920 | 418                                   | 23,328    | 376                                  | 22,032    | 288                                    | 31,104    | 501                   | 19,440    | 215                        | 18,144    | 173                        |           |
| 5                                  | 0.013                  | 25,920 | 418                                   | 23,328    | 376                                  | 22,032    | 288                                    | 31,104    | 501                   | 19,440    | 215                        | 18,144    | 173                        |           |
| 6                                  | 0.013                  | 23,040 | 325                                   | 20,736    | 292                                  | 19,584    | 187                                    | 27,648    | 390                   | 17,280    | 166                        | 16,128    | 130                        |           |

【Note】 Please refer to P528

## Recommended Cutting Data (High Precision)

SPM200-SN2/SHM200-SN2

2 Flute, Standard Length

Micro Diameter Endmills for Deep Machining

» Continuation

| Workpiece Material                    |                              |       | P   |              |  |              |  |              | N                        |              | H                             |              |                               |              |
|---------------------------------------|------------------------------|-------|---|--------------|--|--------------|--|--------------|--------------------------|--------------|-------------------------------|--------------|-------------------------------|--------------|
|                                       |                              |       | Carbon Steel,<br>Alloy Steel<br>(180~250HB) |              | Alloy Steels,<br>Tool Steels<br>(25~35HRC) |              | PH,Ferrite,Martensite<br>Steel<br>(35~45HRC) |              | Copper,<br>Copper Alloys |              | Hardened Steels<br>(45~55HRC) |              | Hardened Steels<br>(55~65HRC) |              |
| Ratio to standard depth of<br>cut(ap) |                              |       | 1.00  |              | 0.90                                       |              | 0.70   |              | 1.20                     |              | 0.50                          |              | 0.45                          |              |
| Mill<br>Dia.<br>(mm)                  | Under Neck<br>Length<br>(mm) | ap    | n<br>r/min                                  | Vf<br>mm/min | n<br>r/min                                 | Vf<br>mm/min | n<br>r/min                                   | Vf<br>mm/min | n<br>r/min               | Vf<br>mm/min | n<br>r/min                    | Vf<br>mm/min | n<br>r/min                    | Vf<br>mm/min |
| 0.5                                   | 8                            | 0.008 | 23,040                                      | 278          | 20,736                                     | 250          | 19,584                                       | 155          | 27,648                   | 334          | 17,280                        | 140          | 16,128                        | 105          |
|                                       | 10                           | 0.004 | 20,160                                      | 216          | 18,144                                     | 194          | 17,136                                       | 109          | 24,192                   | 259          | 15,120                        | 95           | 14,112                        | 71           |
| 0.6                                   | 2                            | 0.042 | 28,800                                      | 816          | 25,920                                     | 734          | 24,480                                       | 515          | 34,560                   | 980          | 21,600                        | 384          | 20,160                        | 310          |
|                                       | 3                            | 0.035 | 25,920                                      | 671          | 23,328                                     | 604          | 22,032                                       | 464          | 31,104                   | 806          | 19,440                        | 347          | 18,144                        | 279          |
|                                       | 4                            | 0.024 | 25,920                                      | 671          | 23,328                                     | 604          | 22,032                                       | 464          | 31,104                   | 806          | 19,440                        | 347          | 18,144                        | 279          |
|                                       | 5                            | 0.02  | 25,920                                      | 597          | 23,328                                     | 536          | 22,032                                       | 412          | 31,104                   | 716          | 19,440                        | 308          | 18,144                        | 248          |
|                                       | 6                            | 0.015 | 25,920                                      | 597          | 23,328                                     | 536          | 22,032                                       | 412          | 31,104                   | 716          | 19,440                        | 308          | 18,144                        | 248          |
|                                       | 7                            | 0.015 | 23,040                                      | 515          | 20,736                                     | 464          | 19,584                                       | 356          | 27,648                   | 618          | 17,280                        | 266          | 16,128                        | 214          |
|                                       | 8                            | 0.015 | 23,040                                      | 464          | 20,736                                     | 418          | 19,584                                       | 267          | 27,648                   | 536          | 17,280                        | 236          | 16,128                        | 185          |
|                                       | 9                            | 0.012 | 23,040                                      | 464          | 20,736                                     | 418          | 19,584                                       | 267          | 27,648                   | 536          | 17,280                        | 236          | 16,128                        | 185          |
|                                       | 10                           | 0.009 | 23,040                                      | 464          | 20,736                                     | 418          | 19,584                                       | 267          | 27,648                   | 536          | 17,280                        | 236          | 16,128                        | 185          |
|                                       | 0.7                          | 2     | 0.07  | 28,800       | 816  | 25,920       | 734  | 24,480       | 515                      | 34,560       | 980                           | 21,600       | 384                           | 20,160       |
| 4                                     |                              | 0.049 | 25,920                                      | 597          | 23,328                                     | 536          | 22,032                                       | 412          | 31,104                   | 716          | 19,440                        | 308          | 18,144                        | 248          |
| 6                                     |                              | 0.018 | 25,920                                      | 597          | 23,328                                     | 536          | 22,032                                       | 412          | 31,104                   | 716          | 19,440                        | 308          | 18,144                        | 248          |
| 8                                     |                              | 0.018 | 23,040                                      | 406          | 20,736                                     | 365          | 19,584                                       | 234          | 27,648                   | 487          | 17,280                        | 206          | 16,128                        | 162          |
| 10                                    |                              | 0.018 | 23,040                                      | 406          | 20,736                                     | 365          | 19,584                                       | 234          | 27,648                   | 487          | 17,280                        | 206          | 16,128                        | 162          |
| 0.8                                   | 4                            | 0.056 | 28,800                                      | 816          | 25,920                                     | 734          | 24,480                                       | 572          | 34,560                   | 980          | 21,600                        | 428          | 20,160                        | 345          |
|                                       | 6                            | 0.032 | 25,920                                      | 597          | 23,328                                     | 536          | 22,032                                       | 516          | 31,104                   | 716          | 19,440                        | 385          | 18,144                        | 311          |
|                                       | 8                            | 0.02  | 25,920                                      | 597          | 23,328                                     | 536          | 22,032                                       | 412          | 31,104                   | 716          | 19,440                        | 308          | 18,144                        | 248          |
|                                       | 10                           | 0.02  | 23,040                                      | 406          | 20,736                                     | 365          | 19,584                                       | 234          | 27,648                   | 487          | 17,280                        | 206          | 16,128                        | 162          |
|                                       | 12                           | 0.012 | 23,040                                      | 406          | 20,736                                     | 365          | 19,584                                       | 234          | 27,648                   | 487          | 17,280                        | 206          | 16,128                        | 162          |
| 0.9                                   | 6                            | 0.036 | 25,920                                      | 746          | 23,328                                     | 671          | 22,032                                       | 516          | 31,104                   | 896          | 19,440                        | 385          | 18,144                        | 311          |
|                                       | 8                            | 0.023 | 25,920                                      | 671          | 23,328                                     | 671          | 22,032                                       | 516          | 31,104                   | 896          | 19,440                        | 385          | 18,144                        | 311          |
|                                       | 10                           | 0.023 | 23,040                                      | 464          | 20,736                                     | 418          | 19,584                                       | 267          | 27,648                   | 557          | 17,280                        | 236          | 16,128                        | 185          |
|                                       | 12                           | 0.023 | 23,040                                      | 406          | 20,736                                     | 373          | 19,584                                       | 267          | 27,648                   | 487          | 17,280                        | 236          | 16,128                        | 185          |
| 1                                     | 2                            | 0.09  | 25,920                                      | 1,098        | 23,328                                     | 988          | 22,032                                       | 842          | 31,104                   | 1,319        | 19,440                        | 629          | 18,144                        | 507          |
|                                       | 3                            | 0.07  | 25,920                                      | 1,098        | 23,328                                     | 988          | 22,032                                       | 842          | 31,104                   | 1,319        | 19,440                        | 629          | 18,144                        | 507          |
|                                       | 4                            | 0.065 | 25,920                                      | 1,098        | 23,328                                     | 988          | 22,032                                       | 842          | 31,104                   | 1,319        | 19,440                        | 629          | 18,144                        | 507          |
|                                       | 5                            | 0.05  | 25,920                                      | 1,098        | 23,328                                     | 988          | 22,032                                       | 842          | 31,104                   | 1,319        | 19,440                        | 629          | 18,144                        | 507          |
|                                       | 6                            | 0.035 | 23,328                                      | 907          | 20,995                                     | 816          | 19,829                                       | 696          | 27,994                   | 1,148        | 17,496                        | 519          | 16,330                        | 376          |
|                                       | 7                            | 0.035 | 23,328                                      | 907          | 20,995                                     | 816          | 19,829                                       | 696          | 27,994                   | 1,148        | 17,496                        | 519          | 16,330                        | 376          |
|                                       | 8                            | 0.035 | 23,328                                      | 907          | 20,995                                     | 816          | 19,829                                       | 696          | 27,994                   | 1,088        | 17,496                        | 519          | 16,330                        | 376          |

【Note】 Please refer to P528

## Recommended Cutting Data (High Precision)

SPM200-SN2/SHM200-SN2

2 Flute, Standard Length

Micro Diameter Endmills for Deep Machining

» Continuation

| Workpiece Material                    |                              |       | P   |              |  |              |  |              | N                        |              | H                             |              |                               |              |
|---------------------------------------|------------------------------|-------|---|--------------|--|--------------|--|--------------|--------------------------|--------------|-------------------------------|--------------|-------------------------------|--------------|
|                                       |                              |       | Carbon Steel,<br>Alloy Steel<br>(180~250HB) |              | Alloy Steels,<br>Tool Steels<br>(25~35HRC) |              | PH,Ferrite,Martensite<br>Steel<br>(35~45HRC) |              | Copper,<br>Copper Alloys |              | Hardened Steels<br>(45~55HRC) |              | Hardened Steels<br>(55~65HRC) |              |
| Ratio to standard depth of<br>cut(ap) |                              |       | 1.00  |              | 0.90                                       |              | 0.70   |              | 1.20                     |              | 0.50                          |              | 0.45                          |              |
| Mill<br>Dia.<br>(mm)                  | Under Neck<br>Length<br>(mm) | ap    | n<br>r/min                                  | Vf<br>mm/min | n<br>r/min                                 | Vf<br>mm/min | n<br>r/min                                   | Vf<br>mm/min | n<br>r/min               | Vf<br>mm/min | n<br>r/min                    | Vf<br>mm/min | n<br>r/min                    | Vf<br>mm/min |
| 1                                     | 9                            | 0.03  | 23,328                                      | 907          | 20,995                                     | 816          | 19,829                                       | 626          | 27,994                   | 1,088        | 17,496                        | 415          | 16,330                        | 335          |
|                                       | 10                           | 0.022 | 23,328                                      | 806          | 20,995                                     | 734          | 19,829                                       | 626          | 27,994                   | 1,088        | 17,496                        | 415          | 16,330                        | 335          |
|                                       | 12                           | 0.022 | 20,736                                      | 626          | 18,662                                     | 564          | 17,626                                       | 361          | 24,883                   | 752          | 15,552                        | 319          | 14,515                        | 250          |
|                                       | 14                           | 0.022 | 20,736                                      | 626          | 18,662                                     | 564          | 17,626                                       | 361          | 24,883                   | 752          | 15,552                        | 319          | 14,515                        | 250          |
|                                       | 16                           | 0.012 | 20,736                                      | 536          | 18,662                                     | 483          | 17,626                                       | 342          | 24,883                   | 644          | 15,552                        | 268          | 14,515                        | 203          |
|                                       | 20                           | 0.008 | 18,621                                      | 439          | 16,759                                     | 395          | 15,828                                       | 250          | 22,345                   | 527          | 13,966                        | 192          | 13,035                        | 142          |
|                                       | 25                           | 0.005 | 15,750                                      | 341          | 14,175                                     | 307          | 13,388                                       | 194          | 18,900                   | 410          | 11,813                        | 149          | 11,025                        | 110          |
| 1.2                                   | 6                            | 0.084 | 23,040                                      | 980          | 20,736                                     | 882          | 19,584                                       | 684          | 27,648                   | 1,175        | 17,280                        | 462          | 16,128                        | 373          |
|                                       | 8                            | 0.048 | 20,736                                      | 806          | 18,662                                     | 725          | 17,626                                       | 616          | 24,883                   | 967          | 15,552                        | 415          | 14,515                        | 335          |
|                                       | 10                           | 0.03  | 20,736                                      | 806          | 18,662                                     | 725          | 17,626                                       | 616          | 24,883                   | 967          | 15,552                        | 415          | 14,515                        | 335          |
|                                       | 12                           | 0.03  | 20,736                                      | 644          | 18,662                                     | 578          | 17,626                                       | 494          | 24,883                   | 860          | 15,552                        | 369          | 14,515                        | 298          |
|                                       | 16                           | 0.02  | 18,432                                      | 636          | 16,589                                     | 501          | 15,667                                       | 439          | 22,118                   | 763          | 13,824                        | 328          | 12,902                        | 265          |
| 1.4                                   | 6                            | 0.1   | 20,160                                      | 857          | 18,144                                     | 771          | 17,136                                       | 541          | 24,192                   | 1,029        | 15,120                        | 404          | 14,112                        | 325          |
|                                       | 12                           | 0.035 | 18,144                                      | 705          | 16,330                                     | 635          | 15,422                                       | 486          | 21,773                   | 846          | 13,608                        | 364          | 12,701                        | 293          |
| 1.5                                   | 4                            | 0.11  | 20,160                                      | 952          | 18,144                                     | 858          | 17,136                                       | 601          | 24,192                   | 1,143        | 15,120                        | 449          | 14,112                        | 362          |
|                                       | 6                            | 0.11  | 20,160                                      | 857          | 18,144                                     | 779          | 17,136                                       | 601          | 24,192                   | 1,029        | 15,120                        | 449          | 14,112                        | 362          |
|                                       | 8                            | 0.06  | 18,144                                      | 784          | 16,330                                     | 706          | 15,422                                       | 541          | 21,773                   | 941          | 13,608                        | 404          | 12,701                        | 326          |
|                                       | 10                           | 0.06  | 18,144                                      | 705          | 16,330                                     | 635          | 15,422                                       | 541          | 21,773                   | 941          | 13,608                        | 404          | 12,701                        | 326          |
|                                       | 12                           | 0.06  | 18,144                                      | 705          | 16,330                                     | 635          | 15,422                                       | 541          | 21,773                   | 846          | 13,608                        | 364          | 12,701                        | 293          |
|                                       | 14                           | 0.038 | 18,144                                      | 705          | 16,330                                     | 635          | 15,422                                       | 541          | 21,773                   | 846          | 13,608                        | 364          | 12,701                        | 293          |
|                                       | 16                           | 0.038 | 16,128                                      | 548          | 14,515                                     | 494          | 13,709                                       | 316          | 19,354                   | 658          | 12,096                        | 279          | 11,290                        | 219          |
|                                       | 18                           | 0.038 | 16,128                                      | 548          | 14,515                                     | 494          | 13,709                                       | 316          | 19,354                   | 658          | 12,096                        | 279          | 11,290                        | 219          |
|                                       | 20                           | 0.038 | 16,128                                      | 548          | 14,515                                     | 439          | 13,709                                       | 281          | 19,354                   | 658          | 12,096                        | 248          | 11,290                        | 194          |
|                                       | 25                           | 0.023 | 12,096                                      | 352          | 10,886                                     | 282          | 10,282                                       | 200          | 14,515                   | 423          | 9,072                         | 157          | 8,467                         | 119          |
|                                       | 30                           | 0.015 | 10,080                                      | 239          | 10,886                                     | 191          | 8,568  | 134          | 12,096                   | 287          | 7,560                         | 100          | 7,056                         | 80           |
|                                       | 35                           | 0.01  | 10,080                                      | 212          | 10,886                                     | 167          | 8,568  | 134          | 12,096                   | 256          | 7,560                         | 100          | 7,056                         | 80           |
|                                       | 40                           | 0.005 | 8,064                                       | 113          | 7,258                                      | 102          | 6,854  | 68           | 9,677                    | 137          | 6,048                         | 53           | 5,645                         | 43           |
| 1.6                                   | 6                            | 0.11  | 18,720                                      | 879          | 16,848                                     | 796          | 15,912                                       | 621          | 22,464                   | 1,061        | 14,040                        | 464          | 13,104                        | 374          |
|                                       | 8                            | 0.11  | 18,720                                      | 879          | 16,848                                     | 796          | 15,912                                       | 559          | 22,464                   | 1,061        | 14,040                        | 464          | 13,104                        | 374          |
| 1.8                                   | 6                            | 0.13  | 18,720                                      | 897          | 16,848                                     | 796          | 15,912                                       | 621          | 22,464                   | 1,061        | 14,040                        | 464          | 13,104                        | 374          |
|                                       | 8                            | 0.13  | 18,720                                      | 897          | 16,848                                     | 796          | 15,912                                       | 559          | 22,464                   | 1,061        | 14,040                        | 464          | 13,104                        | 374          |
| 2                                     | 4                            | 0.2   | 15,120                                      | 857          | 13,608                                     | 775          | 12,852                                       | 590          | 18,144                   | 1,143        | 11,340                        | 449          | 10,584                        | 362          |

【Note】 Please refer to P528

## Recommended Cutting Data (High Precision)

SPM200-SN2/SHM200-SN2

2 Flute, Standard Length

Micro Diameter Endmills for Deep Machining

» Continuation

| Workpiece Material                    |                              |       | P   |              |  |              |  |              | N                        |              | H                             |              |                               |              |
|---------------------------------------|------------------------------|-------|---|--------------|--|--------------|--|--------------|--------------------------|--------------|-------------------------------|--------------|-------------------------------|--------------|
|                                       |                              |       | Carbon Steel,<br>Alloy Steel<br>(180~250HB) |              | Alloy Steels,<br>Tool Steels<br>(25~35HRC) |              | PH,Ferrite,Martensite<br>Steel<br>(35~45HRC) |              | Copper,<br>Copper Alloys |              | Hardened Steels<br>(45~55HRC) |              | Hardened Steels<br>(55~65HRC) |              |
| Ratio to standard depth of<br>cut(ap) |                              |       | 1.00  |              | 0.90                                       |              | 0.70   |              | 1.20                     |              | 0.50                          |              | 0.45                          |              |
| Mill<br>Dia.<br>(mm)                  | Under Neck<br>Length<br>(mm) | ap    | n<br>r/min                                  | Vf<br>mm/min | n<br>r/min                                 | Vf<br>mm/min | n<br>r/min                                   | Vf<br>mm/min | n<br>r/min               | Vf<br>mm/min | n<br>r/min                    | Vf<br>mm/min | n<br>r/min                    | Vf<br>mm/min |
| 2                                     | 6                            | 0.2   | 15,120                                      | 857          | 13,608                                     | 775          | 12,852                                       | 590          | 18,144                   | 1,143        | 11,340                        | 449          | 10,584                        | 362          |
|                                       | 8                            | 0.14  | 15,120                                      | 857          | 13,608                                     | 775          | 12,852                                       | 590          | 18,144                   | 1,143        | 11,340                        | 449          | 10,584                        | 362          |
|                                       | 10                           | 0.14  | 15,120                                      | 857          | 13,608                                     | 775          | 12,852                                       | 590          | 18,144                   | 1,143        | 11,340                        | 449          | 10,584                        | 362          |
|                                       | 12                           | 0.08  | 13,608                                      | 784          | 12,247                                     | 706          | 11,567                                       | 531          | 16,330                   | 941          | 10,206                        | 404          | 9,526                         | 326          |
|                                       | 14                           | 0.08  | 13,608                                      | 784          | 12,247                                     | 706          | 11,567                                       | 531          | 16,330                   | 941          | 10,206                        | 404          | 9,526                         | 293          |
|                                       | 16                           | 0.08  | 13,608                                      | 705          | 12,247                                     | 636          | 11,567                                       | 486          | 16,330                   | 846          | 10,206                        | 383          | 9,526                         | 293          |
|                                       | 18                           | 0.05  | 13,608                                      | 705          | 12,247                                     | 636          | 11,567                                       | 486          | 16,330                   | 846          | 10,206                        | 364          | 9,526                         | 260          |
|                                       | 20                           | 0.05  | 13,608                                      | 626          | 12,247                                     | 564          | 11,567                                       | 432          | 16,330                   | 799          | 10,206                        | 323          | 9,526                         | 260          |
|                                       | 25                           | 0.05  | 12,096                                      | 548          | 10,886                                     | 494          | 10,282                                       | 281          | 14,515                   | 658          | 9,072                         | 279          | 8,467                         | 209          |
|                                       | 30                           | 0.03  | 12,096                                      | 487          | 10,886                                     | 439          | 10,282                                       | 246          | 14,515                   | 585          | 9,072                         | 248          | 8,467                         | 194          |
|                                       | 35                           | 0.02  | 10,584                                      | 349          | 9,526                                      | 314          | 8,996  | 203          | 12,701                   | 419          | 7,938                         | 164          | 7,409                         | 133          |
|                                       | 40                           | 0.01  | 10,584                                      | 306          | 9,527                                      | 275          | 8,996  | 177          | 12,701                   | 367          | 7,938                         | 143          | 7,409                         | 116          |
| 50                                    | 0.005                        | 9,072 | 212   | 8,165        | 167  | 7,711        | 108  | 10,886       | 256                      | 6,804        | 87                            | 6,350        | 70                            |              |
| 2.5                                   | 8                            | 0.18  | 12,960                                      | 1,021        | 11,664                                     | 919          | 11,016                                       | 644          | 15,552                   | 1,225        | 9,720                         | 482          | 9,072                         | 388          |
|                                       | 12                           | 0.18  | 12,960                                      | 918          | 11,664                                     | 840          | 11,016                                       | 580          | 15,552                   | 1,021        | 9,720                         | 468          | 9,072                         | 348          |
|                                       | 16                           | 0.1   | 11,664                                      | 755          | 10,498                                     | 682          | 9,914  | 521          | 13,997                   | 907          | 8,748                         | 405          | 8,165                         | 314          |
|                                       | 20                           | 0.1   | 11,664                                      | 715          | 10,498                                     | 640          | 9,914  | 464          | 13,997                   | 756          | 8,748                         | 405          | 8,165                         | 279          |
|                                       | 30                           | 0.06  | 10,368                                      | 522          | 9,331                                      | 411          | 8,813  | 313          | 12,442                   | 626          | 7,776                         | 245          | 7,258                         | 198          |
|                                       | 40                           | 0.03  | 9,072                                       | 328          | 8,165                                      | 295          | 7,711  | 225          | 10,886                   | 393          | 6,804                         | 176          | 6,350                         | 142          |
| 3                                     | 50                           | 0.01  | 9,072                                       | 304          | 8,165                                      | 274          | 7,711  | 183          | 10,886                   | 338          | 6,804                         | 154          | 6,350                         | 124          |
|                                       | 8                            | 0.3   | 11,520                                      | 907          | 10,368                                     | 816          | 9,792  | 572          | 13,824                   | 1,089        | 8,640                         | 428          | 8,064                         | 345          |
|                                       | 12                           | 0.21  | 11,520                                      | 907          | 10,368                                     | 816          | 9,792  | 572          | 13,824                   | 1,089        | 8,640                         | 428          | 8,064                         | 345          |
|                                       | 16                           | 0.12  | 10,368                                      | 746          | 9,331                                      | 671          | 8,813  | 516          | 12,442                   | 896          | 7,776                         | 385          | 7,258                         | 310          |
|                                       | 20                           | 0.12  | 10,368                                      | 708          | 9,331                                      | 635          | 8,813  | 516          | 12,442                   | 806          | 7,776                         | 385          | 7,258                         | 310          |
|                                       | 25                           | 0.08  | 10,368                                      | 708          | 9,331                                      | 635          | 8,813  | 516          | 12,442                   | 806          | 7,776                         | 385          | 7,258                         | 310          |
|                                       | 30                           | 0.08  | 10,368                                      | 597          | 9,331                                      | 541          | 8,813  | 516          | 12,442                   | 716          | 7,776                         | 385          | 7,258                         | 279          |
| 4                                     | 40                           | 0.05  | 9,216                                       | 464          | 8,294                                      | 418          | 7,834  | 320          | 11,059                   | 556          | 6,912                         | 274          | 6,451                         | 221          |
|                                       | 50                           | 0.02  | 8,064                                       | 312          | 7,258                                      | 262          | 6,854  | 175          | 9,677                    | 350          | 6,048                         | 137          | 5,645                         | 111          |
|                                       | 12                           | 0.4   | 8,460                                       | 1,523        | 7,614                                      | 1,233        | 7,191  | 1,100        | 10,350                   | 1,863        | 6,345                         | 730          | 5,922                         | 589          |
|                                       | 16                           | 0.28  | 8,460                                       | 1,523        | 7,614                                      | 1,233        | 7,191  | 1,100        | 10,350                   | 1,863        | 6,345                         | 730          | 5,922                         | 589          |
| 4                                     | 20                           | 0.28  | 7,614                                       | 1,370        | 6,853                                      | 1,110        | 6,472  | 989          | 9,315                    | 1,677        | 5,711                         | 657          | 5,330                         | 529          |
|                                       | 25                           | 0.16  | 7,614                                       | 1,233        | 6,853                                      | 998          | 6,472  | 891          | 9,315                    | 1,508        | 5,711                         | 657          | 5,330                         | 529          |

【Note】 Please refer to P528

## Recommended Cutting Data (High Precision)

SPM200-SN2/SHM200-SN2

2 Flute, Standard Length

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                    |                              |      | P   |              |  |              |  |              | N                        |              | H                             |              |                               |              |
|---------------------------------------|------------------------------|------|---|--------------|--|--------------|--|--------------|--------------------------|--------------|-------------------------------|--------------|-------------------------------|--------------|
|                                       |                              |      | Carbon Steel,<br>Alloy Steel<br>(180~250HB) |              | Alloy Steels,<br>Tool Steels<br>(25~35HRC) |              | PH,Ferrite,Martensite<br>Steel<br>(35~45HRC) |              | Copper,<br>Copper Alloys |              | Hardened Steels<br>(45~55HRC) |              | Hardened Steels<br>(55~65HRC) |              |
| Ratio to standard depth of<br>cut(ap) |                              |      | 1.00  |              | 0.90                                       |              | 0.70   |              | 1.20                     |              | 0.50                          |              | 0.45                          |              |
| Mill<br>Dia.<br>(mm)                  | Under Neck<br>Length<br>(mm) | ap   | n<br>r/min                                  | Vf<br>mm/min | n<br>r/min                                 | Vf<br>mm/min | n<br>r/min                                   | Vf<br>mm/min | n<br>r/min               | Vf<br>mm/min | n<br>r/min                    | Vf<br>mm/min | n<br>r/min                    | Vf<br>mm/min |
| 4                                     | 30                           | 0.16 | 7,614                                       | 1,233        | 6,853                                      | 998          | 6,472  | 792          | 9,315                    | 1,508        | 5,711                         | 584          | 5,330                         | 529          |
|                                       | 35                           | 0.1  | 6,853                                       | 986          | 6,168                                      | 799          | 5,825  | 713          | 8,223                    | 1,184        | 5,140                         | 526          | 4,797                         | 424          |
|                                       | 40                           | 0.1  | 6,853                                       | 863          | 6,168                                      | 699          | 5,825  | 624          | 8,223                    | 1,036        | 5,140                         | 460          | 4,797                         | 371          |
|                                       | 50                           | 0.06 | 5,922                                       | 592          | 6,395                                      | 533          | 5,034  | 414          | 7,106                    | 710          | 4,442                         | 278          | 4,145                         | 224          |
| 5                                     | 20                           | 0.3  | 6,761                                       | 1,216        | 6,085                                      | 1,094        | 5,747  | 851          | 8,113                    | 1,459        | 5,071                         | 572          | 4,732                         | 462          |
|                                       | 25                           | 0.3  | 6,084                                       | 1,094        | 5,476                                      | 985          | 5,171  | 765          | 7,301                    | 1,312        | 4,563                         | 514          | 4,259                         | 415          |
|                                       | 30                           | 0.2  | 6,084                                       | 985          | 5,476                                      | 886          | 5,171  | 689          | 7,301                    | 1,182        | 4,563                         | 463          | 4,259                         | 374          |
|                                       | 40                           | 0.15 | 5,476                                       | 788          | 4,928                                      | 709          | 4,654  | 552          | 6,571                    | 947          | 4,107                         | 371          | 3,833                         | 299          |
|                                       | 50                           | 0.1  | 5,476                                       | 788          | 4,928                                      | 621          | 4,654  | 518          | 6,571                    | 887          | 4,107                         | 324          | 3,833                         | 262          |
| 6                                     | 20                           | 0.5  | 5,564                                       | 1,111        | 5,008                                      | 1,000        | 4,730  | 778          | 6,676                    | 1,333        | 4,173                         | 522          | 3,894                         | 422          |
|                                       | 30                           | 0.4  | 5,058                                       | 1,010        | 4,552                                      | 909          | 4,299  | 707          | 6,070                    | 1,211        | 3,794                         | 474          | 3,541                         | 383          |
|                                       | 40                           | 0.3  | 5,058                                       | 908          | 4,552                                      | 817          | 4,299  | 635          | 6,070                    | 1,090        | 3,794                         | 427          | 3,541                         | 345          |
|                                       | 50                           | 0.2  | 4,500                                       | 735          | 4,050                                      | 662          | 3,825  | 572          | 5,400                    | 883          | 3,375                         | 384          | 3,150                         | 311          |

## 【Note】

1. For different materials, adjust the cutting depth (ap) according to the cutting depth factors in the above table. E.g. for hardened steels (45~55HRC),  $ap \times 0.5$ .
2. Use the appropriate coolant such as air cooling or emulsion for the work material and machining shape.
3. In actual machining, the condition should be adjusted according to the machining shape, purpose and the machine type.
4. If the rpm of the machine is lower than the data in the above table, the feed rate should also be lowered in the same ratio.

# Recommended Cutting Data (General type)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |        | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|--------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |        | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |        | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap     | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 0.2                                 | 0.02   | 0.5                    | 0.016  | 45,000                                | 830       | 40,500                               | 746       | 38,250                                   | 635       | 45,000                | 830       | 33,750                     | 498       | 31,500                     | 407       |
|                                     |        | 1                      | 0.011  | 45,000                                | 830       | 40,500                               | 746       | 38,250                                   | 635       | 45,000                | 830       | 33,750                     | 498       | 31,500                     | 407       |
|                                     |        | 2                      | 0.007  | 37,800                                | 697       | 36,450                               | 671       | 34,425                                   | 572       | 45,000                | 728       | 30,375                     | 448       | 28,350                     | 365       |
|                                     | 0.05   | 0.5                    | 0.02   | 45,000                                | 830       | 40,500                               | 746       | 38,250                                   | 635       | 45,000                | 830       | 33,750                     | 498       | 31,500                     | 407       |
|                                     |        | 1                      | 0.014  | 45,000                                | 830       | 40,500                               | 746       | 38,250                                   | 635       | 45,000                | 830       | 33,750                     | 498       | 31,500                     | 407       |
|                                     |        | 1.5                    | 0.008  | 42,300                                | 779       | 38,475                               | 709       | 36,338                                   | 603       | 45,000                | 728       | 32,063                     | 473       | 29,925                     | 386       |
|                                     | 2      | 0.008                  | 37,800 | 697                                   | 36,450    | 671                                  | 34,425    | 572                                      | 45,000    | 728                   | 30,375    | 448                        | 28,350    | 365                        |           |
| 0.3                                 | 0.02   | 1                      | 0.016  | 43,200                                | 1,045     | 38,880                               | 941       | 36,720                                   | 660       | 45,000                | 1,087     | 32,400                     | 492       | 30,240                     | 397       |
|                                     |        | 2                      | 0.011  | 34,992                                | 774       | 31,493                               | 697       | 29,743                                   | 535       | 40,500                | 898       | 26,244                     | 399       | 24,494                     | 321       |
|                                     |        | 3                      | 0.007  | 33,242                                | 684       | 29,918                               | 616       | 28,256                                   | 473       | 38,475                | 793       | 24,932                     | 353       | 23,270                     | 284       |
|                                     | 0.05   | 1                      | 0.021  | 43,200                                | 1,045     | 38,880                               | 941       | 36,720                                   | 660       | 45,000                | 1,087     | 32,400                     | 492       | 30,240                     | 397       |
|                                     |        | 1.5                    | 0.016  | 41,040                                | 993       | 36,936                               | 894       | 34,884                                   | 627       | 42,750                | 1,032     | 30,780                     | 468       | 28,728                     | 377       |
|                                     |        | 2                      | 0.012  | 34,992                                | 774       | 31,493                               | 697       | 29,743                                   | 535       | 40,500                | 898       | 26,244                     | 399       | 24,494                     | 321       |
|                                     | 2.5    | 0.01                   | 34,992 | 774                                   | 31,493    | 697                                  | 29,743    | 535                                      | 40,500    | 898                   | 26,244    | 399                        | 24,494    | 321                        |           |
|                                     | 3      | 0.008                  | 33,242 | 684                                   | 29,918    | 616                                  | 28,256    | 473                                      | 38,475    | 793                   | 24,932    | 353                        | 23,270    | 284                        |           |
| 0.4                                 | 0.02   | 1                      | 0.016  | 34,470                                | 929       | 31,104                               | 836       | 29,030                                   | 714       | 41,472                | 1,115     | 25,920                     | 558       | 24,053                     | 457       |
|                                     |        | 2                      | 0.013  | 34,470                                | 836       | 31,104                               | 752       | 29,030                                   | 643       | 41,472                | 1,004     | 25,920                     | 501       | 24,053                     | 411       |
|                                     |        | 3                      | 0.01   | 26,393                                | 584       | 23,793                               | 527       | 22,208                                   | 449       | 31,725                | 702       | 19,828                     | 351       | 18,401                     | 288       |
|                                     |        | 4                      | 0.007  | 21,735                                | 482       | 19,595                               | 433       | 18,288                                   | 370       | 26,126                | 578       | 16,329                     | 289       | 15,153                     | 237       |
|                                     | 0.05   | 1                      | 0.025  | 34,470                                | 929       | 31,104                               | 836       | 29,030                                   | 714       | 41,472                | 1,115     | 25,920                     | 558       | 24,053                     | 457       |
|                                     |        | 1.5                    | 0.02   | 34,470                                | 929       | 31,104                               | 836       | 29,030                                   | 714       | 41,472                | 1,115     | 25,920                     | 558       | 24,053                     | 457       |
|                                     |        | 2                      | 0.016  | 34,470                                | 836       | 31,104                               | 752       | 29,030                                   | 643       | 41,472                | 1,004     | 25,920                     | 501       | 24,053                     | 411       |
|                                     |        | 2.5                    | 0.015  | 32,400                                | 797       | 29,160                               | 716       | 27,540                                   | 609       | 38,880                | 956       | 24,300                     | 478       | 22,680                     | 391       |
|                                     | 0.1    | 3                      | 0.014  | 26,393                                | 584       | 23,793                               | 527       | 22,208                                   | 449       | 31,725                | 702       | 19,828                     | 351       | 18,401                     | 288       |
|                                     |        | 3.5                    | 0.012  | 24,786                                | 548       | 22,307                               | 493       | 21,068                                   | 420       | 29,743                | 658       | 18,590                     | 329       | 17,350                     | 269       |
|                                     |        | 4                      | 0.008  | 21,735                                | 482       | 19,595                               | 433       | 18,288                                   | 370       | 26,126                | 578       | 16,329                     | 289       | 15,153                     | 237       |
|                                     |        | 1                      | 0.033  | 34,470                                | 929       | 31,104                               | 836       | 29,030                                   | 714       | 41,472                | 1,115     | 25,920                     | 558       | 24,053                     | 457       |
| 0.5                                 | 0.02   | 1                      | 0.016  | 34,470                                | 929       | 31,104                               | 836       | 29,030                                   | 714       | 41,472                | 1,115     | 25,920                     | 558       | 24,053                     | 457       |
|                                     |        | 2                      | 0.013  | 34,470                                | 836       | 31,104                               | 752       | 29,030                                   | 643       | 41,472                | 1,004     | 25,920                     | 501       | 24,053                     | 411       |

【Note】 Please refer to P539



## Recommended Cutting Data (General type)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

Micro Diameter Endmills for Deep Machining

» Continuation

| Workpiece Material                  |        |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |     |
|-------------------------------------|--------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|-----|
|                                     |        |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |     |
| Ratio to standard depth of cut (ap) |        |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |     |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |     |
| 0.5                                 | 0.02   | 3                      | 0.01  | 27,994                                | 755       | 25,195                               | 675       | 23,794                                   | 571       | 33,593                | 900       | 20,995                     | 426       | 19,596                     | 343       |     |
|                                     |        | 4                      | 0.008 | 24,883                                | 671       | 22,395                               | 599       | 21,151                                   | 507       | 29,860                | 800       | 18,662                     | 378       | 17,419                     | 305       |     |
|                                     |        | 6                      | 0.006 | 19,354                                | 500       | 17,419                               | 449       | 16,450                                   | 288       | 23,225                | 599       | 14,515                     | 254       | 13,548                     | 200       |     |
|                                     | 0.05   | 1                      | 0.03  | 34,470                                | 929       | 31,104                               | 836       | 29,030                                   | 714       | 41,472                | 1,115     | 25,920                     | 558       | 24,053                     | 457       |     |
|                                     |        | 2                      | 0.023 | 34,470                                | 929       | 31,104                               | 836       | 29,030                                   | 714       | 41,472                | 1,115     | 25,920                     | 558       | 24,053                     | 457       |     |
|                                     |        | 3                      | 0.017 | 27,994                                | 755       | 25,195                               | 675       | 23,794                                   | 571       | 33,593                | 900       | 20,995                     | 426       | 19,596                     | 343       |     |
|                                     |        | 4                      | 0.017 | 24,883                                | 671       | 22,395                               | 599       | 21,151                                   | 507       | 29,860                | 800       | 18,662                     | 378       | 17,419                     | 305       |     |
|                                     |        | 5                      | 0.011 | 21,773                                | 588       | 19,596                               | 525       | 18,507                                   | 444       | 26,127                | 700       | 16,330                     | 331       | 15,241                     | 267       |     |
|                                     |        | 6                      | 0.008 | 19,354                                | 500       | 17,419                               | 449       | 16,450                                   | 288       | 23,225                | 599       | 14,515                     | 254       | 13,548                     | 200       |     |
|                                     | 0.1    | 1                      | 0.035 | 34,470                                | 929       | 31,104                               | 836       | 29,030                                   | 714       | 41,472                | 1,115     | 25,920                     | 558       | 24,053                     | 457       |     |
|                                     |        | 2                      | 0.03  | 34,470                                | 929       | 31,104                               | 836       | 29,030                                   | 714       | 41,472                | 1,115     | 25,920                     | 558       | 24,053                     | 457       |     |
|                                     |        | 3                      | 0.02  | 27,994                                | 755       | 25,195                               | 675       | 23,794                                   | 571       | 33,593                | 900       | 20,995                     | 426       | 19,596                     | 343       |     |
|                                     |        | 4                      | 0.02  | 24,883                                | 671       | 22,395                               | 599       | 21,151                                   | 507       | 29,860                | 800       | 18,662                     | 378       | 17,419                     | 305       |     |
|                                     |        | 5                      | 0.013 | 21,773                                | 588       | 19,596                               | 525       | 18,507                                   | 444       | 26,127                | 700       | 16,330                     | 331       | 15,241                     | 267       |     |
|                                     |        | 6                      | 0.013 | 19,354                                | 500       | 17,419                               | 449       | 16,450                                   | 288       | 23,225                | 599       | 14,515                     | 254       | 13,548                     | 200       |     |
|                                     | 0.6    | 0.02                   | 2     | 0.016                                 | 34,470    | 1,310                                | 31,104    | 1,182                                    | 29,030    | 892                   | 41,472    | 1,576                      | 25,920    | 697                        | 24,053    | 572 |
|                                     |        |                        | 4     | 0.013                                 | 27,994    | 1,032                                | 25,195    | 929                                      | 23,794    | 713                   | 33,593    | 1,238                      | 20,995    | 532                        | 19,596    | 429 |
|                                     |        |                        | 6     | 0.01                                  | 21,773    | 803                                  | 19,596    | 723                                      | 18,507    | 554                   | 26,127    | 963                        | 16,330    | 414                        | 15,241    | 334 |
| 0.05                                |        | 2                      | 0.028 | 34,470                                | 1,310     | 31,104                               | 1,182     | 29,030                                   | 892       | 41,472                | 1,576     | 25,920                     | 697       | 24,053                     | 572       |     |
|                                     |        | 4                      | 0.019 | 27,994                                | 1,032     | 25,195                               | 929       | 23,794                                   | 713       | 33,593                | 1,238     | 20,995                     | 532       | 19,596                     | 429       |     |
|                                     |        | 6                      | 0.012 | 21,773                                | 803       | 19,596                               | 723       | 18,507                                   | 554       | 26,127                | 963       | 16,330                     | 414       | 15,241                     | 334       |     |
|                                     |        | 8                      | 0.01  | 20,684                                | 762       | 18,616                               | 687       | 17,582                                   | 527       | 24,821                | 915       | 15,513                     | 393       | 14,479                     | 317       |     |
| 0.1                                 |        | 10                     | 0.007 | 18,507                                | 610       | 16,656                               | 549       | 15,731                                   | 440       | 22,208                | 733       | 13,880                     | 320       | 12,955                     | 258       |     |
|                                     |        | 2                      | 0.035 | 34,470                                | 1,310     | 31,104                               | 1,182     | 29,030                                   | 892       | 41,472                | 1,576     | 25,920                     | 697       | 24,053                     | 572       |     |
|                                     |        | 4                      | 0.024 | 27,994                                | 1,032     | 25,195                               | 929       | 23,794                                   | 713       | 33,593                | 1,238     | 20,995                     | 532       | 19,596                     | 429       |     |
|                                     |        | 6                      | 0.015 | 21,773                                | 803       | 19,596                               | 723       | 18,507                                   | 554       | 26,127                | 963       | 16,330                     | 414       | 15,241                     | 334       |     |
|                                     |        | 8                      | 0.013 | 20,684                                | 762       | 18,616                               | 687       | 17,582                                   | 527       | 24,821                | 915       | 15,513                     | 393       | 14,479                     | 317       |     |
| 0.7                                 | 0.05   | 10                     | 0.009 | 18,507                                | 610       | 16,656                               | 549       | 15,731                                   | 440       | 22,208                | 733       | 13,880                     | 320       | 12,955                     | 258       |     |
|                                     |        | 4                      | 0.024 | 27,994                                | 1,032     | 25,195                               | 929       | 23,794                                   | 713       | 33,593                | 1,238     | 20,995                     | 532       | 19,596                     | 429       |     |
|                                     | 0.1    | 6                      | 0.015 | 21,773                                | 803       | 19,596                               | 723       | 18,507                                   | 554       | 26,127                | 963       | 16,330                     | 414       | 15,241                     | 334       |     |
|                                     |        | 8                      | 0.013 | 20,684                                | 762       | 18,616                               | 687       | 17,582                                   | 527       | 24,821                | 915       | 15,513                     | 393       | 14,479                     | 317       |     |
|                                     |        | 10                     | 0.009 | 18,507                                | 610       | 16,656                               | 549       | 15,731                                   | 440       | 22,208                | 733       | 13,880                     | 320       | 12,955                     | 258       |     |
|                                     |        | 6                      | 0.018 | 21,773                                | 803       | 19,596                               | 723       | 18,507                                   | 554       | 26,127                | 963       | 16,330                     | 414       | 15,241                     | 334       |     |

【Note】 Please refer to P539

## Recommended Cutting Data (General type)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |        | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|--------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |        | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |        | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap     | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 0.8                                 | 0.02   | 4                      | 0.016  | 36,000                                | 1,328     | 32,400                               | 1,194     | 30,600                                   | 1,015     | 43,200                | 1,592     | 27,000                     | 797       | 25,200                     | 651       |
|                                     |        | 6                      | 0.013  | 27,540                                | 914       | 24,786                               | 823       | 23,409                                   | 777       | 33,048                | 1,096     | 20,655                     | 609       | 19,278                     | 498       |
|                                     | 0.05   | 4                      | 0.026  | 36,000                                | 1,328     | 32,400                               | 1,194     | 30,600                                   | 1,015     | 43,200                | 1,592     | 27,000                     | 797       | 25,200                     | 651       |
|                                     |        | 6                      | 0.015  | 27,540                                | 914       | 24,786                               | 823       | 23,409                                   | 777       | 33,048                | 1,096     | 20,655                     | 609       | 19,278                     | 498       |
|                                     |        | 8                      | 0.012  | 22,032                                | 680       | 19,829                               | 612       | 18,727                                   | 578       | 26,438                | 815       | 16,524                     | 454       | 15,422                     | 370       |
|                                     | 0.1    | 12                     | 0.01   | 19,829                                | 569       | 17,846                               | 512       | 16,854                                   | 483       | 23,794                | 683       | 14,872                     | 379       | 13,880                     | 310       |
|                                     |        | 4                      | 0.032  | 36,000                                | 1,328     | 32,400                               | 1,194     | 30,600                                   | 1,015     | 43,200                | 1,592     | 27,000                     | 797       | 25,200                     | 651       |
|                                     |        | 6                      | 0.019  | 27,540                                | 914       | 24,786                               | 823       | 23,409                                   | 777       | 33,048                | 1,096     | 20,655                     | 609       | 19,278                     | 498       |
|                                     |        | 8                      | 0.015  | 22,032                                | 680       | 19,829                               | 612       | 18,727                                   | 578       | 26,438                | 815       | 16,524                     | 454       | 15,422                     | 370       |
|                                     | 0.2    | 12                     | 0.012  | 19,829                                | 569       | 17,846                               | 512       | 16,854                                   | 483       | 23,794                | 683       | 14,872                     | 379       | 13,880                     | 310       |
|                                     |        | 4                      | 0.056  | 36,000                                | 1,328     | 32,400                               | 1,194     | 30,600                                   | 1,015     | 43,200                | 1,592     | 27,000                     | 797       | 25,200                     | 651       |
|                                     |        | 6                      | 0.032  | 27,540                                | 914       | 24,786                               | 823       | 23,409                                   | 777       | 33,048                | 1,096     | 20,655                     | 609       | 19,278                     | 498       |
| 8                                   |        | 0.018                  | 22,032 | 680                                   | 19,829    | 612                                  | 18,727    | 578                                      | 26,438    | 815                   | 16,524    | 454                        | 15,422    | 370                        |           |
| 1                                   | 0.02   | 12                     | 0.015  | 19,829                                | 569       | 17,846                               | 512       | 16,854                                   | 483       | 23,794                | 683       | 14,872                     | 379       | 13,880                     | 310       |
|                                     |        | 2                      | 0.016  | 35,541                                | 2,132     | 32,101                               | 1,926     | 30,095                                   | 1,625     | 42,993                | 2,579     | 26,655                     | 1,279     | 24,936                     | 1,047     |
|                                     |        | 4                      | 0.013  | 32,400                                | 1,941     | 29,160                               | 1,747     | 27,540                                   | 1,485     | 38,880                | 2,329     | 24,300                     | 1,165     | 22,680                     | 951       |
|                                     |        | 6                      | 0.01   | 26,244                                | 1,415     | 26,369                               | 1,581     | 22,307                                   | 1,202     | 31,493                | 1,698     | 19,683                     | 943       | 18,371                     | 770       |
|                                     |        | 8                      | 0.008  | 23,328                                | 1,257     | 23,620                               | 1,274     | 19,829                                   | 1,069     | 27,994                | 1,509     | 17,496                     | 839       | 16,330                     | 685       |
|                                     |        | 10                     | 0.006  | 20,412                                | 1,101     | 20,995                               | 1,132     | 17,350                                   | 935       | 24,494                | 1,320     | 15,309                     | 734       | 14,288                     | 599       |
|                                     | 0.05   | 12                     | 0.005  | 18,144                                | 869       | 18,371                               | 990       | 15,422                                   | 647       | 21,773                | 1,043     | 13,608                     | 571       | 12,701                     | 456       |
|                                     |        | 2                      | 0.046  | 35,541                                | 2,132     | 32,101                               | 1,926     | 30,095                                   | 1,625     | 42,993                | 2,579     | 26,655                     | 1,279     | 24,936                     | 1,047     |
|                                     |        | 3                      | 0.035  | 35,541                                | 2,132     | 32,101                               | 1,926     | 30,095                                   | 1,625     | 42,993                | 2,579     | 26,655                     | 1,279     | 24,936                     | 1,047     |
|                                     |        | 4                      | 0.027  | 32,400                                | 1,941     | 29,160                               | 1,747     | 27,540                                   | 1,485     | 38,880                | 2,329     | 24,300                     | 1,165     | 22,680                     | 951       |
|                                     |        | 5                      | 0.021  | 28,662                                | 1,719     | 26,369                               | 1,581     | 24,936                                   | 1,346     | 35,827                | 2,149     | 22,070                     | 1,059     | 20,636                     | 867       |
|                                     |        | 6                      | 0.017  | 26,244                                | 1,415     | 23,620                               | 1,274     | 22,307                                   | 1,202     | 31,493                | 1,698     | 19,683                     | 943       | 18,371                     | 770       |
|                                     |        | 8                      | 0.016  | 23,328                                | 1,257     | 20,995                               | 1,132     | 19,829                                   | 1,069     | 27,994                | 1,509     | 17,496                     | 839       | 16,330                     | 685       |
|                                     |        | 10                     | 0.011  | 20,412                                | 1,101     | 18,371                               | 990       | 17,350                                   | 935       | 24,494                | 1,320     | 15,309                     | 734       | 14,288                     | 599       |
|                                     |        | 12                     | 0.01   | 18,144                                | 869       | 16,330                               | 783       | 15,422                                   | 647       | 21,773                | 1,043     | 13,608                     | 571       | 12,701                     | 456       |
|                                     |        | 16                     | 0.006  | 18,144                                | 761       | 16,330                               | 685       | 15,422                                   | 600       | 21,773                | 913       | 13,608                     | 489       | 12,701                     | 381       |
|                                     | 20     | 0.004                  | 13,608 | 571                                   | 12,247    | 514                                  | 11,567    | 450                                      | 16,330    | 685                   | 10,206    | 367                        | 9,526     | 285                        |           |
|                                     | 0.1    | 2                      | 0.065  | 35,541                                | 2,132     | 32,101                               | 1,926     | 30,095                                   | 1,625     | 42,993                | 2,579     | 26,655                     | 1,279     | 24,936                     | 1,047     |
|                                     |        | 3                      | 0.05   | 35,541                                | 2,132     | 32,101                               | 1,926     | 30,095                                   | 1,625     | 42,993                | 2,579     | 26,655                     | 1,279     | 24,936                     | 1,047     |

【Note】 Please refer to P539

## Recommended Cutting Data (General type)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 1                                   | 0.1    | 4                      | 0.038 | 32,400                                | 1,941     | 29,160                               | 1,747     | 27,540                                   | 1,485     | 38,880                | 2,329     | 24,300                     | 1,165     | 22,680                     | 951       |
|                                     |        | 5                      | 0.03  | 28,662                                | 1,719     | 26,369                               | 1,581     | 24,936                                   | 1,346     | 35,827                | 2,149     | 22,070                     | 1,059     | 20,636                     | 867       |
|                                     |        | 6                      | 0.024 | 26,244                                | 1,415     | 23,620                               | 1,274     | 22,307                                   | 1,202     | 31,493                | 1,698     | 19,683                     | 943       | 18,371                     | 770       |
|                                     |        | 8                      | 0.024 | 23,328                                | 1,257     | 20,995                               | 1,132     | 19,829                                   | 1,069     | 27,994                | 1,509     | 17,496                     | 839       | 16,330                     | 685       |
|                                     |        | 10                     | 0.015 | 20,412                                | 1,101     | 18,371                               | 990       | 17,350                                   | 935       | 24,494                | 1,320     | 15,309                     | 734       | 14,288                     | 599       |
|                                     |        | 12                     | 0.015 | 18,144                                | 869       | 16,330                               | 783       | 15,422                                   | 647       | 21,773                | 1,043     | 13,608                     | 571       | 12,701                     | 456       |
|                                     |        | 16                     | 0.009 | 18,144                                | 761       | 16,330                               | 685       | 15,422                                   | 600       | 21,773                | 913       | 13,608                     | 489       | 12,701                     | 381       |
|                                     |        | 20                     | 0.006 | 13,608                                | 571       | 12,247                               | 514       | 11,567                                   | 450       | 16,330                | 685       | 10,206                     | 367       | 9,526                      | 285       |
|                                     | 0.2    | 2                      | 0.11  | 35,541                                | 2,132     | 32,101                               | 1,926     | 30,095                                   | 1,625     | 42,993                | 2,579     | 26,655                     | 1,279     | 24,936                     | 1,047     |
|                                     |        | 3                      | 0.09  | 35,541                                | 2,132     | 32,101                               | 1,926     | 30,095                                   | 1,625     | 42,993                | 2,579     | 26,655                     | 1,279     | 24,936                     | 1,047     |
|                                     |        | 4                      | 0.07  | 32,400                                | 1,941     | 29,160                               | 1,747     | 27,540                                   | 1,485     | 38,880                | 2,329     | 24,300                     | 1,165     | 22,680                     | 951       |
|                                     |        | 5                      | 0.05  | 28,662                                | 1,719     | 26,369                               | 1,581     | 24,936                                   | 1,346     | 35,827                | 2,149     | 22,070                     | 1,059     | 20,636                     | 867       |
|                                     |        | 6                      | 0.04  | 26,244                                | 1,415     | 23,620                               | 1,274     | 22,307                                   | 1,202     | 31,493                | 1,698     | 19,683                     | 943       | 18,371                     | 770       |
|                                     |        | 8                      | 0.04  | 23,328                                | 1,257     | 20,995                               | 1,132     | 19,829                                   | 1,069     | 27,994                | 1,509     | 17,496                     | 839       | 16,330                     | 685       |
|                                     |        | 10                     | 0.025 | 20,412                                | 1,101     | 18,371                               | 990       | 17,350                                   | 935       | 24,494                | 1,320     | 15,309                     | 734       | 14,288                     | 599       |
|                                     |        | 12                     | 0.025 | 18,144                                | 869       | 16,330                               | 783       | 15,422                                   | 647       | 21,773                | 1,043     | 13,608                     | 571       | 12,701                     | 456       |
|                                     | 0.3    | 16                     | 0.015 | 18,144                                | 761       | 16,330                               | 685       | 15,422                                   | 600       | 21,773                | 913       | 13,608                     | 489       | 12,701                     | 381       |
|                                     |        | 20                     | 0.01  | 13,608                                | 571       | 12,247                               | 514       | 11,567                                   | 450       | 16,330                | 685       | 10,206                     | 367       | 9,526                      | 285       |
|                                     |        | 2                      | 0.11  | 35,541                                | 2,132     | 32,101                               | 1,926     | 30,095                                   | 1,625     | 42,993                | 2,579     | 26,655                     | 1,279     | 24,936                     | 1,047     |
|                                     |        | 3                      | 0.09  | 35,541                                | 2,132     | 32,101                               | 1,926     | 30,095                                   | 1,625     | 42,993                | 2,579     | 26,655                     | 1,279     | 24,936                     | 1,047     |
|                                     |        | 4                      | 0.07  | 32,400                                | 1,941     | 29,160                               | 1,747     | 27,540                                   | 1,485     | 38,880                | 2,329     | 24,300                     | 1,165     | 22,680                     | 951       |
|                                     |        | 5                      | 0.05  | 28,662                                | 1,719     | 26,369                               | 1,581     | 24,936                                   | 1,346     | 35,827                | 2,149     | 22,070                     | 1,059     | 20,636                     | 867       |
|                                     |        | 6                      | 0.04  | 26,244                                | 1,415     | 23,620                               | 1,274     | 22,307                                   | 1,202     | 31,493                | 1,698     | 19,683                     | 943       | 18,371                     | 770       |
|                                     |        | 8                      | 0.04  | 23,328                                | 1,257     | 20,995                               | 1,132     | 19,829                                   | 1,069     | 27,994                | 1,509     | 17,496                     | 839       | 16,330                     | 685       |
|                                     | 0.1    | 10                     | 0.025 | 20,412                                | 1,101     | 18,371                               | 990       | 17,350                                   | 935       | 24,494                | 1,320     | 15,309                     | 734       | 14,288                     | 599       |
|                                     |        | 12                     | 0.025 | 18,144                                | 869       | 16,330                               | 783       | 15,422                                   | 647       | 21,773                | 1,043     | 13,608                     | 571       | 12,701                     | 456       |
|                                     |        | 16                     | 0.015 | 18,144                                | 761       | 16,330                               | 685       | 15,422                                   | 600       | 21,773                | 913       | 13,608                     | 489       | 12,701                     | 381       |
|                                     |        | 20                     | 0.01  | 13,608                                | 571       | 12,247                               | 514       | 11,567                                   | 450       | 16,330                | 685       | 10,206                     | 367       | 9,526                      | 285       |
| 1.25                                | 0.1    | 5                      | 0.03  | 28,662                                | 1,719     | 26,369                               | 1,581     | 24,936                                   | 1,346     | 35,827                | 2,149     | 22,070                     | 1,059     | 20,636                     | 867       |
|                                     |        | 10                     | 0.015 | 23,328                                | 1,257     | 18,371                               | 990       | 17,350                                   | 935       | 24,494                | 1,320     | 15,309                     | 734       | 14,288                     | 599       |
|                                     |        | 15                     | 0.01  | 18,144                                | 761       | 16,330                               | 685       | 15,422                                   | 600       | 21,773                | 913       | 13,608                     | 489       | 12,701                     | 381       |
|                                     |        | 20                     | 0.006 | 13,608                                | 571       | 12,247                               | 514       | 11,567                                   | 450       | 16,330                | 685       | 10,206                     | 367       | 9,526                      | 285       |

【Note】 Please refer to P539

## Recommended Cutting Data (General type)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |        | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|--------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |        | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |        | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap     | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 1.25                                | 0.2    | 5                      | 0.05   | 28,662                                | 1,719     | 26,369                               | 1,581     | 24,936                                   | 1,346     | 35,827                | 2,149     | 22,070                     | 1,059     | 20,636                     | 867       |
|                                     |        | 10                     | 0.025  | 23,328                                | 1,257     | 18,371                               | 990       | 17,350                                   | 935       | 24,494                | 1,320     | 15,309                     | 734       | 14,288                     | 599       |
|                                     |        | 15                     | 0.016  | 18,144                                | 761       | 16,330                               | 685       | 15,422                                   | 600       | 21,773                | 913       | 13,608                     | 489       | 12,701                     | 381       |
|                                     | 0.3    | 20                     | 0.01   | 13,608                                | 571       | 12,247                               | 514       | 11,567                                   | 450       | 16,330                | 685       | 10,206                     | 367       | 9,526                      | 285       |
|                                     |        | 5                      | 0.05   | 28,662                                | 1,719     | 26,369                               | 1,581     | 24,936                                   | 1,346     | 35,827                | 2,149     | 22,070                     | 1,059     | 20,636                     | 867       |
|                                     |        | 10                     | 0.025  | 23,328                                | 1,257     | 18,371                               | 990       | 17,350                                   | 935       | 24,494                | 1,320     | 15,309                     | 734       | 14,288                     | 599       |
|                                     |        | 15                     | 0.016  | 18,144                                | 761       | 16,330                               | 685       | 15,422                                   | 600       | 21,773                | 913       | 13,608                     | 489       | 12,701                     | 381       |
| 1.5                                 | 0.1    | 20                     | 0.01   | 13,608                                | 571       | 12,247                               | 514       | 11,567                                   | 450       | 16,330                | 685       | 10,206                     | 367       | 9,526                      | 285       |
|                                     |        | 4                      | 0.042  | 24,930                                | 1,614     | 22,453                               | 1,453     | 20,957                                   | 1,240     | 29,938                | 1,938     | 18,711                     | 968       | 17,364                     | 795       |
|                                     |        | 6                      | 0.04   | 23,885                                | 1,543     | 21,401                               | 1,382     | 20,255                                   | 1,199     | 28,662                | 1,851     | 17,961                     | 930       | 16,624                     | 761       |
|                                     |        | 8                      | 0.036  | 22,680                                | 1,467     | 20,412                               | 1,320     | 19,278                                   | 1,141     | 27,216                | 1,760     | 17,010                     | 881       | 15,876                     | 726       |
|                                     |        | 12                     | 0.036  | 18,144                                | 1,174     | 16,330                               | 1,057     | 15,422                                   | 913       | 21,773                | 1,409     | 13,608                     | 705       | 12,701                     | 581       |
|                                     |        | 15                     | 0.023  | 14,112                                | 812       | 12,701                               | 731       | 11,995                                   | 604       | 16,934                | 974       | 10,584                     | 533       | 9,878                      | 426       |
|                                     | 0.2    | 20                     | 0.018  | 14,112                                | 734       | 12,701                               | 660       | 11,995                                   | 552       | 16,934                | 880       | 10,584                     | 486       | 9,878                      | 385       |
|                                     |        | 4                      | 0.07   | 24,930                                | 1,614     | 22,453                               | 1,453     | 20,957                                   | 1,240     | 29,938                | 1,938     | 18,711                     | 968       | 17,364                     | 795       |
|                                     |        | 6                      | 0.065  | 23,885                                | 1,543     | 21,401                               | 1,382     | 20,255                                   | 1,199     | 28,662                | 1,851     | 17,961                     | 930       | 16,624                     | 761       |
|                                     |        | 8                      | 0.06   | 22,680                                | 1,467     | 20,412                               | 1,320     | 19,278                                   | 1,141     | 27,216                | 1,760     | 17,010                     | 881       | 15,876                     | 726       |
|                                     |        | 12                     | 0.06   | 18,144                                | 1,174     | 16,330                               | 1,057     | 15,422                                   | 913       | 21,773                | 1,409     | 13,608                     | 705       | 12,701                     | 581       |
|                                     |        | 15                     | 0.038  | 14,112                                | 812       | 12,701                               | 731       | 11,995                                   | 604       | 16,934                | 974       | 10,584                     | 533       | 9,878                      | 426       |
|                                     |        | 20                     | 0.03   | 14,112                                | 734       | 12,701                               | 660       | 11,995                                   | 552       | 16,934                | 880       | 10,584                     | 486       | 9,878                      | 385       |
|                                     |        | 0.3                    | 4      | 0.07                                  | 24,930    | 1,614                                | 22,453    | 1,453                                    | 20,957    | 1,240                 | 29,938    | 1,938                      | 18,711    | 968                        | 17,364    |
| 6                                   | 0.065  |                        | 23,885 | 1,543                                 | 21,401    | 1,382                                | 20,255    | 1,199                                    | 28,662    | 1,851                 | 17,961    | 930                        | 16,624    | 761                        |           |
| 8                                   | 0.06   |                        | 22,680 | 1,467                                 | 20,412    | 1,320                                | 19,278    | 1,141                                    | 27,216    | 1,760                 | 17,010    | 881                        | 15,876    | 726                        |           |
| 12                                  | 0.06   |                        | 18,144 | 1,174                                 | 16,330    | 1,057                                | 15,422    | 913                                      | 21,773    | 1,409                 | 13,608    | 705                        | 12,701    | 581                        |           |
| 15                                  | 0.038  |                        | 14,112 | 812                                   | 12,701    | 731                                  | 11,995    | 604                                      | 16,934    | 974                   | 10,584    | 533                        | 9,878     | 426                        |           |
| 20                                  | 0.03   |                        | 14,112 | 734                                   | 12,701    | 660                                  | 11,995    | 552                                      | 16,934    | 880                   | 10,584    | 486                        | 9,878     | 385                        |           |
| 0.5                                 | 4      | 0.085                  | 24,930 | 1,614                                 | 22,453    | 1,453                                | 20,957    | 1,240                                    | 29,938    | 1,938                 | 18,711    | 968                        | 17,364    | 795                        |           |
|                                     | 6      | 0.08                   | 23,885 | 1,543                                 | 21,401    | 1,382                                | 20,255    | 1,199                                    | 28,662    | 1,851                 | 17,961    | 930                        | 16,624    | 761                        |           |
|                                     | 8      | 0.07                   | 22,680 | 1,467                                 | 20,412    | 1,320                                | 19,278    | 1,141                                    | 27,216    | 1,760                 | 17,010    | 881                        | 15,876    | 726                        |           |
|                                     | 12     | 0.065                  | 18,144 | 1,174                                 | 16,330    | 1,057                                | 15,422    | 913                                      | 21,773    | 1,409                 | 13,608    | 705                        | 12,701    | 581                        |           |
|                                     | 15     | 0.045                  | 14,112 | 812                                   | 12,701    | 731                                  | 11,995    | 604                                      | 16,934    | 974                   | 10,584    | 533                        | 9,878     | 426                        |           |
|                                     | 20     | 0.035                  | 14,112 | 734                                   | 12,701    | 660                                  | 11,995    | 552                                      | 16,934    | 880                   | 10,584    | 486                        | 9,878     | 385                        |           |

【Note】 Please refer to P539

## Recommended Cutting Data (General type)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |        | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|--------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |        | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |        | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap     | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 1.75                                | 0.1    | 5                      | 0.04   | 23,885                                | 1,543     | 21,401                               | 1,382     | 20,255                                   | 1,199     | 28,662                | 1,851     | 17,961                     | 930       | 16,624                     | 761       |
|                                     |        | 10                     | 0.036  | 18,144                                | 1,174     | 16,330                               | 1,057     | 15,422                                   | 913       | 21,773                | 1,409     | 13,608                     | 705       | 12,701                     | 581       |
|                                     |        | 15                     | 0.023  | 14,112                                | 812       | 12,701                               | 731       | 11,995                                   | 604       | 16,934                | 974       | 10,584                     | 533       | 9,878                      | 426       |
|                                     |        | 20                     | 0.018  | 14,112                                | 734       | 12,701                               | 660       | 11,995                                   | 552       | 16,934                | 880       | 10,584                     | 486       | 9,878                      | 385       |
|                                     | 0.2    | 5                      | 0.065  | 23,885                                | 1,543     | 21,401                               | 1,382     | 20,255                                   | 1,199     | 28,662                | 1,851     | 17,961                     | 930       | 16,624                     | 761       |
|                                     |        | 10                     | 0.06   | 18,144                                | 1,174     | 16,330                               | 1,057     | 15,422                                   | 913       | 21,773                | 1,409     | 13,608                     | 705       | 12,701                     | 581       |
|                                     |        | 15                     | 0.038  | 14,112                                | 812       | 12,701                               | 731       | 11,995                                   | 604       | 16,934                | 974       | 10,584                     | 533       | 9,878                      | 426       |
|                                     |        | 20                     | 0.03   | 14,112                                | 734       | 12,701                               | 660       | 11,995                                   | 552       | 16,934                | 880       | 10,584                     | 486       | 9,878                      | 385       |
|                                     | 0.3    | 5                      | 0.065  | 23,885                                | 1,543     | 21,401                               | 1,382     | 20,255                                   | 1,199     | 28,662                | 1,851     | 17,961                     | 930       | 16,624                     | 761       |
|                                     |        | 10                     | 0.06   | 18,144                                | 1,174     | 16,330                               | 1,057     | 15,422                                   | 913       | 21,773                | 1,409     | 13,608                     | 705       | 12,701                     | 581       |
|                                     |        | 15                     | 0.038  | 14,112                                | 812       | 12,701                               | 731       | 11,995                                   | 604       | 16,934                | 974       | 10,584                     | 533       | 9,878                      | 426       |
|                                     |        | 20                     | 0.03   | 14,112                                | 734       | 12,701                               | 660       | 11,995                                   | 552       | 16,934                | 880       | 10,584                     | 486       | 9,878                      | 385       |
| 2                                   | 0.1    | 4                      | 0.08   | 21,783                                | 2,448     | 19,634                               | 2,207     | 18,487                                   | 2,077     | 25,796                | 2,899     | 16,337                     | 1,467     | 15,334                     | 1,205     |
|                                     |        | 6                      | 0.07   | 20,790                                | 2,336     | 18,711                               | 2,102     | 17,672                                   | 1,985     | 24,948                | 2,803     | 15,593                     | 1,401     | 14,553                     | 1,144     |
|                                     |        | 8                      | 0.055  | 18,900                                | 2,123     | 17,010                               | 1,911     | 16,065                                   | 1,805     | 22,680                | 2,547     | 14,175                     | 1,274     | 13,230                     | 1,040     |
|                                     |        | 12                     | 0.03   | 15,309                                | 1,548     | 13,778                               | 1,393     | 13,013                                   | 1,316     | 18,371                | 1,857     | 11,482                     | 1,031     | 10,716                     | 842       |
|                                     |        | 16                     | 0.03   | 13,608                                | 1,375     | 12,247                               | 1,238     | 11,567                                   | 1,169     | 16,330                | 1,651     | 10,206                     | 917       | 9,526                      | 749       |
|                                     |        | 20                     | 0.025  | 11,907                                | 1,203     | 10,716                               | 1,084     | 10,121                                   | 1,023     | 14,288                | 1,445     | 8,931                      | 721       | 8,335                      | 588       |
|                                     |        | 25                     | 0.015  | 11,907                                | 1,203     | 10,716                               | 1,084     | 10,121                                   | 1,023     | 14,288                | 1,445     | 8,931                      | 721       | 8,335                      | 588       |
|                                     |        | 30                     | 0.01   | 11,312                                | 1,144     | 10,181                               | 1,029     | 9,615                                    | 972       | 13,574                | 1,373     | 8,483                      | 685       | 7,918                      | 559       |
|                                     | 0.2    | 4                      | 0.1    | 21,783                                | 2,448     | 19,634                               | 2,207     | 18,487                                   | 2,077     | 25,796                | 2,899     | 16,337                     | 1,467     | 15,334                     | 1,205     |
|                                     |        | 6                      | 0.08   | 20,790                                | 2,336     | 18,711                               | 2,102     | 17,672                                   | 1,985     | 24,948                | 2,803     | 15,593                     | 1,401     | 14,553                     | 1,144     |
|                                     |        | 8                      | 0.07   | 18,900                                | 2,123     | 17,010                               | 1,911     | 16,065                                   | 1,805     | 22,680                | 2,547     | 14,175                     | 1,274     | 13,230                     | 1,040     |
|                                     |        | 12                     | 0.04   | 15,309                                | 1,548     | 13,778                               | 1,393     | 13,013                                   | 1,316     | 18,371                | 1,857     | 11,482                     | 1,031     | 10,716                     | 842       |
| 0.3                                 | 16     | 0.04                   | 13,608 | 1,375                                 | 12,247    | 1,238                                | 11,567    | 1,169                                    | 16,330    | 1,651                 | 10,206    | 917                        | 9,526     | 749                        |           |
|                                     | 20     | 0.035                  | 11,907 | 1,203                                 | 10,716    | 1,084                                | 10,121    | 1,023                                    | 14,288    | 1,445                 | 8,931     | 721                        | 8,335     | 588                        |           |
|                                     | 25     | 0.025                  | 11,907 | 1,203                                 | 10,716    | 1,084                                | 10,121    | 1,023                                    | 14,288    | 1,445                 | 8,931     | 721                        | 8,335     | 588                        |           |
|                                     | 30     | 0.017                  | 11,312 | 1,144                                 | 10,181    | 1,029                                | 9,615     | 972                                      | 13,574    | 1,373                 | 8,483     | 685                        | 7,918     | 559                        |           |
| 0.3                                 | 4      | 0.13                   | 21,783 | 2,448                                 | 19,634    | 2,207                                | 18,487    | 2,077                                    | 25,796    | 2,899                 | 16,337    | 1,467                      | 15,334    | 1,205                      |           |
|                                     | 6      | 0.11                   | 20,790 | 2,336                                 | 18,711    | 2,102                                | 17,672    | 1,985                                    | 24,948    | 2,803                 | 15,593    | 1,401                      | 14,553    | 1,144                      |           |
|                                     | 8      | 0.09                   | 18,900 | 2,123                                 | 17,010    | 1,911                                | 16,065    | 1,805                                    | 22,680    | 2,547                 | 14,175    | 1,274                      | 13,230    | 1,040                      |           |
|                                     | 12     | 0.06                   | 15,309 | 1,548                                 | 13,778    | 1,393                                | 13,013    | 1,316                                    | 18,371    | 1,857                 | 11,482    | 1,031                      | 10,716    | 842                        |           |

[Note] Please refer to P539

## Recommended Cutting Data (General type)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |        | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |     |
|-------------------------------------|--------|------------------------|--------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|-----|
|                                     |        |                        |        | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |     |
| Ratio to standard depth of cut (ap) |        |                        |        | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |     |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap     | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |     |
| 2                                   | 0.3    | 16                     | 0.06   | 13,608                                | 1,375     | 12,247                               | 1,238     | 11,567                                   | 1,169     | 16,330                | 1,651     | 10,206                     | 917       | 9,526                      | 749       |     |
|                                     |        | 20                     | 0.037  | 11,907                                | 1,203     | 10,716                               | 1,084     | 10,121                                   | 1,023     | 14,288                | 1,445     | 8,931                      | 721       | 8,335                      | 588       |     |
|                                     |        | 25                     | 0.03   | 11,907                                | 1,203     | 10,716                               | 1,084     | 10,121                                   | 1,023     | 14,288                | 1,445     | 8,931                      | 721       | 8,335                      | 588       |     |
|                                     |        | 30                     | 0.021  | 11,312                                | 1,144     | 10,181                               | 1,029     | 9,615                                    | 972       | 13,574                | 1,373     | 8,483                      | 685       | 7,918                      | 559       |     |
|                                     | 0.5    | 6                      | 0.17   | 20,790                                | 2,336     | 18,711                               | 2,102     | 17,672                                   | 1,985     | 24,948                | 2,803     | 15,593                     | 1,401     | 14,553                     | 1,144     |     |
|                                     |        | 8                      | 0.14   | 18,900                                | 2,123     | 17,010                               | 1,911     | 16,065                                   | 1,805     | 22,680                | 2,547     | 14,175                     | 1,274     | 13,230                     | 1,040     |     |
|                                     |        | 12                     | 0.08   | 15,309                                | 1,548     | 13,778                               | 1,393     | 13,013                                   | 1,316     | 18,371                | 1,857     | 11,482                     | 1,031     | 10,716                     | 842       |     |
|                                     |        | 16                     | 0.08   | 13,608                                | 1,375     | 12,247                               | 1,238     | 11,567                                   | 1,169     | 16,330                | 1,651     | 10,206                     | 917       | 9,526                      | 749       |     |
|                                     |        | 20                     | 0.05   | 11,907                                | 1,203     | 10,716                               | 1,084     | 10,121                                   | 1,023     | 14,288                | 1,445     | 8,931                      | 721       | 8,335                      | 588       |     |
|                                     |        | 25                     | 0.05   | 11,907                                | 1,203     | 10,716                               | 1,084     | 10,121                                   | 1,023     | 14,288                | 1,445     | 8,931                      | 721       | 8,335                      | 588       |     |
|                                     | 0.8    | 6                      | 0.22   | 20,790                                | 2,336     | 18,711                               | 2,102     | 17,672                                   | 1,985     | 24,948                | 2,803     | 15,593                     | 1,401     | 14,553                     | 1,144     |     |
|                                     |        | 8                      | 0.2    | 18,900                                | 2,123     | 17,010                               | 1,911     | 16,065                                   | 1,805     | 22,680                | 2,547     | 14,175                     | 1,274     | 13,230                     | 1,040     |     |
|                                     |        | 12                     | 0.13   | 15,309                                | 1,548     | 13,778                               | 1,393     | 13,013                                   | 1,316     | 18,371                | 1,857     | 11,482                     | 1,031     | 10,716                     | 842       |     |
|                                     |        | 16                     | 0.1    | 13,608                                | 1,375     | 12,247                               | 1,238     | 11,567                                   | 1,169     | 16,330                | 1,651     | 10,206                     | 917       | 9,526                      | 749       |     |
|                                     |        | 20                     | 0.06   | 11,907                                | 1,203     | 10,716                               | 1,084     | 10,121                                   | 1,023     | 14,288                | 1,445     | 8,931                      | 721       | 8,335                      | 588       |     |
|                                     |        | 25                     | 0.057  | 11,907                                | 1,203     | 10,716                               | 1,084     | 10,121                                   | 1,023     | 14,288                | 1,445     | 8,931                      | 721       | 8,335                      | 588       |     |
|                                     | 2.5    | 0.1                    | 30     | 0.045                                 | 11,312    | 1,144                                | 10,181    | 1,029                                    | 9,615     | 972                   | 13,574    | 1,373                      | 8,483     | 685                        | 7,918     | 559 |
|                                     |        |                        | 10     | 0.05                                  | 15,309    | 1,548                                | 13,778    | 1,393                                    | 13,013    | 1,316                 | 18,371    | 2,064                      | 11,482    | 1,031                      | 10,716    | 842 |
|                                     |        |                        | 20     | 0.03                                  | 11,907    | 1,203                                | 10,716    | 1,084                                    | 10,121    | 1,023                 | 14,288    | 1,605                      | 8,931     | 721                        | 8,335     | 588 |
|                                     |        | 0.2                    | 30     | 0.015                                 | 11,312    | 1,144                                | 10,181    | 1,029                                    | 9,615     | 972                   | 13,574    | 1,373                      | 8,483     | 685                        | 7,918     | 559 |
|                                     |        |                        | 10     | 0.07                                  | 15,309    | 1,548                                | 13,778    | 1,393                                    | 13,013    | 1,316                 | 18,371    | 2,064                      | 11,482    | 1,031                      | 10,716    | 842 |
|                                     |        |                        | 20     | 0.04                                  | 11,907    | 1,203                                | 10,716    | 1,084                                    | 10,121    | 1,023                 | 14,288    | 1,605                      | 8,931     | 721                        | 8,335     | 588 |
|                                     |        |                        | 30     | 0.025                                 | 11,312    | 1,144                                | 10,181    | 1,029                                    | 9,615     | 972                   | 13,574    | 1,373                      | 8,483     | 685                        | 7,918     | 559 |
|                                     |        |                        | 10     | 0.09                                  | 15,309    | 1,548                                | 13,778    | 1,393                                    | 13,013    | 1,316                 | 18,371    | 2,064                      | 11,482    | 1,031                      | 10,716    | 842 |
| 20                                  |        |                        | 0.06   | 11,907                                | 1,203     | 10,716                               | 1,084     | 10,121                                   | 1,023     | 14,288                | 1,605     | 8,931                      | 721       | 8,335                      | 588       |     |
| 0.3                                 |        | 30                     | 0.03   | 11,312                                | 1,144     | 10,181                               | 1,029     | 9,615                                    | 972       | 13,574                | 1,373     | 8,483                      | 685       | 7,918                      | 559       |     |
|                                     |        | 10                     | 0.12   | 15,309                                | 1,548     | 13,778                               | 1,393     | 13,013                                   | 1,316     | 18,371                | 2,064     | 11,482                     | 1,031     | 10,716                     | 842       |     |
|                                     |        | 20                     | 0.08   | 11,907                                | 1,203     | 10,716                               | 1,084     | 10,121                                   | 1,023     | 14,288                | 1,605     | 8,931                      | 721       | 8,335                      | 588       |     |
| 0.5                                 | 30     | 0.05                   | 11,312 | 1,144                                 | 10,181    | 1,029                                | 9,615     | 972                                      | 13,574    | 1,373                 | 8,483     | 685                        | 7,918     | 559                        |           |     |
|                                     | 10     | 0.12                   | 15,309 | 1,548                                 | 13,778    | 1,393                                | 13,013    | 1,316                                    | 18,371    | 2,064                 | 11,482    | 1,031                      | 10,716    | 842                        |           |     |
|                                     | 20     | 0.08                   | 11,907 | 1,203                                 | 10,716    | 1,084                                | 10,121    | 1,023                                    | 14,288    | 1,605                 | 8,931     | 721                        | 8,335     | 588                        |           |     |
| 3                                   | 0.1    | 6                      | 0.08   | 14,400                                | 2,021     | 12,960                               | 1,820     | 12,240                                   | 1,718     | 17,280                | 2,426     | 10,800                     | 1,213     | 10,080                     | 991       |     |
|                                     |        | 8                      | 0.07   | 14,400                                | 2,021     | 12,960                               | 1,820     | 12,240                                   | 1,718     | 17,280                | 2,426     | 10,800                     | 1,213     | 10,080                     | 991       |     |

【Note】 Please refer to P539

## Recommended Cutting Data (General type)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |        | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|--------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |        | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |        | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap     | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 3                                   | 0.1    | 12                     | 0.05   | 14,400                                | 2,021     | 12,960                               | 1,820     | 12,240                                   | 1,718     | 17,280                | 2,426     | 10,800                     | 1,213     | 10,080                     | 991       |
|                                     |        | 16                     | 0.035  | 14,400                                | 2,021     | 12,960                               | 1,820     | 12,240                                   | 1,718     | 17,280                | 2,426     | 10,800                     | 1,213     | 10,080                     | 991       |
|                                     |        | 18                     | 0.035  | 12,898                                | 1,811     | 11,464                               | 1,609     | 10,987                                   | 1,543     | 15,287                | 2,146     | 9,554                      | 1,074     | 9,076                      | 893       |
|                                     |        | 20                     | 0.035  | 11,664                                | 1,638     | 10,498                               | 1,474     | 9,914                                    | 1,392     | 13,997                | 1,966     | 8,748                      | 983       | 8,165                      | 803       |
|                                     |        | 30                     | 0.027  | 9,072                                 | 1,143     | 8,165                                | 1,029     | 7,711                                    | 971       | 10,886                | 1,372     | 6,804                      | 694       | 6,350                      | 559       |
|                                     |        | 35                     | 0.02   | 9,072                                 | 1,143     | 8,165                                | 1,029     | 7,711                                    | 971       | 10,886                | 1,372     | 6,804                      | 694       | 6,350                      | 559       |
|                                     | 0.2    | 6                      | 0.1    | 14,400                                | 2,021     | 12,960                               | 1,820     | 12,240                                   | 1,718     | 17,280                | 2,426     | 10,800                     | 1,213     | 10,080                     | 991       |
|                                     |        | 8                      | 0.09   | 14,400                                | 2,021     | 12,960                               | 1,820     | 12,240                                   | 1,718     | 17,280                | 2,426     | 10,800                     | 1,213     | 10,080                     | 991       |
|                                     |        | 12                     | 0.07   | 14,400                                | 2,021     | 12,960                               | 1,820     | 12,240                                   | 1,718     | 17,280                | 2,426     | 10,800                     | 1,213     | 10,080                     | 991       |
|                                     |        | 16                     | 0.05   | 14,400                                | 2,021     | 12,960                               | 1,820     | 12,240                                   | 1,718     | 17,280                | 2,426     | 10,800                     | 1,213     | 10,080                     | 991       |
|                                     |        | 18                     | 0.05   | 12,898                                | 1,811     | 11,464                               | 1,609     | 10,987                                   | 1,543     | 15,287                | 2,146     | 9,554                      | 1,074     | 9,076                      | 893       |
|                                     |        | 20                     | 0.05   | 11,664                                | 1,638     | 10,498                               | 1,474     | 9,914                                    | 1,392     | 13,997                | 1,966     | 8,748                      | 983       | 8,165                      | 803       |
|                                     | 0.3    | 6                      | 0.145  | 14,400                                | 2,021     | 12,960                               | 1,820     | 12,240                                   | 1,718     | 17,280                | 2,426     | 10,800                     | 1,213     | 10,080                     | 991       |
|                                     |        | 8                      | 0.13   | 14,400                                | 2,021     | 12,960                               | 1,820     | 12,240                                   | 1,718     | 17,280                | 2,426     | 10,800                     | 1,213     | 10,080                     | 991       |
|                                     |        | 12                     | 0.1    | 14,400                                | 2,021     | 12,960                               | 1,820     | 12,240                                   | 1,718     | 17,280                | 2,426     | 10,800                     | 1,213     | 10,080                     | 991       |
|                                     |        | 16                     | 0.075  | 14,400                                | 2,021     | 12,960                               | 1,820     | 12,240                                   | 1,718     | 17,280                | 2,426     | 10,800                     | 1,213     | 10,080                     | 991       |
|                                     |        | 18                     | 0.075  | 12,898                                | 1,811     | 11,464                               | 1,609     | 10,987                                   | 1,543     | 15,287                | 2,146     | 9,554                      | 1,074     | 9,076                      | 893       |
|                                     |        | 20                     | 0.075  | 11,664                                | 1,638     | 10,498                               | 1,474     | 9,914                                    | 1,392     | 13,997                | 1,966     | 8,748                      | 983       | 8,165                      | 803       |
|                                     | 0.5    | 30                     | 0.06   | 9,072                                 | 1,143     | 8,165                                | 1,029     | 7,711                                    | 971       | 10,886                | 1,372     | 6,804                      | 694       | 6,350                      | 559       |
|                                     |        | 35                     | 0.05   | 9,072                                 | 1,143     | 8,165                                | 1,029     | 7,711                                    | 971       | 10,886                | 1,372     | 6,804                      | 694       | 6,350                      | 559       |
|                                     |        | 8                      | 0.18   | 14,400                                | 2,021     | 12,960                               | 1,820     | 12,240                                   | 1,718     | 17,280                | 2,426     | 10,800                     | 1,213     | 10,080                     | 991       |
|                                     |        | 12                     | 0.13   | 14,400                                | 2,021     | 12,960                               | 1,820     | 12,240                                   | 1,718     | 17,280                | 2,426     | 10,800                     | 1,213     | 10,080                     | 991       |
|                                     |        | 16                     | 0.1    | 14,400                                | 2,021     | 12,960                               | 1,820     | 12,240                                   | 1,718     | 17,280                | 2,426     | 10,800                     | 1,213     | 10,080                     | 991       |
|                                     |        | 18                     | 0.1    | 12,898                                | 1,811     | 11,464                               | 1,609     | 12,240                                   | 1,718     | 15,287                | 2,146     | 9,554                      | 1,074     | 9,076                      | 893       |
| 1                                   | 20     | 0.1                    | 11,664 | 1,638                                 | 10,498    | 1,474                                | 9,914     | 1,392                                    | 13,997    | 1,966                 | 8,748     | 983                        | 8,165     | 803                        |           |
|                                     | 30     | 0.08                   | 9,072  | 1,143                                 | 8,165     | 1,029                                | 7,711     | 971                                      | 10,886    | 1,372                 | 6,804     | 694                        | 6,350     | 559                        |           |
|                                     | 35     | 0.065                  | 9,072  | 1,143                                 | 8,165     | 1,029                                | 7,711     | 971                                      | 10,886    | 1,372                 | 6,804     | 694                        | 6,350     | 559                        |           |
|                                     | 8      | 0.2                    | 14,400 | 2,021                                 | 12,960    | 1,820                                | 12,240    | 1,718                                    | 17,280    | 2,426                 | 10,800    | 1,213                      | 10,080    | 991                        |           |
|                                     | 12     | 0.15                   | 14,400 | 2,021                                 | 12,960    | 1,820                                | 12,240    | 1,718                                    | 17,280    | 2,426                 | 10,800    | 1,213                      | 10,080    | 991                        |           |
|                                     | 16     | 0.12                   | 14,400 | 2,021                                 | 12,960    | 1,820                                | 12,240    | 1,718                                    | 17,280    | 2,426                 | 10,800    | 1,213                      | 10,080    | 991                        |           |

【Note】 Please refer to P539

## Recommended Cutting Data (General type)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 3                                   | 1      | 18                     | 0.11  | 12,898                                | 1,811     | 11,464                               | 1,609     | 12,240                                   | 1,718     | 15,287                | 2,146     | 9,554                      | 1,074     | 9,076                      | 893       |
|                                     |        | 20                     | 0.11  | 11,664                                | 1,638     | 10,498                               | 1,474     | 9,914                                    | 1,392     | 13,997                | 1,966     | 8,748                      | 983       | 8,165                      | 803       |
|                                     |        | 30                     | 0.09  | 9,072                                 | 1,143     | 8,165                                | 1,029     | 7,711                                    | 971       | 10,886                | 1,372     | 6,804                      | 694       | 6,350                      | 559       |
|                                     |        | 35                     | 0.075 | 9,072                                 | 1,143     | 8,165                                | 1,029     | 7,711                                    | 971       | 10,886                | 1,372     | 6,804                      | 694       | 6,350                      | 559       |
| 4                                   | 0.1    | 8                      | 0.08  | 12,420                                | 2,160     | 11,178                               | 1,944     | 10,557                                   | 1,836     | 14,904                | 2,592     | 9,315                      | 1,296     | 8,694                      | 1,058     |
|                                     |        | 12                     | 0.065 | 12,420                                | 2,160     | 11,178                               | 1,944     | 10,557                                   | 1,836     | 14,904                | 2,592     | 9,315                      | 1,296     | 8,694                      | 1,058     |
|                                     |        | 16                     | 0.06  | 10,301                                | 1,791     | 9,064                                | 1,576     | 8,652                                    | 1,504     | 12,360                | 2,149     | 7,416                      | 1,031     | 7,004                      | 852       |
|                                     |        | 20                     | 0.055 | 10,301                                | 1,791     | 9,064                                | 1,576     | 8,652                                    | 1,504     | 12,360                | 2,149     | 7,416                      | 1,031     | 7,004                      | 852       |
|                                     |        | 30                     | 0.045 | 8,239                                 | 1,290     | 7,415                                | 1,161     | 7,003                                    | 1,096     | 9,887                 | 1,547     | 6,179                      | 774       | 5,767                      | 632       |
|                                     |        | 35                     | 0.04  | 8,239                                 | 1,290     | 7,415                                | 1,161     | 7,003                                    | 1,096     | 9,887                 | 1,547     | 6,179                      | 774       | 5,767                      | 632       |
|                                     |        | 45                     | 0.03  | 6,592                                 | 825       | 5,933                                | 743       | 5,603                                    | 702       | 7,910                 | 990       | 4,945                      | 499       | 4,614                      | 401       |
|                                     |        | 8                      | 0.16  | 12,420                                | 2,160     | 11,178                               | 1,944     | 10,557                                   | 1,836     | 14,904                | 2,592     | 9,315                      | 1,296     | 8,694                      | 1,058     |
|                                     | 0.2    | 12                     | 0.14  | 12,420                                | 2,160     | 11,178                               | 1,944     | 10,557                                   | 1,836     | 14,904                | 2,592     | 9,315                      | 1,296     | 8,694                      | 1,058     |
|                                     |        | 16                     | 0.13  | 10,301                                | 1,791     | 9,064                                | 1,576     | 8,652                                    | 1,504     | 12,360                | 2,149     | 7,416                      | 1,031     | 7,004                      | 852       |
|                                     |        | 20                     | 0.11  | 10,301                                | 1,791     | 9,064                                | 1,576     | 8,652                                    | 1,504     | 12,360                | 2,149     | 7,416                      | 1,031     | 7,004                      | 852       |
|                                     |        | 30                     | 0.1   | 8,239                                 | 1,290     | 7,415                                | 1,161     | 7,003                                    | 1,096     | 9,887                 | 1,547     | 6,179                      | 774       | 5,767                      | 632       |
|                                     |        | 35                     | 0.08  | 8,239                                 | 1,290     | 7,415                                | 1,161     | 7,003                                    | 1,096     | 9,887                 | 1,547     | 6,179                      | 774       | 5,767                      | 632       |
|                                     |        | 45                     | 0.06  | 6,592                                 | 825       | 5,933                                | 743       | 5,603                                    | 702       | 7,910                 | 990       | 4,945                      | 499       | 4,614                      | 401       |
|                                     |        | 8                      | 0.24  | 12,420                                | 2,160     | 11,178                               | 1,944     | 10,557                                   | 1,836     | 14,904                | 2,592     | 9,315                      | 1,296     | 8,694                      | 1,058     |
|                                     |        | 12                     | 0.22  | 12,420                                | 2,160     | 11,178                               | 1,944     | 10,557                                   | 1,836     | 14,904                | 2,592     | 9,315                      | 1,296     | 8,694                      | 1,058     |
|                                     | 0.3    | 16                     | 0.2   | 10,301                                | 1,791     | 9,064                                | 1,576     | 8,652                                    | 1,504     | 12,360                | 2,149     | 7,416                      | 1,031     | 7,004                      | 852       |
|                                     |        | 20                     | 0.18  | 10,301                                | 1,791     | 9,064                                | 1,576     | 8,652                                    | 1,504     | 12,360                | 2,149     | 7,416                      | 1,031     | 7,004                      | 852       |
|                                     |        | 30                     | 0.16  | 8,239                                 | 1,290     | 7,415                                | 1,161     | 7,003                                    | 1,096     | 9,887                 | 1,547     | 6,179                      | 774       | 5,767                      | 632       |
|                                     |        | 35                     | 0.14  | 8,239                                 | 1,290     | 7,415                                | 1,161     | 7,003                                    | 1,096     | 9,887                 | 1,547     | 6,179                      | 774       | 5,767                      | 632       |
|                                     |        | 45                     | 0.12  | 6,592                                 | 825       | 5,933                                | 743       | 5,603                                    | 702       | 7,910                 | 990       | 4,945                      | 499       | 4,614                      | 401       |
|                                     |        | 12                     | 0.35  | 12,420                                | 2,160     | 11,178                               | 1,944     | 10,557                                   | 1,836     | 14,904                | 2,592     | 9,315                      | 1,296     | 8,694                      | 1,058     |
|                                     |        | 16                     | 0.25  | 10,301                                | 1,791     | 9,064                                | 1,576     | 8,652                                    | 1,504     | 12,360                | 2,149     | 7,416                      | 1,031     | 7,004                      | 852       |
|                                     |        | 20                     | 0.2   | 10,301                                | 1,791     | 9,064                                | 1,576     | 8,652                                    | 1,504     | 12,360                | 2,149     | 7,416                      | 1,031     | 7,004                      | 852       |
| 0.5                                 | 30     | 0.15                   | 8,239 | 1,290                                 | 7,415     | 1,161                                | 7,003     | 1,096                                    | 9,887     | 1,547                 | 6,179     | 774                        | 5,767     | 632                        |           |
|                                     | 35     | 0.1                    | 8,239 | 1,290                                 | 7,415     | 1,161                                | 7,003     | 1,096                                    | 9,887     | 1,547                 | 6,179     | 774                        | 5,767     | 632                        |           |
|                                     | 45     | 0.05                   | 6,592 | 825                                   | 5,933     | 743                                  | 5,603     | 702                                      | 7,910     | 990                   | 4,945     | 499                        | 4,614     | 401                        |           |

【Note】 Please refer to P539



## Recommended Cutting Data (General type)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |       |
|-------------------------------------|--------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|-------|
|                                     |        |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |       |
| Ratio to standard depth of cut (ap) |        |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |       |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |       |
| 4                                   | 1      | 12                     | 0.4   | 12,420                                | 2,160     | 11,178                               | 1,944     | 10,557                                   | 1,836     | 14,904                | 2,592     | 9,315                      | 1,296     | 8,694                      | 1,058     |       |
|                                     |        | 16                     | 0.29  | 10,301                                | 1,791     | 9,064                                | 1,576     | 8,652                                    | 1,504     | 12,360                | 2,149     | 7,416                      | 1,031     | 7,004                      | 852       |       |
|                                     |        | 20                     | 0.23  | 10,301                                | 1,791     | 9,064                                | 1,576     | 8,652                                    | 1,504     | 12,360                | 2,149     | 7,416                      | 1,031     | 7,004                      | 852       |       |
|                                     |        | 30                     | 0.17  | 8,239                                 | 1,290     | 7,415                                | 1,161     | 7,003                                    | 1,096     | 9,887                 | 1,547     | 6,179                      | 774       | 5,767                      | 632       |       |
|                                     |        | 35                     | 0.12  | 8,239                                 | 1,290     | 7,415                                | 1,161     | 7,003                                    | 1,096     | 9,887                 | 1,547     | 6,179                      | 774       | 5,767                      | 632       |       |
|                                     |        | 45                     | 0.06  | 6,592                                 | 825       | 5,933                                | 743       | 5,603                                    | 702       | 7,910                 | 990       | 4,945                      | 499       | 4,614                      | 401       |       |
| 5                                   | 0.1    | 20                     | 0.08  | 9,885                                 | 2,149     | 8,896                                | 1,934     | 8,402                                    | 1,826     | 11,861                | 2,579     | 7,413                      | 1,290     | 6,919                      | 1,053     |       |
|                                     |        | 40                     | 0.06  | 8,901                                 | 1,733     | 8,011                                | 1,561     | 7,566                                    | 1,473     | 10,681                | 2,081     | 6,676                      | 1,040     | 6,231                      | 850       |       |
|                                     | 0.2    | 20                     | 0.16  | 9,885                                 | 2,149     | 8,896                                | 1,934     | 8,402                                    | 1,826     | 11,861                | 2,579     | 7,413                      | 1,290     | 6,919                      | 1,053     |       |
|                                     |        | 40                     | 0.13  | 8,901                                 | 1,733     | 8,011                                | 1,561     | 7,566                                    | 1,473     | 10,681                | 2,081     | 6,676                      | 1,040     | 6,231                      | 850       |       |
|                                     | 0.3    | 20                     | 0.24  | 9,885                                 | 2,149     | 8,896                                | 1,934     | 8,402                                    | 1,826     | 11,861                | 2,579     | 7,413                      | 1,290     | 6,919                      | 1,053     |       |
|                                     |        | 40                     | 0.2   | 8,901                                 | 1,733     | 8,011                                | 1,561     | 7,566                                    | 1,473     | 10,681                | 2,081     | 6,676                      | 1,040     | 6,231                      | 850       |       |
|                                     | 0.5    | 20                     | 0.35  | 9,885                                 | 2,149     | 8,896                                | 1,934     | 8,402                                    | 1,826     | 11,861                | 2,579     | 7,413                      | 1,290     | 6,919                      | 1,053     |       |
|                                     |        | 40                     | 0.135 | 8,901                                 | 1,733     | 8,011                                | 1,561     | 7,566                                    | 1,473     | 10,681                | 2,081     | 6,676                      | 1,040     | 6,231                      | 850       |       |
|                                     | 1      | 20                     | 0.4   | 9,885                                 | 2,149     | 8,896                                | 1,934     | 8,402                                    | 1,826     | 11,861                | 2,579     | 7,413                      | 1,290     | 6,919                      | 1,053     |       |
|                                     |        | 40                     | 0.15  | 8,901                                 | 1,733     | 8,011                                | 1,561     | 7,566                                    | 1,473     | 10,681                | 2,081     | 6,676                      | 1,040     | 6,231                      | 850       |       |
|                                     | 6      | 0.1                    | 12    | 0.08                                  | 8,239     | 2,149                                | 7,415     | 1,934                                    | 7,003     | 1,827                 | 9,887     | 2,579                      | 6,179     | 1,290                      | 5,767     | 1,053 |
|                                     |        |                        | 18    | 0.065                                 | 8,239     | 2,149                                | 7,415     | 1,934                                    | 7,003     | 1,827                 | 9,887     | 2,579                      | 6,179     | 1,290                      | 5,767     | 1,053 |
| 24                                  |        |                        | 0.06  | 8,239                                 | 2,149     | 7,415                                | 1,934     | 7,003                                    | 1,827     | 9,887                 | 2,579     | 6,179                      | 1,290     | 5,767                      | 1,053     |       |
| 35                                  |        |                        | 0.05  | 7,411                                 | 1,740     | 6,670                                | 1,566     | 6,299                                    | 1,479     | 8,893                 | 2,088     | 5,558                      | 1,044     | 5,188                      | 852       |       |
| 55                                  |        |                        | 0.04  | 5,765                                 | 1,354     | 5,189                                | 1,219     | 4,901                                    | 1,150     | 6,918                 | 1,625     | 4,325                      | 812       | 4,036                      | 663       |       |
| 12                                  |        |                        | 0.16  | 8,239                                 | 2,149     | 7,415                                | 1,934     | 7,003                                    | 1,827     | 9,887                 | 2,579     | 6,179                      | 1,290     | 5,767                      | 1,053     |       |
| 0.2                                 |        | 18                     | 0.14  | 8,239                                 | 2,149     | 7,415                                | 1,934     | 7,003                                    | 1,827     | 9,887                 | 2,579     | 6,179                      | 1,290     | 5,767                      | 1,053     |       |
|                                     |        | 24                     | 0.13  | 8,239                                 | 2,149     | 7,415                                | 1,934     | 7,003                                    | 1,827     | 9,887                 | 2,579     | 6,179                      | 1,290     | 5,767                      | 1,053     |       |
|                                     |        | 35                     | 0.11  | 7,411                                 | 1,740     | 6,670                                | 1,566     | 6,299                                    | 1,479     | 8,893                 | 2,088     | 5,558                      | 1,044     | 5,188                      | 852       |       |
|                                     |        | 55                     | 0.08  | 5,765                                 | 1,354     | 5,189                                | 1,219     | 4,901                                    | 1,150     | 6,918                 | 1,625     | 4,325                      | 812       | 4,036                      | 663       |       |
|                                     |        | 12                     | 0.24  | 8,239                                 | 2,149     | 7,415                                | 1,934     | 7,003                                    | 1,827     | 9,887                 | 2,579     | 6,179                      | 1,290     | 5,767                      | 1,053     |       |
|                                     |        | 18                     | 0.22  | 8,239                                 | 2,149     | 7,415                                | 1,934     | 7,003                                    | 1,827     | 9,887                 | 2,579     | 6,179                      | 1,290     | 5,767                      | 1,053     |       |
| 0.3                                 |        | 24                     | 0.2   | 8,239                                 | 2,149     | 7,415                                | 1,934     | 7,003                                    | 1,827     | 9,887                 | 2,579     | 6,179                      | 1,290     | 5,767                      | 1,053     |       |
|                                     |        | 35                     | 0.18  | 7,411                                 | 1,740     | 6,670                                | 1,566     | 6,299                                    | 1,479     | 8,893                 | 2,088     | 5,558                      | 1,044     | 5,188                      | 852       |       |
|                                     |        | 55                     | 0.14  | 5,765                                 | 1,354     | 5,189                                | 1,219     | 4,901                                    | 1,150     | 6,918                 | 1,625     | 4,325                      | 812       | 4,036                      | 663       |       |

【Note】 Please refer to P539

## Recommended Cutting Data (General type)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 6                                   | 0.5    | 18                     | 0.35  | 8,239                                 | 2,149     | 7,415                                | 1,934     | 7,003                                    | 1,827     | 9,887                 | 2,579     | 6,179                      | 1,290     | 5,767                      | 1,053     |
|                                     |        | 24                     | 0.29  | 8,239                                 | 2,149     | 7,415                                | 1,934     | 7,003                                    | 1,827     | 9,887                 | 2,579     | 6,179                      | 1,290     | 5,767                      | 1,053     |
|                                     |        | 35                     | 0.24  | 7,411                                 | 1,740     | 6,670                                | 1,566     | 6,299                                    | 1,479     | 8,893                 | 2,088     | 5,558                      | 1,044     | 5,188                      | 852       |
|                                     |        | 55                     | 0.165 | 5,765                                 | 1,354     | 5,189                                | 1,219     | 4,901                                    | 1,150     | 6,918                 | 1,625     | 4,325                      | 812       | 4,036                      | 663       |
|                                     | 1      | 18                     | 0.4   | 8,239                                 | 2,149     | 7,415                                | 1,934     | 7,003                                    | 1,827     | 9,887                 | 2,579     | 6,179                      | 1,290     | 5,767                      | 1,053     |
|                                     |        | 24                     | 0.35  | 8,239                                 | 2,149     | 7,415                                | 1,934     | 7,003                                    | 1,827     | 9,887                 | 2,579     | 6,179                      | 1,290     | 5,767                      | 1,053     |
|                                     |        | 35                     | 0.28  | 7,411                                 | 1,740     | 6,670                                | 1,566     | 6,299                                    | 1,479     | 8,893                 | 2,088     | 5,558                      | 1,044     | 5,188                      | 852       |
|                                     |        | 55                     | 0.2   | 5,765                                 | 1,354     | 5,189                                | 1,219     | 4,901                                    | 1,150     | 6,918                 | 1,625     | 4,325                      | 812       | 4,036                      | 663       |

## 【Note】

- For different materials, adjust the cutting depth (ap) according to the cutting depth factors in the above table. E.g. for hardened steels (45~55HRC),  $ap \times 0.5$ .
- Use the appropriate coolant such as air cooling or emulsion for the work material and machining shape.
- In actual machining, the condition should be adjusted according to the machining shape, purpose and the machine type.
- If the rpm of the machine is lower than the data in the above table, the feed rate should also be lowered in the same ratio.

## Recommended Cutting Data (High Precision)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 0.2                                 | 0.02   | 0.5                    | 0.016 | 45,000                                | 232       | 45,000                               | 207       | 45,000                                   | 185       | 45,000                | 276       | 45,000                     | 162       | 45,000                     | 144       |
|                                     |        | 1                      | 0.011 | 45,000                                | 232       | 45,000                               | 207       | 45,000                                   | 185       | 45,000                | 276       | 45,000                     | 162       | 45,000                     | 144       |
|                                     |        | 2                      | 0.007 | 37,800                                | 182       | 34,020                               | 163       | 33,030                                   | 158       | 45,000                | 221       | 33,030                     | 146       | 33,030                     | 132       |
|                                     | 0.05   | 0.5                    | 0.02  | 45,000                                | 232       | 45,000                               | 207       | 45,000                                   | 185       | 45,000                | 276       | 45,000                     | 162       | 45,000                     | 144       |
|                                     |        | 1                      | 0.014 | 45,000                                | 232       | 45,000                               | 207       | 45,000                                   | 185       | 45,000                | 276       | 45,000                     | 162       | 45,000                     | 144       |
|                                     |        | 1.5                    | 0.008 | 45,000                                | 216       | 43,740                               | 201       | 41,310                                   | 182       | 45,000                | 248       | 41,310                     | 153       | 41,310                     | 138       |
|                                     |        | 2                      | 0.008 | 37,800                                | 182       | 34,020                               | 163       | 33,030                                   | 158       | 45,000                | 221       | 33,030                     | 146       | 33,030                     | 132       |
| 0.3                                 | 0.02   | 1                      | 0.016 | 45,000                                | 527       | 45,000                               | 464       | 45,000                                   | 410       | 45,000                | 626       | 45,000                     | 302       | 45,000                     | 288       |
|                                     |        | 2                      | 0.011 | 40,500                                | 477       | 40,500                               | 414       | 40,500                                   | 378       | 40,500                | 558       | 40,500                     | 270       | 40,500                     | 261       |
|                                     |        | 3                      | 0.007 | 31,500                                | 371       | 31,500                               | 322       | 31,500                                   | 293       | 36,000                | 454       | 27,000                     | 180       | 27,000                     | 175       |
|                                     | 0.05   | 1                      | 0.021 | 45,000                                | 527       | 45,000                               | 464       | 45,000                                   | 410       | 45,000                | 626       | 45,000                     | 302       | 45,000                     | 288       |
|                                     |        | 1.5                    | 0.016 | 45,000                                | 527       | 40,500                               | 464       | 40,500                                   | 410       | 45,000                | 626       | 40,500                     | 302       | 40,500                     | 288       |
|                                     |        | 2                      | 0.012 | 40,500                                | 477       | 40,500                               | 414       | 40,500                                   | 378       | 40,500                | 558       | 40,500                     | 270       | 40,500                     | 261       |
|                                     |        | 2.5                    | 0.01  | 36,000                                | 424       | 36,000                               | 368       | 36,000                                   | 336       | 36,000                | 496       | 36,000                     | 240       | 36,000                     | 232       |
| 3                                   | 0.008  | 31,500                 | 371   | 31,500                                | 322       | 31,500                               | 293       | 36,000                                   | 454       | 27,000                | 180       | 27,000                     | 175       |                            |           |
| 0.4                                 | 0.02   | 1                      | 0.016 | 45,000                                | 522       | 45,000                               | 466       | 45,000                                   | 415       | 45,000                | 622       | 36,000                     | 288       | 32,400                     | 243       |
|                                     |        | 2                      | 0.013 | 40,500                                | 468       | 40,500                               | 423       | 40,500                                   | 369       | 40,500                | 558       | 32,400                     | 261       | 30,600                     | 216       |
|                                     |        | 3                      | 0.01  | 36,000                                | 369       | 36,000                               | 333       | 36,000                                   | 297       | 36,000                | 432       | 29,520                     | 216       | 23,040                     | 180       |
|                                     |        | 4                      | 0.007 | 27,000                                | 288       | 27,000                               | 252       | 27,000                                   | 225       | 27,000                | 333       | 19,440                     | 144       | 17,280                     | 135       |
|                                     | 0.05   | 1                      | 0.025 | 45,000                                | 522       | 45,000                               | 466       | 45,000                                   | 415       | 45,000                | 622       | 36,000                     | 288       | 32,400                     | 243       |
|                                     |        | 1.5                    | 0.02  | 45,000                                | 522       | 45,000                               | 466       | 45,000                                   | 415       | 45,000                | 622       | 36,000                     | 288       | 32,400                     | 243       |
|                                     |        | 2                      | 0.016 | 40,500                                | 468       | 40,500                               | 423       | 40,500                                   | 369       | 40,500                | 558       | 32,400                     | 261       | 30,600                     | 216       |
|                                     |        | 2.5                    | 0.015 | 36,450                                | 432       | 36,450                               | 360       | 36,450                                   | 333       | 36,450                | 504       | 30,060                     | 243       | 27,540                     | 198       |
|                                     |        | 3                      | 0.014 | 36,000                                | 369       | 36,000                               | 333       | 36,000                                   | 297       | 36,000                | 432       | 29,520                     | 216       | 23,040                     | 180       |
|                                     | 0.1    | 3.5                    | 0.012 | 32,400                                | 342       | 32,400                               | 288       | 32,400                                   | 270       | 32,400                | 378       | 26,460                     | 180       | 20,628                     | 162       |
|                                     |        | 4                      | 0.008 | 27,000                                | 288       | 27,000                               | 252       | 27,000                                   | 225       | 27,000                | 333       | 19,440                     | 144       | 17,280                     | 135       |
|                                     |        | 1                      | 0.033 | 45,000                                | 522       | 45,000                               | 466       | 45,000                                   | 415       | 45,000                | 622       | 36,000                     | 288       | 32,400                     | 243       |
|                                     |        | 2                      | 0.028 | 40,500                                | 468       | 40,500                               | 423       | 40,500                                   | 369       | 40,500                | 558       | 32,400                     | 261       | 30,600                     | 216       |
| 0.5                                 | 0.02   | 3                      | 0.016 | 36,000                                | 369       | 36,000                               | 333       | 36,000                                   | 297       | 36,000                | 432       | 29,520                     | 216       | 23,040                     | 180       |
|                                     |        | 4                      | 0.01  | 27,000                                | 288       | 27,000                               | 252       | 27,000                                   | 225       | 27,000                | 333       | 19,440                     | 144       | 17,280                     | 135       |
| 0.5                                 | 0.02   | 1                      | 0.016 | 45,000                                | 808       | 45,000                               | 680       | 36,000                                   | 418       | 45,000                | 963       | 27,000                     | 340       | 25,200                     | 284       |
|                                     |        | 2                      | 0.013 | 45,000                                | 808       | 45,000                               | 680       | 36,000                                   | 418       | 45,000                | 963       | 27,000                     | 340       | 25,200                     | 284       |

【Note】 Please refer to P550

## Recommended Cutting Data (High Precision)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

Micro Diameter Endmills for Deep Machining

» Continuation

| Workpiece Material                  |        |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |     |
|-------------------------------------|--------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|-----|
|                                     |        |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |     |
| Ratio to standard depth of cut (ap) |        |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |     |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |     |
| 0.5                                 | 0.02   | 3                      | 0.01  | 40,500                                | 729       | 40,500                               | 616       | 32,400                                   | 373       | 40,500                | 864       | 24,300                     | 284       | 22,050                     | 235       |     |
|                                     |        | 4                      | 0.008 | 36,000                                | 648       | 36,000                               | 543       | 28,800                                   | 340       | 36,000                | 765       | 21,600                     | 251       | 18,000                     | 211       |     |
|                                     |        | 6                      | 0.006 | 25,920                                | 432       | 21,600                               | 342       | 17,460                                   | 234       | 27,000                | 513       | 16,200                     | 225       | 13,500                     | 180       |     |
|                                     | 0.05   | 1                      | 0.03  | 45,000                                | 808       | 45,000                               | 680       | 36,000                                   | 418       | 45,000                | 963       | 27,000                     | 340       | 25,200                     | 284       |     |
|                                     |        | 2                      | 0.023 | 45,000                                | 808       | 45,000                               | 680       | 36,000                                   | 418       | 45,000                | 963       | 27,000                     | 340       | 25,200                     | 284       |     |
|                                     |        | 3                      | 0.017 | 40,500                                | 729       | 40,500                               | 616       | 32,400                                   | 373       | 40,500                | 864       | 24,300                     | 284       | 22,050                     | 235       |     |
|                                     |        | 4                      | 0.017 | 36,000                                | 648       | 36,000                               | 543       | 28,800                                   | 340       | 36,000                | 765       | 21,600                     | 251       | 18,000                     | 211       |     |
|                                     |        | 5                      | 0.011 | 25,920                                | 486       | 21,600                               | 342       | 17,460                                   | 252       | 27,000                | 576       | 16,200                     | 225       | 13,500                     | 180       |     |
|                                     |        | 6                      | 0.008 | 25,920                                | 432       | 21,600                               | 342       | 17,460                                   | 234       | 27,000                | 513       | 16,200                     | 225       | 13,500                     | 180       |     |
|                                     | 0.1    | 1                      | 0.035 | 45,000                                | 808       | 45,000                               | 680       | 36,000                                   | 418       | 45,000                | 963       | 27,000                     | 340       | 25,200                     | 284       |     |
|                                     |        | 2                      | 0.03  | 45,000                                | 808       | 45,000                               | 680       | 36,000                                   | 418       | 45,000                | 963       | 27,000                     | 340       | 25,200                     | 284       |     |
|                                     |        | 3                      | 0.02  | 40,500                                | 729       | 40,500                               | 616       | 32,400                                   | 373       | 40,500                | 864       | 24,300                     | 284       | 22,050                     | 235       |     |
|                                     |        | 4                      | 0.02  | 36,000                                | 648       | 36,000                               | 543       | 28,800                                   | 340       | 36,000                | 765       | 21,600                     | 251       | 18,000                     | 211       |     |
|                                     |        | 5                      | 0.013 | 25,920                                | 486       | 21,600                               | 342       | 17,460                                   | 252       | 27,000                | 576       | 16,200                     | 225       | 13,500                     | 180       |     |
|                                     |        | 6                      | 0.013 | 25,920                                | 432       | 21,600                               | 342       | 17,460                                   | 234       | 27,000                | 513       | 16,200                     | 225       | 13,500                     | 180       |     |
|                                     | 0.6    | 0.02                   | 2     | 0.016                                 | 45,000    | 1,043                                | 42,120    | 828                                      | 34,047    | 540                   | 45,000    | 1,242                      | 25,380    | 351                        | 20,700    | 288 |
|                                     |        |                        | 4     | 0.013                                 | 36,000    | 747                                  | 31,050    | 558                                      | 25,020    | 396                   | 36,000    | 882                        | 21,240    | 252                        | 18,900    | 207 |
|                                     |        |                        | 6     | 0.01                                  | 21,600    | 441                                  | 18,000    | 324                                      | 16,200    | 270                   | 27,000    | 522                        | 16,020    | 216                        | 13,500    | 189 |
| 0.05                                |        | 2                      | 0.028 | 45,000                                | 1,043     | 42,120                               | 828       | 34,047                                   | 540       | 45,000                | 1,242     | 25,380                     | 351       | 20,700                     | 288       |     |
|                                     |        | 4                      | 0.019 | 36,000                                | 747       | 31,050                               | 558       | 25,020                                   | 396       | 36,000                | 882       | 21,240                     | 252       | 18,900                     | 207       |     |
|                                     |        | 6                      | 0.012 | 21,600                                | 441       | 18,000                               | 324       | 16,200                                   | 270       | 27,000                | 522       | 16,020                     | 216       | 13,500                     | 189       |     |
|                                     |        | 8                      | 0.01  | 21,600                                | 419       | 18,000                               | 308       | 16,200                                   | 257       | 27,000                | 496       | 16,020                     | 205       | 13,500                     | 180       |     |
| 0.1                                 |        | 10                     | 0.007 | 21,600                                | 406       | 18,000                               | 298       | 16,200                                   | 248       | 27,000                | 481       | 16,020                     | 199       | 13,500                     | 174       |     |
|                                     |        | 2                      | 0.035 | 45,000                                | 1,043     | 42,120                               | 828       | 34,047                                   | 540       | 45,000                | 1,242     | 25,380                     | 351       | 20,700                     | 288       |     |
|                                     |        | 4                      | 0.024 | 36,000                                | 747       | 31,050                               | 558       | 25,020                                   | 396       | 36,000                | 882       | 21,240                     | 252       | 18,900                     | 207       |     |
|                                     |        | 6                      | 0.015 | 21,600                                | 441       | 18,000                               | 324       | 16,200                                   | 270       | 27,000                | 522       | 16,020                     | 216       | 13,500                     | 189       |     |
|                                     |        | 8                      | 0.013 | 21,600                                | 419       | 18,000                               | 308       | 16,200                                   | 257       | 27,000                | 496       | 16,020                     | 205       | 13,500                     | 180       |     |
| 0.7                                 | 0.05   | 10                     | 0.009 | 21,600                                | 406       | 18,000                               | 298       | 16,200                                   | 248       | 27,000                | 481       | 16,020                     | 199       | 13,500                     | 174       |     |
|                                     |        | 4                      | 0.024 | 36,000                                | 747       | 31,050                               | 558       | 25,020                                   | 396       | 36,000                | 882       | 21,240                     | 252       | 18,900                     | 207       |     |
|                                     | 0.1    | 6                      | 0.015 | 21,600                                | 441       | 18,000                               | 324       | 16,200                                   | 270       | 27,000                | 522       | 16,020                     | 216       | 13,500                     | 189       |     |
|                                     |        | 4                      | 0.029 | 36,000                                | 747       | 31,050                               | 558       | 25,020                                   | 396       | 36,000                | 882       | 21,240                     | 252       | 18,900                     | 207       |     |
|                                     |        | 6                      | 0.018 | 21,600                                | 441       | 18,000                               | 324       | 16,200                                   | 270       | 27,000                | 522       | 16,020                     | 216       | 13,500                     | 189       |     |
|                                     |        | 4                      | 0.018 | 21,600                                | 441       | 18,000                               | 324       | 16,200                                   | 270       | 27,000                | 522       | 16,020                     | 216       | 13,500                     | 189       |     |

【Note】 Please refer to P550

# Recommended Cutting Data (High Precision)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |        | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|--------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |        | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |        | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap     | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 0.8                                 | 0.02   | 4                      | 0.016  | 43,200                                | 992       | 32,400                               | 675       | 25,200                                   | 466       | 45,000                | 1,181     | 18,000                     | 288       | 18,000                     | 259       |
|                                     |        | 6                      | 0.013  | 34,830                                | 720       | 23,400                               | 477       | 22,500                                   | 415       | 36,000                | 855       | 16,200                     | 259       | 16,200                     | 230       |
|                                     | 0.05   | 4                      | 0.026  | 43,200                                | 992       | 32,400                               | 675       | 25,200                                   | 466       | 45,000                | 1,181     | 18,000                     | 288       | 18,000                     | 259       |
|                                     |        | 6                      | 0.015  | 34,830                                | 720       | 23,400                               | 477       | 22,500                                   | 415       | 36,000                | 855       | 16,200                     | 259       | 16,200                     | 230       |
|                                     |        | 8                      | 0.012  | 26,123                                | 540       | 18,720                               | 382       | 18,000                                   | 332       | 27,000                | 642       | 14,580                     | 233       | 14,580                     | 207       |
|                                     | 0.1    | 12                     | 0.01   | 26,123                                | 513       | 18,720                               | 363       | 18,000                                   | 315       | 27,000                | 609       | 14,580                     | 221       | 14,580                     | 197       |
|                                     |        | 4                      | 0.032  | 43,200                                | 992       | 32,400                               | 675       | 25,200                                   | 466       | 45,000                | 1,181     | 18,000                     | 288       | 18,000                     | 259       |
|                                     |        | 6                      | 0.019  | 34,830                                | 720       | 23,400                               | 477       | 22,500                                   | 415       | 36,000                | 855       | 16,200                     | 259       | 16,200                     | 230       |
|                                     |        | 8                      | 0.015  | 26,123                                | 540       | 18,720                               | 382       | 18,000                                   | 332       | 27,000                | 642       | 14,580                     | 233       | 14,580                     | 207       |
|                                     | 0.2    | 12                     | 0.012  | 26,123                                | 513       | 18,720                               | 363       | 18,000                                   | 315       | 27,000                | 609       | 14,580                     | 221       | 14,580                     | 197       |
|                                     |        | 4                      | 0.056  | 43,200                                | 992       | 32,400                               | 675       | 25,200                                   | 466       | 45,000                | 1,181     | 18,000                     | 288       | 18,000                     | 259       |
|                                     |        | 6                      | 0.032  | 34,830                                | 720       | 23,400                               | 477       | 22,500                                   | 415       | 36,000                | 855       | 16,200                     | 259       | 16,200                     | 230       |
| 8                                   |        | 0.018                  | 26,123 | 540                                   | 18,720    | 382                                  | 18,000    | 332                                      | 27,000    | 642                   | 14,580    | 233                        | 14,580    | 207                        |           |
| 1                                   | 0.02   | 12                     | 0.015  | 26,123                                | 513       | 18,720                               | 363       | 18,000                                   | 315       | 27,000                | 609       | 14,580                     | 221       | 14,580                     | 197       |
|                                     |        | 2                      | 0.016  | 32,101                                | 1,412     | 28,868                               | 1,270     | 27,265                                   | 1,091     | 38,408                | 1,689     | 24,057                     | 866       | 22,453                     | 718       |
|                                     |        | 4                      | 0.013  | 29,160                                | 1,223     | 26,244                               | 1,101     | 24,786                                   | 935       | 34,992                | 1,467     | 21,870                     | 734       | 20,412                     | 599       |
|                                     |        | 6                      | 0.01   | 23,620                                | 891       | 21,258                               | 802       | 20,076                                   | 758       | 28,344                | 1,070     | 17,715                     | 594       | 16,534                     | 485       |
|                                     |        | 8                      | 0.008  | 20,995                                | 792       | 18,896                               | 713       | 17,846                                   | 673       | 25,195                | 950       | 15,746                     | 528       | 14,697                     | 431       |
|                                     | 0.05   | 10                     | 0.006  | 18,371                                | 693       | 16,534                               | 624       | 15,615                                   | 590       | 19,596                | 832       | 13,778                     | 463       | 12,859                     | 377       |
|                                     |        | 12                     | 0.005  | 16,330                                | 548       | 14,697                               | 493       | 13,880                                   | 408       | 19,596                | 657       | 12,247                     | 359       | 11,431                     | 288       |
|                                     |        | 2                      | 0.046  | 32,101                                | 1,412     | 28,868                               | 1,270     | 27,229                                   | 1,089     | 38,408                | 1,689     | 24,057                     | 866       | 22,453                     | 718       |
|                                     |        | 3                      | 0.035  | 30,618                                | 1,316     | 27,556                               | 1,185     | 27,265                                   | 1,091     | 36,716                | 1,579     | 22,964                     | 780       | 21,433                     | 643       |
|                                     |        | 4                      | 0.027  | 29,160                                | 1,223     | 26,244                               | 1,101     | 26,025                                   | 1,015     | 34,992                | 1,467     | 21,870                     | 734       | 20,412                     | 599       |
|                                     |        | 5                      | 0.021  | 25,981                                | 1,039     | 23,384                               | 935       | 24,786                                   | 935       | 31,242                | 1,249     | 19,486                     | 654       | 18,187                     | 535       |
|                                     |        | 6                      | 0.017  | 23,620                                | 891       | 21,258                               | 802       | 22,084                                   | 835       | 28,344                | 1,070     | 17,715                     | 594       | 16,534                     | 485       |
| 8                                   |        | 0.016                  | 20,995 | 792                                   | 18,896    | 713                                  | 17,846    | 673                                      | 25,195    | 950                   | 15,746    | 528                        | 14,697    | 431                        |           |
| 0.1                                 | 10     | 0.011                  | 18,371 | 693                                   | 16,534    | 624                                  | 15,615    | 590                                      | 22,045    | 832                   | 13,778    | 463                        | 12,859    | 377                        |           |
|                                     | 12     | 0.01                   | 16,330 | 548                                   | 14,697    | 493                                  | 13,880    | 408                                      | 19,596    | 657                   | 12,247    | 359                        | 11,431    | 288                        |           |
|                                     | 16     | 0.006                  | 16,330 | 480                                   | 14,697    | 431                                  | 13,880    | 378                                      | 19,596    | 575                   | 12,247    | 308                        | 11,431    | 239                        |           |
|                                     | 20     | 0.004                  | 12,247 | 359                                   | 11,022    | 323                                  | 10,410    | 284                                      | 14,697    | 431                   | 9,185     | 231                        | 8,573     | 180                        |           |
|                                     | 2      | 0.065                  | 32,101 | 1,412                                 | 28,868    | 1,270                                | 27,265    | 1,091                                    | 38,408    | 1,689                 | 24,057    | 866                        | 22,453    | 718                        |           |
| 0.1                                 | 3      | 0.05                   | 30,618 | 1,316                                 | 27,556    | 1,185                                | 26,025    | 1,015                                    | 36,716    | 1,579                 | 22,964    | 780                        | 21,433    | 643                        |           |

[Note] Please refer to P550

## Recommended Cutting Data (High Precision)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

Micro Diameter Endmills for Deep Machining

» Continuation

| Workpiece Material                  |        |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |     |
|-------------------------------------|--------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|-----|
|                                     |        |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |     |
| Ratio to standard depth of cut (ap) |        |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |     |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |     |
| 1                                   | 0.1    | 4                      | 0.038 | 29,160                                | 1,223     | 26,244                               | 1,101     | 24,786                                   | 935       | 34,992                | 1,467     | 21,870                     | 734       | 20,412                     | 599       |     |
|                                     |        | 5                      | 0.03  | 25,981                                | 1,039     | 23,384                               | 935       | 22,084                                   | 835       | 31,242                | 1,249     | 19,486                     | 654       | 18,187                     | 535       |     |
|                                     |        | 6                      | 0.024 | 23,620                                | 891       | 21,258                               | 802       | 20,076                                   | 758       | 28,344                | 1,070     | 17,715                     | 594       | 16,534                     | 485       |     |
|                                     |        | 8                      | 0.024 | 20,995                                | 792       | 18,896                               | 713       | 17,846                                   | 673       | 25,195                | 950       | 15,746                     | 528       | 14,697                     | 431       |     |
|                                     |        | 10                     | 0.015 | 18,371                                | 693       | 16,534                               | 624       | 15,615                                   | 590       | 22,045                | 832       | 13,778                     | 463       | 12,859                     | 377       |     |
|                                     |        | 12                     | 0.015 | 16,330                                | 548       | 14,697                               | 493       | 13,880                                   | 408       | 19,596                | 657       | 12,247                     | 359       | 11,431                     | 288       |     |
|                                     |        | 16                     | 0.009 | 16,330                                | 480       | 14,697                               | 431       | 13,880                                   | 378       | 19,596                | 575       | 12,247                     | 308       | 11,431                     | 239       |     |
|                                     |        | 20                     | 0.006 | 12,247                                | 359       | 11,022                               | 323       | 10,410                                   | 284       | 14,697                | 431       | 9,185                      | 231       | 8,573                      | 180       |     |
|                                     | 0.2    | 2                      | 0.11  | 32,101                                | 1,412     | 28,868                               | 1,270     | 27,265                                   | 1,091     | 38,408                | 1,689     | 24,057                     | 866       | 22,453                     | 718       |     |
|                                     |        | 3                      | 0.09  | 30,618                                | 1,316     | 27,556                               | 1,185     | 26,025                                   | 1,015     | 36,716                | 1,579     | 22,964                     | 780       | 21,433                     | 643       |     |
|                                     |        | 4                      | 0.07  | 29,160                                | 1,223     | 26,244                               | 1,101     | 24,786                                   | 935       | 34,992                | 1,467     | 21,870                     | 734       | 20,412                     | 599       |     |
|                                     |        | 5                      | 0.05  | 25,981                                | 1,039     | 23,384                               | 935       | 22,084                                   | 835       | 31,242                | 1,249     | 19,486                     | 654       | 18,187                     | 535       |     |
|                                     |        | 6                      | 0.04  | 23,620                                | 891       | 21,258                               | 802       | 20,076                                   | 758       | 28,344                | 1,070     | 17,715                     | 594       | 16,534                     | 485       |     |
|                                     |        | 8                      | 0.04  | 20,995                                | 792       | 18,896                               | 713       | 17,846                                   | 673       | 25,195                | 950       | 15,746                     | 528       | 14,697                     | 431       |     |
|                                     |        | 10                     | 0.025 | 18,371                                | 693       | 16,534                               | 624       | 15,615                                   | 590       | 22,045                | 832       | 13,778                     | 463       | 12,859                     | 377       |     |
|                                     |        | 12                     | 0.025 | 16,330                                | 548       | 14,697                               | 493       | 13,880                                   | 408       | 19,596                | 657       | 12,247                     | 359       | 11,431                     | 288       |     |
|                                     | 0.3    | 16                     | 0.015 | 16,330                                | 480       | 14,697                               | 431       | 13,880                                   | 378       | 19,596                | 575       | 12,247                     | 308       | 11,431                     | 239       |     |
|                                     |        | 20                     | 0.01  | 12,247                                | 359       | 11,022                               | 323       | 10,410                                   | 284       | 14,697                | 431       | 9,185                      | 231       | 8,573                      | 180       |     |
|                                     |        | 2                      | 0.11  | 32,101                                | 1,412     | 28,868                               | 1,270     | 27,265                                   | 1,091     | 38,408                | 1,689     | 24,057                     | 866       | 22,453                     | 718       |     |
|                                     |        | 3                      | 0.09  | 30,618                                | 1,316     | 27,556                               | 1,185     | 26,025                                   | 1,015     | 36,716                | 1,579     | 22,964                     | 780       | 21,433                     | 643       |     |
|                                     |        | 4                      | 0.07  | 29,160                                | 1,223     | 26,244                               | 1,101     | 24,786                                   | 935       | 34,992                | 1,467     | 21,870                     | 734       | 20,412                     | 599       |     |
|                                     |        | 5                      | 0.05  | 25,981                                | 1,039     | 23,384                               | 935       | 22,084                                   | 835       | 31,242                | 1,249     | 19,486                     | 654       | 18,187                     | 535       |     |
|                                     |        | 6                      | 0.04  | 23,620                                | 891       | 21,258                               | 802       | 20,076                                   | 758       | 28,344                | 1,070     | 17,715                     | 594       | 16,534                     | 485       |     |
|                                     |        | 8                      | 0.04  | 20,995                                | 792       | 18,896                               | 713       | 17,846                                   | 673       | 25,195                | 950       | 15,746                     | 528       | 14,697                     | 431       |     |
|                                     | 1.25   | 0.1                    | 10    | 0.015                                 | 18,371    | 693                                  | 16,534    | 624                                      | 15,615    | 590                   | 22,045    | 832                        | 13,778    | 463                        | 12,859    | 377 |
|                                     |        |                        | 15    | 0.01                                  | 16,330    | 480                                  | 14,697    | 493                                      | 13,880    | 408                   | 19,596    | 575                        | 12,247    | 308                        | 11,431    | 239 |
|                                     |        |                        | 20    | 0.006                                 | 12,247    | 359                                  | 11,022    | 323                                      | 10,410    | 284                   | 14,697    | 431                        | 9,185     | 231                        | 8,573     | 180 |

【Note】 Please refer to P550

# Recommended Cutting Data (High Precision)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 1.25                                | 0.2    | 5                      | 0.05  | 25,981                                | 1,039     | 23,384                               | 935       | 22,084                                   | 835       | 31,242                | 1,249     | 19,486                     | 654       | 18,187                     | 535       |
|                                     |        | 10                     | 0.025 | 18,371                                | 693       | 16,534                               | 624       | 15,615                                   | 590       | 22,045                | 832       | 13,778                     | 463       | 12,859                     | 377       |
|                                     |        | 15                     | 0.016 | 16,330                                | 480       | 14,697                               | 493       | 13,880                                   | 408       | 19,596                | 575       | 12,247                     | 308       | 11,431                     | 239       |
|                                     |        | 20                     | 0.01  | 12,247                                | 359       | 11,022                               | 323       | 10,410                                   | 284       | 14,697                | 431       | 9,185                      | 231       | 8,573                      | 180       |
|                                     | 0.3    | 5                      | 0.05  | 25,981                                | 1,039     | 23,384                               | 935       | 22,084                                   | 835       | 31,242                | 1,249     | 19,486                     | 654       | 18,187                     | 535       |
|                                     |        | 10                     | 0.025 | 18,371                                | 693       | 16,534                               | 624       | 15,615                                   | 590       | 22,045                | 832       | 13,778                     | 463       | 12,859                     | 377       |
|                                     |        | 15                     | 0.016 | 16,330                                | 480       | 14,697                               | 493       | 13,880                                   | 408       | 19,596                | 575       | 12,247                     | 308       | 11,431                     | 239       |
|                                     |        | 20                     | 0.01  | 12,247                                | 359       | 11,022                               | 323       | 10,410                                   | 284       | 14,697                | 431       | 9,185                      | 231       | 8,573                      | 180       |
| 1.5                                 | 0.1    | 4                      | 0.042 | 22,437                                | 1,017     | 20,208                               | 915       | 18,860                                   | 852       | 26,944                | 1,220     | 16,840                     | 677       | 15,628                     | 550       |
|                                     |        | 6                      | 0.04  | 21,401                                | 967       | 19,299                               | 872       | 18,344                                   | 829       | 25,605                | 1,157     | 16,051                     | 644       | 14,904                     | 524       |
|                                     |        | 8                      | 0.036 | 20,412                                | 924       | 18,371                               | 832       | 17,350                                   | 786       | 24,494                | 1,110     | 15,309                     | 617       | 14,288                     | 503       |
|                                     |        | 12                     | 0.036 | 16,330                                | 740       | 14,697                               | 666       | 13,880                                   | 628       | 19,596                | 887       | 12,247                     | 493       | 11,431                     | 402       |
|                                     |        | 15                     | 0.023 | 12,701                                | 511       | 11,431                               | 460       | 10,796                                   | 381       | 15,241                | 614       | 9,526                      | 336       | 8,890                      | 268       |
|                                     | 0.2    | 4                      | 0.07  | 22,437                                | 1,017     | 20,208                               | 915       | 18,860                                   | 781       | 26,944                | 1,220     | 16,840                     | 610       | 15,628                     | 500       |
|                                     |        | 6                      | 0.065 | 21,401                                | 967       | 19,299                               | 872       | 18,344                                   | 829       | 25,605                | 1,157     | 16,051                     | 644       | 14,904                     | 524       |
|                                     |        | 8                      | 0.06  | 20,412                                | 924       | 18,371                               | 832       | 17,350                                   | 786       | 24,494                | 1,110     | 15,309                     | 617       | 14,288                     | 503       |
|                                     |        | 12                     | 0.06  | 16,330                                | 740       | 14,697                               | 666       | 13,880                                   | 628       | 19,596                | 887       | 12,247                     | 493       | 11,431                     | 402       |
|                                     |        | 15                     | 0.038 | 12,701                                | 511       | 11,431                               | 460       | 10,796                                   | 381       | 15,241                | 614       | 9,526                      | 336       | 8,890                      | 268       |
|                                     | 0.3    | 4                      | 0.07  | 22,437                                | 1,017     | 20,208                               | 915       | 18,860                                   | 781       | 26,944                | 1,220     | 16,840                     | 610       | 15,628                     | 500       |
|                                     |        | 6                      | 0.065 | 21,401                                | 967       | 19,299                               | 872       | 18,344                                   | 829       | 25,605                | 1,157     | 16,051                     | 644       | 14,904                     | 524       |
|                                     |        | 8                      | 0.06  | 20,412                                | 924       | 18,371                               | 832       | 17,350                                   | 786       | 24,494                | 1,110     | 15,309                     | 617       | 14,288                     | 503       |
|                                     |        | 12                     | 0.06  | 16,330                                | 740       | 14,697                               | 666       | 13,880                                   | 628       | 19,596                | 887       | 12,247                     | 493       | 11,431                     | 402       |
|                                     |        | 15                     | 0.038 | 12,701                                | 511       | 11,431                               | 460       | 10,796                                   | 381       | 15,241                | 614       | 9,526                      | 336       | 8,890                      | 268       |
|                                     | 0.5    | 4                      | 0.085 | 22,437                                | 1,017     | 20,208                               | 915       | 18,860                                   | 781       | 26,944                | 1,220     | 16,840                     | 610       | 15,628                     | 500       |
|                                     |        | 6                      | 0.08  | 21,401                                | 967       | 19,299                               | 872       | 18,344                                   | 829       | 25,605                | 1,157     | 16,051                     | 644       | 14,904                     | 524       |
|                                     |        | 8                      | 0.07  | 20,412                                | 924       | 18,371                               | 832       | 17,350                                   | 786       | 24,494                | 1,110     | 15,309                     | 617       | 14,288                     | 503       |
|                                     |        | 12                     | 0.065 | 16,330                                | 740       | 14,697                               | 666       | 13,880                                   | 628       | 19,596                | 887       | 12,247                     | 493       | 11,431                     | 402       |
|                                     |        | 15                     | 0.045 | 12,701                                | 511       | 11,431                               | 460       | 10,796                                   | 381       | 15,241                | 614       | 9,526                      | 336       | 8,890                      | 268       |
| 20                                  | 0.035  | 12,701                 | 511   | 11,431                                | 460       | 10,796                               | 381       | 15,241                                   | 614       | 9,526                 | 336       | 8,890                      | 268       |                            |           |

[Note] Please refer to P550

## Recommended Cutting Data (High Precision)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

Micro Diameter Endmills for Deep Machining

» Continuation

| Workpiece Material                  |        |                        |        | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|--------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |        | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |        | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap     | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 1.75                                | 0.1    | 5                      | 0.04   | 22,437                                | 1,017     | 20,208                               | 915       | 18,860                                   | 781       | 26,944                | 1,220     | 16,840                     | 610       | 15,628                     | 500       |
|                                     |        | 10                     | 0.036  | 20,412                                | 924       | 18,371                               | 832       | 17,350                                   | 786       | 24,494                | 1,110     | 15,309                     | 617       | 14,288                     | 503       |
|                                     |        | 15                     | 0.023  | 12,701                                | 511       | 11,431                               | 460       | 10,796                                   | 381       | 15,241                | 614       | 9,526                      | 336       | 8,890                      | 268       |
|                                     |        | 20                     | 0.018  | 12,701                                | 511       | 11,431                               | 460       | 10,796                                   | 381       | 15,241                | 614       | 9,526                      | 336       | 8,890                      | 268       |
|                                     | 0.2    | 5                      | 0.065  | 22,437                                | 1,017     | 20,208                               | 915       | 18,860                                   | 781       | 26,944                | 1,220     | 16,840                     | 610       | 15,628                     | 500       |
|                                     |        | 10                     | 0.06   | 20,412                                | 924       | 18,371                               | 832       | 17,350                                   | 786       | 24,494                | 1,110     | 15,309                     | 617       | 14,288                     | 503       |
|                                     |        | 15                     | 0.038  | 12,701                                | 511       | 11,431                               | 460       | 10,796                                   | 381       | 15,241                | 614       | 9,526                      | 336       | 8,890                      | 268       |
|                                     |        | 20                     | 0.03   | 12,701                                | 511       | 11,431                               | 460       | 10,796                                   | 381       | 15,241                | 614       | 9,526                      | 336       | 8,890                      | 268       |
|                                     | 0.3    | 5                      | 0.065  | 22,437                                | 1,017     | 20,208                               | 915       | 18,860                                   | 781       | 26,944                | 1,220     | 16,840                     | 610       | 15,628                     | 500       |
|                                     |        | 10                     | 0.06   | 20,412                                | 924       | 18,371                               | 832       | 17,350                                   | 786       | 24,494                | 1,110     | 15,309                     | 617       | 14,288                     | 503       |
|                                     |        | 15                     | 0.038  | 12,701                                | 511       | 11,431                               | 460       | 10,796                                   | 381       | 15,241                | 614       | 9,526                      | 336       | 8,890                      | 268       |
|                                     |        | 20                     | 0.03   | 12,701                                | 511       | 11,431                               | 460       | 10,796                                   | 381       | 15,241                | 614       | 9,526                      | 336       | 8,890                      | 268       |
| 2                                   | 0.1    | 4                      | 0.08   | 19,777                                | 1,554     | 17,771                               | 1,396     | 16,624                                   | 1,306     | 23,503                | 1,847     | 14,761                     | 930       | 13,757                     | 756       |
|                                     |        | 6                      | 0.07   | 18,711                                | 1,472     | 16,840                               | 1,324     | 15,905                                   | 1,250     | 22,453                | 1,766     | 14,034                     | 883       | 13,098                     | 721       |
|                                     |        | 8                      | 0.055  | 17,010                                | 1,337     | 15,309                               | 1,203     | 14,459                                   | 1,137     | 20,412                | 1,605     | 12,758                     | 803       | 11,907                     | 655       |
|                                     |        | 12                     | 0.03   | 13,778                                | 975       | 12,400                               | 878       | 11,712                                   | 829       | 16,534                | 1,170     | 10,334                     | 650       | 9,644                      | 531       |
|                                     |        | 16                     | 0.03   | 12,247                                | 867       | 11,022                               | 780       | 10,410                                   | 736       | 14,697                | 1,040     | 9,185                      | 578       | 8,573                      | 472       |
|                                     |        | 20                     | 0.025  | 10,716                                | 759       | 9,644                                | 682       | 9,109                                    | 644       | 12,859                | 910       | 8,037                      | 506       | 7,502                      | 413       |
|                                     |        | 25                     | 0.015  | 10,716                                | 681       | 9,644                                | 613       | 9,109                                    | 579       | 12,859                | 817       | 8,037                      | 455       | 7,502                      | 370       |
|                                     |        | 30                     | 0.01   | 10,181                                | 647       | 9,162                                | 582       | 8,654                                    | 550       | 12,217                | 777       | 7,636                      | 432       | 7,126                      | 352       |
|                                     | 0.2    | 4                      | 0.1    | 19,777                                | 1,554     | 17,771                               | 1,396     | 16,624                                   | 1,306     | 23,503                | 1,847     | 14,761                     | 930       | 13,757                     | 756       |
|                                     |        | 6                      | 0.08   | 18,711                                | 1,472     | 16,840                               | 1,324     | 15,905                                   | 1,250     | 22,453                | 1,766     | 14,034                     | 883       | 13,098                     | 721       |
|                                     |        | 8                      | 0.07   | 17,010                                | 1,337     | 15,309                               | 1,203     | 14,459                                   | 1,137     | 20,412                | 1,605     | 12,758                     | 803       | 11,907                     | 655       |
|                                     |        | 12                     | 0.04   | 13,778                                | 975       | 12,400                               | 878       | 11,712                                   | 829       | 16,534                | 1,170     | 10,334                     | 650       | 9,644                      | 531       |
| 0.3                                 | 16     | 0.04                   | 12,247 | 867                                   | 11,022    | 780                                  | 10,410    | 736                                      | 14,697    | 1,040                 | 9,185     | 578                        | 8,573     | 472                        |           |
|                                     | 20     | 0.035                  | 10,716 | 759                                   | 9,644     | 682                                  | 9,109     | 644                                      | 12,859    | 910                   | 8,037     | 506                        | 7,502     | 413                        |           |
|                                     | 25     | 0.025                  | 10,716 | 681                                   | 9,644     | 613                                  | 9,109     | 579                                      | 12,859    | 817                   | 8,037     | 455                        | 7,502     | 370                        |           |
|                                     | 30     | 0.017                  | 10,181 | 647                                   | 9,162     | 582                                  | 8,654     | 550                                      | 12,217    | 777                   | 7,636     | 432                        | 7,126     | 352                        |           |
| 0.3                                 | 4      | 0.13                   | 19,777 | 1,554                                 | 17,771    | 1,396                                | 16,624    | 1,306                                    | 23,503    | 1,847                 | 14,761    | 930                        | 13,757    | 756                        |           |
|                                     | 6      | 0.11                   | 18,711 | 1,472                                 | 16,840    | 1,324                                | 15,905    | 1,250                                    | 22,453    | 1,766                 | 14,034    | 883                        | 13,098    | 721                        |           |
|                                     | 8      | 0.09                   | 17,010 | 1,337                                 | 15,309    | 1,203                                | 14,459    | 1,137                                    | 20,412    | 1,605                 | 12,758    | 803                        | 11,907    | 655                        |           |
|                                     | 12     | 0.06                   | 13,778 | 975                                   | 12,400    | 878                                  | 11,712    | 829                                      | 16,534    | 1,300                 | 10,334    | 650                        | 9,644     | 531                        |           |

【Note】 Please refer to P550



# Recommended Cutting Data (High Precision)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |     |
|-------------------------------------|--------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|-----|
|                                     |        |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |     |
| Ratio to standard depth of cut (ap) |        |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |     |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |     |
| 2                                   | 0.3    | 16                     | 0.06  | 12,247                                | 867       | 11,022                               | 780       | 10,410                                   | 736       | 14,697                | 1,156     | 9,185                      | 578       | 8,573                      | 472       |     |
|                                     |        | 20                     | 0.037 | 10,716                                | 759       | 9,644                                | 682       | 9,109                                    | 644       | 12,859                | 1,011     | 8,037                      | 506       | 7,502                      | 413       |     |
|                                     |        | 25                     | 0.03  | 10,716                                | 681       | 9,644                                | 613       | 9,109                                    | 579       | 12,859                | 817       | 8,037                      | 455       | 7,502                      | 370       |     |
|                                     |        | 30                     | 0.021 | 10,181                                | 647       | 9,162                                | 582       | 8,654                                    | 550       | 12,217                | 777       | 7,636                      | 432       | 7,126                      | 352       |     |
|                                     | 0.5    | 6                      | 0.17  | 18,711                                | 1,472     | 16,840                               | 1,324     | 15,905                                   | 1,250     | 22,453                | 1,766     | 14,034                     | 883       | 13,098                     | 721       |     |
|                                     |        | 8                      | 0.14  | 17,010                                | 1,337     | 15,309                               | 1,203     | 14,459                                   | 1,137     | 20,412                | 1,605     | 12,758                     | 803       | 11,907                     | 655       |     |
|                                     |        | 12                     | 0.08  | 13,778                                | 975       | 12,400                               | 878       | 11,712                                   | 921       | 16,534                | 1,300     | 10,334                     | 650       | 9,644                      | 531       |     |
|                                     |        | 16                     | 0.08  | 12,247                                | 867       | 11,022                               | 780       | 10,410                                   | 736       | 14,697                | 1,156     | 9,185                      | 578       | 8,573                      | 472       |     |
|                                     |        | 20                     | 0.05  | 10,716                                | 759       | 9,644                                | 682       | 9,109                                    | 644       | 12,859                | 1,011     | 8,037                      | 506       | 7,502                      | 413       |     |
|                                     |        | 25                     | 0.05  | 10,716                                | 681       | 9,644                                | 613       | 9,109                                    | 579       | 12,859                | 817       | 8,037                      | 455       | 7,502                      | 370       |     |
|                                     | 0.8    | 6                      | 0.22  | 18,711                                | 1,472     | 16,840                               | 1,324     | 15,905                                   | 1,250     | 22,453                | 1,766     | 14,034                     | 883       | 13,098                     | 721       |     |
|                                     |        | 8                      | 0.2   | 17,010                                | 1,337     | 15,309                               | 1,203     | 14,459                                   | 1,137     | 20,412                | 1,605     | 12,758                     | 803       | 11,907                     | 655       |     |
|                                     |        | 12                     | 0.13  | 13,778                                | 975       | 12,400                               | 878       | 11,712                                   | 829       | 16,534                | 1,300     | 10,334                     | 650       | 9,644                      | 531       |     |
|                                     |        | 16                     | 0.1   | 12,247                                | 867       | 11,022                               | 780       | 10,410                                   | 736       | 14,697                | 1,156     | 9,185                      | 578       | 8,573                      | 472       |     |
|                                     |        | 20                     | 0.06  | 10,716                                | 759       | 9,644                                | 682       | 9,109                                    | 644       | 12,859                | 1,011     | 8,037                      | 506       | 7,502                      | 413       |     |
|                                     |        | 25                     | 0.057 | 10,716                                | 681       | 9,644                                | 613       | 9,109                                    | 579       | 12,859                | 817       | 8,037                      | 455       | 7,502                      | 370       |     |
|                                     | 2.5    | 0.1                    | 10    | 0.055                                 | 17,010    | 1,337                                | 15,309    | 1,203                                    | 14,459    | 1,137                 | 20,412    | 1,605                      | 12,758    | 803                        | 11,907    | 655 |
|                                     |        |                        | 20    | 0.03                                  | 12,247    | 867                                  | 11,022    | 780                                      | 10,410    | 736                   | 14,697    | 1,156                      | 9,185     | 578                        | 8,573     | 472 |
|                                     |        |                        | 30    | 0.015                                 | 10,716    | 681                                  | 9,644     | 613                                      | 9,109     | 579                   | 12,859    | 907                        | 8,037     | 455                        | 7,502     | 370 |
|                                     |        | 0.2                    | 10    | 0.07                                  | 17,010    | 1,337                                | 15,309    | 1,203                                    | 14,459    | 1,137                 | 20,412    | 1,605                      | 12,758    | 803                        | 11,907    | 655 |
|                                     |        |                        | 20    | 0.04                                  | 12,247    | 867                                  | 11,022    | 780                                      | 10,410    | 736                   | 14,697    | 1,156                      | 9,185     | 578                        | 8,573     | 472 |
|                                     |        |                        | 30    | 0.025                                 | 10,716    | 681                                  | 9,644     | 613                                      | 9,109     | 579                   | 12,859    | 907                        | 8,037     | 455                        | 7,502     | 370 |
|                                     |        | 0.3                    | 10    | 0.09                                  | 17,010    | 1,337                                | 15,309    | 1,203                                    | 14,459    | 1,137                 | 20,412    | 1,605                      | 12,758    | 803                        | 11,907    | 655 |
|                                     |        |                        | 20    | 0.06                                  | 12,247    | 867                                  | 11,022    | 780                                      | 10,410    | 736                   | 14,697    | 1,156                      | 9,185     | 578                        | 8,573     | 472 |
| 30                                  |        |                        | 0.03  | 10,716                                | 681       | 9,644                                | 613       | 9,109                                    | 579       | 12,859                | 907       | 8,037                      | 455       | 7,502                      | 370       |     |
| 0.5                                 |        | 10                     | 0.14  | 17,010                                | 1,337     | 15,309                               | 1,203     | 14,459                                   | 1,137     | 20,412                | 1,605     | 12,758                     | 803       | 11,907                     | 655       |     |
|                                     |        | 20                     | 0.08  | 12,247                                | 867       | 11,022                               | 780       | 10,410                                   | 736       | 14,697                | 1,156     | 9,185                      | 578       | 8,573                      | 472       |     |
|                                     |        | 30                     | 0.05  | 10,716                                | 681       | 9,644                                | 613       | 9,109                                    | 579       | 12,859                | 907       | 8,037                      | 455       | 7,502                      | 370       |     |
| 3                                   | 0.1    | 6                      | 0.08  | 12,960                                | 1,274     | 11,664                               | 1,147     | 11,016                                   | 1,083     | 15,552                | 1,528     | 9,720                      | 764       | 9,072                      | 624       |     |
|                                     |        | 8                      | 0.07  | 12,960                                | 1,274     | 11,664                               | 1,147     | 11,016                                   | 1,083     | 15,552                | 1,528     | 9,720                      | 764       | 9,072                      | 624       |     |

【Note】 Please refer to P550

## Recommended Cutting Data (High Precision)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

Micro Diameter Endmills for Deep Machining

» Continuation

| Workpiece Material                  |        |                        |        | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|--------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |        | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |        | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap     | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 3                                   | 0.1    | 12                     | 0.05   | 12,960                                | 1,274     | 11,664                               | 1,147     | 11,016                                   | 1,083     | 15,552                | 1,528     | 9,720                      | 764       | 9,072                      | 624       |
|                                     |        | 16                     | 0.035  | 12,960                                | 1,274     | 11,664                               | 1,147     | 11,016                                   | 1,083     | 15,552                | 1,528     | 9,720                      | 764       | 9,072                      | 624       |
|                                     |        | 18                     | 0.035  | 11,656                                | 1,144     | 10,509                               | 1,034     | 9,841                                    | 966       | 13,948                | 1,369     | 8,789                      | 690       | 8,121                      | 558       |
|                                     |        | 20                     | 0.035  | 10,498                                | 1,031     | 9,448                                | 929       | 8,923                                    | 877       | 12,597                | 1,238     | 7,873                      | 618       | 7,349                      | 505       |
|                                     |        | 30                     | 0.027  | 8,165                                 | 721       | 7,349                                | 649       | 6,940                                    | 613       | 9,797                 | 866       | 6,124                      | 432       | 5,715                      | 354       |
|                                     |        | 35                     | 0.02   | 8,165                                 | 721       | 7,349                                | 649       | 6,940                                    | 613       | 9,797                 | 866       | 6,124                      | 432       | 5,715                      | 354       |
|                                     | 0.2    | 6                      | 0.1    | 12,960                                | 1,274     | 11,664                               | 1,147     | 11,016                                   | 1,083     | 15,552                | 1,528     | 9,720                      | 764       | 9,072                      | 624       |
|                                     |        | 8                      | 0.09   | 12,960                                | 1,274     | 11,664                               | 1,147     | 11,016                                   | 1,083     | 15,552                | 1,528     | 9,720                      | 764       | 9,072                      | 624       |
|                                     |        | 12                     | 0.07   | 12,960                                | 1,274     | 11,664                               | 1,147     | 11,016                                   | 1,083     | 15,552                | 1,528     | 9,720                      | 764       | 9,072                      | 624       |
|                                     |        | 16                     | 0.05   | 12,960                                | 1,274     | 11,664                               | 1,147     | 11,016                                   | 1,083     | 15,552                | 1,528     | 9,720                      | 764       | 9,072                      | 624       |
|                                     |        | 18                     | 0.05   | 11,656                                | 1,144     | 10,509                               | 1,034     | 9,841                                    | 966       | 13,948                | 1,369     | 8,789                      | 690       | 8,121                      | 558       |
|                                     |        | 20                     | 0.05   | 10,498                                | 1,031     | 9,448                                | 929       | 8,923                                    | 877       | 12,597                | 1,238     | 7,873                      | 618       | 7,349                      | 505       |
|                                     | 0.3    | 30                     | 0.04   | 8,165                                 | 721       | 7,349                                | 649       | 6,940                                    | 613       | 9,797                 | 866       | 6,124                      | 432       | 5,715                      | 354       |
|                                     |        | 35                     | 0.035  | 8,165                                 | 721       | 7,349                                | 649       | 6,940                                    | 613       | 9,797                 | 866       | 6,124                      | 432       | 5,715                      | 354       |
|                                     |        | 6                      | 0.145  | 12,960                                | 1,274     | 11,664                               | 1,147     | 11,016                                   | 1,083     | 15,552                | 1,528     | 9,720                      | 764       | 9,072                      | 624       |
|                                     |        | 8                      | 0.13   | 12,960                                | 1,274     | 11,664                               | 1,147     | 11,016                                   | 1,083     | 15,552                | 1,528     | 9,720                      | 764       | 9,072                      | 624       |
|                                     |        | 12                     | 0.1    | 12,960                                | 1,274     | 11,664                               | 1,147     | 11,016                                   | 1,083     | 15,552                | 1,528     | 9,720                      | 764       | 9,072                      | 624       |
|                                     |        | 16                     | 0.075  | 12,960                                | 1,274     | 11,664                               | 1,147     | 11,016                                   | 1,083     | 15,552                | 1,528     | 9,720                      | 764       | 9,072                      | 624       |
|                                     | 0.5    | 18                     | 0.075  | 11,656                                | 1,144     | 10,509                               | 1,034     | 9,841                                    | 966       | 13,948                | 1,369     | 8,789                      | 690       | 8,121                      | 558       |
|                                     |        | 20                     | 0.075  | 10,498                                | 1,031     | 9,448                                | 929       | 8,923                                    | 877       | 12,597                | 1,238     | 7,873                      | 618       | 7,349                      | 505       |
|                                     |        | 30                     | 0.06   | 8,165                                 | 721       | 7,349                                | 649       | 6,940                                    | 613       | 9,797                 | 866       | 6,124                      | 432       | 5,715                      | 354       |
|                                     |        | 35                     | 0.05   | 8,165                                 | 721       | 7,349                                | 649       | 6,940                                    | 613       | 9,797                 | 866       | 6,124                      | 432       | 5,715                      | 354       |
|                                     |        | 8                      | 0.18   | 12,960                                | 1,274     | 11,664                               | 1,147     | 11,016                                   | 1,083     | 15,552                | 1,528     | 9,720                      | 764       | 9,072                      | 624       |
|                                     |        | 12                     | 0.13   | 12,960                                | 1,274     | 11,664                               | 1,147     | 11,016                                   | 1,083     | 15,552                | 1,528     | 9,720                      | 764       | 9,072                      | 624       |
|                                     | 1      | 16                     | 0.1    | 12,960                                | 1,274     | 11,664                               | 1,147     | 11,016                                   | 1,083     | 15,552                | 1,528     | 9,720                      | 764       | 9,072                      | 624       |
|                                     |        | 18                     | 0.1    | 11,656                                | 1,144     | 10,509                               | 1,034     | 9,841                                    | 966       | 13,948                | 1,369     | 8,789                      | 690       | 8,121                      | 558       |
|                                     |        | 20                     | 0.1    | 10,498                                | 1,031     | 9,448                                | 929       | 8,923                                    | 877       | 12,597                | 1,238     | 7,873                      | 618       | 7,349                      | 505       |
|                                     |        | 30                     | 0.08   | 8,165                                 | 721       | 7,349                                | 649       | 6,940                                    | 613       | 9,797                 | 866       | 6,124                      | 432       | 5,715                      | 354       |
| 35                                  |        | 0.065                  | 8,165  | 721                                   | 7,349     | 649                                  | 6,940     | 613                                      | 9,797     | 866                   | 6,124     | 432                        | 5,715     | 354                        |           |
| 8                                   |        | 0.2                    | 12,960 | 1,274                                 | 11,664    | 1,147                                | 11,016    | 1,083                                    | 15,552    | 1,528                 | 9,720     | 764                        | 9,072     | 624                        |           |
| 1                                   | 12     | 0.15                   | 12,960 | 1,274                                 | 11,664    | 1,147                                | 11,016    | 1,083                                    | 15,552    | 1,528                 | 9,720     | 764                        | 9,072     | 624                        |           |
|                                     | 16     | 0.12                   | 12,960 | 1,274                                 | 11,664    | 1,147                                | 11,016    | 1,083                                    | 15,552    | 1,528                 | 9,720     | 764                        | 9,072     | 624                        |           |

【Note】 Please refer to P550

## Recommended Cutting Data (High Precision)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |        | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|--------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |        | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |        | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap     | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 3                                   | 1      | 18                     | 0.11   | 11,656                                | 1,144     | 10,509                               | 1,034     | 9,841                                    | 966       | 13,948                | 1,369     | 8,789                      | 690       | 8,121                      | 558       |
|                                     |        | 20                     | 0.11   | 10,498                                | 1,031     | 9,448                                | 929       | 8,923                                    | 877       | 12,597                | 1,238     | 7,873                      | 618       | 7,349                      | 505       |
|                                     |        | 30                     | 0.09   | 8,165                                 | 721       | 7,349                                | 649       | 6,940                                    | 613       | 9,797                 | 866       | 6,124                      | 432       | 5,715                      | 354       |
|                                     |        | 35                     | 0.075  | 8,165                                 | 721       | 7,349                                | 649       | 6,940                                    | 613       | 9,797                 | 866       | 6,124                      | 432       | 5,715                      | 354       |
| 4                                   | 0.1    | 8                      | 0.08   | 10,092                                | 1,755     | 9,082                                | 1,580     | 8,578                                    | 1,492     | 12,110                | 2,106     | 7,569                      | 1,053     | 7,064                      | 860       |
|                                     |        | 12                     | 0.065  | 10,092                                | 1,755     | 9,082                                | 1,580     | 8,578                                    | 1,492     | 12,110                | 2,106     | 7,569                      | 1,053     | 7,064                      | 860       |
|                                     |        | 16                     | 0.06   | 9,230                                 | 1,605     | 8,240                                | 1,433     | 7,827                                    | 1,361     | 11,124                | 1,934     | 6,839                      | 951       | 6,016                      | 733       |
|                                     |        | 20                     | 0.055  | 9,230                                 | 1,605     | 8,240                                | 1,433     | 7,827                                    | 1,361     | 11,124                | 1,934     | 6,839                      | 951       | 6,016                      | 733       |
|                                     |        | 30                     | 0.045  | 9,230                                 | 1,605     | 8,240                                | 1,433     | 6,180                                    | 968       | 11,124                | 1,934     | 4,942                      | 619       | 4,612                      | 505       |
|                                     |        | 35                     | 0.04   | 9,230                                 | 1,605     | 8,240                                | 1,433     | 6,180                                    | 968       | 11,124                | 1,934     | 4,942                      | 619       | 4,612                      | 505       |
|                                     |        | 45                     | 0.03   | 7,416                                 | 968       | 6,592                                | 860       | 5,026                                    | 655       | 8,899                 | 1,160     | 4,450                      | 464       | 3,707                      | 322       |
|                                     | 0.2    | 8                      | 0.16   | 10,092                                | 1,755     | 9,082                                | 1,580     | 8,578                                    | 1,492     | 12,110                | 2,106     | 7,569                      | 1,053     | 7,064                      | 860       |
|                                     |        | 12                     | 0.14   | 10,092                                | 1,755     | 9,082                                | 1,580     | 8,578                                    | 1,492     | 12,110                | 2,106     | 7,569                      | 1,053     | 7,064                      | 860       |
|                                     |        | 16                     | 0.13   | 9,230                                 | 1,605     | 8,240                                | 1,433     | 7,827                                    | 1,361     | 11,124                | 1,934     | 6,839                      | 951       | 6,016                      | 733       |
|                                     |        | 20                     | 0.11   | 9,230                                 | 1,605     | 8,240                                | 1,433     | 7,827                                    | 1,361     | 11,124                | 1,934     | 6,839                      | 951       | 6,016                      | 733       |
|                                     |        | 30                     | 0.1    | 9,230                                 | 1,605     | 8,240                                | 1,433     | 6,180                                    | 968       | 11,124                | 1,934     | 4,942                      | 619       | 4,612                      | 505       |
|                                     |        | 35                     | 0.08   | 9,230                                 | 1,605     | 8,240                                | 1,433     | 6,180                                    | 968       | 11,124                | 1,934     | 4,942                      | 619       | 4,612                      | 505       |
|                                     |        | 45                     | 0.06   | 7,416                                 | 968       | 6,592                                | 860       | 5,026                                    | 655       | 8,899                 | 1,160     | 4,450                      | 464       | 3,707                      | 322       |
|                                     | 0.3    | 8                      | 0.24   | 10,092                                | 1,755     | 9,082                                | 1,580     | 8,578                                    | 1,492     | 12,110                | 2,106     | 7,569                      | 1,053     | 7,064                      | 860       |
|                                     |        | 12                     | 0.22   | 10,092                                | 1,755     | 9,082                                | 1,580     | 8,578                                    | 1,492     | 12,110                | 2,106     | 7,569                      | 1,053     | 7,064                      | 860       |
|                                     |        | 16                     | 0.2    | 9,230                                 | 1,605     | 8,240                                | 1,433     | 7,827                                    | 1,361     | 11,124                | 1,934     | 6,839                      | 951       | 6,016                      | 733       |
|                                     |        | 20                     | 0.18   | 9,230                                 | 1,605     | 8,240                                | 1,433     | 7,827                                    | 1,361     | 11,124                | 1,934     | 6,839                      | 951       | 6,016                      | 733       |
|                                     |        | 30                     | 0.16   | 9,230                                 | 1,605     | 8,240                                | 1,433     | 6,180                                    | 968       | 11,124                | 1,934     | 4,942                      | 619       | 4,612                      | 505       |
|                                     |        | 35                     | 0.14   | 9,230                                 | 1,605     | 8,240                                | 1,433     | 6,180                                    | 968       | 11,124                | 1,934     | 4,942                      | 619       | 4,612                      | 505       |
|                                     |        | 45                     | 0.12   | 7,416                                 | 968       | 6,592                                | 860       | 5,026                                    | 655       | 8,899                 | 1,160     | 4,450                      | 464       | 3,707                      | 322       |
|                                     | 0.5    | 12                     | 0.35   | 10,092                                | 1,755     | 9,082                                | 1,580     | 8,578                                    | 1,492     | 12,110                | 2,106     | 7,569                      | 1,053     | 7,064                      | 860       |
|                                     |        | 16                     | 0.25   | 9,230                                 | 1,605     | 8,240                                | 1,433     | 7,827                                    | 1,361     | 11,124                | 1,934     | 6,839                      | 951       | 6,016                      | 733       |
|                                     |        | 20                     | 0.2    | 9,230                                 | 1,605     | 8,240                                | 1,433     | 7,827                                    | 1,361     | 11,124                | 1,934     | 6,839                      | 951       | 6,016                      | 733       |
| 30                                  |        | 0.15                   | 9,230  | 1,605                                 | 8,240     | 1,433                                | 6,180     | 968                                      | 11,124    | 1,934                 | 4,942     | 619                        | 4,612     | 505                        |           |
| 35                                  |        | 0.1                    | 9,230  | 1,605                                 | 8,240     | 1,433                                | 6,180     | 968                                      | 11,124    | 1,934                 | 4,942     | 619                        | 4,612     | 505                        |           |
| 1                                   | 12     | 0.4                    | 10,092 | 1,755                                 | 9,082     | 1,580                                | 8,578     | 1,492                                    | 12,110    | 2,106                 | 7,569     | 1,053                      | 7,064     | 860                        |           |

【Note】 Please refer to P550

## Recommended Cutting Data (High Precision)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 4                                   | 1      | 16                     | 0.29  | 9,230                                 | 1,605     | 8,240                                | 1,433     | 7,827                                    | 1,361     | 11,124                | 1,934     | 6,839                      | 951       | 6,016                      | 733       |
|                                     |        | 20                     | 0.23  | 9,230                                 | 1,605     | 8,240                                | 1,433     | 7,827                                    | 1,361     | 11,124                | 1,934     | 6,839                      | 951       | 6,016                      | 733       |
|                                     |        | 30                     | 0.17  | 9,230                                 | 1,605     | 8,240                                | 1,433     | 6,180                                    | 968       | 11,124                | 1,934     | 4,942                      | 619       | 4,612                      | 505       |
|                                     |        | 35                     | 0.12  | 9,230                                 | 1,605     | 8,240                                | 1,433     | 6,180                                    | 968       | 11,124                | 1,934     | 4,942                      | 619       | 4,612                      | 505       |
|                                     |        | 45                     | 0.06  | 7,416                                 | 968       | 6,592                                | 860       | 5,026                                    | 655       | 8,899                 | 1,160     | 4,450                      | 464       | 3,707                      | 322       |
| 5                                   | 0.1    | 20                     | 0.08  | 8,239                                 | 1,791     | 7,415                                | 1,612     | 7,003                                    | 1,523     | 9,887                 | 2,149     | 6,179                      | 1,075     | 5,767                      | 878       |
|                                     |        | 40                     | 0.06  | 5,931                                 | 1,156     | 5,338                                | 1,040     | 5,042                                    | 982       | 7,116                 | 1,386     | 4,449                      | 693       | 4,152                      | 566       |
|                                     | 0.2    | 20                     | 0.16  | 8,239                                 | 1,791     | 7,415                                | 1,612     | 7,003                                    | 1,523     | 9,887                 | 2,149     | 6,179                      | 1,075     | 5,767                      | 878       |
|                                     |        | 40                     | 0.13  | 5,931                                 | 1,156     | 5,338                                | 1,040     | 5,042                                    | 982       | 7,116                 | 1,386     | 4,449                      | 693       | 4,152                      | 566       |
|                                     | 0.3    | 20                     | 0.24  | 8,239                                 | 1,791     | 7,415                                | 1,612     | 7,003                                    | 1,523     | 9,887                 | 2,149     | 6,179                      | 1,075     | 5,767                      | 878       |
|                                     |        | 40                     | 0.2   | 5,931                                 | 1,156     | 5,338                                | 1,040     | 5,042                                    | 982       | 7,116                 | 1,386     | 4,449                      | 693       | 4,152                      | 566       |
|                                     | 0.5    | 20                     | 0.35  | 8,239                                 | 1,791     | 7,415                                | 1,612     | 7,003                                    | 1,523     | 9,887                 | 2,149     | 6,179                      | 1,075     | 5,767                      | 878       |
|                                     |        | 40                     | 0.135 | 5,931                                 | 1,156     | 5,338                                | 1,040     | 5,042                                    | 982       | 7,116                 | 1,386     | 4,449                      | 693       | 4,152                      | 566       |
|                                     | 1      | 20                     | 0.4   | 8,239                                 | 1,791     | 7,415                                | 1,612     | 7,003                                    | 1,523     | 9,887                 | 2,149     | 6,179                      | 1,075     | 5,767                      | 878       |
|                                     |        | 40                     | 0.15  | 5,931                                 | 1,156     | 5,338                                | 1,040     | 5,042                                    | 982       | 7,116                 | 1,386     | 4,449                      | 693       | 4,152                      | 566       |
| 6                                   | 0.1    | 12                     | 0.08  | 6,867                                 | 1,792     | 6,181                                | 1,612     | 5,837                                    | 1,523     | 8,240                 | 2,150     | 5,150                      | 1,075     | 4,808                      | 878       |
|                                     |        | 18                     | 0.065 | 6,867                                 | 1,792     | 6,181                                | 1,612     | 5,837                                    | 1,523     | 8,240                 | 2,150     | 5,150                      | 1,075     | 4,808                      | 878       |
|                                     |        | 24                     | 0.06  | 6,867                                 | 1,792     | 6,181                                | 1,612     | 5,837                                    | 1,523     | 8,240                 | 2,150     | 5,150                      | 1,075     | 4,808                      | 878       |
|                                     |        | 35                     | 0.05  | 5,837                                 | 1,371     | 5,253                                | 1,234     | 4,962                                    | 1,165     | 7,005                 | 1,644     | 4,379                      | 823       | 4,086                      | 671       |
|                                     |        | 55                     | 0.04  | 4,942                                 | 945       | 4,449                                | 851       | 4,201                                    | 803       | 5,931                 | 1,134     | 3,706                      | 561       | 3,460                      | 457       |
|                                     | 0.2    | 12                     | 0.16  | 6,867                                 | 1,792     | 6,181                                | 1,612     | 5,837                                    | 1,523     | 8,240                 | 2,150     | 5,150                      | 1,075     | 4,808                      | 878       |
|                                     |        | 18                     | 0.14  | 6,867                                 | 1,792     | 6,181                                | 1,612     | 5,837                                    | 1,523     | 8,240                 | 2,150     | 5,150                      | 1,075     | 4,808                      | 878       |
|                                     |        | 24                     | 0.13  | 6,867                                 | 1,792     | 6,181                                | 1,612     | 5,837                                    | 1,523     | 8,240                 | 2,150     | 5,150                      | 1,075     | 4,808                      | 878       |
|                                     |        | 35                     | 0.11  | 5,837                                 | 1,371     | 5,253                                | 1,234     | 4,962                                    | 1,165     | 7,005                 | 1,644     | 4,379                      | 823       | 4,086                      | 671       |
|                                     |        | 55                     | 0.08  | 4,942                                 | 945       | 4,449                                | 851       | 4,201                                    | 803       | 5,931                 | 1,134     | 3,706                      | 561       | 3,460                      | 457       |
|                                     | 0.3    | 12                     | 0.24  | 6,867                                 | 1,792     | 6,181                                | 1,612     | 5,837                                    | 1,523     | 8,240                 | 2,150     | 5,150                      | 1,075     | 4,808                      | 878       |
|                                     |        | 18                     | 0.22  | 6,867                                 | 1,792     | 6,181                                | 1,612     | 5,837                                    | 1,523     | 8,240                 | 2,150     | 5,150                      | 1,075     | 4,808                      | 878       |
|                                     |        | 24                     | 0.2   | 6,867                                 | 1,792     | 6,181                                | 1,612     | 5,837                                    | 1,523     | 8,240                 | 2,150     | 5,150                      | 1,075     | 4,808                      | 878       |
|                                     |        | 35                     | 0.18  | 5,837                                 | 1,371     | 5,253                                | 1,234     | 4,962                                    | 1,165     | 7,005                 | 1,644     | 4,379                      | 823       | 4,086                      | 671       |
|                                     |        | 55                     | 0.14  | 4,942                                 | 945       | 4,449                                | 851       | 4,201                                    | 803       | 5,931                 | 1,134     | 3,706                      | 561       | 3,460                      | 457       |
|                                     | 0.5    | 18                     | 0.35  | 6,867                                 | 1,792     | 6,181                                | 1,612     | 5,837                                    | 1,523     | 8,240                 | 2,150     | 5,150                      | 1,075     | 4,808                      | 878       |
|                                     |        | 24                     | 0.29  | 6,867                                 | 1,792     | 6,181                                | 1,612     | 5,837                                    | 1,523     | 8,240                 | 2,150     | 5,150                      | 1,075     | 4,808                      | 878       |

【Note】 Please refer to P550

## Recommended Cutting Data (High Precision)

SPM200-RN2/SHM200-RN2

2 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 6                                   | 0.5    | 35                     | 0.24  | 5,837                                 | 1,371     | 5,253                                | 1,234     | 4,962                                    | 1,165     | 7,005                 | 1,644     | 4,379                      | 823       | 4,086                      | 671       |
|                                     |        | 55                     | 0.165 | 4,942                                 | 945       | 4,449                                | 851       | 4,201                                    | 803       | 5,931                 | 1,134     | 3,706                      | 561       | 3,460                      | 457       |
|                                     | 1      | 18                     | 0.4   | 6,867                                 | 1,792     | 6,181                                | 1,612     | 5,837                                    | 1,523     | 8,240                 | 2,150     | 5,150                      | 1,075     | 4,808                      | 878       |
|                                     |        | 24                     | 0.35  | 6,867                                 | 1,792     | 6,181                                | 1,612     | 5,837                                    | 1,523     | 8,240                 | 2,150     | 5,150                      | 1,075     | 4,808                      | 878       |
|                                     |        | 35                     | 0.28  | 5,837                                 | 1,371     | 5,253                                | 1,234     | 4,962                                    | 1,165     | 7,005                 | 1,644     | 4,379                      | 823       | 4,086                      | 671       |
|                                     |        | 55                     | 0.2   | 4,942                                 | 945       | 4,449                                | 851       | 4,201                                    | 803       | 5,931                 | 1,134     | 3,706                      | 561       | 3,460                      | 457       |

## 【Note】

1. For different materials, adjust the cutting depth (ap) according to the cutting depth factors in the above table. E.g. for hardened steels (45~55HRC),  $ap \times 0.5$ .
2. Use the appropriate coolant such as air cooling or emulsion for the work material and machining shape.
3. In actual machining, the condition should be adjusted according to the machining shape, purpose and the machine type.
4. If the rpm of the machine is lower than the data in the above table, the feed rate should also be lowered in the same ratio.

# Recommended Cutting Data (High Precision)

SPM200-RN4/SHM200-RN4

4 Flute, Corner Radius

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 1                                   | 0.05   | 4                      | 0.012 | 31,120                                | 1,952     | 28,008                               | 1,757     | 26,608                                   | 1,669     | 38,900                | 2,440     | 23,947                     | 1,230     | 22,749                     | 1,000     |
|                                     |        | 6                      | 0.01  | 25,200                                | 1,424     | 22,680                               | 1,282     | 21,546                                   | 1,218     | 31,500                | 1,780     | 19,391                     | 990       | 18,422                     | 810       |
|                                     |        | 8                      | 0.008 | 22,400                                | 1,264     | 20,160                               | 1,138     | 19,152                                   | 1,081     | 28,000                | 1,580     | 17,237                     | 880       | 16,375                     | 720       |
|                                     |        | 10                     | 0.005 | 19,600                                | 1,112     | 17,640                               | 1,001     | 16,758                                   | 951       | 24,500                | 1,390     | 15,082                     | 770       | 14,328                     | 630       |
|                                     |        | 12                     | 0.004 | 17,440                                | 880       | 15,696                               | 792       | 14,911                                   | 752       | 21,800                | 1,100     | 13,420                     | 600       | 12,749                     | 480       |
|                                     |        | 16                     | 0.003 | 17,440                                | 768       | 15,696                               | 691       | 14,911                                   | 657       | 21,800                | 960       | 13,420                     | 510       | 12,749                     | 400       |
|                                     |        | 20                     | 0.002 | 13,040                                | 576       | 11,736                               | 518       | 11,149                                   | 492       | 16,300                | 720       | 10,034                     | 385       | 9,533                      | 300       |
|                                     | 0.1    | 4                      | 0.02  | 31,120                                | 1,952     | 28,008                               | 1,757     | 26,608                                   | 1,669     | 38,900                | 2,440     | 23,947                     | 1,230     | 22,749                     | 1,000     |
|                                     |        | 6                      | 0.018 | 25,200                                | 1,424     | 22,680                               | 1,282     | 21,546                                   | 1,218     | 31,500                | 1,780     | 19,391                     | 990       | 18,422                     | 810       |
|                                     |        | 8                      | 0.014 | 22,400                                | 1,264     | 20,160                               | 1,138     | 19,152                                   | 1,081     | 28,000                | 1,580     | 17,237                     | 880       | 16,375                     | 720       |
|                                     |        | 10                     | 0.01  | 19,600                                | 1,112     | 17,640                               | 1,001     | 16,758                                   | 951       | 24,500                | 1,390     | 15,082                     | 770       | 14,328                     | 630       |
|                                     |        | 12                     | 0.008 | 17,440                                | 880       | 15,696                               | 792       | 14,911                                   | 752       | 21,800                | 1,100     | 13,420                     | 600       | 12,749                     | 480       |
|                                     |        | 16                     | 0.006 | 17,440                                | 768       | 15,696                               | 691       | 14,911                                   | 657       | 21,800                | 960       | 13,420                     | 510       | 12,749                     | 400       |
|                                     |        | 20                     | 0.004 | 13,040                                | 576       | 11,736                               | 518       | 11,149                                   | 492       | 16,300                | 720       | 10,034                     | 385       | 9,533                      | 300       |
| 1.5                                 | 0.05   | 4                      | 0.02  | 23,920                                | 1,624     | 21,528                               | 1,462     | 20,452                                   | 1,389     | 29,900                | 2,030     | 18,406                     | 1,020     | 17,486                     | 830       |
|                                     |        | 8                      | 0.014 | 21,760                                | 1,480     | 19,584                               | 1,332     | 18,605                                   | 1,265     | 27,200                | 1,850     | 16,744                     | 1,030     | 15,907                     | 840       |
|                                     |        | 12                     | 0.007 | 17,440                                | 1,184     | 15,696                               | 1,066     | 14,911                                   | 1,012     | 21,800                | 1,480     | 13,420                     | 820       | 12,749                     | 670       |
|                                     |        | 15                     | 0.006 | 13,520                                | 816       | 12,168                               | 734       | 11,560                                   | 698       | 16,900                | 1,020     | 10,404                     | 560       | 9,883                      | 450       |
|                                     | 0.1    | 4                      | 0.027 | 23,920                                | 1,624     | 21,528                               | 1,462     | 20,452                                   | 1,389     | 29,900                | 2,030     | 18,406                     | 1,020     | 17,486                     | 830       |
|                                     |        | 8                      | 0.02  | 21,760                                | 1,480     | 19,584                               | 1,332     | 18,605                                   | 1,265     | 27,200                | 1,850     | 16,744                     | 1,030     | 15,907                     | 840       |
|                                     |        | 12                     | 0.017 | 17,440                                | 1,184     | 15,696                               | 1,066     | 14,911                                   | 1,012     | 21,800                | 1,480     | 13,420                     | 820       | 12,749                     | 670       |
|                                     |        | 15                     | 0.014 | 13,520                                | 816       | 12,168                               | 734       | 11,560                                   | 698       | 16,900                | 1,020     | 10,404                     | 560       | 9,883                      | 450       |
|                                     |        | 20                     | 0.01  | 13,520                                | 816       | 12,168                               | 734       | 11,560                                   | 698       | 16,900                | 1,020     | 10,404                     | 560       | 9,883                      | 450       |
|                                     |        | 20                     | 0.01  | 13,520                                | 816       | 12,168                               | 734       | 11,560                                   | 698       | 16,900                | 1,020     | 10,404                     | 560       | 9,883                      | 450       |
| 2                                   | 0.05   | 4                      | 0.035 | 20,800                                | 2,450     | 18,700                               | 2,210     | 17,700                                   | 2,080     | 24,900                | 2,940     | 15,600                     | 1,470     | 14,600                     | 1,200     |
|                                     |        | 6                      | 0.03  | 20,800                                | 2,450     | 18,700                               | 2,210     | 17,700                                   | 2,080     | 24,900                | 2,940     | 15,600                     | 1,470     | 14,600                     | 1,200     |
|                                     |        | 8                      | 0.025 | 18,900                                | 2,230     | 17,000                               | 2,010     | 16,100                                   | 1,890     | 22,700                | 2,670     | 14,200                     | 1,340     | 13,200                     | 1,090     |
|                                     |        | 12                     | 0.02  | 15,300                                | 1,620     | 13,800                               | 1,460     | 13,000                                   | 1,380     | 18,400                | 1,950     | 11,500                     | 1,080     | 10,700                     | 890       |
|                                     |        | 16                     | 0.015 | 13,600                                | 1,440     | 12,200                               | 1,300     | 11,600                                   | 1,230     | 16,300                | 1,730     | 10,200                     | 960       | 9,500                      | 790       |
|                                     |        | 20                     | 0.01  | 11,900                                | 1,260     | 10,700                               | 1,140     | 10,100                                   | 1,070     | 14,300                | 1,520     | 8,900                      | 840       | 8,300                      | 690       |

【Note】 Please refer to P555

## Recommended Cutting Data (High Precision)

SPM200-RN4/SHM200-RN4

4 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |        | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|--------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |        | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |        | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap     | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 2                                   | 0.1    | 4                      | 0.042  | 20,800                                | 2,450     | 18,700                               | 2,210     | 17,700                                   | 2,080     | 24,900                | 2,940     | 15,600                     | 1,470     | 14,600                     | 1,200     |
|                                     |        | 6                      | 0.042  | 20,800                                | 2,450     | 18,700                               | 2,210     | 17,700                                   | 2,080     | 24,900                | 2,940     | 15,600                     | 1,470     | 14,600                     | 1,200     |
|                                     |        | 8                      | 0.036  | 18,900                                | 2,230     | 17,000                               | 2,010     | 16,100                                   | 1,890     | 22,700                | 2,670     | 14,200                     | 1,340     | 13,200                     | 1,090     |
|                                     |        | 12                     | 0.036  | 15,300                                | 1,620     | 13,800                               | 1,460     | 13,000                                   | 1,380     | 18,400                | 1,950     | 11,500                     | 1,080     | 10,700                     | 890       |
|                                     |        | 16                     | 0.023  | 13,600                                | 1,440     | 12,200                               | 1,300     | 11,600                                   | 1,230     | 16,300                | 1,730     | 10,200                     | 960       | 9,500                      | 790       |
|                                     |        | 20                     | 0.018  | 11,900                                | 1,260     | 10,700                               | 1,140     | 10,100                                   | 1,070     | 14,300                | 1,520     | 8,900                      | 840       | 8,300                      | 690       |
|                                     | 0.2    | 4                      | 0.08   | 20,800                                | 2,450     | 18,700                               | 2,210     | 17,700                                   | 2,080     | 24,900                | 2,940     | 15,600                     | 1,470     | 14,600                     | 1,200     |
|                                     |        | 6                      | 0.08   | 20,800                                | 2,450     | 18,700                               | 2,210     | 17,700                                   | 2,080     | 24,900                | 2,940     | 15,600                     | 1,470     | 14,600                     | 1,200     |
|                                     |        | 8                      | 0.07   | 18,900                                | 2,230     | 17,000                               | 2,010     | 16,100                                   | 1,890     | 22,700                | 2,670     | 14,200                     | 1,340     | 13,200                     | 1,090     |
|                                     |        | 12                     | 0.04   | 15,300                                | 1,620     | 13,800                               | 1,460     | 13,000                                   | 1,380     | 18,400                | 1,950     | 11,500                     | 1,080     | 10,700                     | 890       |
|                                     |        | 16                     | 0.04   | 13,600                                | 1,440     | 12,200                               | 1,300     | 11,600                                   | 1,230     | 16,300                | 1,730     | 10,200                     | 960       | 9,500                      | 790       |
|                                     |        | 20                     | 0.035  | 11,900                                | 1,260     | 10,700                               | 1,140     | 10,100                                   | 1,070     | 14,300                | 1,520     | 8,900                      | 840       | 8,300                      | 690       |
|                                     | 0.3    | 25                     | 0.025  | 11,900                                | 1,260     | 10,700                               | 1,140     | 10,100                                   | 1,070     | 14,300                | 1,520     | 8,900                      | 840       | 8,300                      | 690       |
|                                     |        | 30                     | 0.017  | 11,300                                | 1,200     | 10,200                               | 1,080     | 9,600                                    | 1,020     | 13,600                | 1,440     | 8,500                      | 800       | 7,900                      | 650       |
|                                     | 0.5    | 4                      | 0.11   | 20,800                                | 2,450     | 18,700                               | 2,210     | 17,700                                   | 2,080     | 24,900                | 2,940     | 15,600                     | 1,470     | 14,600                     | 1,200     |
|                                     |        | 8                      | 0.09   | 18,900                                | 2,350     | 17,000                               | 2,100     | 16,100                                   | 1,950     | 22,700                | 2,850     | 14,200                     | 1,490     | 13,200                     | 1,210     |
|                                     |        | 12                     | 0.06   | 15,300                                | 1,810     | 13,800                               | 1,620     | 13,000                                   | 1,530     | 18,400                | 2,170     | 11,500                     | 1,200     | 10,700                     | 980       |
|                                     |        | 16                     | 0.06   | 13,600                                | 1,610     | 12,200                               | 1,440     | 11,600                                   | 1,360     | 16,300                | 1,930     | 10,200                     | 1,070     | 9,500                      | 870       |
|                                     |        | 20                     | 0.037  | 11,900                                | 1,400     | 10,700                               | 1,260     | 10,100                                   | 1,190     | 14,300                | 1,680     | 8,900                      | 940       | 8,300                      | 770       |
|                                     |        | 4                      | 0.17   | 20,800                                | 2450      | 18,700                               | 2210      | 17,700                                   | 2,080     | 24,900                | 2940      | 15,600                     | 1,470     | 14,600                     | 1,200     |
|                                     | 0.1    | 6                      | 0.17   | 20,800                                | 2450      | 18,700                               | 2210      | 17,700                                   | 2,080     | 24,900                | 2940      | 15,600                     | 1,470     | 14,600                     | 1,200     |
|                                     |        | 8                      | 0.14   | 18,900                                | 2350      | 17,000                               | 2100      | 16,100                                   | 1,950     | 22,700                | 2850      | 14,200                     | 1,490     | 13,200                     | 1,210     |
|                                     |        | 12                     | 0.08   | 15,300                                | 1810      | 13,800                               | 1620      | 13,000                                   | 1,530     | 18,400                | 2170      | 11,500                     | 1,200     | 10,700                     | 980       |
|                                     |        | 16                     | 0.08   | 13,600                                | 1610      | 12,200                               | 1440      | 11,600                                   | 1,360     | 16,300                | 1930      | 10,200                     | 1,070     | 9,500                      | 870       |
| 20                                  |        | 0.05                   | 11,900 | 1400                                  | 10,700    | 1260                                 | 10,100    | 1,190                                    | 14,300    | 1680                  | 8,900     | 940                        | 8,300     | 770                        |           |
| 25                                  |        | 0.05                   | 11,900 | 1400                                  | 10,700    | 1260                                 | 10,100    | 1,190                                    | 14,300    | 1680                  | 8,900     | 940                        | 8,300     | 770                        |           |
| 2.5                                 | 0.1    | 30                     | 0.03   | 11,300                                | 1330      | 10,200                               | 1200      | 9,600                                    | 1,130     | 13,600                | 1600      | 8,500                      | 850       | 7,900                      | 730       |
|                                     |        | 8                      | 0.047  | 18,900                                | 2480      | 17,000                               | 2230      | 16,100                                   | 2,100     | 22,700                | 2970      | 14,200                     | 1,490     | 13,200                     | 1,210     |
|                                     |        | 16                     | 0.037  | 13,600                                | 1610      | 12,200                               | 1440      | 11,600                                   | 1,360     | 16,300                | 1930      | 10,200                     | 1,070     | 9,500                      | 870       |
|                                     |        | 20                     | 0.025  | 11,900                                | 1400      | 10,700                               | 1260      | 10,100                                   | 1,190     | 14,300                | 1680      | 8,900                      | 940       | 8,300                      | 770       |

【Note】 Please refer to P555

## Recommended Cutting Data (High Precision)

SPM200-RN4/SHM200-RN4

4 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |        | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|--------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |        | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |        | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap     | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 2.5                                 | 0.2    | 8                      | 0.08   | 16,200                                | 2140      | 14,600                               | 1920      | 13,800                                   | 1,820     | 19,400                | 2570      | 12,200                     | 1,280     | 11,300                     | 1,100     |
|                                     |        | 16                     | 0.045  | 14,100                                | 1770      | 12,700                               | 1600      | 12,000                                   | 1,510     | 16,900                | 2130      | 10,600                     | 1,110     | 9,900                      | 960       |
|                                     |        | 20                     | 0.042  | 11,800                                | 1410      | 10,600                               | 1270      | 10,000                                   | 1,200     | 14,100                | 1750      | 8,800                      | 930       | 8,200                      | 790       |
|                                     | 0.3    | 12                     | 0.09   | 14,800                                | 1960      | 13,300                               | 1760      | 12,500                                   | 1,660     | 17,700                | 2350      | 11,100                     | 1,230     | 10,300                     | 1,010     |
|                                     |        | 20                     | 0.052  | 11,800                                | 1560      | 10,600                               | 1400      | 10,000                                   | 1,330     | 14,100                | 1870      | 8,800                      | 1,040     | 8,200                      | 850       |
|                                     | 0.5    | 12                     | 0.1    | 14,800                                | 1,960     | 13,300                               | 1,760     | 12,500                                   | 1,660     | 17,700                | 2,350     | 11,100                     | 1,230     | 10,300                     | 1,010     |
| 20                                  |        | 0.07                   | 11,800 | 1,560                                 | 10,600    | 1,400                                | 10,000    | 1,330                                    | 14,100    | 1,870                 | 8,800     | 1,040                      | 8,200     | 850                        |           |
| 3                                   | 0.1    | 8                      | 0.055  | 14,400                                | 2,120     | 13,000                               | 1,910     | 12,200                                   | 1,800     | 17,300                | 2,550     | 10,800                     | 1,270     | 10,100                     | 1,040     |
|                                     |        | 16                     | 0.035  | 14,400                                | 2,120     | 13,000                               | 1,910     | 12,200                                   | 1,800     | 17,300                | 2,550     | 10,800                     | 1,270     | 10,100                     | 1,040     |
|                                     |        | 25                     | 0.022  | 11,700                                | 1,720     | 10,500                               | 1,550     | 9,900                                    | 1,460     | 14,000                | 2,060     | 8,700                      | 1,150     | 8,200                      | 940       |
|                                     |        | 30                     | 0.014  | 9,100                                 | 1,720     | 8,200                                | 1,550     | 7,700                                    | 1,460     | 10,900                | 2,060     | 6,800                      | 1,150     | 6,400                      | 940       |
|                                     | 0.2    | 8                      | 0.09   | 14,400                                | 2,120     | 13,000                               | 1,910     | 12,200                                   | 1,800     | 17,300                | 2,550     | 10,800                     | 1,270     | 10,100                     | 1,040     |
|                                     |        | 12                     | 0.07   | 14,400                                | 2,120     | 13,000                               | 1,910     | 12,200                                   | 1,800     | 17,300                | 2,550     | 10,800                     | 1,270     | 10,100                     | 1,040     |
|                                     |        | 16                     | 0.05   | 14,400                                | 2,120     | 13,000                               | 1,910     | 12,200                                   | 1,800     | 17,300                | 2,550     | 10,800                     | 1,270     | 10,100                     | 1,040     |
|                                     |        | 20                     | 0.05   | 11,700                                | 1,720     | 10,500                               | 1,550     | 9,900                                    | 1,460     | 14,000                | 2,060     | 8,700                      | 1,150     | 8,200                      | 940       |
|                                     |        | 25                     | 0.045  | 11,700                                | 1,720     | 10,500                               | 1,550     | 9,900                                    | 1,460     | 14,000                | 2,060     | 8,700                      | 1,150     | 8,200                      | 940       |
|                                     |        | 30                     | 0.04   | 9,100                                 | 1,720     | 8,200                                | 1,550     | 7,700                                    | 1,460     | 10,900                | 2,060     | 6,800                      | 1,150     | 6,400                      | 940       |
|                                     | 0.3    | 8                      | 0.13   | 14,400                                | 2,360     | 13,000                               | 2,120     | 12,200                                   | 2,010     | 17,300                | 2,830     | 10,800                     | 1,410     | 10,100                     | 1,160     |
|                                     |        | 16                     | 0.075  | 14,400                                | 2,360     | 13,000                               | 2,120     | 12,200                                   | 2,010     | 17,300                | 2,830     | 10,800                     | 1,410     | 10,100                     | 1,160     |
|                                     |        | 20                     | 0.075  | 11,700                                | 1,910     | 10,500                               | 1,720     | 9,900                                    | 1,620     | 14,000                | 2,290     | 8,700                      | 1,270     | 8,200                      | 1,040     |
|                                     |        | 25                     | 0.067  | 11,700                                | 1,910     | 10,500                               | 1,720     | 9,900                                    | 1,620     | 14,000                | 2,290     | 8,700                      | 1,270     | 8,200                      | 1,040     |
|                                     |        | 30                     | 0.06   | 9,100                                 | 1,910     | 8,200                                | 1,720     | 7,700                                    | 1,620     | 10,900                | 2,290     | 6,800                      | 1,270     | 6,400                      | 1,040     |
|                                     | 0.5    | 8                      | 0.18   | 14,400                                | 2,360     | 13,000                               | 2,120     | 12,200                                   | 2,010     | 17,300                | 2,830     | 10,800                     | 1,410     | 10,100                     | 1,160     |
|                                     |        | 12                     | 0.13   | 14,400                                | 2,360     | 13,000                               | 2,120     | 12,200                                   | 2,010     | 17,300                | 2,830     | 10,800                     | 1,410     | 10,100                     | 1,160     |
|                                     |        | 16                     | 0.1    | 14,400                                | 2,360     | 13,000                               | 2,120     | 12,200                                   | 2,010     | 17,300                | 2,830     | 10,800                     | 1,410     | 10,100                     | 1,160     |
|                                     |        | 20                     | 0.1    | 11,700                                | 1,910     | 10,500                               | 1,720     | 9,900                                    | 1,620     | 14,000                | 2,290     | 8,700                      | 1,270     | 8,200                      | 1,040     |
|                                     |        | 25                     | 0.09   | 11,700                                | 1,910     | 10,500                               | 1,720     | 9,900                                    | 1,620     | 14,000                | 2,290     | 8,700                      | 1,270     | 8,200                      | 1,040     |
|                                     |        | 30                     | 0.08   | 9,100                                 | 1,910     | 8,200                                | 1,720     | 7,700                                    | 1,620     | 10,900                | 2,290     | 6,800                      | 1,270     | 6,400                      | 1,040     |
|                                     |        | 35                     | 0.065  | 9,100                                 | 1,910     | 8,200                                | 1,720     | 7,700                                    | 1,620     | 10,900                | 2,290     | 6,800                      | 1,270     | 6,400                      | 1,040     |

【Note】 Please refer to P555



## Recommended Cutting Data (High Precision)

SPM200-RN4/SHM200-RN4

4 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 4                                   | 0.1    | 12                     | 0.065 | 10,400                                | 2,790     | 9,300                                | 2,520     | 8,800                                    | 2,240     | 12,400                | 3,350     | 7,800                      | 1,750     | 7,200                      | 1,300     |
|                                     |        | 20                     | 0.055 | 10,400                                | 2,790     | 9,300                                | 2,520     | 8,800                                    | 2,240     | 12,400                | 3,350     | 7,800                      | 1,750     | 7,200                      | 1,300     |
|                                     |        | 30                     | 0.045 | 9,300                                 | 2,520     | 8,400                                | 2,010     | 7,900                                    | 1,830     | 11,200                | 3,020     | 7,000                      | 1,470     | 6,500                      | 1,170     |
|                                     |        | 40                     | 0.03  | 9,300                                 | 2,520     | 8,400                                | 2,010     | 7,900                                    | 1,830     | 11,200                | 3,020     | 7,000                      | 1,470     | 6,500                      | 1,170     |
|                                     | 0.2    | 12                     | 0.13  | 10,400                                | 2,790     | 9,300                                | 2,520     | 8,800                                    | 2,240     | 12,400                | 3,350     | 7,800                      | 1,750     | 7,200                      | 1,300     |
|                                     |        | 20                     | 0.1   | 10,400                                | 2,790     | 9,300                                | 2,520     | 8,800                                    | 2,240     | 12,400                | 3,350     | 7,800                      | 1,750     | 7,200                      | 1,300     |
|                                     |        | 30                     | 0.08  | 9,300                                 | 2,520     | 8,400                                | 2,010     | 7,900                                    | 1,830     | 11,200                | 3,020     | 7,000                      | 1,470     | 6,500                      | 1,170     |
|                                     |        | 40                     | 0.06  | 9,300                                 | 2,520     | 8,400                                | 2,010     | 7,900                                    | 1,830     | 11,200                | 3,020     | 7,000                      | 1,470     | 6,500                      | 1,170     |
|                                     | 0.3    | 12                     | 0.17  | 10,400                                | 2,790     | 9,300                                | 2,520     | 8,800                                    | 2,380     | 12,400                | 3,350     | 7,800                      | 1,860     | 7,200                      | 1,410     |
|                                     |        | 20                     | 0.13  | 10,400                                | 2,790     | 9,300                                | 2,520     | 8,800                                    | 2,380     | 12,400                | 3,350     | 7,800                      | 1,860     | 7,200                      | 1,410     |
|                                     |        | 30                     | 0.1   | 9,300                                 | 2,520     | 8,400                                | 2,260     | 7,900                                    | 1,900     | 11,200                | 3,020     | 7,000                      | 1,570     | 6,500                      | 1,170     |
|                                     |        | 40                     | 0.08  | 9,300                                 | 2,520     | 8,400                                | 2,260     | 7,900                                    | 1,900     | 11,200                | 3,020     | 7,000                      | 1,570     | 6,500                      | 1,170     |
|                                     | 0.5    | 12                     | 0.24  | 10,400                                | 2,790     | 9,300                                | 2,520     | 8,800                                    | 2,380     | 12,400                | 3,350     | 7,800                      | 1,860     | 7,200                      | 1,410     |
|                                     |        | 20                     | 0.2   | 10,400                                | 2,790     | 9,300                                | 2,520     | 8,800                                    | 2,380     | 12,400                | 3,350     | 7,800                      | 1,860     | 7,200                      | 1,410     |
|                                     |        | 30                     | 0.17  | 9,300                                 | 2,520     | 8,400                                | 2,260     | 7,900                                    | 1,900     | 11,200                | 3,020     | 7,000                      | 1,570     | 6,500                      | 1,170     |
|                                     |        | 40                     | 0.1   | 9,300                                 | 2,520     | 8,400                                | 2,260     | 7,900                                    | 1,900     | 11,200                | 3,020     | 7,000                      | 1,570     | 6,500                      | 1,170     |
| 5                                   | 0.1    | 20                     | 0.07  | 8,100                                 | 2,190     | 7,300                                | 1,970     | 6,900                                    | 1,760     | 9,700                 | 2,620     | 6,100                      | 1,370     | 5,700                      | 1,020     |
|                                     |        | 40                     | 0.035 | 7,300                                 | 1,970     | 6,600                                | 1,570     | 6,200                                    | 1,430     | 8,700                 | 2,360     | 5,500                      | 1,150     | 5,100                      | 920       |
|                                     | 0.2    | 20                     | 0.15  | 8,100                                 | 2,190     | 7,300                                | 1,970     | 6,900                                    | 1,760     | 9,700                 | 2,620     | 6,100                      | 1,370     | 5,700                      | 1,020     |
|                                     |        | 40                     | 0.08  | 7,300                                 | 1,970     | 6,600                                | 1,570     | 6,200                                    | 1,430     | 8,700                 | 2,360     | 5,500                      | 1,150     | 5,100                      | 920       |
|                                     | 0.3    | 20                     | 0.21  | 8,100                                 | 2,190     | 7,300                                | 1,970     | 6,900                                    | 1,860     | 9,700                 | 2,620     | 6,100                      | 1,460     | 5,700                      | 1,110     |
|                                     |        | 40                     | 0.1   | 7,300                                 | 1,970     | 6,600                                | 1,770     | 6,200                                    | 1,490     | 8,700                 | 2,360     | 5,500                      | 1,230     | 5,100                      | 920       |
|                                     | 0.5    | 20                     | 0.28  | 8,100                                 | 2,190     | 7,300                                | 1,970     | 6,900                                    | 1,860     | 9,700                 | 2,620     | 6,100                      | 1,460     | 5,700                      | 1,110     |
|                                     |        | 40                     | 0.14  | 7,300                                 | 1,970     | 6,600                                | 1,770     | 6,200                                    | 1,490     | 8,700                 | 2,360     | 5,500                      | 1,230     | 5,100                      | 920       |
|                                     | 1      | 20                     | 0.35  | 8,100                                 | 2,190     | 7,300                                | 1,970     | 6,900                                    | 1,860     | 9,700                 | 2,620     | 6,100                      | 1,460     | 5,700                      | 1,110     |
|                                     |        | 40                     | 0.18  | 7,300                                 | 1,970     | 6,600                                | 1,770     | 6,200                                    | 1,490     | 8,700                 | 2,360     | 5,500                      | 1,230     | 5,100                      | 920       |

【Note】 Please refer to P555

## Recommended Cutting Data (High Precision)

SPM200-RN4/SHM200-RN4

4 Flute, Corner Radius

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |        |                        |      | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|--------|------------------------|------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |        |                        |      | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |        |                        |      | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| Mill Dia. (mm)                      | r (mm) | Under Neck Length (mm) | ap   | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 6                                   | 0.2    | 30                     | 0.15 | 7,200                                 | 1,940     | 6,500                                | 1,750     | 6,100                                    | 1,560     | 8,600                 | 2,330     | 5,400                      | 1,220     | 5,000                      | 910       |
|                                     |        | 54                     | 0.1  | 6,500                                 | 1,750     | 5,800                                | 1,400     | 5,500                                    | 1,270     | 7,800                 | 2,100     | 4,900                      | 1,020     | 4,500                      | 820       |
|                                     |        | 72                     | 0.07 | 6,500                                 | 1,750     | 5,800                                | 1,400     | 5,500                                    | 1,270     | 7,800                 | 2,100     | 4,900                      | 1,020     | 4,500                      | 820       |
|                                     | 0.3    | 30                     | 0.25 | 7,200                                 | 1,940     | 6,500                                | 1,750     | 6,100                                    | 1,560     | 8,600                 | 2,330     | 5,400                      | 1,300     | 5,000                      | 980       |
|                                     |        | 54                     | 0.18 | 6,500                                 | 1,750     | 5,800                                | 1,570     | 5,500                                    | 1,270     | 7,800                 | 2,100     | 4,900                      | 1,090     | 4,500                      | 820       |
|                                     |        | 72                     | 0.1  | 6,500                                 | 1,750     | 5,800                                | 1,570     | 5,500                                    | 1,270     | 7,800                 | 2,100     | 4,900                      | 1,090     | 4,500                      | 820       |
|                                     | 0.5    | 30                     | 0.35 | 7,200                                 | 1,940     | 6,500                                | 1,750     | 6,100                                    | 1,650     | 8,600                 | 2,330     | 5,400                      | 1,300     | 5,000                      | 980       |
|                                     |        | 54                     | 0.25 | 6,500                                 | 1,750     | 5,800                                | 1,570     | 5,500                                    | 1,320     | 7,800                 | 2,100     | 4,900                      | 1,090     | 4,500                      | 820       |
|                                     |        | 72                     | 0.15 | 6,500                                 | 1,750     | 5,800                                | 1,570     | 5,500                                    | 1,320     | 7,800                 | 2,100     | 4,900                      | 1,090     | 4,500                      | 820       |
|                                     | 1      | 30                     | 0.55 | 7,200                                 | 1,940     | 6,500                                | 1,750     | 6,100                                    | 1,650     | 8,600                 | 2,330     | 5,400                      | 1,300     | 5,000                      | 980       |
|                                     |        | 54                     | 0.4  | 6,500                                 | 1,750     | 5,800                                | 1,570     | 5,500                                    | 1,320     | 7,800                 | 2,100     | 4,900                      | 1,090     | 4,500                      | 820       |
|                                     |        | 72                     | 0.22 | 6,500                                 | 1,750     | 5,800                                | 1,570     | 5,500                                    | 1,320     | 7,800                 | 2,100     | 4,900                      | 1,090     | 4,500                      | 820       |

## 【Note】

- For different materials, adjust the cutting depth (ap) according to the cutting depth factors in the above table. E.g. for hardened steels (45~55HRC), ap\*0.5.
- Use the appropriate coolant such as air cooling or emulsion for the work material and machining shape.
- In actual machining, the condition should be adjusted according to the machining shape, purpose and the machine type.
- If the rpm of the machine is lower than the data in the above table, the feed rate should also be lowered in the same ratio.

## Recommended Cutting Data (General type)

SPM200-BN2/SHM200-BN2

2 Flute, Ballnose

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |                |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|----------------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |                |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |                |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| R (mm)                              | Mill Dia. (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 0.05                                | 0.1            | 0.2                    | 0.008 | 50,000                                | 250       | 50,000                               | 250       | 50,000                                   | 225       | 50,000                | 300       | 50,000                     | 200       | 50,000                     | 188       |
|                                     |                | 0.3                    | 0.006 | 50,000                                | 250       | 50,000                               | 250       | 50,000                                   | 225       | 50,000                | 300       | 50,000                     | 200       | 50,000                     | 188       |
|                                     |                | 0.5                    | 0.004 | 50,000                                | 250       | 50,000                               | 250       | 50,000                                   | 225       | 50,000                | 300       | 50,000                     | 200       | 50,000                     | 188       |
| 0.1                                 | 0.2            | 0.5                    | 0.02  | 45,000                                | 315       | 45,000                               | 315       | 45,000                                   | 293       | 45,000                | 378       | 40,950                     | 246       | 37,800                     | 189       |
|                                     |                | 0.75                   | 0.017 | 45,000                                | 315       | 45,000                               | 315       | 45,000                                   | 293       | 45,000                | 378       | 40,950                     | 246       | 37,800                     | 189       |
|                                     |                | 1                      | 0.014 | 45,000                                | 315       | 45,000                               | 315       | 45,000                                   | 293       | 45,000                | 378       | 40,950                     | 246       | 37,800                     | 189       |
|                                     |                | 1.25                   | 0.011 | 45,000                                | 284       | 43,740                               | 275       | 41,310                                   | 242       | 45,000                | 340       | 36,450                     | 197       | 34,020                     | 153       |
|                                     |                | 1.5                    | 0.008 | 45,000                                | 284       | 43,740                               | 275       | 41,310                                   | 242       | 45,000                | 340       | 36,450                     | 197       | 34,020                     | 153       |
|                                     |                | 2                      | 0.008 | 45,000                                | 284       | 43,740                               | 275       | 41,310                                   | 242       | 45,000                | 340       | 36,450                     | 197       | 34,020                     | 153       |
|                                     |                | 2.5                    | 0.006 | 43,200                                | 242       | 38,880                               | 218       | 36,720                                   | 191       | 43,200                | 291       | 32,400                     | 156       | 30,240                     | 121       |
| 3                                   | 0.004          | 43,200                 | 242   | 38,880                                | 218       | 36,720                               | 191       | 43,200                                   | 291       | 32,400                | 156       | 30,240                     | 121       |                            |           |
| 0.15                                | 0.3            | 0.5                    | 0.027 | 45,000                                | 450       | 45,000                               | 450       | 45,000                                   | 405       | 45,000                | 540       | 40,500                     | 345       | 37,800                     | 302       |
|                                     |                | 0.75                   | 0.024 | 45,000                                | 450       | 45,000                               | 450       | 45,000                                   | 405       | 45,000                | 540       | 40,500                     | 345       | 37,800                     | 302       |
|                                     |                | 1                      | 0.021 | 45,000                                | 450       | 45,000                               | 450       | 45,000                                   | 405       | 45,000                | 540       | 40,500                     | 345       | 37,800                     | 302       |
|                                     |                | 1.25                   | 0.019 | 45,000                                | 450       | 45,000                               | 450       | 45,000                                   | 405       | 45,000                | 540       | 40,500                     | 345       | 37,800                     | 302       |
|                                     |                | 1.5                    | 0.016 | 45,000                                | 450       | 45,000                               | 450       | 45,000                                   | 405       | 45,000                | 540       | 40,500                     | 345       | 37,800                     | 302       |
|                                     |                | 2                      | 0.012 | 45,000                                | 405       | 43,740                               | 393       | 41,310                                   | 335       | 45,000                | 486       | 36,450                     | 279       | 34,020                     | 245       |
|                                     |                | 2.5                    | 0.01  | 45,000                                | 405       | 43,740                               | 393       | 41,310                                   | 335       | 45,000                | 486       | 36,450                     | 279       | 34,020                     | 245       |
| 3                                   | 0.008          | 45,000                 | 405   | 43,740                                | 393       | 41,310                               | 335       | 45,000                                   | 486       | 36,450                | 279       | 34,020                     | 245       |                            |           |
| 0.2                                 | 0.4            | 0.75                   | 0.043 | 45,000                                | 756       | 45,000                               | 755       | 45,000                                   | 693       | 45,000                | 870       | 42,120                     | 590       | 39,312                     | 551       |
|                                     |                | 1                      | 0.04  | 45,000                                | 756       | 45,000                               | 755       | 45,000                                   | 693       | 45,000                | 870       | 42,120                     | 590       | 39,312                     | 551       |
|                                     |                | 1.5                    | 0.034 | 45,000                                | 648       | 45,000                               | 647       | 45,000                                   | 594       | 45,000                | 746       | 42,120                     | 421       | 39,312                     | 393       |
|                                     |                | 2                      | 0.028 | 45,000                                | 540       | 45,000                               | 540       | 45,000                                   | 495       | 45,000                | 622       | 42,120                     | 421       | 39,312                     | 393       |
|                                     |                | 2.5                    | 0.022 | 38,880                                | 420       | 34,992                               | 378       | 33,048                                   | 328       | 45,000                | 504       | 29,160                     | 263       | 32,659                     | 245       |
|                                     |                | 3                      | 0.016 | 38,880                                | 420       | 34,992                               | 378       | 33,048                                   | 328       | 45,000                | 504       | 29,160                     | 263       | 32,659                     | 245       |
|                                     |                | 3.5                    | 0.012 | 38,880                                | 420       | 34,992                               | 378       | 33,048                                   | 328       | 45,000                | 504       | 29,160                     | 263       | 32,659                     | 245       |
| 4                                   | 0.01           | 38,880                 | 420   | 34,992                                | 378       | 33,048                               | 328       | 45,000                                   | 504       | 29,160                | 263       | 32,659                     | 245       |                            |           |
| 4.5                                 | 0.008          | 34,560                 | 353   | 31,104                                | 318       | 29,376                               | 275       | 41,472                                   | 423       | 25,920                | 221       | 24,192                     | 205       |                            |           |
| 0.25                                | 0.5            | 1                      | 0.045 | 45,000                                | 1,350     | 42,120                               | 1,264     | 39,780                                   | 1,074     | 45,000                | 1,350     | 35,100                     | 948       | 32,760                     | 669       |
|                                     |                | 1.5                    | 0.04  | 45,000                                | 1,350     | 42,120                               | 1,264     | 39,780                                   | 1,074     | 45,000                | 1,350     | 35,100                     | 948       | 32,760                     | 613       |
|                                     |                | 2                      | 0.035 | 45,000                                | 1,080     | 42,120                               | 1,011     | 39,780                                   | 860       | 45,000                | 1,080     | 35,100                     | 758       | 32,760                     | 613       |
|                                     |                | 2.5                    | 0.033 | 45,000                                | 900       | 37,908                               | 682       | 35,802                                   | 581       | 45,000                | 973       | 31,590                     | 511       | 29,484                     | 452       |

【Note】 Please refer to P566

## Recommended Cutting Data (General type)

SPM200-BN2/SHM200-BN2

2 Flute, Ballnose

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |                |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|----------------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |                |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |                |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| R (mm)                              | Mill Dia. (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 0.25                                | 0.5            | 3                      | 0.03  | 42,120                                | 758       | 37,908                               | 682       | 35,802                                   | 581       | 45,000                | 810       | 31,590                     | 511       | 22,680                     | 347       |
|                                     |                | 4                      | 0.02  | 32,400                                | 583       | 29,160                               | 525       | 27,540                                   | 446       | 38,880                | 700       | 29,160                     | 472       | 22,680                     | 347       |
|                                     |                | 5                      | 0.018 | 32,400                                | 583       | 29,160                               | 525       | 27,540                                   | 446       | 38,880                | 700       | 29,160                     | 472       | 22,680                     | 347       |
|                                     |                | 5.5                    | 0.015 | 28,800                                | 490       | 25,920                               | 441       | 24,480                                   | 374       | 34,560                | 588       | 21,600                     | 330       | 20,160                     | 292       |
|                                     |                | 6                      | 0.013 | 28,800                                | 490       | 25,920                               | 441       | 24,480                                   | 374       | 34,560                | 588       | 21,600                     | 330       | 20,160                     | 292       |
|                                     |                | 8                      | 0.008 | 28,800                                | 490       | 25,920                               | 441       | 24,480                                   | 374       | 34,560                | 588       | 21,600                     | 330       | 20,160                     | 292       |
| 0.3                                 | 0.6            | 1                      | 0.075 | 45,000                                | 2,025     | 45,000                               | 2,025     | 45,000                                   | 1,755     | 45,000                | 2,025     | 43,200                     | 1,555     | 40,320                     | 1,210     |
|                                     |                | 2                      | 0.063 | 45,000                                | 2,025     | 45,000                               | 2,025     | 45,000                                   | 1,755     | 45,000                | 2,025     | 43,200                     | 1,555     | 40,320                     | 1,210     |
|                                     |                | 2.5                    | 0.046 | 45,000                                | 1,620     | 45,000                               | 1,620     | 45,000                                   | 1,404     | 45,000                | 1,620     | 43,200                     | 1,244     | 40,320                     | 887       |
|                                     |                | 3                      | 0.041 | 45,000                                | 1,620     | 45,000                               | 1,620     | 45,000                                   | 1,404     | 45,000                | 1,620     | 43,200                     | 1,244     | 40,320                     | 887       |
|                                     |                | 3.5                    | 0.035 | 45,000                                | 1,539     | 45,000                               | 1,538     | 44,064                                   | 1,307     | 45,000                | 1,539     | 38,880                     | 1,065     | 36,288                     | 759       |
|                                     |                | 4                      | 0.026 | 45,000                                | 1,539     | 45,000                               | 1,538     | 44,064                                   | 1,307     | 45,000                | 1,539     | 38,880                     | 1,065     | 36,288                     | 689       |
|                                     |                | 4.5                    | 0.022 | 45,000                                | 1,215     | 43,740                               | 1,182     | 41,310                                   | 967       | 45,000                | 1,215     | 36,450                     | 788       | 34,020                     | 613       |
|                                     |                | 5                      | 0.02  | 42,120                                | 1,138     | 37,908                               | 1,024     | 35,802                                   | 838       | 45,000                | 1,215     | 31,590                     | 682       | 29,484                     | 531       |
|                                     |                | 5.5                    | 0.017 | 42,120                                | 1,138     | 37,908                               | 1,024     | 35,802                                   | 838       | 45,000                | 1,215     | 31,590                     | 682       | 29,484                     | 531       |
|                                     |                | 6                      | 0.015 | 42,120                                | 1,138     | 37,908                               | 1,024     | 35,802                                   | 838       | 45,000                | 1,215     | 31,590                     | 682       | 29,484                     | 531       |
|                                     |                | 7                      | 0.015 | 28,800                                | 734       | 25,920                               | 793       | 24,480                                   | 541       | 34,560                | 881       | 21,600                     | 441       | 20,160                     | 446       |
|                                     |                | 8                      | 0.015 | 28,800                                | 734       | 25,920                               | 661       | 24,480                                   | 541       | 34,560                | 881       | 21,600                     | 441       | 20,160                     | 343       |
| 9                                   | 0.012          | 28,800                 | 734   | 25,920                                | 661       | 24,480                               | 541       | 34,560                                   | 881       | 21,600                | 441       | 20,160                     | 343       |                            |           |
| 10                                  | 0.009          | 25,200                 | 643   | 22,680                                | 579       | 21,420                               | 473       | 30,240                                   | 771       | 18,900                | 385       | 17,640                     | 300       |                            |           |
| 12                                  | 0.007          | 21,600                 | 518   | 19,440                                | 466       | 18,360                               | 382       | 25,920                                   | 622       | 16,200                | 311       | 15,120                     | 242       |                            |           |
| 0.35                                | 0.7            | 2                      | 0.092 | 45,000                                | 2,228     | 45,000                               | 2,228     | 45,000                                   | 1,940     | 45,000                | 2,228     | 43,200                     | 1,739     | 37,800                     | 1,069     |
|                                     |                | 4                      | 0.041 | 45,000                                | 1,692     | 45,000                               | 1,692     | 44,064                                   | 1,443     | 45,000                | 1,692     | 38,880                     | 1,189     | 34,020                     | 761       |
|                                     |                | 6                      | 0.027 | 42,120                                | 1,251     | 37,908                               | 1,126     | 35,802                                   | 925       | 45,000                | 1,337     | 31,590                     | 763       | 27,216                     | 577       |
|                                     |                | 8                      | 0.02  | 28,800                                | 760       | 25,920                               | 684       | 24,480                                   | 563       | 34,560                | 912       | 21,600                     | 464       | 20,160                     | 380       |
| 0.4                                 | 0.8            | 2                      | 0.12  | 45,000                                | 2,430     | 45,000                               | 2,430     | 45,000                                   | 2,160     | 45,000                | 2,430     | 43,200                     | 2,333     | 40,320                     | 1,694     |
|                                     |                | 4                      | 0.078 | 45,000                                | 2,430     | 45,000                               | 2,430     | 45,000                                   | 2,160     | 45,000                | 2,430     | 43,200                     | 2,333     | 40,320                     | 1,694     |
|                                     |                | 5                      | 0.059 | 45,000                                | 2,186     | 45,000                               | 2,188     | 44,064                                   | 1,903     | 45,000                | 2,188     | 38,880                     | 1,911     | 36,288                     | 1,372     |
|                                     |                | 6                      | 0.042 | 45,000                                | 2,040     | 40,824                               | 1,852     | 38,556                                   | 1,554     | 45,000                | 2,042     | 34,020                     | 1,286     | 31,752                     | 1,121     |
|                                     |                | 8                      | 0.02  | 37,440                                | 1,213     | 33,696                               | 1,092     | 31,824                                   | 916       | 44,928                | 1,455     | 28,080                     | 758       | 26,208                     | 660       |
|                                     |                | 10                     | 0.02  | 28,800                                | 881       | 25,920                               | 793       | 24,480                                   | 666       | 34,560                | 1,058     | 21,600                     | 551       | 20,160                     | 480       |
| 0.45                                | 0.9            | 2                      | 0.135 | 45,000                                | 2,877     | 45,000                               | 2,877     | 45,000                                   | 2,539     | 45,000                | 2,877     | 41,040                     | 2,170     | 38,304                     | 1,924     |

【Note】 Please refer to P566

## Recommended Cutting Data (General type)

SPM200-BN2/SHM200-BN2

2 Flute, Ballnose

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |                |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|----------------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |                |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |                |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| R (mm)                              | Mill Dia. (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 0.45                                | 0.9            | 4                      | 0.081 | 45,000                                | 2,494     | 45,000                               | 2,494     | 43,605                                   | 2,132     | 45,000                | 2,494     | 38,475                     | 1,763     | 35,910                     | 1,563     |
|                                     |                | 6                      | 0.05  | 43,092                                | 1,818     | 38,783                               | 1,636     | 36,628                                   | 1,364     | 45,000                | 2,072     | 32,319                     | 1,128     | 30,164                     | 1,000     |
|                                     |                | 8                      | 0.036 | 32,832                                | 1,259     | 29,549                               | 1,133     | 27,907                                   | 944       | 39,398                | 1,511     | 24,624                     | 781       | 22,982                     | 693       |
| 0.5                                 | 1              | 2                      | 0.2   | 45,000                                | 3,375     | 43,740                               | 3,281     | 41,310                                   | 2,788     | 45,000                | 3,375     | 38,880                     | 2,450     | 34,020                     | 2,041     |
|                                     |                | 3                      | 0.2   | 45,000                                | 3,375     | 43,740                               | 3,281     | 41,310                                   | 2,788     | 45,000                | 3,375     | 38,880                     | 2,450     | 34,020                     | 2,041     |
|                                     |                | 4                      | 0.14  | 45,000                                | 3,375     | 43,740                               | 3,281     | 41,310                                   | 2,788     | 45,000                | 3,375     | 38,880                     | 2,450     | 34,020                     | 2,041     |
|                                     |                | 5                      | 0.09  | 42,120                                | 2,948     | 37,908                               | 2,653     | 35,802                                   | 2,336     | 45,000                | 3,150     | 38,880                     | 2,286     | 29,484                     | 1,652     |
|                                     |                | 6                      | 0.06  | 37,908                                | 2,389     | 36,742                               | 2,302     | 34,700                                   | 2,087     | 45,000                | 2,836     | 34,992                     | 2,118     | 26,536                     | 1,241     |
|                                     |                | 7                      | 0.06  | 34,992                                | 1,575     | 31,493                               | 1,417     | 29,743                                   | 1,204     | 41,990                | 1,890     | 28,431                     | 1,191     | 24,494                     | 955       |
|                                     |                | 8                      | 0.06  | 34,992                                | 1,575     | 31,493                               | 1,417     | 29,743                                   | 1,204     | 41,990                | 1,890     | 28,431                     | 1,191     | 24,494                     | 881       |
|                                     |                | 9                      | 0.045 | 34,992                                | 1,575     | 31,493                               | 1,417     | 29,743                                   | 1,204     | 41,990                | 1,890     | 28,431                     | 1,191     | 24,494                     | 881       |
|                                     |                | 10                     | 0.038 | 34,992                                | 1,575     | 31,493                               | 1,417     | 29,743                                   | 1,204     | 41,990                | 1,890     | 28,431                     | 1,191     | 24,494                     | 881       |
|                                     |                | 12                     | 0.025 | 25,920                                | 1,102     | 23,328                               | 992       | 22,032                                   | 842       | 31,104                | 1,322     | 19,440                     | 694       | 18,144                     | 617       |
|                                     |                | 13                     | 0.023 | 25,920                                | 1,102     | 23,328                               | 992       | 22,032                                   | 842       | 31,104                | 1,322     | 19,440                     | 694       | 18,144                     | 617       |
|                                     |                | 14                     | 0.02  | 25,920                                | 1,102     | 23,328                               | 992       | 22,032                                   | 842       | 31,104                | 1,322     | 19,440                     | 694       | 18,144                     | 617       |
|                                     |                | 16                     | 0.015 | 25,920                                | 1,102     | 23,328                               | 992       | 22,032                                   | 842       | 31,104                | 1,322     | 19,440                     | 694       | 18,144                     | 617       |
| 18                                  | 0.012          | 22,680                 | 907   | 20,412                                | 816       | 19,278                               | 694       | 27,216                                   | 1,089     | 17,010                | 572       | 15,876                     | 508       |                            |           |
| 20                                  | 0.01           | 19,440                 | 778   | 17,496                                | 700       | 16,524                               | 595       | 23,328                                   | 933       | 14,580                | 490       | 13,608                     | 436       |                            |           |
| 0.55                                | 1.1            | 2                      | 0.2   | 45,000                                | 3,532     | 40,824                               | 3,204     | 38,556                                   | 2,634     | 45,000                | 3,532     | 34,020                     | 2,207     | 31,752                     | 1,958     |
|                                     |                | 4                      | 0.14  | 45,000                                | 3,532     | 40,824                               | 3,204     | 38,556                                   | 2,634     | 45,000                | 3,532     | 34,020                     | 2,207     | 31,752                     | 1,958     |
|                                     |                | 6                      | 0.06  | 35,802                                | 2,075     | 32,222                               | 1,868     | 30,432                                   | 1,535     | 42,962                | 2,490     | 26,852                     | 1,287     | 25,061                     | 1,141     |
|                                     |                | 8                      | 0.06  | 35,802                                | 2,075     | 32,222                               | 1,556     | 28,091                                   | 1,181     | 42,962                | 2,075     | 24,786                     | 990       | 23,134                     | 878       |
|                                     |                | 10                     | 0.038 | 35,802                                | 1,597     | 32,222                               | 1,556     | 28,091                                   | 1,181     | 42,962                | 2,075     | 24,786                     | 990       | 23,134                     | 878       |
| 0.6                                 | 1.2            | 4                      | 0.16  | 41,539                                | 3,369     | 37,384                               | 2,934     | 35,307                                   | 2,445     | 45,000                | 3,532     | 33,231                     | 2,300     | 29,076                     | 1,674     |
|                                     |                | 8                      | 0.06  | 33,696                                | 1,928     | 30,326                               | 1,893     | 28,642                                   | 1,862     | 40,435                | 2,313     | 27,216                     | 1,856     | 23,587                     | 943       |
|                                     |                | 10                     | 0.053 | 31,104                                | 1,537     | 27,994                               | 1,310     | 26,438                                   | 1,190     | 37,325                | 1,746     | 24,300                     | 962       | 21,773                     | 784       |
|                                     |                | 12                     | 0.045 | 31,104                                | 1,456     | 27,994                               | 1,310     | 26,438                                   | 1,190     | 37,325                | 1,746     | 23,328                     | 923       | 21,773                     | 784       |
| 0.7                                 | 1.4            | 8                      | 0.11  | 29,484                                | 2,123     | 26,536                               | 1,911     | 25,061                                   | 1,625     | 35,381                | 2,547     | 22,113                     | 1,380     | 20,639                     | 1,238     |
|                                     |                | 12                     | 0.053 | 27,216                                | 1,470     | 24,494                               | 1,323     | 23,134                                   | 1,124     | 32,659                | 1,764     | 20,412                     | 956       | 19,051                     | 858       |
|                                     |                | 16                     | 0.035 | 20,160                                | 1,028     | 18,144                               | 925       | 17,136                                   | 787       | 24,192                | 1,234     | 15,120                     | 669       | 14,112                     | 599       |
| 0.75                                | 1.5            | 4                      | 0.2   | 37,800                                | 3,742     | 34,020                               | 3,368     | 32,130                                   | 2,892     | 45,000                | 4,456     | 28,350                     | 2,297     | 26,460                     | 1,985     |
|                                     |                | 6                      | 0.2   | 37,800                                | 3,742     | 34,020                               | 3,368     | 32,130                                   | 2,892     | 45,000                | 4,456     | 28,350                     | 2,297     | 26,460                     | 1,985     |
|                                     |                | 8                      | 0.09  | 29,484                                | 2,364     | 26,536                               | 1,891     | 25,061                                   | 1,625     | 35,381                | 2,522     | 22,113                     | 1,291     | 20,639                     | 1,115     |

【Note】 Please refer to P566

## Recommended Cutting Data (General type)

SPM200-BN2/SHM200-BN2

2 Flute, Ballnose

Micro Diameter Endmills for Deep Machining

» Continuation

| Workpiece Material                  |                |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|----------------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |                |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |                |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| R (mm)                              | Mill Dia. (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 0.75                                | 1.5            | 10                     | 0.09  | 27,216                                | 1,940     | 24,494                               | 1,746     | 23,134                                   | 1,499     | 32,659                | 2,327     | 20,412                     | 1,191     | 19,051                     | 1,029     |
|                                     |                | 12                     | 0.09  | 27,216                                | 1,616     | 24,494                               | 1,454     | 23,134                                   | 1,249     | 32,659                | 1,940     | 20,412                     | 993       | 19,051                     | 858       |
|                                     |                | 14                     | 0.075 | 27,216                                | 1,616     | 21,773                               | 1,221     | 20,563                                   | 1,049     | 29,030                | 1,629     | 18,144                     | 833       | 16,934                     | 719       |
|                                     |                | 16                     | 0.038 | 20,160                                | 1,131     | 18,144                               | 1,018     | 17,136                                   | 874       | 24,192                | 1,357     | 15,120                     | 694       | 14,112                     | 599       |
|                                     |                | 18                     | 0.038 | 20,160                                | 1,131     | 18,144                               | 1,018     | 17,136                                   | 874       | 24,192                | 1,357     | 15,120                     | 694       | 14,112                     | 599       |
|                                     |                | 20                     | 0.038 | 20,160                                | 1,131     | 18,144                               | 1,018     | 17,136                                   | 874       | 24,192                | 1,357     | 15,120                     | 694       | 14,112                     | 599       |
| 0.8                                 | 1.6            | 8                      | 0.22  | 32,760                                | 2,752     | 29,484                               | 2,477     | 27,846                                   | 2,244     | 39,312                | 3,302     | 24,570                     | 1,916     | 21,294                     | 1,431     |
|                                     |                | 12                     | 0.098 | 29,484                                | 2,600     | 26,536                               | 2,341     | 25,061                                   | 1,958     | 35,381                | 3,120     | 22,113                     | 1,672     | 19,165                     | 1,160     |
|                                     |                | 16                     | 0.06  | 25,272                                | 1,592     | 22,745                               | 1,433     | 21,481                                   | 1,199     | 30,326                | 1,911     | 18,954                     | 1,024     | 17,690                     | 892       |
|                                     |                | 20                     | 0.04  | 18,720                                | 1,114     | 16,848                               | 1,003     | 15,912                                   | 839       | 22,464                | 1,337     | 14,040                     | 716       | 13,104                     | 624       |
| 0.9                                 | 1.8            | 8                      | 0.26  | 30,420                                | 2,921     | 27,378                               | 2,628     | 25,857                                   | 2,172     | 36,504                | 3,505     | 22,815                     | 1,807     | 21,294                     | 1,534     |
|                                     |                | 12                     | 0.105 | 25,272                                | 1,820     | 22,745                               | 1,637     | 21,481                                   | 1,354     | 30,326                | 2,183     | 18,954                     | 1,125     | 17,690                     | 956       |
|                                     |                | 16                     | 0.068 | 25,272                                | 1,820     | 22,745                               | 1,637     | 21,481                                   | 1,354     | 30,326                | 2,183     | 18,954                     | 1,125     | 17,690                     | 956       |
|                                     |                | 20                     | 0.045 | 18,720                                | 1,273     | 16,848                               | 1,146     | 15,912                                   | 947       | 22,464                | 1,527     | 14,040                     | 788       | 13,104                     | 669       |
| 1                                   | 2              | 3                      | 0.4   | 28,350                                | 4,253     | 25,515                               | 3,828     | 24,098                                   | 3,254     | 34,020                | 5,103     | 21,263                     | 2,744     | 19,845                     | 2,381     |
|                                     |                | 4                      | 0.4   | 28,350                                | 4,253     | 25,515                               | 3,828     | 24,098                                   | 3,254     | 34,020                | 5,103     | 21,263                     | 2,744     | 19,845                     | 2,381     |
|                                     |                | 6                      | 0.4   | 28,350                                | 3,828     | 25,515                               | 3,444     | 24,098                                   | 2,892     | 34,020                | 4,593     | 21,263                     | 2,424     | 19,845                     | 2,143     |
|                                     |                | 8                      | 0.28  | 28,350                                | 3,828     | 25,515                               | 3,444     | 24,098                                   | 2,892     | 34,020                | 4,593     | 21,263                     | 2,424     | 19,845                     | 2,143     |
|                                     |                | 10                     | 0.21  | 26,460                                | 3,175     | 23,814                               | 2,858     | 22,491                                   | 2,429     | 31,752                | 3,811     | 19,845                     | 2,024     | 17,199                     | 1,321     |
|                                     |                | 12                     | 0.12  | 23,814                                | 2,858     | 21,433                               | 2,572     | 20,242                                   | 2,187     | 28,577                | 3,428     | 17,861                     | 1,846     | 15,479                     | 1,189     |
|                                     |                | 13                     | 0.12  | 23,814                                | 2,858     | 21,433                               | 2,572     | 20,242                                   | 2,187     | 28,577                | 3,428     | 17,861                     | 1,822     | 14,288                     | 914       |
|                                     |                | 14                     | 0.12  | 23,814                                | 2,477     | 21,433                               | 2,229     | 20,242                                   | 1,895     | 28,577                | 2,971     | 16,585                     | 1,466     | 14,288                     | 914       |
|                                     |                | 16                     | 0.12  | 22,113                                | 1,592     | 19,902                               | 1,434     | 18,797                                   | 1,218     | 26,536                | 1,911     | 16,585                     | 1,320     | 14,288                     | 823       |
|                                     |                | 18                     | 0.09  | 20,412                                | 1,470     | 18,371                               | 1,323     | 17,350                                   | 1,124     | 24,494                | 1,764     | 16,585                     | 1,219     | 14,288                     | 823       |
|                                     |                | 20                     | 0.075 | 20,412                                | 1,470     | 18,371                               | 1,323     | 17,350                                   | 1,124     | 24,494                | 1,764     | 16,585                     | 1,015     | 14,288                     | 823       |
|                                     |                | 22                     | 0.05  | 16,065                                | 1,093     | 14,459                               | 983       | 13,656                                   | 836       | 19,278                | 1,311     | 12,049                     | 697       | 13,495                     | 734       |
|                                     |                | 25                     | 0.05  | 15,120                                | 1,028     | 13,608                               | 925       | 12,852                                   | 787       | 18,144                | 1,234     | 11,340                     | 655       | 12,701                     | 691       |
|                                     |                | 30                     | 0.03  | 15,120                                | 1,028     | 13,608                               | 925       | 12,852                                   | 787       | 18,144                | 1,234     | 11,340                     | 655       | 12,701                     | 691       |
| 35                                  | 0.025          | 13,230                 | 847   | 11,907                                | 762       | 11,246                               | 648       | 15,876                                   | 1,016     | 9,923                 | 540       | 9,261                      | 474       |                            |           |
| 40                                  | 0.022          | 11,340                 | 725   | 10,206                                | 653       | 9,639                                | 555       | 13,608                                   | 871       | 8,505                 | 463       | 7,938                      | 407       |                            |           |
| 1.25                                | 2.5            | 6                      | 0.5   | 24,975                                | 4,557     | 22,478                               | 4,100     | 21,229                                   | 3,417     | 29,970                | 5,468     | 18,732                     | 2,779     | 17,483                     | 2,278     |
|                                     |                | 10                     | 0.34  | 24,975                                | 4,557     | 22,478                               | 4,100     | 21,229                                   | 3,417     | 29,970                | 5,468     | 18,732                     | 2,779     | 17,483                     | 2,278     |
|                                     |                | 15                     | 0.15  | 19,481                                | 2,558     | 17,533                               | 2,302     | 16,558                                   | 1,919     | 23,377                | 3,070     | 14,611                     | 1,821     | 13,637                     | 1,279     |

【Note】 Please refer to P566

## Recommended Cutting Data (General type)

SPM200-BN2/SHM200-BN2

2 Flute, Ballnose

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |                |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|----------------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |                |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |                |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| R (mm)                              | Mill Dia. (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 1.25                                | 2.5            | 20                     | 0.12  | 17,982                                | 1,967     | 16,184                               | 1,771     | 15,285                                   | 1,476     | 21,578                | 2,362     | 14,611                     | 1,301     | 12,587                     | 984       |
|                                     |                | 25                     | 0.098 | 17,982                                | 1,770     | 16,184                               | 1,593     | 15,285                                   | 1,328     | 21,578                | 2,124     | 13,487                     | 1,080     | 12,587                     | 885       |
|                                     |                | 30                     | 0.055 | 13,320                                | 1,377     | 11,988                               | 1,239     | 11,322                                   | 1,033     | 15,984                | 1,652     | 9,990                      | 840       | 9,324                      | 689       |
| 1.5                                 | 3              | 8                      | 0.6   | 21,600                                | 4,860     | 19,440                               | 4,374     | 18,360                                   | 3,690     | 25,920                | 5,832     | 16,200                     | 3,062     | 15,120                     | 2,722     |
|                                     |                | 10                     | 0.42  | 21,600                                | 4,860     | 19,440                               | 4,374     | 18,360                                   | 3,690     | 25,920                | 5,832     | 16,200                     | 3,062     | 15,120                     | 2,722     |
|                                     |                | 13                     | 0.315 | 20,160                                | 3,629     | 18,144                               | 3,266     | 17,136                                   | 2,755     | 24,192                | 4,354     | 15,120                     | 2,286     | 14,112                     | 2,032     |
|                                     |                | 16                     | 0.315 | 20,160                                | 3,266     | 18,144                               | 2,939     | 17,136                                   | 2,480     | 24,192                | 3,920     | 15,120                     | 2,057     | 13,104                     | 1,699     |
|                                     |                | 20                     | 0.18  | 16,848                                | 2,274     | 15,163                               | 2,048     | 14,321                                   | 1,727     | 20,218                | 2,730     | 12,636                     | 1,434     | 10,886                     | 1,176     |
|                                     |                | 25                     | 0.12  | 16,848                                | 2,274     | 15,163                               | 2,048     | 14,321                                   | 1,727     | 20,218                | 2,730     | 12,636                     | 1,434     | 10,886                     | 1,176     |
|                                     |                | 30                     | 0.12  | 15,552                                | 2,100     | 13,997                               | 1,890     | 13,219                                   | 1,594     | 18,662                | 2,520     | 11,664                     | 1,323     | 10,886                     | 1,176     |
|                                     |                | 35                     | 0.08  | 11,520                                | 1,469     | 10,368                               | 1,322     | 9,792                                    | 1,115     | 13,824                | 1,762     | 8,640                      | 925       | 9,677                      | 987       |
| 1.75                                | 3.5            | 15                     | 0.36  | 16,088                                | 3,299     | 14,479                               | 2,969     | 13,675                                   | 2,475     | 19,305                | 3,959     | 12,065                     | 2,012     | 11,262                     | 1,650     |
|                                     |                | 25                     | 0.21  | 13,365                                | 2,052     | 12,029                               | 1,847     | 11,361                                   | 1,539     | 16,038                | 2,462     | 10,024                     | 1,252     | 9,356                      | 1,026     |
|                                     |                | 35                     | 0.09  | 13,365                                | 2,052     | 12,029                               | 1,847     | 11,361                                   | 1,539     | 16,038                | 2,462     | 10,024                     | 1,252     | 9,356                      | 1,026     |
|                                     |                | 45                     | 0.09  | 9,900                                 | 1,438     | 8,910                                | 1,294     | 8,415                                    | 1,079     | 11,880                | 1,726     | 7,425                      | 878       | 6,930                      | 719       |
| 2                                   | 4              | 10                     | 0.6   | 15,525                                | 4,658     | 13,973                               | 4,192     | 13,197                                   | 3,564     | 18,630                | 5,589     | 11,644                     | 2,969     | 10,868                     | 2,608     |
|                                     |                | 13                     | 0.48  | 15,525                                | 4,658     | 13,973                               | 4,192     | 13,197                                   | 3,564     | 18,630                | 5,589     | 11,644                     | 2,969     | 10,868                     | 2,608     |
|                                     |                | 16                     | 0.42  | 15,525                                | 4,658     | 13,973                               | 4,192     | 13,197                                   | 3,564     | 18,630                | 5,589     | 11,644                     | 2,969     | 10,868                     | 2,608     |
|                                     |                | 20                     | 0.42  | 13,455                                | 3,229     | 12,110                               | 2,906     | 11,437                                   | 2,471     | 16,146                | 3,875     | 10,092                     | 2,058     | 9,419                      | 1,808     |
|                                     |                | 25                     | 0.24  | 12,110                                | 2,615     | 10,899                               | 2,354     | 10,293                                   | 2,001     | 14,531                | 3,139     | 9,083                      | 1,946     | 8,477                      | 1,464     |
|                                     |                | 30                     | 0.16  | 11,178                                | 2,012     | 10,060                               | 1,811     | 9,502                                    | 1,539     | 13,414                | 2,415     | 8,384                      | 1,283     | 7,825                      | 1,127     |
|                                     |                | 35                     | 0.1   | 11,178                                | 2,012     | 10,060                               | 1,811     | 9,502                                    | 1,539     | 13,414                | 2,415     | 8,384                      | 1,283     | 7,825                      | 1,127     |
|                                     |                | 40                     | 0.1   | 11,178                                | 2,012     | 10,060                               | 1,811     | 9,502                                    | 1,539     | 13,414                | 2,415     | 8,384                      | 1,283     | 7,825                      | 1,127     |
|                                     |                | 45                     | 0.1   | 8,280                                 | 1,408     | 7,452                                | 1,267     | 7,038                                    | 1,076     | 9,936                 | 1,689     | 6,210                      | 897       | 5,796                      | 788       |
|                                     |                | 50                     | 0.1   | 8,280                                 | 1,408     | 7,452                                | 1,267     | 7,038                                    | 1,076     | 9,936                 | 1,689     | 6,210                      | 897       | 5,796                      | 788       |
| 2.5                                 | 5              | 20                     | 0.525 | 11,340                                | 4,082     | 10,206                               | 3,674     | 9,639                                    | 2,892     | 13,608                | 4,899     | 8,505                      | 2,552     | 7,938                      | 2,143     |
|                                     |                | 25                     | 0.525 | 10,530                                | 3,285     | 9,477                                | 3,412     | 8,951                                    | 2,686     | 12,636                | 4,549     | 7,898                      | 2,370     | 7,371                      | 1,990     |
|                                     |                | 30                     | 0.3   | 9,477                                 | 2,502     | 8,529                                | 3,072     | 8,056                                    | 2,417     | 11,372                | 4,094     | 7,108                      | 2,132     | 6,634                      | 1,792     |
|                                     |                | 40                     | 0.2   | 8,748                                 | 1,890     | 7,873                                | 1,701     | 7,436                                    | 1,338     | 10,498                | 2,268     | 6,561                      | 1,182     | 6,124                      | 993       |
| 3                                   | 6              | 12                     | 0.6   | 12,150                                | 5,103     | 10,935                               | 4,593     | 10,328                                   | 3,828     | 14,580                | 6,124     | 9,113                      | 3,113     | 8,505                      | 2,552     |
|                                     |                | 20                     | 0.5   | 11,475                                | 4,476     | 10,328                               | 4,028     | 9,754                                    | 3,356     | 13,770                | 5,370     | 8,607                      | 2,730     | 8,033                      | 2,237     |
|                                     |                | 30                     | 0.42  | 9,360                                 | 2,696     | 8,424                                | 2,426     | 7,956                                    | 1,910     | 11,232                | 3,235     | 7,020                      | 1,825     | 6,552                      | 1,415     |
|                                     |                | 50                     | 0.15  | 7,776                                 | 2,015     | 6,998                                | 1,814     | 6,610                                    | 1,428     | 9,331                 | 2,418     | 5,832                      | 1,260     | 5,443                      | 1,058     |

[Note] Please refer to P566

## Recommended Cutting Data (High Precision)

SPM200-BN2/SHM200-BN2

2 Flute, Ballnose

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |                |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|----------------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |                |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |                |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| R (mm)                              | Mill Dia. (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 0.05                                | 0.1            | 0.2                    | 0.004 | 50,000                                | 250       | 50,000                               | 250       | 50,000                                   | 225       | 50,000                | 300       | 50,000                     | 200       | 50,000                     | 188       |
|                                     |                | 0.3                    | 0.003 | 50,000                                | 250       | 50,000                               | 250       | 50,000                                   | 225       | 50,000                | 300       | 50,000                     | 200       | 50,000                     | 188       |
|                                     |                | 0.5                    | 0.002 | 50,000                                | 250       | 50,000                               | 250       | 50,000                                   | 225       | 50,000                | 300       | 50,000                     | 200       | 50,000                     | 188       |
| 0.1                                 | 0.2            | 0.5                    | 0.015 | 45,000                                | 315       | 45,000                               | 315       | 45,000                                   | 293       | 45,000                | 378       | 40,950                     | 246       | 37,800                     | 189       |
|                                     |                | 0.75                   | 0.013 | 45,000                                | 315       | 45,000                               | 315       | 45,000                                   | 293       | 45,000                | 378       | 40,950                     | 246       | 37,800                     | 189       |
|                                     |                | 1                      | 0.011 | 45,000                                | 315       | 45,000                               | 315       | 45,000                                   | 293       | 45,000                | 378       | 40,950                     | 246       | 37,800                     | 189       |
|                                     |                | 1.25                   | 0.008 | 45,000                                | 284       | 43,740                               | 275       | 41,310                                   | 242       | 45,000                | 340       | 36,450                     | 197       | 34,020                     | 153       |
|                                     |                | 1.5                    | 0.007 | 45,000                                | 284       | 43,740                               | 275       | 41,310                                   | 242       | 45,000                | 340       | 36,450                     | 197       | 34,020                     | 153       |
|                                     |                | 2                      | 0.006 | 45,000                                | 284       | 43,740                               | 275       | 41,310                                   | 242       | 45,000                | 340       | 36,450                     | 197       | 34,020                     | 153       |
|                                     |                | 2.5                    | 0.005 | 43,200                                | 242       | 38,880                               | 218       | 36,720                                   | 191       | 43,200                | 291       | 32,400                     | 156       | 30,240                     | 121       |
| 3                                   | 0.003          | 43,200                 | 242   | 38,880                                | 218       | 36,720                               | 191       | 43,200                                   | 291       | 32,400                | 156       | 30,240                     | 121       |                            |           |
| 0.15                                | 0.3            | 0.5                    | 0.02  | 45,000                                | 450       | 45,000                               | 450       | 45,000                                   | 405       | 45,000                | 540       | 40,500                     | 345       | 37,800                     | 302       |
|                                     |                | 0.75                   | 0.018 | 45,000                                | 450       | 45,000                               | 450       | 45,000                                   | 405       | 45,000                | 540       | 40,500                     | 345       | 37,800                     | 302       |
|                                     |                | 1                      | 0.016 | 45,000                                | 450       | 45,000                               | 450       | 45,000                                   | 405       | 45,000                | 540       | 40,500                     | 345       | 37,800                     | 302       |
|                                     |                | 1.25                   | 0.014 | 45,000                                | 450       | 45,000                               | 450       | 45,000                                   | 405       | 45,000                | 540       | 40,500                     | 345       | 37,800                     | 302       |
|                                     |                | 1.5                    | 0.012 | 45,000                                | 450       | 45,000                               | 450       | 45,000                                   | 405       | 45,000                | 540       | 40,500                     | 345       | 37,800                     | 302       |
|                                     |                | 2                      | 0.009 | 45,000                                | 405       | 43,740                               | 393       | 41,310                                   | 335       | 45,000                | 486       | 36,450                     | 279       | 34,020                     | 245       |
|                                     |                | 2.5                    | 0.008 | 45,000                                | 405       | 43,740                               | 393       | 41,310                                   | 335       | 45,000                | 486       | 36,450                     | 279       | 34,020                     | 245       |
| 3                                   | 0.006          | 45,000                 | 405   | 43,740                                | 393       | 41,310                               | 335       | 45,000                                   | 486       | 36,450                | 279       | 34,020                     | 245       |                            |           |
| 0.2                                 | 0.4            | 0.75                   | 0.043 | 43,200                                | 518       | 38,880                               | 466       | 36,720                                   | 404       | 45,000                | 622       | 32,400                     | 324       | 30,240                     | 302       |
|                                     |                | 1                      | 0.04  | 43,200                                | 518       | 38,880                               | 466       | 36,720                                   | 404       | 45,000                | 622       | 32,400                     | 324       | 30,240                     | 302       |
|                                     |                | 1.5                    | 0.034 | 43,200                                | 518       | 38,880                               | 466       | 36,720                                   | 404       | 45,000                | 622       | 32,400                     | 324       | 30,240                     | 302       |
|                                     |                | 2                      | 0.028 | 43,200                                | 518       | 38,880                               | 466       | 36,720                                   | 404       | 45,000                | 622       | 32,400                     | 324       | 30,240                     | 302       |
|                                     |                | 2.5                    | 0.016 | 38,880                                | 420       | 34,992                               | 378       | 33,048                                   | 328       | 45,000                | 504       | 29,160                     | 263       | 27,216                     | 245       |
|                                     |                | 3                      | 0.011 | 38,880                                | 420       | 34,992                               | 378       | 33,048                                   | 328       | 45,000                | 504       | 29,160                     | 263       | 27,216                     | 245       |
|                                     |                | 3.5                    | 0.008 | 38,880                                | 420       | 34,992                               | 378       | 33,048                                   | 328       | 45,000                | 504       | 29,160                     | 263       | 27,216                     | 245       |
|                                     |                | 4                      | 0.005 | 38,880                                | 420       | 34,992                               | 378       | 33,048                                   | 328       | 45,000                | 504       | 29,160                     | 263       | 27,216                     | 245       |
| 4.5                                 | 0.004          | 34,560                 | 353   | 31,104                                | 318       | 29,376                               | 275       | 41,472                                   | 423       | 25,920                | 221       | 24,192                     | 205       |                            |           |
| 0.25                                | 0.5            | 1                      | 0.045 | 36,000                                | 720       | 32,400                               | 648       | 30,600                                   | 551       | 43,200                | 864       | 27,000                     | 486       | 25,200                     | 428       |
|                                     |                | 1.5                    | 0.04  | 36,000                                | 720       | 32,400                               | 648       | 30,600                                   | 551       | 43,200                | 864       | 27,000                     | 486       | 25,200                     | 428       |
|                                     |                | 2                      | 0.035 | 36,000                                | 720       | 32,400                               | 648       | 30,600                                   | 551       | 43,200                | 864       | 27,000                     | 486       | 25,200                     | 428       |
|                                     |                | 2.5                    | 0.033 | 36,000                                | 720       | 29,160                               | 525       | 27,540                                   | 446       | 38,880                | 700       | 24,300                     | 393       | 22,680                     | 347       |

【Note】 Please refer to P566



# Recommended Cutting Data (High Precision)

SPM200-BN2/SHM200-BN2

2 Flute, Ballnose

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |                |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|----------------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |                |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |                |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| R (mm)                              | Mill Dia. (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 0.25                                | 0.5            | 3                      | 0.03  | 32,400                                | 583       | 29,160                               | 525       | 27,540                                   | 446       | 38,880                | 700       | 24,300                     | 393       | 22,680                     | 347       |
|                                     |                | 4                      | 0.02  | 32,400                                | 583       | 29,160                               | 525       | 27,540                                   | 446       | 38,880                | 700       | 24,300                     | 393       | 22,680                     | 347       |
|                                     |                | 5                      | 0.018 | 32,400                                | 583       | 29,160                               | 525       | 27,540                                   | 446       | 38,880                | 700       | 24,300                     | 393       | 22,680                     | 347       |
|                                     |                | 5.5                    | 0.008 | 28,800                                | 490       | 25,920                               | 441       | 24,480                                   | 374       | 34,560                | 588       | 21,600                     | 330       | 20,160                     | 292       |
|                                     |                | 6                      | 0.007 | 28,800                                | 490       | 25,920                               | 441       | 24,480                                   | 374       | 34,560                | 588       | 21,600                     | 330       | 20,160                     | 292       |
|                                     |                | 8                      | 0.004 | 28,800                                | 490       | 25,920                               | 441       | 24,480                                   | 374       | 34,560                | 588       | 21,600                     | 330       | 20,160                     | 292       |
| 0.3                                 | 0.6            | 1                      | 0.05  | 36,000                                | 1,080     | 32,400                               | 972       | 30,600                                   | 796       | 43,200                | 1,296     | 27,000                     | 648       | 25,200                     | 504       |
|                                     |                | 2                      | 0.042 | 36,000                                | 1,080     | 32,400                               | 972       | 30,600                                   | 796       | 43,200                | 1,296     | 27,000                     | 648       | 25,200                     | 504       |
|                                     |                | 2.5                    | 0.038 | 36,000                                | 1,080     | 32,400                               | 972       | 30,600                                   | 796       | 43,200                | 1,296     | 27,000                     | 648       | 25,200                     | 504       |
|                                     |                | 3                      | 0.034 | 36,000                                | 1,080     | 32,400                               | 972       | 30,600                                   | 796       | 43,200                | 1,296     | 27,000                     | 648       | 25,200                     | 504       |
|                                     |                | 3.5                    | 0.029 | 32,400                                | 923       | 29,160                               | 831       | 27,540                                   | 680       | 38,880                | 1,108     | 24,300                     | 554       | 22,680                     | 431       |
|                                     |                | 4                      | 0.024 | 32,400                                | 923       | 29,160                               | 831       | 27,540                                   | 680       | 38,880                | 1,108     | 24,300                     | 554       | 22,680                     | 431       |
|                                     |                | 4.5                    | 0.022 | 32,400                                | 875       | 29,160                               | 788       | 27,540                                   | 644       | 38,880                | 1,049     | 24,300                     | 525       | 22,680                     | 409       |
|                                     |                | 5                      | 0.02  | 32,400                                | 875       | 29,160                               | 788       | 27,540                                   | 644       | 38,880                | 1,049     | 24,300                     | 525       | 22,680                     | 409       |
|                                     |                | 5.5                    | 0.017 | 32,400                                | 875       | 29,160                               | 788       | 27,540                                   | 644       | 38,880                | 1,049     | 24,300                     | 525       | 22,680                     | 409       |
|                                     |                | 6                      | 0.015 | 32,400                                | 875       | 29,160                               | 788       | 27,540                                   | 644       | 38,880                | 1,049     | 24,300                     | 525       | 22,680                     | 409       |
|                                     |                | 7                      | 0.008 | 28,800                                | 734       | 25,920                               | 661       | 24,480                                   | 541       | 34,560                | 881       | 21,600                     | 441       | 20,160                     | 343       |
|                                     |                | 8                      | 0.008 | 28,800                                | 734       | 25,920                               | 661       | 24,480                                   | 541       | 34,560                | 881       | 21,600                     | 441       | 20,160                     | 343       |
| 9                                   | 0.006          | 28,800                 | 734   | 25,920                                | 661       | 24,480                               | 541       | 34,560                                   | 881       | 21,600                | 441       | 20,160                     | 343       |                            |           |
| 10                                  | 0.005          | 25,200                 | 643   | 22,680                                | 579       | 21,420                               | 473       | 30,240                                   | 771       | 18,900                | 385       | 17,640                     | 300       |                            |           |
| 12                                  | 0.004          | 21,600                 | 518   | 19,440                                | 466       | 18,360                               | 382       | 25,920                                   | 622       | 16,200                | 311       | 15,120                     | 242       |                            |           |
| 0.35                                | 0.7            | 2                      | 0.061 | 36,000                                | 1,188     | 32,400                               | 1,069     | 30,600                                   | 879       | 43,200                | 1,426     | 27,000                     | 725       | 25,200                     | 594       |
|                                     |                | 4                      | 0.034 | 32,400                                | 1,015     | 29,160                               | 914       | 27,540                                   | 752       | 38,880                | 1,219     | 24,300                     | 619       | 22,680                     | 508       |
|                                     |                | 6                      | 0.027 | 32,400                                | 962       | 29,160                               | 866       | 27,540                                   | 712       | 38,880                | 1,155     | 24,300                     | 587       | 22,680                     | 482       |
|                                     |                | 8                      | 0.01  | 28,800                                | 760       | 25,920                               | 684       | 24,480                                   | 563       | 34,560                | 912       | 21,600                     | 464       | 20,160                     | 380       |
| 0.4                                 | 0.8            | 2                      | 0.08  | 36,000                                | 1,296     | 32,400                               | 1,166     | 30,600                                   | 979       | 43,200                | 1,555     | 27,000                     | 810       | 25,200                     | 706       |
|                                     |                | 4                      | 0.056 | 36,000                                | 1,296     | 32,400                               | 1,166     | 30,600                                   | 979       | 43,200                | 1,555     | 27,000                     | 810       | 25,200                     | 706       |
|                                     |                | 5                      | 0.045 | 32,400                                | 1,049     | 29,160                               | 945       | 27,540                                   | 793       | 38,880                | 1,260     | 24,300                     | 656       | 22,680                     | 572       |
|                                     |                | 6                      | 0.032 | 32,400                                | 1,049     | 29,160                               | 945       | 27,540                                   | 793       | 38,880                | 1,260     | 24,300                     | 656       | 22,680                     | 572       |
|                                     |                | 8                      | 0.02  | 28,800                                | 933       | 25,920                               | 840       | 24,480                                   | 705       | 34,560                | 1,120     | 21,600                     | 583       | 20,160                     | 508       |
|                                     |                | 10                     | 0.01  | 28,800                                | 881       | 25,920                               | 793       | 24,480                                   | 666       | 34,560                | 1,058     | 21,600                     | 551       | 20,160                     | 480       |
| 0.45                                | 0.9            | 2                      | 0.09  | 34,200                                | 1,458     | 30,780                               | 1,312     | 29,070                                   | 1,094     | 41,040                | 1,750     | 25,650                     | 904       | 23,940                     | 802       |

【Note】 Please refer to P566

## Recommended Cutting Data (High Precision)

SPM200-BN2/SHM200-BN2

2 Flute, Ballnose

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |                |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|----------------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |                |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |                |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| R (mm)                              | Mill Dia. (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 0.45                                | 0.9            | 4                      | 0.058 | 34,200                                | 1,458     | 30,780                               | 1,312     | 29,070                                   | 1,094     | 41,040                | 1,750     | 25,650                     | 904       | 23,940                     | 802       |
|                                     |                | 6                      | 0.042 | 30,780                                | 1,181     | 27,702                               | 1,063     | 26,163                                   | 886       | 36,936                | 1,417     | 23,085                     | 732       | 21,546                     | 650       |
|                                     |                | 8                      | 0.03  | 27,360                                | 1,049     | 24,624                               | 944       | 23,256                                   | 788       | 32,832                | 1,259     | 20,520                     | 651       | 19,152                     | 577       |
| 0.5                                 | 1              | 2                      | 0.1   | 32,400                                | 1,620     | 29,160                               | 1,458     | 27,540                                   | 1,239     | 38,880                | 1,944     | 24,300                     | 1,021     | 22,680                     | 907       |
|                                     |                | 3                      | 0.1   | 32,400                                | 1,620     | 29,160                               | 1,458     | 27,540                                   | 1,239     | 38,880                | 1,944     | 24,300                     | 1,021     | 22,680                     | 907       |
|                                     |                | 4                      | 0.07  | 32,400                                | 1,620     | 29,160                               | 1,458     | 27,540                                   | 1,239     | 38,880                | 1,944     | 24,300                     | 1,021     | 22,680                     | 907       |
|                                     |                | 5                      | 0.06  | 32,400                                | 1,620     | 29,160                               | 1,458     | 27,540                                   | 1,239     | 38,880                | 1,944     | 24,300                     | 1,021     | 22,680                     | 907       |
|                                     |                | 6                      | 0.04  | 29,160                                | 1,312     | 26,244                               | 1,181     | 24,786                                   | 1,004     | 34,992                | 1,575     | 21,870                     | 827       | 20,412                     | 734       |
|                                     |                | 7                      | 0.04  | 29,160                                | 1,312     | 26,244                               | 1,181     | 24,786                                   | 1,004     | 34,992                | 1,575     | 21,870                     | 827       | 20,412                     | 734       |
|                                     |                | 8                      | 0.04  | 29,160                                | 1,312     | 26,244                               | 1,181     | 24,786                                   | 1,004     | 34,992                | 1,575     | 21,870                     | 827       | 20,412                     | 734       |
|                                     |                | 9                      | 0.03  | 29,160                                | 1,312     | 26,244                               | 1,181     | 24,786                                   | 1,004     | 34,992                | 1,575     | 21,870                     | 827       | 20,412                     | 734       |
|                                     |                | 10                     | 0.025 | 29,160                                | 1,312     | 26,244                               | 1,181     | 24,786                                   | 1,004     | 34,992                | 1,575     | 21,870                     | 827       | 20,412                     | 734       |
|                                     |                | 12                     | 0.013 | 25,920                                | 1,102     | 23,328                               | 992       | 22,032                                   | 842       | 31,104                | 1,322     | 19,440                     | 694       | 18,144                     | 617       |
|                                     |                | 13                     | 0.011 | 25,920                                | 1,102     | 23,328                               | 992       | 22,032                                   | 842       | 31,104                | 1,322     | 19,440                     | 694       | 18,144                     | 617       |
|                                     |                | 14                     | 0.01  | 25,920                                | 1,102     | 23,328                               | 992       | 22,032                                   | 842       | 31,104                | 1,322     | 19,440                     | 694       | 18,144                     | 617       |
|                                     |                | 16                     | 0.008 | 25,920                                | 1,102     | 23,328                               | 992       | 22,032                                   | 842       | 31,104                | 1,322     | 19,440                     | 694       | 18,144                     | 617       |
| 18                                  | 0.006          | 22,680                 | 907   | 20,412                                | 816       | 19,278                               | 694       | 27,216                                   | 1,089     | 17,010                | 572       | 15,876                     | 508       |                            |           |
| 20                                  | 0.005          | 19,440                 | 778   | 17,496                                | 700       | 16,524                               | 595       | 23,328                                   | 933       | 14,580                | 490       | 13,608                     | 436       |                            |           |
| 0.55                                | 1.1            | 2                      | 0.1   | 30,240                                | 1,582     | 27,216                               | 1,424     | 25,704                                   | 1,171     | 36,288                | 1,899     | 22,680                     | 981       | 21,168                     | 870       |
|                                     |                | 4                      | 0.07  | 30,240                                | 1,582     | 27,216                               | 1,424     | 25,704                                   | 1,171     | 36,288                | 1,899     | 22,680                     | 981       | 21,168                     | 870       |
|                                     |                | 6                      | 0.04  | 27,540                                | 1,330     | 24,786                               | 1,197     | 23,409                                   | 985       | 33,048                | 1,597     | 20,655                     | 824       | 19,278                     | 732       |
|                                     |                | 8                      | 0.04  | 27,540                                | 1,330     | 24,786                               | 1,197     | 23,409                                   | 985       | 33,048                | 1,597     | 20,655                     | 824       | 19,278                     | 732       |
|                                     |                | 10                     | 0.025 | 27,540                                | 1,330     | 24,786                               | 1,197     | 23,409                                   | 985       | 33,048                | 1,597     | 20,655                     | 824       | 19,278                     | 732       |
| 0.6                                 | 1.2            | 4                      | 0.08  | 27,692                                | 1,449     | 24,923                               | 1,304     | 23,539                                   | 1,087     | 33,231                | 1,739     | 20,769                     | 898       | 19,384                     | 797       |
|                                     |                | 8                      | 0.04  | 25,920                                | 1,348     | 23,328                               | 1,213     | 22,032                                   | 992       | 31,104                | 1,617     | 19,440                     | 855       | 18,144                     | 725       |
|                                     |                | 10                     | 0.035 | 25,920                                | 1,281     | 23,328                               | 1,092     | 22,032                                   | 992       | 31,104                | 1,455     | 19,440                     | 770       | 18,144                     | 653       |
|                                     |                | 12                     | 0.03  | 25,920                                | 1,213     | 23,328                               | 1,092     | 22,032                                   | 992       | 31,104                | 1,455     | 19,440                     | 770       | 18,144                     | 653       |
| 0.7                                 | 1.4            | 8                      | 0.055 | 22,680                                | 1,361     | 20,412                               | 1,225     | 19,278                                   | 1,041     | 27,216                | 1,633     | 17,010                     | 885       | 15,876                     | 794       |
|                                     |                | 12                     | 0.035 | 22,680                                | 1,225     | 20,412                               | 1,103     | 19,278                                   | 937       | 27,216                | 1,470     | 17,010                     | 797       | 15,876                     | 715       |
|                                     |                | 16                     | 0.017 | 20,160                                | 1,028     | 18,144                               | 925       | 17,136                                   | 787       | 24,192                | 1,234     | 15,120                     | 669       | 14,112                     | 599       |
| 0.75                                | 1.5            | 4                      | 0.1   | 25,200                                | 1,663     | 22,680                               | 1,497     | 21,420                                   | 1,285     | 30,240                | 1,996     | 18,900                     | 1,021     | 17,640                     | 882       |
|                                     |                | 6                      | 0.1   | 25,200                                | 1,663     | 22,680                               | 1,497     | 21,420                                   | 1,285     | 30,240                | 1,996     | 18,900                     | 1,021     | 17,640                     | 882       |

【Note】 Please refer to P566

## Recommended Cutting Data (High Precision)

SPM200-BN2/SHM200-BN2

2 Flute, Ballnose

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |                |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|----------------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |                |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |                |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| R (mm)                              | Mill Dia. (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 0.75                                | 1.5            | 8                      | 0.06  | 22,680                                | 1,347     | 20,412                               | 1,212     | 19,278                                   | 1,041     | 27,216                | 1,616     | 17,010                     | 827       | 15,876                     | 715       |
|                                     |                | 10                     | 0.06  | 22,680                                | 1,347     | 20,412                               | 1,212     | 19,278                                   | 1,041     | 27,216                | 1,616     | 17,010                     | 827       | 15,876                     | 715       |
|                                     |                | 12                     | 0.06  | 22,680                                | 1,347     | 20,412                               | 1,212     | 19,278                                   | 1,041     | 27,216                | 1,616     | 17,010                     | 827       | 15,876                     | 715       |
|                                     |                | 14                     | 0.05  | 22,680                                | 1,347     | 18,144                               | 1,018     | 17,136                                   | 874       | 24,192                | 1,357     | 15,120                     | 694       | 14,112                     | 599       |
|                                     |                | 16                     | 0.019 | 20,160                                | 1,131     | 18,144                               | 1,018     | 17,136                                   | 874       | 24,192                | 1,357     | 15,120                     | 694       | 14,112                     | 599       |
|                                     |                | 18                     | 0.019 | 20,160                                | 1,131     | 18,144                               | 1,018     | 17,136                                   | 874       | 24,192                | 1,357     | 15,120                     | 694       | 14,112                     | 599       |
|                                     |                | 20                     | 0.019 | 20,160                                | 1,131     | 18,144                               | 1,018     | 17,136                                   | 874       | 24,192                | 1,357     | 15,120                     | 694       | 14,112                     | 599       |
| 0.8                                 | 1.6            | 8                      | 0.11  | 23,400                                | 1,638     | 21,060                               | 1,474     | 19,890                                   | 1,233     | 28,080                | 1,966     | 17,550                     | 1,053     | 16,380                     | 917       |
|                                     |                | 12                     | 0.065 | 21,060                                | 1,327     | 18,954                               | 1,194     | 17,901                                   | 999       | 25,272                | 1,592     | 15,795                     | 853       | 14,742                     | 743       |
|                                     |                | 16                     | 0.04  | 21,060                                | 1,327     | 18,954                               | 1,194     | 17,901                                   | 999       | 25,272                | 1,592     | 15,795                     | 853       | 14,742                     | 743       |
|                                     |                | 20                     | 0.02  | 18,720                                | 1,114     | 16,848                               | 1,003     | 15,912                                   | 839       | 22,464                | 1,337     | 14,040                     | 716       | 13,104                     | 624       |
| 0.9                                 | 1.8            | 8                      | 0.13  | 23,400                                | 1,872     | 21,060                               | 1,685     | 19,890                                   | 1,392     | 28,080                | 2,246     | 17,550                     | 1,158     | 16,380                     | 983       |
|                                     |                | 12                     | 0.07  | 21,060                                | 1,517     | 18,954                               | 1,364     | 17,901                                   | 1,128     | 25,272                | 1,820     | 15,795                     | 938       | 14,742                     | 797       |
|                                     |                | 16                     | 0.045 | 21,060                                | 1,517     | 18,954                               | 1,364     | 17,901                                   | 1,128     | 25,272                | 1,820     | 15,795                     | 938       | 14,742                     | 797       |
|                                     |                | 20                     | 0.022 | 18,720                                | 1,273     | 16,848                               | 1,146     | 15,912                                   | 947       | 22,464                | 1,527     | 14,040                     | 788       | 13,104                     | 669       |
| 1                                   | 2              | 3                      | 0.2   | 18,900                                | 1,890     | 17,010                               | 1,701     | 16,065                                   | 1,446     | 22,680                | 2,268     | 14,175                     | 1,220     | 13,230                     | 1,058     |
|                                     |                | 4                      | 0.2   | 18,900                                | 1,890     | 17,010                               | 1,701     | 16,065                                   | 1,446     | 22,680                | 2,268     | 14,175                     | 1,220     | 13,230                     | 1,058     |
|                                     |                | 6                      | 0.2   | 18,900                                | 1,701     | 17,010                               | 1,531     | 16,065                                   | 1,285     | 22,680                | 2,041     | 14,175                     | 1,077     | 13,230                     | 952       |
|                                     |                | 8                      | 0.14  | 18,900                                | 1,701     | 17,010                               | 1,531     | 16,065                                   | 1,285     | 22,680                | 2,041     | 14,175                     | 1,077     | 13,230                     | 952       |
|                                     |                | 10                     | 0.14  | 18,900                                | 1,512     | 17,010                               | 1,361     | 16,065                                   | 1,157     | 22,680                | 1,814     | 14,175                     | 964       | 13,230                     | 847       |
|                                     |                | 12                     | 0.08  | 17,010                                | 1,361     | 15,309                               | 1,225     | 14,459                                   | 1,041     | 20,412                | 1,633     | 12,758                     | 868       | 11,907                     | 762       |
|                                     |                | 13                     | 0.08  | 17,010                                | 1,361     | 15,309                               | 1,225     | 14,459                                   | 1,041     | 20,412                | 1,633     | 12,758                     | 868       | 11,907                     | 762       |
|                                     |                | 14                     | 0.08  | 17,010                                | 1,361     | 15,309                               | 1,225     | 14,459                                   | 1,041     | 20,412                | 1,633     | 12,758                     | 868       | 11,907                     | 762       |
|                                     |                | 16                     | 0.08  | 17,010                                | 1,225     | 15,309                               | 1,103     | 14,459                                   | 937       | 20,412                | 1,470     | 12,758                     | 781       | 11,907                     | 686       |
|                                     |                | 18                     | 0.06  | 17,010                                | 1,225     | 15,309                               | 1,103     | 14,459                                   | 937       | 20,412                | 1,470     | 12,758                     | 781       | 11,907                     | 686       |
|                                     |                | 20                     | 0.05  | 17,010                                | 1,225     | 15,309                               | 1,103     | 14,459                                   | 937       | 20,412                | 1,470     | 12,758                     | 781       | 11,907                     | 686       |
|                                     |                | 22                     | 0.042 | 16,065                                | 1,093     | 14,459                               | 983       | 13,656                                   | 836       | 19,278                | 1,311     | 12,049                     | 697       | 11,246                     | 612       |
|                                     |                | 25                     | 0.035 | 15,120                                | 1,028     | 13,608                               | 925       | 12,852                                   | 787       | 18,144                | 1,234     | 11,340                     | 655       | 10,584                     | 576       |
|                                     |                | 30                     | 0.015 | 15,120                                | 1,028     | 13,608                               | 925       | 12,852                                   | 787       | 18,144                | 1,234     | 11,340                     | 655       | 10,584                     | 576       |
| 35                                  | 0.012          | 13,230                 | 847   | 11,907                                | 762       | 11,246                               | 648       | 15,876                                   | 1,016     | 9,923                 | 540       | 9,261                      | 474       |                            |           |
| 40                                  | 0.01           | 11,340                 | 725   | 10,206                                | 653       | 9,639                                | 555       | 13,608                                   | 871       | 8,505                 | 463       | 7,938                      | 407       |                            |           |
| 1.25                                | 2.5            | 6                      | 0.25  | 16,650                                | 2,025     | 14,985                               | 1,823     | 14,153                                   | 1,519     | 19,980                | 2,430     | 12,488                     | 1,236     | 11,655                     | 1,013     |

[Note] Please refer to P566

## Recommended Cutting Data (High Precision)

SPM200-BN2/SHM200-BN2

2 Flute, Ballnose

» Continuation

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |                |                        |       | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|----------------|------------------------|-------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |                |                        |       | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |                |                        |       | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| R (mm)                              | Mill Dia. (mm) | Under Neck Length (mm) | ap    | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 1.25                                | 2.5            | 10                     | 0.17  | 16,650                                | 2,025     | 14,985                               | 1,823     | 14,153                                   | 1,519     | 19,980                | 2,430     | 12,488                     | 1,236     | 11,655                     | 1,013     |
|                                     |                | 15                     | 0.1   | 14,985                                | 1,640     | 13,487                               | 1,476     | 12,738                                   | 1,230     | 17,982                | 1,967     | 11,239                     | 1,000     | 10,490                     | 820       |
|                                     |                | 20                     | 0.08  | 14,985                                | 1,640     | 13,487                               | 1,476     | 12,738                                   | 1,230     | 17,982                | 1,967     | 11,239                     | 1,000     | 10,490                     | 820       |
|                                     |                | 25                     | 0.065 | 14,985                                | 1,475     | 13,487                               | 1,328     | 12,738                                   | 1,106     | 17,982                | 1,770     | 11,239                     | 900       | 10,490                     | 738       |
|                                     |                | 30                     | 0.044 | 13,320                                | 1,377     | 11,988                               | 1,239     | 11,322                                   | 1,033     | 15,984                | 1,652     | 9,990                      | 840       | 9,324                      | 689       |
| 1.5                                 | 3              | 8                      | 0.3   | 14,400                                | 2,160     | 12,960                               | 1,944     | 12,240                                   | 1,640     | 17,280                | 2,592     | 10,800                     | 1,361     | 10,080                     | 1,210     |
|                                     |                | 10                     | 0.21  | 14,400                                | 2,160     | 12,960                               | 1,944     | 12,240                                   | 1,640     | 17,280                | 2,592     | 10,800                     | 1,361     | 10,080                     | 1,210     |
|                                     |                | 13                     | 0.21  | 14,400                                | 2,160     | 12,960                               | 1,944     | 12,240                                   | 1,640     | 17,280                | 2,592     | 10,800                     | 1,361     | 10,080                     | 1,210     |
|                                     |                | 16                     | 0.21  | 14,400                                | 1,944     | 12,960                               | 1,750     | 12,240                                   | 1,476     | 17,280                | 2,333     | 10,800                     | 1,225     | 10,080                     | 1,089     |
|                                     |                | 20                     | 0.12  | 12,960                                | 1,750     | 11,664                               | 1,575     | 11,016                                   | 1,328     | 15,552                | 2,100     | 9,720                      | 1,103     | 9,072                      | 980       |
|                                     |                | 25                     | 0.08  | 12,960                                | 1,750     | 11,664                               | 1,575     | 11,016                                   | 1,328     | 15,552                | 2,100     | 9,720                      | 1,103     | 9,072                      | 980       |
|                                     |                | 30                     | 0.08  | 12,960                                | 1,750     | 11,664                               | 1,575     | 11,016                                   | 1,328     | 15,552                | 2,100     | 9,720                      | 1,103     | 9,072                      | 980       |
|                                     |                | 35                     | 0.064 | 11,520                                | 1,469     | 10,368                               | 1,322     | 9,792                                    | 1,115     | 13,824                | 1,762     | 8,640                      | 925       | 8,064                      | 823       |
| 1.75                                | 3.5            | 15                     | 0.24  | 12,375                                | 2,115     | 11,138                               | 1,904     | 10,519                                   | 1,587     | 14,850                | 2,538     | 9,282                      | 1,291     | 8,663                      | 1,058     |
|                                     |                | 25                     | 0.14  | 11,138                                | 1,710     | 10,024                               | 1,539     | 9,467                                    | 1,283     | 13,365                | 2,052     | 8,353                      | 1,043     | 7,797                      | 855       |
|                                     |                | 35                     | 0.09  | 11,138                                | 1,710     | 10,024                               | 1,539     | 9,467                                    | 1,283     | 13,365                | 2,052     | 8,353                      | 1,043     | 7,797                      | 855       |
|                                     |                | 45                     | 0.072 | 9,900                                 | 1,438     | 8,910                                | 1,294     | 8,415                                    | 1,079     | 11,880                | 1,726     | 7,425                      | 878       | 6,930                      | 719       |
| 2                                   | 4              | 10                     | 0.4   | 10,350                                | 2,070     | 9,315                                | 1,863     | 8,798                                    | 1,584     | 12,420                | 2,484     | 7,763                      | 1,319     | 7,245                      | 1,159     |
|                                     |                | 13                     | 0.32  | 10,350                                | 2,070     | 9,315                                | 1,863     | 8,798                                    | 1,584     | 12,420                | 2,484     | 7,763                      | 1,319     | 7,245                      | 1,159     |
|                                     |                | 16                     | 0.28  | 10,350                                | 2,070     | 9,315                                | 1,863     | 8,798                                    | 1,584     | 12,420                | 2,484     | 7,763                      | 1,319     | 7,245                      | 1,159     |
|                                     |                | 20                     | 0.28  | 10,350                                | 2,070     | 9,315                                | 1,863     | 8,798                                    | 1,584     | 12,420                | 2,484     | 7,763                      | 1,319     | 7,245                      | 1,159     |
|                                     |                | 25                     | 0.16  | 9,315                                 | 1,677     | 8,384                                | 1,509     | 7,918                                    | 1,283     | 11,178                | 2,012     | 6,987                      | 1,069     | 6,521                      | 939       |
|                                     |                | 30                     | 0.16  | 9,315                                 | 1,677     | 8,384                                | 1,509     | 7,918                                    | 1,283     | 11,178                | 2,012     | 6,987                      | 1,069     | 6,521                      | 939       |
|                                     |                | 35                     | 0.1   | 9,315                                 | 1,677     | 8,384                                | 1,509     | 7,918                                    | 1,283     | 11,178                | 2,012     | 6,987                      | 1,069     | 6,521                      | 939       |
|                                     |                | 40                     | 0.1   | 9,315                                 | 1,677     | 8,384                                | 1,509     | 7,918                                    | 1,283     | 11,178                | 2,012     | 6,987                      | 1,069     | 6,521                      | 939       |
|                                     |                | 45                     | 0.08  | 8,280                                 | 1,408     | 7,452                                | 1,267     | 7,038                                    | 1,076     | 9,936                 | 1,689     | 6,210                      | 897       | 5,796                      | 788       |
|                                     |                | 50                     | 0.07  | 8,280                                 | 1,408     | 7,452                                | 1,267     | 7,038                                    | 1,076     | 9,936                 | 1,689     | 6,210                      | 897       | 5,796                      | 788       |
| 2.5                                 | 5              | 20                     | 0.35  | 8,100                                 | 1,944     | 7,290                                | 1,750     | 6,885                                    | 1,377     | 9,720                 | 2,333     | 6,075                      | 1,215     | 5,670                      | 1,021     |
|                                     |                | 25                     | 0.35  | 8,100                                 | 1,944     | 7,290                                | 1,750     | 6,885                                    | 1,377     | 9,720                 | 2,333     | 6,075                      | 1,215     | 5,670                      | 1,021     |
|                                     |                | 30                     | 0.2   | 7,290                                 | 1,750     | 6,561                                | 1,575     | 6,197                                    | 1,239     | 8,748                 | 2,100     | 5,468                      | 1,094     | 5,103                      | 919       |
|                                     |                | 40                     | 0.2   | 7,290                                 | 1,575     | 6,561                                | 1,418     | 6,197                                    | 1,115     | 8,748                 | 1,890     | 5,468                      | 985       | 5,103                      | 827       |

【Note】 Please refer to P566

## Recommended Cutting Data (High Precision)

SPM200-BN2/SHM200-BN2

2 Flute, Ballnose

Micro Diameter Endmills for Deep Machining

| Workpiece Material                  |                |                        |      | P                                     |           |                                      |           |  |           | N                     |           | H                          |           |                            |           |
|-------------------------------------|----------------|------------------------|------|---------------------------------------|-----------|--------------------------------------|-----------|--|-----------|-----------------------|-----------|----------------------------|-----------|----------------------------|-----------|
|                                     |                |                        |      | Carbon Steel, Alloy Steel (180~250HB) |           | Alloy Steels, Tool Steels (25~35HRC) |           | PH, Ferrite, Martensite Steel (35~45HRC) |           | Copper, Copper Alloys |           | Hardened Steels (45~55HRC) |           | Hardened Steels (55~65HRC) |           |
| Ratio to standard depth of cut (ap) |                |                        |      | 1.00                                  |           | 0.90                                 |           | 0.80                                     |           | 1.20                  |           | 0.65                       |           | 0.60                       |           |
| R (mm)                              | Mill Dia. (mm) | Under Neck Length (mm) | ap   | n r/min                               | Vf mm/min | n r/min                              | Vf mm/min | n r/min                                  | Vf mm/min | n r/min               | Vf mm/min | n r/min                    | Vf mm/min | n r/min                    | Vf mm/min |
| 3                                   | 6              | 12                     | 0.6  | 8,100                                 | 2,268     | 7,290                                | 2,041     | 6,885                                    | 1,701     | 9,720                 | 2,722     | 6,075                      | 1,383     | 5,670                      | 1,134     |
|                                     |                | 20                     | 0.5  | 7,650                                 | 1,989     | 6,885                                | 1,790     | 6,503                                    | 1,492     | 9,180                 | 2,387     | 5,738                      | 1,213     | 5,355                      | 995       |
|                                     |                | 30                     | 0.42 | 7,200                                 | 1,728     | 6,480                                | 1,555     | 6,120                                    | 1,224     | 8,640                 | 2,074     | 5,400                      | 1,080     | 5,040                      | 907       |
|                                     |                | 50                     | 0.15 | 6,480                                 | 1,400     | 5,832                                | 1,260     | 5,508                                    | 992       | 7,776                 | 1,679     | 4,860                      | 875       | 4,536                      | 734       |

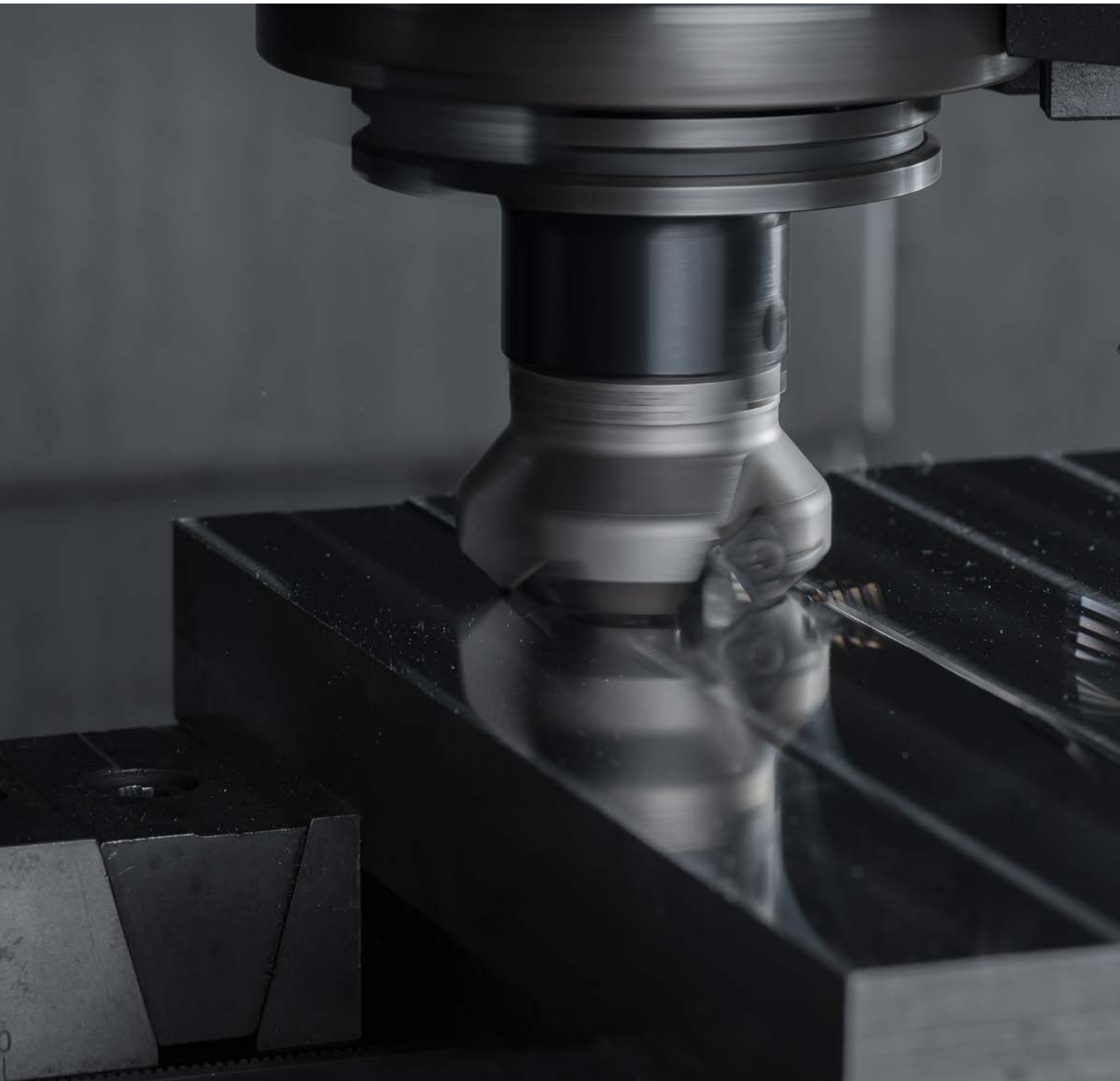
### 【Note】

- For different materials, adjust the cutting depth (ap) according to the cutting depth factors in the above table. E.g. for hardened steels (45~55HRC),  $ap \times 0.5$ .
- When performing cutting where cutting chips may cause clogging, such as for rib cutting, blind grooves, etc., cutting depth setting should be set by multiplying a cutting depth factor to calculate the cutting depth amount, and this amount should then be reduced to 80% of the calculated value.
- Adjust by setting  $ae$  to  $(3 \text{ to } 5) \times (ap) \times (\text{cutting depth ratio})$ . When performing finishing processing, calculate the theoretical cusp height and set accordingly.
- Use the appropriate coolant such as air cooling or emulsion for the work material and machining shape.
- In actual machining, the condition should be adjusted according to the machining shape, purpose and the machine type.
- If the rpm of the machine is lower than the data in the above table, the feed rate should be lowered in the same ratio.

C

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APPENDIX



## Cutting Calculations and Definitions

| Parameter and Unit      |                        |                                 |
|-------------------------|------------------------|---------------------------------|
| D Diameter              | (mm)                   | Fn Feed per Revolution (mm/rev) |
| ap Cutting Depth        | (mm)                   | fz Feeding per Teeth (mm/tooth) |
| ae Cutting Width        | (mm)                   | Z Number of Teeth               |
| Vf Feed Rate            | (mm/min)               | n Spindle Speed (rev/min)       |
| Vc Cutting Speed        | (m/min)                | L Length (mm)                   |
| Q Rate of Metal Removal | (cm <sup>3</sup> /min) | Tc Processing Time (min)        |

| General Formula         |  |
|-------------------------|--|
| n Spindle Speed         | $n = \frac{V_c \cdot 1000}{\pi \cdot D} \text{ (rev/min)}$           |
| Vc Cutting Speed        | $V_c = \frac{\pi \cdot D \cdot n}{1000} \text{ (m/min)}$             |
| Vf Feed Rate            | $V_f = f_z \cdot z \cdot n \text{ (mm/min)}$                         |
| fz Feed per Teeth       | $f_z = \frac{V_f}{z \cdot n} \text{ (mm)}$                           |
| Q Rate of Metal Removal | $Q = \frac{a_e \cdot a_p \cdot V_f}{1000} \text{ (cm}^3\text{/min)}$ |
| Tc Processing Time      | $T_c = \frac{L}{V_f} \text{ (min)}$                                  |

## Workpiece Material Table

| ISO Material Group                                      | MC | Workpiece Material  | Content        | Tensile Strength N/mm <sup>2</sup> | Brinell Hardness HB | Rockwell Hardness HRC |
|---|----|---|----------------|------------------------------------|---------------------|-----------------------|
| <b>P</b><br>Steels                                      | P1 | Low-carbon Steels, Long Chipping  | C<0.25%        | <530                               | <125                |                       |
|   | P2 | Low-carbon Steels, Short Chipping, Free-cutting Steels                                      | C<0.25%        | <530                               | <125                |                       |
|   | P3 | High-carbon Steels, Medium-carbon Steels  | C>0.25%        | >530                               | <220                | <25                   |
|   | P4 | Alloy Steels, Tool Steels.  | C>0.25%        | 600-850                            | <330                | <35                   |
|   | P5 | Alloy Steels, Tool Steels.  | C>0.25%        | 850-1400                           | 340-450             | 35-48                 |
|   | P6 | Ferritic Stainless Steels, Martensitic Stainless Steels, PH Stainless Steels                | C=(0-0.4)%     | 600-900                            | <330                | <35                   |
|   | P7 | High-strength Ferritic Stainless Steels, Martensitic Stainless Steels, PH Stainless Steels. | C=(0.1-0.6)%   | 900-1350                           | 330-450             | 35-48                 |
| <b>M</b><br>Stainless Steels                            | M1 | Austenitic Stainless Steels   | C=(0.05-0.15)% | <600                               | 130-200             |                       |
|   | M2 | High-Strength Austenitic Stainless Steels and Cast Stainless Steels                         | C=(0.05-0.15)% | 600-800                            | 150-230             | <25                   |
|   | M3 | Duplex Stainless Steels   | C=(0.05-0.20)% | <800                               | 135-275             | <30                   |
| <b>K</b><br>Cast Iron                                   | K1 | Grey Cast Iron  |                | 125-500                            | 120-290             | < 32                  |
|   | K2 | Moderately Difficult Alloy Cast iron, Nodular Cast Iron.                                    |                | <600                               | 130-260             | < 28                  |
|   | K3 | Difficult High-alloy Cast Iron, Nodular Cast Iron   |                | >600                               | 180-350             | < 43                  |
| <b>N</b><br>Non-ferrous Materials                       | N1 | Wrought Aluminium Alloys  |                | <520                               | 60-90               |                       |
|   | N2 | Cast Aluminium Alloys   | Si<12%         | <350                               | 70-100              |                       |
|   | N3 | Cast Aluminium Alloys   | Si>12%         | 200-320                            | 60-120              |                       |
|   | N4 | Copper, Copper Alloys   |                | 200-650                            | 60-200              |                       |
|   | N5 | Graphite, CFK, CFRP Graphite, Composite Materials   |                | 600-1500                           |                     |                       |
|   | N6 | GFK, CFK Aluminium-based Composite Materials (MMCs)   |                | <700                               | <210                |                       |
| <b>S</b><br>Heat-resistant SuperAlloys, Titanium Alloys | S1 | Iron-based Heat-resistant Alloys  |                | 500-1200                           | 160-260             | 25-48                 |
|   | S2 | Cobalt-based Heat-resistant Alloys  |                | 1000-1450                          | 250-450             | 25-48                 |
|   | S3 | Nickel-based Heat-resistant Alloys  |                | 600-1700                           | 160-450             | <48                   |
|   | S4 | Titanium and Titanium Alloys  |                | 900-1600                           | 300-400             | 33-48                 |
| <b>H</b><br>Hardened Materials                          | H1 | Hardened Steels   |                |                                    |                     | 45-55                 |
|   | H2 | Hardened Steels   |                |                                    |                     | 55-60                 |
|   | H3 | Hardened Steels   |                |                                    |                     | 60-65                 |
|   | H4 | Hardened Steels   |                |                                    |                     | >65                   |



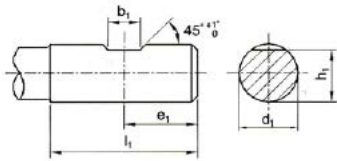
## The Structure of Shank-DIN Standard

### DIN 6535-HA

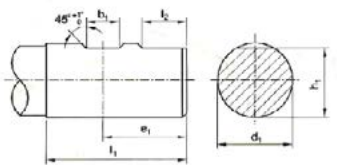


| d <sub>1</sub><br>h <sub>6</sub>         | 2  | 3 | 4 | 5 | 6  | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 25 | 32 |
|--|----|---|---|---|----|---|----|----|----|----|----|----|----|----|
| $\begin{matrix} l_1+2 \\ 0 \end{matrix}$ | 28 |   |   |   | 36 |   | 40 | 45 | 48 |    | 50 | 56 | 60 |    |

### DIN 6535-HB



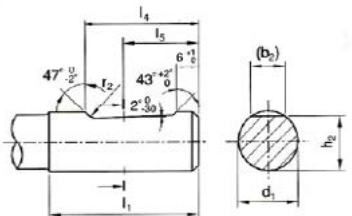
d<sub>1</sub>=6~20mm



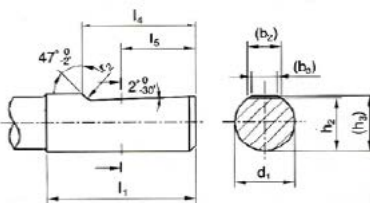
d<sub>1</sub>=25~32mm

| d <sub>1</sub><br>h <sub>6</sub> | $\begin{matrix} b_1 \\ +0.05 \\ 0 \end{matrix}$ | $\begin{matrix} e_1 \\ 0 \\ -1 \end{matrix}$ | $\begin{matrix} h_1 \\ h_{11} \end{matrix}$ | $\begin{matrix} l_1 \\ +2 \\ 0 \end{matrix}$ | $\begin{matrix} l_2 \\ +1 \\ 0 \end{matrix}$ |
|----------------------------------|---|--|---|--|--|
| 6.0                              | 4.2   | 18.0   | 5.1   | 36.0   |  |
| 8.0                              | 5.5   |  | 6.9   |  |  |
| 10                               | 7.0   | 20.0   | 8.5   | 40.0   |  |
| 12                               | 8.0   | 22.5   | 10.4  | 45.0   |  |
| 14                               |   |  | 12.7  |  |  |
| 16                               | 10.0  | 24.0   | 14.2  | 48.0   |  |
| 18                               |   |  | 16.2  |  |  |
| 20                               | 11.0  | 25.0   | 18.2  | 50.0   |  |
| 25                               | 12.0  | 32.0   | 23.0  | 56.0   | 17.0   |
| 32                               | 14.0  | 36.0   | 30.0  | 60.0   | 19.0   |

### DIN 6535-HE



d<sub>1</sub>=6~20mm



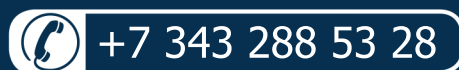
d<sub>1</sub>=25~32mm

| d <sub>1</sub> | (b <sub>2</sub> ) | (b <sub>2</sub> ) | (h <sub>2</sub> ) | (h <sub>2</sub> ) | l <sub>1</sub> | l <sub>4</sub> | l <sub>5</sub> | r <sub>2</sub> |
|----------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|----------------|
| 6.0            | 4.3               |                   | 5.1               |                   | 36.0           | 25.0           | 18.0           | 1.2            |
| 8.0            | 5.5               |                   | 6.9               |                   | 40.0           | 28.0           | 20.0           |                |
| 10             | 7.1               |                   | 8.5               |                   | 45.0           | 33.0           | 22.5           |                |
| 12             | 8.2               |                   | 10.4              |                   | 48.0           | 36.0           | 24.0           |                |
| 14             | 8.1               |                   | 12.7              |                   | 50.0           | 38.0           | 25.0           |                |
| 16             | 10.1              |                   | 14.2              |                   | 56.0           | 44.0           | 32.0           |                |
| 18             | 10.8              | 9.3               | 16.2              | 24.1              | 60.0           | 48.0           | 35.0           | 1.6            |
| 20             | 11.4              |                   | 18.2              |                   | 56.0           | 44.0           | 32.0           |                |
| 25             | 13.6              | 9.3               | 23.0              | 24.1              | 60.0           | 48.0           | 35.0           |                |
| 32             | 15.5              | 9.9               | 30.0              | 31.2              | 60.0           | 48.0           | 35.0           |                |

## Comparison Table for Tensile Strength , Brinell Hardness and Rockwell Hardness

| N/mm2 | HV10 | HB  | HRC |
|-------|------|-----|-----|
| 240   | 75   | 71  |     |
| 255   | 80   | 76  |     |
| 270   | 85   | 81  |     |
| 285   | 90   | 86  |     |
| 305   | 95   | 90  |     |
| 320   | 100  | 95  |     |
| 335   | 105  | 100 |     |
| 350   | 110  | 105 |     |
| 370   | 115  | 109 |     |
| 385   | 120  | 114 |     |
| 400   | 125  | 119 |     |
| 415   | 130  | 124 |     |
| 430   | 135  | 128 |     |
| 450   | 140  | 133 |     |
| 465   | 145  | 138 |     |
| 480   | 150  | 143 |     |
| 495   | 155  | 147 |     |
| 510   | 160  | 152 |     |
| 530   | 165  | 157 |     |
| 545   | 170  | 162 |     |
| 560   | 175  | 166 |     |
| 575   | 180  | 171 |     |
| 595   | 185  | 176 |     |
| 610   | 190  | 181 |     |
| 625   | 195  | 185 |     |
| 640   | 200  | 190 |     |
| 660   | 205  | 195 |     |
| 675   | 210  | 199 |     |
| 690   | 215  | 204 |     |
| 705   | 220  | 209 |     |
| 720   | 225  | 214 |     |
| 740   | 230  | 219 |     |
| 755   | 235  | 223 |     |
| 770   | 240  | 228 |     |
| 785   | 245  | 233 |     |
| 800   | 250  | 238 | 22  |
| 820   | 255  | 242 | 23  |
| 835   | 260  | 247 | 24  |
| 860   | 268  | 255 | 25  |
| 870   | 272  | 258 | 26  |
| 900   | 280  | 266 | 27  |

| N/mm2 | HV10 | HB  | HRC |
|-------|------|-----|-----|
| 920   | 287  | 273 | 28  |
| 940   | 293  | 278 | 29  |
| 970   | 302  | 287 | 30  |
| 995   | 310  | 295 | 31  |
| 1020  | 317  | 301 | 32  |
| 1050  | 327  | 311 | 33  |
| 1080  | 336  | 319 | 34  |
| 1110  | 345  | 328 | 35  |
| 1140  | 355  | 337 | 36  |
| 1170  | 364  | 346 | 37  |
| 1200  | 373  | 354 | 38  |
| 1230  | 382  | 363 | 39  |
| 1260  | 392  | 372 | 40  |
| 1260  | 403  | 383 | 41  |
| 1330  | 413  | 393 | 42  |
| 1360  | 423  | 402 | 43  |
| 1400  | 434  | 413 | 44  |
| 1440  | 446  | 424 | 45  |
| 1480  | 458  | 435 | 46  |
| 1530  | 473  | 449 | 47  |
| 1570  | 484  | 460 | 48  |
| 1620  | 497  | 472 | 49  |
| 1680  | 514  | 488 | 50  |
| 1730  | 527  | 501 | 51  |
| 1790  | 544  | 517 | 52  |
| 1845  | 560  | 632 | 53  |
| 1910  | 578  | 549 | 54  |
| 1980  | 596  | 567 | 55  |
| 2050  | 615  | 584 | 56  |
| 2140  | 639  | 607 | 57  |
|       | 655  | 622 | 58  |
|       | 675  |     | 59  |
|       | 698  |     | 60  |
|       | 720  |     | 61  |
|       | 745  |     | 62  |
|       | 773  |     | 63  |
|       | 800  |     | 64  |
|       | 829  |     | 65  |
|       | 864  |     | 66  |
|       | 900  |     | 67  |
|       | 940  |     | 68  |



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