



## Company Introduction

**Nano-Mill Technology Co., Ltd** has been established since year 2000. It's specialized in exporting Carbide end mill from Taiwan.. We created our brand "**Nano-mill**" and produce a wide range of high quality Carbide cutting tools. The production is specializing in high hard, high speed and soft metal cutting Solid Carbide End Mill. We supply end mill made of the best material from Germany and manifested by modern CNC grinding machines from Switzerland 'Rollomatic' and Schneebberger. The leading coating technology from Balzers is also adopted to achieve superior performance. Providing customers with the ultimate in quality and service is given. Nano's sales network spans the globe, and will continue to grow as it's innovations to flow with the ebbs and tides of the market.

## 公差表 Tolerance

### 平底刀 (mm) Square End Mills

| Flute Dia. | Dia. Tolerance |
|------------|----------------|
| 1.0        | 0~-0.020       |
| 1.5        | 0~-0.020       |
| 2.0        | 0~-0.020       |
| 2.5        | 0~-0.020       |
| 3.0        | 0~-0.020       |
| 4.0        | 0~-0.020       |
| 5.0        | 0~-0.020       |
| 6.0        | 0~-0.025       |
| 8.0        | 0~-0.030       |
| 10.0       | 0~-0.035       |
| 12.0       | 0~-0.040       |
| 16.0       | 0~-0.040       |
| 20.0       | 0~-0.040       |

### 圓頭立銑刀 (mm) Ball Nose End Mills

| Flute Dia. | Dia. Tolerance |
|------------|----------------|
| R0.5       | ±0.01          |
| R1         | ±0.01          |
| R1.5       | ±0.01          |
| R2         | ±0.01          |
| R2.5       | ±0.01          |
| R3         | ±0.01          |
| R4         | ±0.01          |
| R5         | ±0.01          |
| R6         | ±0.015         |
| R8         | ±0.02          |
| R10        | ±0.02          |
|            |                |
|            |                |

### 圓鼻刀 (mm) Corner Radius End Mills

| Flute Dia. | Dia. Tolerance | R Tolerance |
|------------|----------------|-------------|
| 3.0        | 0.000~-0.020   | +0.02~0     |
| 4.0        | 0.000~-0.020   | +0.02~0     |
| 6.0        | -0.005~-0.025  | +0.02~0     |
| 8.0        | -0.010~-0.025  | +0.03~0     |
| 10.0       | -0.010~-0.030  | +0.03~0     |
| 12.0       | -0.010~-0.035  | +0.03~0     |
| 16.0       | -0.010~-0.040  | +0.03~0     |
|            |                |             |
|            |                |             |
|            |                |             |
|            |                |             |

| Shank Dia. (h6) | Shank Tolerance |
|-----------------|-----------------|
| Φ 3             | 0~-0.008        |
| Φ 4             | 0~-0.008        |
| Φ 6             | 0~-0.008        |
| Φ 8             | 0~-0.008        |
| Φ 10            | 0~-0.009        |
| Φ 12            | 0~-0.011        |
| Φ 16            | 0~-0.011        |
| Φ 20            | 0~-0.013        |

| Shank Dia. (h6) | Shank Tolerance |
|-----------------|-----------------|
| Φ 3             | 0~-0.008        |
| Φ 4             | 0~-0.008        |
| Φ 6             | 0~-0.008        |
| Φ 8             | 0~-0.008        |
| Φ 10            | 0~-0.009        |
| Φ 12            | 0~-0.011        |
| Φ 16            | 0~-0.011        |
| Φ 20            | 0~-0.013        |

| Shank Dia.(h6) | Shank Tolerance |
|----------------|-----------------|
| Φ 3            | 0~-0.008        |
| Φ 4            | 0~-0.008        |
| Φ 6            | 0~-0.008        |
| Φ 8            | 0~-0.008        |
| Φ 10           | 0~-0.009        |
| Φ 12           | 0~-0.011        |
| Φ 16           | 0~-0.011        |
| Φ 20           | 0~-0.013        |

## 硬質合金 Solid Carbide

### MG J Series Packing

|                                   |         |
|-----------------------------------|---------|
| Co %                              | 10      |
| WC incl. Doping                   | 90      |
| Tungsten Carbide α                | Φ 0.6μm |
| T.R.S. (N/mm <sup>2</sup> )       | >3600   |
| Density (g/cm <sup>3</sup> )      | 14.5    |
| Hardness HRA                      | 91.9    |
| Hardness HV30(N/mm <sup>2</sup> ) | 1610    |
| ISO-Range                         | K30-K40 |

### UMG H Series Packing

|                                   |         |
|-----------------------------------|---------|
| Co %                              | 12      |
| WC incl. Doping                   | 88      |
| Tungsten Carbide α                | Φ 0.4μm |
| T.R.S. (N/mm <sup>2</sup> )       | >3800   |
| Density (g/cm <sup>3</sup> )      | 14.1    |
| Hardness HRA                      | 92.3    |
| Hardness HV30(N/mm <sup>2</sup> ) | 1680    |
| ISO-Range                         | K20-K30 |

### UMG V Series Packing

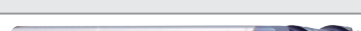
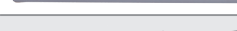
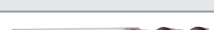
|                                   |         |
|-----------------------------------|---------|
| Co %                              | 9       |
| WC incl. Doping                   | 89.83   |
| Tungsten Carbide α                | Φ 0.2μm |
| T.R.S. (N/mm <sup>2</sup> )       | >4000   |
| Density (g/cm <sup>3</sup> )      | 14.3    |
| Hardness HRA                      | 93.2    |
| Hardness HV30(N/mm <sup>2</sup> ) | 1950    |
| ISO-Range                         | K05-K10 |



- 8  高速極高硬度切削用  
High Speed Cutting & High Hard Cutting
- 23  高速極高硬度切削用  
High Speed Cutting & High Hard Cutting
- 61  平刀系列  
End Mills Series
- 80  圓鼻刀系列  
Corner Radius End Mills
- 86  圓頭立銑刀系列  
Ball Nose End Mills Series
- 91  軟金屬系列  
Soft Materials Cutting Series
- 101  鑽頭系列  
Carbide Drills Series High Performance Drills
- 113  螺紋銑刀系列  
Thread Milling Tool Series
- 116  鉸刀系列  
Carbide Reamers

# 鎢鋼刀具內容簡介表

## CARBIDE INTRODUCCION TABLE TOOL

| 型號<br>Number                                                | 刀具形狀<br>Appearance                                                                  | 刀具類別<br>Type                                                              | 頁數<br>Remarks |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------|
| <b>高速極高硬度切削用 HIGH SPEED CUTTING &amp; HIGH HARD CUTTING</b> |                                                                                     |                                                                           |               |
| VSBN                                                        |    | 微小徑2刃球型立銑刀<br>Micro Diameter 2 Flutes Ball Nose End Mills                 | 8             |
| VSEN                                                        |    | 微小徑2刃立銑刀<br>Micro Diameter Miniature 2 Flutes End Mills                   | 9             |
| VB                                                          |    | 2刃球型立銑刀<br>Standard 2 Flutes Ball Nose End Mills                          | 10            |
| VB                                                          |    | 4刃球型立銑刀<br>Standard 4 Flutes Ball Nose End Mills                          | 11            |
| VBN                                                         |    | 2刃球型立銑刀<br>Standard 2 Flutes Ball Nose End Mills                          | 12            |
| VIBN                                                        |    | 長柄2刃球型立銑刀<br>Long Shank 2 Flutes Ball Nose End Mills                      | 13            |
| VE                                                          |    | 4刃立銑刀<br>Standard 4 Flutes Square End Mills                               | 14            |
| VEA                                                         |    | 4刃立銑刀<br>4 Flutes Square End Mills                                        | 15            |
| VEN                                                         |    | 4刃立銑刀<br>4 Flutes Square End Mills                                        | 16            |
| VER                                                         |    | 圓鼻4刃立銑刀<br>4 Flutes Corner Radius End Mills                               | 17            |
| VLER                                                        |  | 長柄圓鼻4刃立銑刀<br>4 Flutes Long Shank Corner Radius End Mills                  | 18            |
| VMR                                                         |  | 短刃圓鼻4刃立銑刀<br>Short Flute 4 Flutes Corner Radius End Mills                 | 19            |
| VNB                                                         |  | 長頸短刃2刃球型立銑刀<br>Long Neck Short Flutes Length 2 Flutes Ball Nose End Mills | 20            |
| <b>高速極高硬度切削用 HIGH SPEED CUTTING &amp; HIGH HARD CUTTING</b> |                                                                                     |                                                                           |               |
| HSE                                                         |  | 微小徑2刃立銑刀<br>Micro Diameter Miniature 2 Flutes End Mills                   | 23            |
| HE                                                          |  | 2刃立銑刀<br>2 Flutes Square End Mills                                        | 24            |
| HE                                                          |  | 4刃立銑刀<br>4 Flutes Square End Mills                                        | 25            |
| HEA                                                         |  | 4刃立銑刀<br>4 Flutes Square End Mills                                        | 26            |
| HEF                                                         |  | 3刃立銑刀<br>3 Flutes Square End Mills                                        | 27            |
| HEB                                                         |  | 4刃立銑刀<br>4 Flutes Square End Mills                                        | 28            |
| HXE                                                         |  | 重切削3刃立銑刀<br>Heavy Cutting 3 Flutes End Mills                              | 29            |
| HXW                                                         |  | 重切削3刃波浪銑刀<br>Heavy Cutting 3 Flutes End Mills                             | 30            |
| HVE                                                         |  | 長柄4刃變化螺旋立銑刀<br>4 Flutes Square Variable helix angle End Mills             | 31            |
| HXE                                                         |  | 重切削4刃立銑刀<br>Heavy Cutting 4 Flutes End Mills                              | 32            |
| HVT                                                         |  | 6刃立銑刀<br>6 Flutes Square End Mills                                        | 33            |



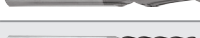
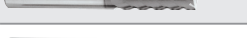
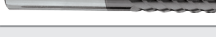
# 鎢鋼刀具內容簡介表

## CARBIDE INTRODUCCION TABLE TOOL

|      |                                                                                     |                                                                 |    |
|------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------|----|
| LHVT |    | 長刃型6刃立銑刀<br>6 Flutes Long Shank End Mills                       | 34 |
| HVTR |    | 圓鼻6刃立銑刀<br>6 Flutes Corner Radius End Mills                     | 35 |
| HEL  |    | 長柄短刀2刃立銑刀<br>2 Flutes Long Shank Short Length Square End Mills  | 36 |
| HEI  |    | 長柄短刀2刃立銑刀<br>2 Flutes Long Shank Short Length Square End Mills  | 36 |
| HEJ  |    | 長柄短刀2刃立銑刀<br>2 Flutes Long Shank Short Length Square End Mills  | 36 |
| HELF |    | 長刃型2刃立銑刀<br>Long Flutes Square 2 Flutes End Mills               | 37 |
| HEL  |    | 長柄型4刃立銑刀<br>4 Flutes Short Length Long Square End Mills         | 38 |
| HELF |    | 長刃型4刃立銑刀<br>4 Flutes Long Shank Square End Mills                | 39 |
| HNE  |    | 長頸短刀2刃立銑刀<br>Long Neck Short Length Square 2 Flutes End Mills   | 40 |
| HSB  |    | 微小徑2刃球型立銑刀<br>Micro Diameter 2 Flutes Ball Nose End Mills       | 42 |
| HB   |    | 2刃球型立銑刀<br>Standard 2 Flutes Ball Nose End Mills                | 43 |
| HIB  |    | 長柄型2刃球型立銑刀<br>Long Shank 2 Flutes Ball Nose End Mills           | 44 |
| HJB  |  | 長柄型2刃球型立銑刀<br>Long Shank 2 Flutes Ball Nose End Mills           | 44 |
| HKB  |  | 長柄型2刃球型立銑刀<br>Long Shank 2 Flutes Ball Nose End Mills           | 44 |
| HBA  |  | 2刃球型立銑刀<br>Standard 2 Flutes Ball Nose End Mills                | 46 |
| HB   |  | 4刃球型立銑刀<br>Standard 4 Flutes Ball Nose End Mills                | 47 |
| HOB  |  | 強力短刀2刃球型立銑刀<br>Short length 2 Flutes Ball Nose End Mills        | 48 |
| HLB  |  | 長斜頸2刃強力球型立銑刀<br>Long Neck Taper 2 Flutes Ball Nose End Mills    | 49 |
| HNB  |  | 長頸短刀2刃球型立銑刀<br>Long Neck short 2 Flutes Ball Nose End Mills     | 50 |
| HNR  |  | 圓鼻2刃立銑刀<br>2 Flutes Corner Radius Square End Mills              | 52 |
| HER  |  | 圓鼻4刃立銑刀<br>4 Flutes Corner Radius End Mills                     | 53 |
| HMR  |  | 短刃圓鼻4刃立銑刀<br>Short flute 4 Flutes Corner Radius End Mills       | 54 |
| HXR  |  | 重切削圓鼻4刃立銑刀<br>Heavy Cutting 4 Flutes Corner Radius End Mills    | 55 |
| HLNR |  | 長柄圓鼻2刃立銑刀<br>2 Flutes Long Shank Corner Radius Square End Mills | 56 |
| HLR  |  | 長柄圓鼻4刃立銑刀<br>4 Flutes Long Shank Corner Radius End Mills        | 57 |
| HNMR |  | 長頸短刀圓鼻2刃立銑刀<br>2 Flutes Long Neck Corner Radius End Mills       | 58 |

## 鎢鋼刀具內容簡介表 CARBIDE INTRODUCTION TABLE TOOL

### 平刀系列 END MILLS SERIES

|      |                                                                                     |                                                          |    |
|------|-------------------------------------------------------------------------------------|----------------------------------------------------------|----|
| JE   |    | 2刃立銑刀<br>2 Flutes Square End Mills                       | 61 |
| JEA  |    | 4刃立銑刀<br>4 Flutes Square End Mills                       | 62 |
| JE   |    | 4刃立銑刀<br>4 Flutes Square End Mills                       | 63 |
| JEF  |    | 3刃立銑刀<br>3 Flutes Square End Mills                       | 64 |
| JEL  |    | 長柄型4刃立銑刀<br>4 Flutes Long Shank Square End Mills         | 65 |
| JELF |    | 長刃型4刃立銑刀<br>4 Flutes Short Length Long Square End Mills  | 66 |
| JELF |    | 長刃型2刃立銑刀<br>2 Flutes short Length Long Square End Mills  | 67 |
| JEL  |    | 長柄型2刃立銑刀<br>2 Flutes Long Short Length Square End Mills  | 68 |
| JEI  |    | 長柄型2刃立銑刀<br>2 Flutes Long Short Length Square End Mills  | 68 |
| JEJ  |    | 長柄型2刃立銑刀<br>2 Flutes Long Short Length Square End Mills  | 68 |
| JTA  |    | 斜度刀2刃立銑刀<br>2 Flutes Taper Square End Mills              | 70 |
| JVT  |   | 6刃立銑刀<br>6 Flutes Standard End Mills                     | 73 |
| LJVT |  | 長刃型6刃立銑刀<br>6 Flutes Long Shank End Mills                | 74 |
| JWA  |  | 3刃粗立銑刀<br>3 Flutes Roughing End Mills                    | 75 |
| LJWA |  | 長柄長刃粗銑刀<br>3 Flutes Long Shank Square Roughing End Mills | 76 |
| JWA  |  | 4刃粗立銑刀<br>4 Flutes Roughing End Mills                    | 77 |
| LJWA |  | 長柄4刃粗銑刀<br>4 Flutes Long Shank Square Roughing End Mills | 78 |

### 圓鼻刀系列 CORNER RADIUS END MILLS

|      |                                                                                     |                                                          |    |
|------|-------------------------------------------------------------------------------------|----------------------------------------------------------|----|
| JNR  |  | 圓鼻2刃立銑刀<br>2 Flutes Corner Radius Square End Mills       | 80 |
| JLNR |  | 長柄圓鼻2刃立銑刀<br>2 Flutes Long Shank Corner Radius End Mills | 81 |
| JER  |  | 圓鼻4刃立銑刀<br>4 Flutes Corner Radius End Mills              | 82 |
| JLR  |  | 長柄圓鼻4刃立銑刀<br>4 Flutes Long Shank Corner Radius End Mills | 84 |

### 圓頭立銑刀系列 BALL NOSE END MILLS SERIES

|     |                                                                                     |                                         |    |
|-----|-------------------------------------------------------------------------------------|-----------------------------------------|----|
| JB  |  | 2刃球型立銑刀<br>2 Flutes Ball Nose End Mills | 86 |
| JBA |  | 2刃球型立銑刀<br>2 Flutes Ball Nose End Mills | 87 |
| JB  |  | 4刃球型立銑刀<br>4 Flutes Ball Nose End Mills | 88 |

## 鎢鋼刀具內容簡介表 CARBIDE INTRODUCCION TABLE TOOL

|     |                                                                                   |                                                      |    |
|-----|-----------------------------------------------------------------------------------|------------------------------------------------------|----|
| JIB |  | 長柄2刃球型立銑刀<br>2 Flutes Long Shank Ball Nose End Mills | 89 |
| JJB |  | 長柄2刃球型立銑刀<br>2 Flutes Long Shank Ball Nose End Mills | 89 |
| JKB |  | 長柄2刃球型立銑刀<br>2 Flutes Long Shank Ball Nose End Mills | 89 |

### 軟金屬系列 SOFT MATERIALS CUTTING SERIES

|     |                                                                                     |                                                                  |    |
|-----|-------------------------------------------------------------------------------------|------------------------------------------------------------------|----|
| AE  |    | 鋁合金專用2刃立銑刀<br>2 Flutes Aluminum Square End Mills                 | 91 |
| LAE |    | 鋁合金專用2刃長刃立銑刀<br>2 Flutes Long Shank Square End Mills             | 92 |
| AEW |    | 鋁合金專用3刃立銑刀<br>3 Flutes Aluminum Square End Mills                 | 93 |
| AE  |    | 鋁合金專用3刃立銑刀<br>3 Flutes Aluminum Square End Mills                 | 94 |
| LAE |    | 鋁合金專用3刃立銑刀<br>3 Flutes Long Shank Square End Mills               | 95 |
| AEE |    | 鋁合金專用3刃立銑刀<br>3 Flutes Aluminum Square End Mills                 | 96 |
| AB  |    | 鋁合金專用2刃球型立銑刀<br>2 Flutes Aluminum Ball Nose End Mills            | 97 |
|     |   | 外角R刀3刃立銑刀<br>3F Corner Rounding Cutter                           | 98 |
|     |  | 60度90度120度2刃定位鑽頭<br>NC Spot Drills 60, 90, 120, Degree End Mills | 99 |

### 鑽頭系列 CARBIDE DRILLS SERIES HIGH PERFORMANCE DRILLS

|      |                                                                                     |                                                                                 |     |
|------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----|
| DSE  |  | 鋁、銅、塑膠、塑膠複合材料 超微粒鎢鋼微小徑鑽頭<br>For Aluminium, Copper, Plastics, Composite Material | 101 |
| DE   |  | 高速加工用極超硬極超微粒鎢鋼塗層高速鑽頭<br>High Performance Drills                                 | 102 |
| DEF  |  | 高速加工用極超硬極超微粒鎢鋼塗層高速鑽頭<br>High Performance Drills                                 | 104 |
| DEE  |  | 高速加工用超硬超微粒鎢鋼塗層高速鑽頭<br>High Performance Drills                                   | 106 |
| DEEF |  | 高速加工用超硬超微粒鎢鋼塗層高速鑽頭<br>High Performance Drills                                   | 108 |
| DA   |  | 鋁銅合金專用3刃鑽頭<br>3-Flute Drills For Aluminium, Copper                              | 110 |
|      |  | 極超硬極超微粒鎢鋼塗層階梯鑽頭<br>Combined Drill and Chamfer Tool                              | 111 |

### 螺紋銑刀系列 THREAD MILLING TOOL SERIES

|    |                                                                                     |                                        |     |
|----|-------------------------------------------------------------------------------------|----------------------------------------|-----|
| TR |  | 高硬度用螺紋銑刀<br>Thread Milling Tool Series | 113 |
| TH |  | 高硬度用螺紋銑刀<br>Thread Milling Tool Series | 114 |

### 鉸刀系列 CARBIDE REAMERS

|     |                                                                                     |                                                        |     |
|-----|-------------------------------------------------------------------------------------|--------------------------------------------------------|-----|
| RE  |  | 鎢鋼鉸刀超硬(0.1mm指定單位)<br>Machine Reamers In Steps of 0.1mm | 116 |
| REA |  | 超微粒鎢鋼NC機械鉸刀<br>NC Machine Reamers                      | 118 |

## 符號圖解 GUIDE LINES to ICONS

### WORK MATERIAL 被切削材硬度

**HRC >55** Work material hardness is up to HRC50°, HRC55°

**HRC >60** Work material hardness is up to HRC50°, HRC55°, HRC60°

**HRC >65** Work material hardness is up to HRC50°, HRC55°, HRC60°, HRC65°

### CORNER R 圓隅角

### COATING 鍍層

TIALN   Ticsin   HELICA   ALTiN   nAcoB

### CARBIDE 鎢鋼材質

**UMG 0.2 μm CO 9%** Super Micro Grain 極細超微粒子

**UMG 0.4 μm CO 12%** Super Micro Grain 極細超微粒子

**MG 0.6 μm CO 10%** Micro Grain 超微粒子

### HELIX ANGLE 螺旋角

Icons for Helix Angles: 30°, 50°, 5°, 35°, 55°, 25°, 45°, 30°

Helix 5°, 25°, 30°, 35°, 40°, 50°, 55°

螺旋角是 5°, 25°, 30°, 35°, 40°, 50°, 55°

### FLUTE 刃數

Icons for Flute Counts: 2Flutes, 3Flutes, 4Flutes, 2Flutes, 3Flutes, 4Flutes, 2Flutes, 6Flutes

### SHINK NECK 縮頸

Best for long neck machining.  
應用於深溝加工用。

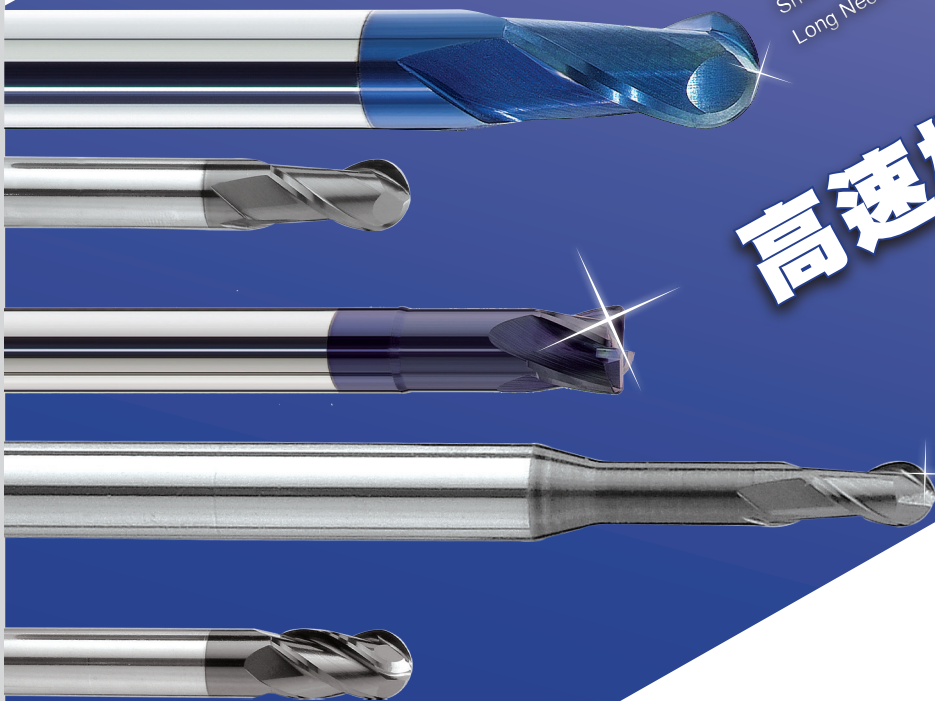
| Coating Classifying And Advantage 立銑刀的塗層種類及特點 End Mill Expert |                                              |         |         |         |             |          |
|---------------------------------------------------------------|----------------------------------------------|---------|---------|---------|-------------|----------|
| 項目 Item                                                       | 塗層種類 Coating Type                            | ALTiN   | TIALN   | nAcoB   | Ticsin      | HELICA   |
| 特性<br>Characteristic                                          | 表面硬度 (HV) Hardness(HV)                       | ~3200   | ~2800   | 45(Gpa) | ~3600       | ~2800    |
|                                                               | 塗層厚度(m) Thickness(m)                         | 2.5~3   | 2.5~3   | 3       | 2.0~2.5     | 1~4      |
|                                                               | 耐氧化溫度 Oxidation Temp                         | 900     | 800     | 1200    | 1100        | 1000     |
|                                                               | 摩擦係數 Friction Coefficient                    | 0.3     | 0.3     | 0.45    | 0.4         | 0.25     |
|                                                               | 顏色 Color                                     | 黑 Black | 黑 Black | 藍 Blue  | 金 SoFe GOLD | 棕 Copper |
| 適用材質<br>Application                                           | 碳鋼 Carbon Steel                              | ◎       | ◎       | ◎       | ○           | ○        |
|                                                               | 合金/工具/高速鋼 Alloy /Tool/ High Speed Steel      | ◎       | ◎       | ◎       | ○           | ◎        |
|                                                               | 不鏽鋼 Stainless Steel                          | X       | ○       | ○       | ◎           | ◎        |
|                                                               | 合金 Alloy                                     | ◎       | ○       | ◎       | ◎           | ○        |
|                                                               | 銅 / 鋁 Copper/Aluminum                        | X       | X       | X       | X           | X        |
|                                                               | 高溫合金 Incolnet                                | ◎       | ○       | ◎       | ◎           | ○        |
|                                                               | 鈦合金 Titanium                                 | X       | ○       | ○       | ◎           | X        |
|                                                               | 塑膠/複合材料/木材/紙Plastic / Composites/Wood /Paper | X       | X       | X       | X           | X        |
| 切削方式<br>Cutting Way                                           | 乾式 Dry Cutting                               | ◎       | ◎       | ○       | ◎           | ◎        |
|                                                               | 濕式 Wet Cutting                               | X       | ○       | X       | ○           | ○        |
|                                                               | 油霧 Oil Spary                                 | ○       | ◎       | ◎       | ○           | ◎        |

符號說明ICON：◎最適合 Recommend ○適合 Suitable X不建議 Not Recommend

# High Speed Cutting & High Hard Cutting

Standard 2 Flutes Ball Nose End Mills  
Standard 4 Flutes Ball Nose End Mills  
Long Shank 2 Flutes Square End Mills  
Standard 4 Flutes Square End Mills  
4 Flutes Square End Mills  
4 Flutes Corner Radius End Mills  
4 Flutes Long Shank Corner Radius End Mills  
Short flute 4 Flutes Corner Radius End Mills  
Long Neck Short Flutes Length 2 Flutes Ball Nose End Mills

高速極高硬度  
切削用



# High Speed Cutting & High Hard Cutting

Micro Diameter 2 Flutes Ball Nose End Mills



微小徑 2刃球型立銑刀 極細微粒碳化鎢 高速極高硬度切削用

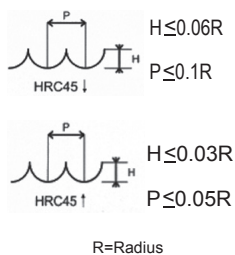


| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| VSBN 0022      | R0.10              | 0.4                    | 50              | 4                   |
| VSBN 0032      | R0.15              | 0.6                    | 50              | 4                   |
| VSBN 0042      | R0.20              | 0.8                    | 50              | 4                   |
| VSBN 0052      | R0.25              | 1.0                    | 50              | 4                   |
| VSBN 0062      | R0.30              | 1.2                    | 50              | 4                   |
| VSBN 0072      | R0.35              | 1.4                    | 50              | 4                   |
| VSBN 0082      | R0.40              | 1.6                    | 50              | 4                   |
| VSBN 0092      | R0.45              | 1.8                    | 50              | 4                   |
| VSBN 0122      | R0.6               | 2.4                    | 50              | 4                   |
| VSBN 0142      | R0.7               | 2.8                    | 50              | 4                   |
| VSBN 0162      | R0.8               | 3.2                    | 50              | 4                   |
| VSBN 0182      | R0.9               | 3.6                    | 50              | 4                   |

## Recommended cutting condition for Ball Nose End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 0.1      | 32000                                                           | 500-600        | 32000                                                           | 400-500        | 25000                 | 300-400        |
| 0.15     | 32000                                                           | 500-600        | 32000                                                           | 400-500        | 25000                 | 300-400        |
| 0.2      | 32000                                                           | 500-600        | 32000                                                           | 400-500        | 25000                 | 300-400        |
| 0.25     | 32000                                                           | 600-700        | 32000                                                           | 500-600        | 25000                 | 400-500        |
| 0.3      | 32000                                                           | 600-700        | 32000                                                           | 500-600        | 25000                 | 400-500        |
| 0.35     | 32000                                                           | 700-800        | 32000                                                           | 600-700        | 25000                 | 500-600        |
| 0.4      | 32000                                                           | 900-1000       | 32000                                                           | 800-900        | 25000                 | 600-700        |
| 0.45     | 32000                                                           | 1000-1100      | 32000                                                           | 900-1000       | 25000                 | 600-700        |

## DEPTH OF CUT





# High Speed Cutting & High Hard Cutting

## Micro Diameter Miniature 2 Flutes End Mills



微小徑 2刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

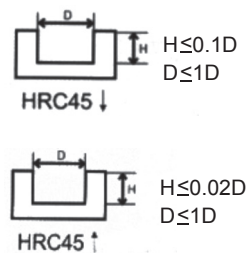


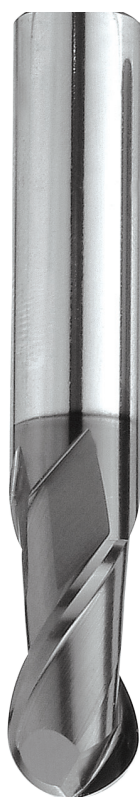
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刀長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| VSEN 0022      | 0.2                | 0.4                    | 50              | 4                   |
| VSEN 0032      | 0.3                | 0.6                    | 50              | 4                   |
| VSEN 0042      | 0.4                | 0.8                    | 50              | 4                   |
| VSEN 0052      | 0.5                | 1.0                    | 50              | 4                   |
| VSEN 0062      | 0.6                | 1.2                    | 50              | 4                   |
| VSEN 0072      | 0.7                | 1.4                    | 50              | 4                   |
| VSEN 0082      | 0.8                | 1.6                    | 50              | 4                   |
| VSEN 0092      | 0.9                | 1.8                    | 50              | 4                   |
| VSEN 0122      | 1.2                | 3                      | 50              | 4                   |
| VSEN 0142      | 1.4                | 3                      | 50              | 4                   |
| VSEN 0162      | 1.6                | 4                      | 50              | 4                   |
| VSEN 0182      | 1.8                | 5                      | 50              | 4                   |

### Recommended cutting condition for Micro Diameter Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 0.2      | 40000                                                           | 100-300        | 30000                                                          | 80-250         | 15000                 | 50-150         |
| 0.3      | 40000                                                           | 100-350        | 30000                                                          | 80-300         | 15000                 | 50-200         |
| 0.4      | 40000                                                           | 100-400        | 25000                                                          | 80-350         | 10000                 | 50-250         |
| 0.5      | 40000                                                           | 100-500        | 25000                                                          | 80-400         | 10000                 | 50-250         |
| 0.6      | 38000                                                           | 100-600        | 25000                                                          | 80-500         | 8000                  | 50-250         |
| 0.7      | 36000                                                           | 100-700        | 20000                                                          | 80-600         | 8000                  | 50-250         |
| 0.8      | 34000                                                           | 100-800        | 20000                                                          | 80-700         | 8000                  | 50-250         |
| 0.9      | 32000                                                           | 100-1000       | 20000                                                          | 80-800         | 8000                  | 50-250         |

### DEPTH OF CUT





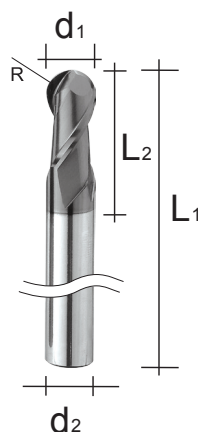
# High Speed Cutting & High Hard Cutting

Standard 2 Flutes Ball Nose End Mills



2刃球型立銑刀 極細微粒碳化鎢 高速極高硬度切削用

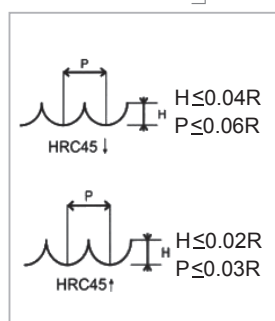
| 型號       | 直徑(D1)   | 刀長(L2)       | 全長(L1) | 柄徑(d2)    |
|----------|----------|--------------|--------|-----------|
| Type No. | Diameter | Flute Length | O.A.L  | Shank Dia |
| VB 0102  | R0.5     | 2            | 50     | 4         |
| VB 0152  | R0.75    | 3            | 50     | 4         |
| VB 0202  | R1.0     | 4            | 50     | 4         |
| VB 0252  | R1.25    | 5            | 50     | 4         |
| VB 0302  | R1.5     | 6            | 50     | 4         |
| VB 0302A | R1.5     | 6            | 50     | 3         |
| VB 0402  | R2.0     | 8            | 50     | 4         |
| VB 0502  | R2.5     | 10           | 50     | 6         |
| VB 0602  | R3.0     | 12           | 50     | 6         |
| VB 0802  | R4.0     | 16           | 60     | 8         |
| VB 1002  | R5.0     | 20           | 75     | 10        |
| VB 1202  | R6.0     | 24           | 75     | 12        |
| VB 1602  | R8.0     | 32           | 100    | 16        |
| VB 2002  | R10.0    | 32           | 100    | 20        |



## Recommended cutting condition for Ball Nose End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| R0.5     | 45000                                                           | 2000           | 45000                                                           | 1800           | 28000                 | 1000           |
| R1       | 23000                                                           | 2000           | 22000                                                           | 1800           | 16000                 | 900            |
| R1.5     | 16000                                                           | 2000           | 15000                                                           | 1800           | 11000                 | 900            |
| R2       | 15000                                                           | 2400           | 14000                                                           | 2000           | 10000                 | 1300           |
| R3       | 13000                                                           | 3200           | 11000                                                           | 2000           | 9000                  | 1500           |
| R4       | 9000                                                            | 2300           | 8000                                                            | 1500           | 6200                  | 1400           |
| R5       | 7500                                                            | 1900           | 6500                                                            | 1200           | 5200                  | 900            |
| R6       | 6300                                                            | 1600           | 5500                                                            | 1000           | 4300                  | 800            |
| R8       | 4500                                                            | 1200           | 3800                                                            | 800            | 3300                  | 700            |

## DEPTH OF CUT

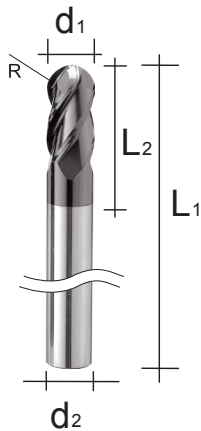


# High Speed Cutting & High Hard Cutting

Standard 4 Flutes Ball Nose End Mills



4刃球型立銑刀 極細微粒碳化鎢 高速極高硬度切削用

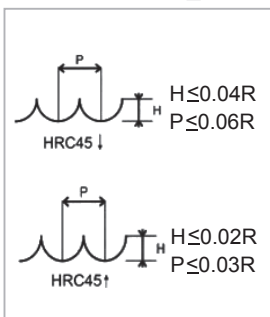


| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L. | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|------------------|---------------------|
| VB 0104        | R0.5               | 2                      | 50               | 4                   |
| VB 0154        | R0.75              | 3                      | 50               | 4                   |
| VB 0204        | R1.0               | 4                      | 50               | 4                   |
| VB 0304        | R1.5               | 6                      | 50               | 4                   |
| VB 0304A       | R1.5               | 6                      | 50               | 3                   |
| VB 0404        | R2.0               | 8                      | 50               | 4                   |
| VB 0504        | R2.5               | 10                     | 50               | 6                   |
| VB 0604        | R3.0               | 12                     | 50               | 6                   |
| VB 0804        | R4.0               | 16                     | 60               | 8                   |
| VB 1004        | R5.0               | 20                     | 75               | 10                  |
| VB 1204        | R6.0               | 24                     | 75               | 12                  |
| VB 1604        | R8.0               | 32                     | 100              | 16                  |
| VB 2004        | R10.0              | 32                     | 100              | 20                  |

## Recommended cutting condition for Ball Nose End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| R2       | 15000                                                           | 3000           | 14000                                                           | 2600           | 10000                 | 1700           |
| R3       | 13000                                                           | 4000           | 11000                                                           | 2600           | 9000                  | 1900           |
| R4       | 9000                                                            | 2900           | 8000                                                            | 1900           | 6200                  | 1800           |
| R5       | 7500                                                            | 2400           | 6500                                                            | 1500           | 5200                  | 1100           |
| R6       | 6300                                                            | 2100           | 5500                                                            | 1300           | 4300                  | 1000           |
| R8       | 4500                                                            | 1500           | 3800                                                            | 1000           | 3300                  | 900            |
| R10      | 3700                                                            | 1200           | 3200                                                            | 750            | 2600                  | 600            |

### DEPTH OF CUT



# High Speed Cutting & High Hard Cutting

## Standard 2 Flutes Ball Nose End Mills



2刃球型立銑刀 極細微粒碳化鎢 高速極高硬度切削用

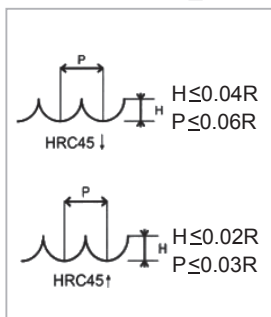


| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L. | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|------------------|---------------------|
| VBN 0102       | R0.5               | 2                      | 50               | 4                   |
| VBN 0152       | R0.75              | 3                      | 50               | 4                   |
| VBN 0202       | R1.0               | 4                      | 50               | 4                   |
| VBN 0252       | R1.25              | 5                      | 50               | 4                   |
| VBN 0302       | R1.5               | 6                      | 50               | 4                   |
| VBN 0302A      | R1.5               | 6                      | 50               | 3                   |
| VBN 0402       | R2.0               | 8                      | 50               | 4                   |
| VBN 0502       | R2.5               | 10                     | 50               | 6                   |
| VBN 0602       | R3.0               | 12                     | 50               | 6                   |
| VBN 0802       | R4.0               | 16                     | 60               | 8                   |
| VBN 1002       | R5.0               | 20                     | 75               | 10                  |
| VBN 1202       | R6.0               | 24                     | 75               | 12                  |
| VBN 1602       | R8.0               | 32                     | 100              | 16                  |
| VBN 2002       | R10.0              | 32                     | 100              | 20                  |

### Recommended cutting condition for Ball Nose End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| R0.5     | 45000                                                           | 2000           | 45000                                                          | 1800           | 28000                 | 1000           |
| R1       | 23000                                                           | 2000           | 22000                                                          | 1800           | 16000                 | 900            |
| R1.5     | 16000                                                           | 2000           | 15000                                                          | 1800           | 11000                 | 900            |
| R2       | 15000                                                           | 2400           | 14000                                                          | 2000           | 10000                 | 1300           |
| R3       | 13000                                                           | 3200           | 11000                                                          | 2000           | 9000                  | 1500           |
| R4       | 9000                                                            | 2300           | 8000                                                           | 1500           | 6200                  | 1400           |
| R5       | 7500                                                            | 1900           | 6500                                                           | 1200           | 5200                  | 900            |
| R6       | 6300                                                            | 1600           | 5500                                                           | 1000           | 4300                  | 800            |
| R8       | 4500                                                            | 1200           | 3800                                                           | 800            | 3300                  | 700            |

### DEPTH OF CUT



# High Speed Cutting & High Hard Cutting

Long Shank 2 Flutes Ball Nose End Mills



長柄 2刃球型立銑刀 極細微粒碳化鎢 高速極高硬度切削用



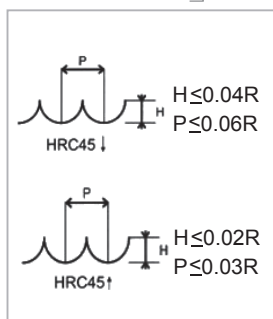
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| VIBN 0202      | R1.0               | 4                      | 75              | 6                   |
| VIBN 0302      | R1.5               | 6                      | 75              | 6                   |
| VIBN 0402      | R2.0               | 8                      | 75              | 6                   |
| VIBN 0502      | R2.5               | 10                     | 75              | 6                   |
| VIBN 0602      | R3.0               | 12                     | 75              | 6                   |
| VIBN 0802      | R4.0               | 16                     | 75              | 8                   |
| VJBN 0602      | R3.0               | 12                     | 100             | 6                   |
| VJBN 0802      | R4.0               | 16                     | 100             | 8                   |
| VJBN 1002      | R5.0               | 20                     | 100             | 10                  |
| VJBN 1202      | R6.0               | 24                     | 100             | 12                  |



## Recommended cutting condition for Ball Nose End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, S.Cr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|------------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                           |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                  | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 23000                                                           | 2000           | 22000                                                            | 1800           | 16000                 | 900            |
| 1.5      | 16000                                                           | 2000           | 15000                                                            | 1800           | 11000                 | 900            |
| 2        | 15000                                                           | 2400           | 14000                                                            | 2000           | 10000                 | 1300           |
| 3        | 13000                                                           | 3200           | 11000                                                            | 2000           | 9000                  | 1500           |
| 4        | 9000                                                            | 2300           | 8000                                                             | 1500           | 6200                  | 1400           |
| 5        | 7500                                                            | 1900           | 6500                                                             | 1200           | 5200                  | 900            |
| 6        | 6300                                                            | 1600           | 5500                                                             | 1000           | 4300                  | 800            |

## DEPTH OF CUT



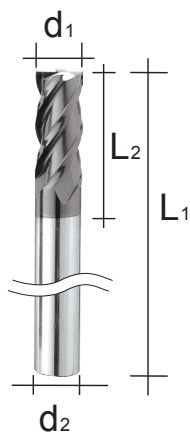


# High Speed Cutting & High Hard Cutting

Standard 4 Flutes Square End Mills



4刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

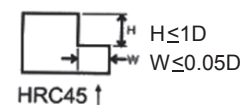
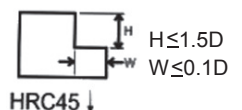


| 型號       | 直徑(D1)   | 刀長(L2)       | 全長(L1) | 柄徑(d2)    |
|----------|----------|--------------|--------|-----------|
| Type No. | Diameter | Flute Length | O.A.L  | Shank Dia |
| VE 0104  | 1.0      | 3            | 50     | 4         |
| VE 0154  | 1.5      | 4            | 50     | 4         |
| VE 0204  | 2.0      | 6            | 50     | 4         |
| VE 0254  | 2.5      | 7            | 50     | 4         |
| VE 0304  | 3.0      | 8            | 50     | 4         |
| VE 0304A | 3.0      | 8            | 50     | 3         |
| VE 0404  | 4.0      | 11           | 50     | 4         |
| VE 0504  | 5.0      | 13           | 50     | 6         |
| VE 0604  | 6.0      | 15           | 50     | 6         |
| VE 0804  | 8.0      | 20           | 60     | 8         |
| VE 1004  | 10.0     | 30           | 75     | 10        |
| VE 1204  | 12.0     | 30           | 75     | 12        |
| VE 1404  | 14.0     | 45           | 100    | 16        |
| VE 1604  | 16.0     | 45           | 100    | 16        |
| VE 1804  | 18.0     | 45           | 100    | 20        |
| VE 2004  | 20.0     | 50           | 100    | 20        |
| VE 2504  | 25.0     | 50           | 100    | 25        |

## Recommended cutting condition for Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 22000                                                           | 400            | 18000                                                          | 200            | 9000                  | 140            |
| 1.5      | 12000                                                           | 500            | 11000                                                          | 280            | 5200                  | 150            |
| 2        | 10000                                                           | 550            | 10000                                                          | 280            | 4600                  | 170            |
| 3        | 9000                                                            | 600            | 5500                                                           | 310            | 3500                  | 220            |
| 4        | 6000                                                            | 600            | 5000                                                           | 400            | 2200                  | 220            |
| 5        | 4800                                                            | 750            | 4000                                                           | 400            | 1700                  | 240            |
| 6        | 4500                                                            | 800            | 3800                                                           | 420            | 1600                  | 300            |
| 8        | 3500                                                            | 82             | 2800                                                           | 420            | 1000                  | 300            |
| 10       | 3000                                                            | 820            | 1800                                                           | 420            | 900                   | 300            |
| 12       | 2000                                                            | 820            | 1600                                                           | 350            | 800                   | 300            |
| 16       | 1500                                                            | 650            | 1000                                                           | 300            | 500                   | 150            |
| 20       | 1200                                                            | 600            | 900                                                            | 300            | 400                   | 150            |

## DEPTH OF CUT





# High Speed Cutting & High Hard Cutting

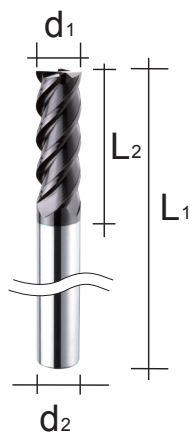
## 4 Flutes Square End Mills



4刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用



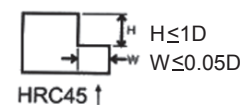
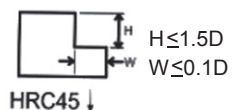
| 型號       | 直徑(D1)   | 刃長(L2)       | 全長(L1) | 柄徑(d2)    |
|----------|----------|--------------|--------|-----------|
| Type No. | Diameter | Flute Length | O.A.L  | Shank Dia |
| VEA 0504 | 5.0      | 13           | 50     | 6         |
| VEA 0604 | 6.0      | 15           | 50     | 6         |
| VEA 0804 | 8.0      | 20           | 60     | 8         |
| VEA 1004 | 10.0     | 30           | 75     | 10        |
| VEA 1204 | 12.0     | 30           | 75     | 12        |
| VEA 1404 | 14.0     | 45           | 100    | 16        |
| VEA 1604 | 16.0     | 45           | 100    | 16        |
| VEA 1804 | 18.0     | 45           | 100    | 20        |
| VEA 2004 | 20.0     | 50           | 100    | 20        |
| VEA 2504 | 25.0     | 50           | 100    | 25        |



### Recommended cutting condition for Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 22000                                                           | 400            | 18000                                                           | 200            | 9000                  | 140            |
| 1.5      | 12000                                                           | 500            | 11000                                                           | 280            | 5200                  | 150            |
| 2        | 10000                                                           | 550            | 10000                                                           | 280            | 4600                  | 170            |
| 3        | 9000                                                            | 600            | 5500                                                            | 310            | 3500                  | 220            |
| 4        | 6000                                                            | 600            | 5000                                                            | 400            | 2200                  | 220            |
| 5        | 4800                                                            | 750            | 4000                                                            | 400            | 1700                  | 240            |
| 6        | 4500                                                            | 800            | 3800                                                            | 420            | 1600                  | 300            |
| 8        | 3500                                                            | 82             | 2800                                                            | 420            | 1000                  | 300            |
| 10       | 3000                                                            | 820            | 1800                                                            | 420            | 900                   | 300            |
| 12       | 2000                                                            | 820            | 1600                                                            | 350            | 800                   | 300            |
| 16       | 1500                                                            | 650            | 1000                                                            | 300            | 500                   | 150            |
| 20       | 1200                                                            | 600            | 900                                                             | 300            | 400                   | 150            |

### DEPTH OF CUT





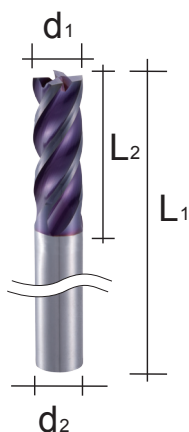
# High Speed Cutting & High Hard Cutting

## 4 Flutes Square End Mills



4刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

| 型號       | 直徑(D1)   | 刃長(L2)       | 全長(L1) | 柄徑(d2)    |
|----------|----------|--------------|--------|-----------|
| Type No. | Diameter | Flute Length | O.A.L  | Shank Dia |
| VEN 0104 | 1.0      | 3            | 50     | 4         |
| VEN 0154 | 1.5      | 4            | 50     | 4         |
| VEN 0204 | 2.0      | 6            | 50     | 4         |
| VEN 0304 | 3.0      | 8            | 50     | 4         |
| VEN 0404 | 4.0      | 11           | 50     | 4         |
| VEN 0504 | 5.0      | 13           | 50     | 6         |
| VEN 0604 | 6.0      | 16           | 50     | 6         |
| VEN 0804 | 8.0      | 20           | 60     | 8         |
| VEN 1004 | 10.0     | 30           | 75     | 10        |
| VEN 1204 | 12.0     | 30           | 75     | 12        |
| VEN 1604 | 16.0     | 45           | 100    | 16        |
| VEN 2004 | 20.0     | 50           | 100    | 20        |



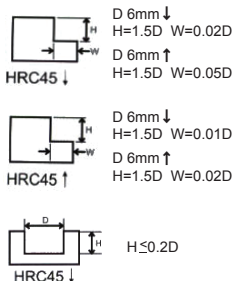
### Recommended cutting condition for Long Shank Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 3        | 20000                                                           | 2000           | 16000                                                           | 1000           | 9000                  | 500            |
| 4        | 19000                                                           | 2000           | 12000                                                           | 1300           | 6000                  | 550            |
| 5        | 13000                                                           | 1800           | 10000                                                           | 1400           | 5000                  | 500            |
| 6        | 10000                                                           | 3000           | 8000                                                            | 1500           | 4500                  | 700            |
| 8        | 8000                                                            | 3200           | 5000                                                            | 1300           | 3500                  | 600            |
| 10       | 7000                                                            | 3000           | 4500                                                            | 1200           | 3000                  | 550            |
| 12       | 5000                                                            | 2000           | 4000                                                            | 1100           | 2000                  | 500            |
| 16       | 4000                                                            | 1800           | 3500                                                            | 1000           | 1800                  | 450            |
| 20       | 3500                                                            | 1600           | 3000                                                            | 1000           | 1300                  | 450            |

### Recommended cutting condition for Long Shank Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 3        | 20000                                                           | 2000           | 20000                                                           | 1200           | 16000                 | 1200           |
| 4        | 16000                                                           | 2000           | 16000                                                           | 1200           | 12000                 | 1300           |
| 5        | 13000                                                           | 1800           | 13000                                                           | 1100           | 10000                 | 1400           |
| 6        | 10000                                                           | 3000           | 10000                                                           | 2100           | 8000                  | 1500           |
| 8        | 8000                                                            | 2900           | 8000                                                            | 1800           | 6000                  | 1400           |
| 10       | 7000                                                            | 2800           | 6000                                                            | 1700           | 5000                  | 1300           |
| 12       | 5000                                                            | 2300           | 5500                                                            | 1700           | 4500                  | 1200           |
| 16       | 3500                                                            | 1800           | 4500                                                            | 1800           | 3500                  | 1200           |
| 20       | 3000                                                            | 1400           | 3000                                                            | 1500           | 2600                  | 1100           |

### DEPTH OF CUT



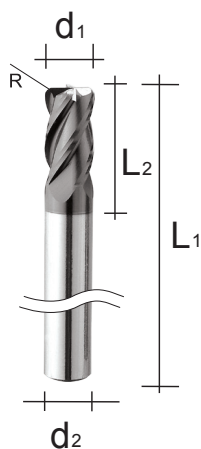


# High Speed Cutting & High Hard Cutting

## 4 Flutes Corner Radius End Mills



圓鼻 4刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

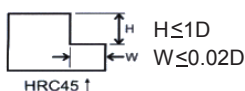
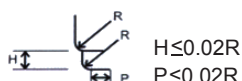


| 型號       | 刀徑(D1)   | R        | 刀長(L2)       | 全長(L1) | 柄徑(d2)    |
|----------|----------|----------|--------------|--------|-----------|
| Type No. | Diameter | Corner R | Flute Length | O.A.L  | Shank Dia |
| VER 0102 | 1.0      | 0.2      | 2            | 50     | 4         |
| VER 0202 | 2.0      | 0.2      | 4            | 50     | 4         |
| VER 0205 | 2.0      | 0.5      | 4            | 50     | 4         |
| VER 0252 | 2.5      | 0.2      | 5            | 50     | 4         |
| VER 0255 | 2.5      | 0.5      | 5            | 50     | 4         |
| VER 0302 | 3.0      | 0.2      | 6            | 50     | 4         |
| VER 0305 | 3.0      | 0.5      | 6            | 50     | 4         |
| VER 0310 | 3.0      | 1.0      | 6            | 50     | 4         |
| VER 0402 | 4.0      | 0.2      | 8            | 50     | 4         |
| VER 0405 | 4.0      | 0.5      | 8            | 50     | 4         |
| VER 0410 | 4.0      | 1.0      | 8            | 50     | 4         |
| VER 0505 | 5.0      | 0.5      | 10           | 50     | 6         |
| VER 0510 | 5.0      | 1.0      | 10           | 50     | 6         |
| VER 0602 | 6.0      | 0.2      | 12           | 50     | 6         |
| VER 0605 | 6.0      | 0.5      | 12           | 50     | 6         |
| VER 0610 | 6.0      | 1.0      | 12           | 50     | 6         |
| VER 0615 | 6.0      | 1.5      | 12           | 50     | 6         |
| VER 0620 | 6.0      | 2.0      | 12           | 50     | 6         |
| VER 0805 | 8.0      | 0.5      | 16           | 60     | 8         |
| VER 0810 | 8.0      | 1.0      | 16           | 60     | 8         |
| VER 0820 | 8.0      | 2.0      | 16           | 60     | 8         |
| VER 1005 | 10.0     | 0.5      | 20           | 75     | 10        |
| VER 1010 | 10.0     | 1.0      | 20           | 75     | 10        |
| VER 1020 | 10.0     | 2.0      | 20           | 75     | 10        |
| VER 1030 | 10.0     | 3.0      | 20           | 75     | 10        |
| VER 1205 | 12.0     | 0.5      | 24           | 75     | 12        |
| VER 1210 | 12.0     | 1.0      | 24           | 75     | 12        |
| VER 1220 | 12.0     | 2.0      | 24           | 75     | 12        |
| VER 1230 | 12.0     | 3.0      | 24           | 75     | 12        |

### Recommended cutting condition for Corner Radius End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C,FC,FCD,SCM,S50C,SKS... |                | Alloy Steels,Tool Steels,SCR,<br>SNCR,SKD11,SKD61,NAK80... |                | Hardened Steels SKD11 |                |
|----------|------------------------------------------------------------|----------------|------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                     |                | ~HRC50                                                     |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                            | FEED<br>mm/min | SPEED<br>(mm-1)                                            | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 2        | 26000                                                      | 1600           | 16500                                                      | 1000           | 7500                  | 300            |
| 3        | 19000                                                      | 1800           | 12000                                                      | 1200           | 5400                  | 380            |
| 4        | 16000                                                      | 3200           | 10000                                                      | 1900           | 4800                  | 480            |
| 5        | 14000                                                      | 3300           | 8000                                                       | 2000           | 3800                  | 500            |
| 6        | 12000                                                      | 3600           | 7200                                                       | 2200           | 3500                  | 650            |
| 8        | 9600                                                       | 4000           | 5600                                                       | 2200           | 2700                  | 750            |
| 10       | 7000                                                       | 3400           | 4400                                                       | 1700           | 2100                  | 650            |
| 12       | 6000                                                       | 2800           | 3600                                                       | 1400           | 1800                  | 600            |
| 16       | 4500                                                       | 2000           | 2800                                                       | 1000           | 1400                  | 450            |

### DEPTH OF CUT



# High Speed Cutting & High Hard Cutting

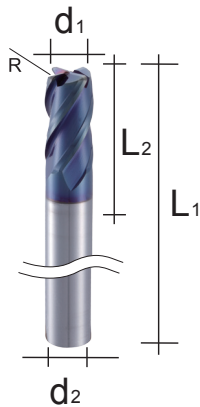
## 4 Flutes Long Shank Corner Radius End Mills



長柄圓鼻 4刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用



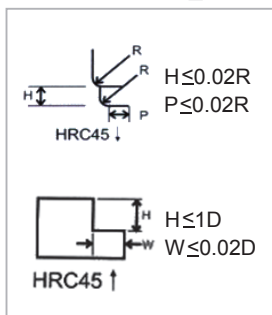
| 型號<br>Type No. | 刀徑(D1)<br>Diameter | R<br>Corner R | 刀長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|---------------|------------------------|-----------------|---------------------|
| VLER 0605      | 6.0                | 0.5           | 12                     | 75              | 6                   |
| VLER 0605A     | 6.0                | 0.5           | 12                     | 100             | 6                   |
| VLER 0610      | 6.0                | 1.0           | 12                     | 75              | 6                   |
| VLER 0610A     | 6.0                | 1.0           | 12                     | 100             | 6                   |
| VLER 0805      | 8.0                | 0.5           | 16                     | 100             | 8                   |
| VLER 0810      | 8.0                | 1.0           | 16                     | 100             | 8                   |
| VLER 1005      | 10.0               | 0.5           | 20                     | 100             | 10                  |
| VLER 1010      | 10.0               | 1.0           | 20                     | 100             | 10                  |
| VLER 1020      | 10.0               | 2.0           | 20                     | 100             | 10                  |
| VLER 1210      | 12.0               | 1.0           | 24                     | 100             | 12                  |
| VLER 1220      | 12.0               | 2.0           | 24                     | 100             | 12                  |



### Recommended cutting condition for Long Shank Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 2        | 26000                                                           | 1600           | 16500                                                          | 1000           | 7500                  | 300            |
| 3        | 19000                                                           | 1800           | 12000                                                          | 1200           | 5400                  | 360            |
| 4        | 16000                                                           | 320            | 10000                                                          | 1900           | 4800                  | 480            |
| 5        | 14000                                                           | 3300           | 8000                                                           | 2000           | 3800                  | 500            |
| 6        | 12000                                                           | 3600           | 7200                                                           | 2200           | 3500                  | 650            |
| 8        | 9600                                                            | 4000           | 5600                                                           | 2200           | 2700                  | 750            |
| 10       | 7000                                                            | 3400           | 4400                                                           | 1700           | 2100                  | 650            |
| 12       | 6000                                                            | 2800           | 3600                                                           | 1400           | 1800                  | 600            |

### DEPTH OF CUT



# High Speed Cutting & High Hard Cutting

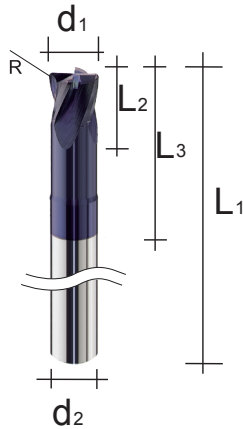
Short Flute 4 Flutes Corner Radius End Mills



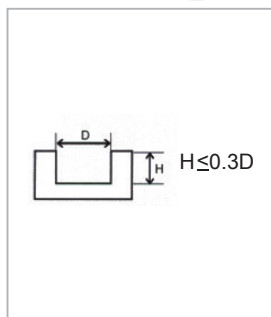
短刃 圓鼻4刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用



| 型號       | 刃徑(D1)   | R        | 刃長(L2)       | 有效長(L3)          | 全長(L1) | 柄徑(d2)    |
|----------|----------|----------|--------------|------------------|--------|-----------|
| Type No. | Diameter | Corner R | Flute Length | Effective Length | O.A.L  | Shank Dia |
| VMR 0605 | 6        | 0.5      | 6            | 15               | 50     | 6         |
| VMR 0610 | 6        | 1.0      | 6            | 15               | 50     | 6         |
| VMR 0805 | 8        | 0.5      | 8            | 20               | 50     | 8         |
| VMR 0810 | 8        | 1.0      | 8            | 20               | 50     | 8         |
| VMR 1010 | 10       | 1.0      | 10           | 25               | 50     | 10        |
| VMR 1020 | 10       | 2.0      | 10           | 25               | 75     | 10        |
| VMR 1030 | 10       | 3.0      | 10           | 25               | 75     | 10        |
| VMR 1210 | 12       | 1.0      | 12           | 30               | 75     | 12        |
| VMR 1220 | 12       | 2.0      | 12           | 30               | 75     | 12        |



## 「DEPTH OF CUT」



## Recommended cutting condition for Corner Radius End Mills

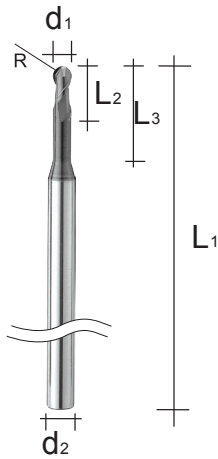
| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCR,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 6        | 12000                                                           | 12000          | 8000                                                           | 8000           | 5000                  | 4000           |
| 8        | 10000                                                           | 10000          | 8000                                                           | 8000           | 6000                  | 4800           |
| 10       | 7000                                                            | 5000           | 6000                                                           | 4000           | 4500                  | 2000           |
| 12       | 5000                                                            | 7000           | 4000                                                           | 6000           | 3000                  | 3000           |

# High Speed Cutting & High Hard Cutting

Long Neck Short Flutes Length 2 Flutes Ball Nose End Mills



長頸短刃 2刃球型立銑刀 極細微粒碳化鎢 高速極高硬度切削用



| 型號       | 直徑(D1)   | 刃長(L2)       | 有效長(L3)          | 全長(L1) | 柄徑(d2)    |
|----------|----------|--------------|------------------|--------|-----------|
| Type No. | Diameter | Flute Length | Effective Length | O.A.L  | Shank Dia |
| VNB 0402 | R0.2     | 0.8          | 2                | 50     | 4         |
| VNB 0404 | R0.2     | 0.8          | 4                | 50     | 4         |
| VNB 0504 | R0.25    | 1.0          | 4                | 50     | 4         |
| VNB 0506 | R0.25    | 1.0          | 6                | 50     | 4         |
| VNB 0604 | R0.3     | 1.2          | 4                | 50     | 4         |
| VNB 0606 | R0.3     | 1.2          | 6                | 50     | 4         |
| VNB 0608 | R0.3     | 1.2          | 8                | 50     | 4         |
| VNB 0804 | R0.4     | 1.2          | 4                | 50     | 4         |
| VNB 0806 | R0.4     | 1.2          | 6                | 50     | 4         |
| VNB 0808 | R0.4     | 1.2          | 8                | 50     | 4         |
| VNB 0810 | R0.4     | 1.2          | 10               | 50     | 4         |
| VNB 1004 | R0.5     | 1.5          | 4                | 50     | 4         |
| VNB 1006 | R0.5     | 1.5          | 6                | 50     | 4         |
| VNB 1008 | R0.5     | 1.5          | 8                | 50     | 4         |
| VNB 1010 | R0.5     | 1.5          | 10               | 50     | 4         |
| VNB 1012 | R0.5     | 1.5          | 12               | 50     | 4         |
| VNB 1506 | R0.75    | 3.0          | 6                | 50     | 4         |
| VNB 1508 | R0.75    | 3.0          | 8                | 50     | 4         |
| VNB 1512 | R0.75    | 3.0          | 12               | 50     | 4         |
| VNB 1516 | R0.75    | 3.0          | 16               | 50     | 4         |
| VNB 1520 | R0.75    | 3.0          | 20               | 50     | 4         |
| VNB 2006 | R1.0     | 4.0          | 6                | 50     | 4         |
| VNB 2008 | R1.0     | 4.0          | 8                | 50     | 4         |
| VNB 2012 | R1.0     | 4.0          | 12               | 50     | 4         |
| VNB 2016 | R1.0     | 4.0          | 16               | 50     | 4         |
| VNB 2020 | R1.0     | 4.0          | 20               | 50     | 4         |
| VNB 3008 | R1.5     | 4.0          | 8                | 50     | 4         |
| VNB 3012 | R1.5     | 4.0          | 12               | 50     | 4         |
| VNB 3016 | R1.5     | 4.0          | 16               | 50     | 4         |
| VNB 3020 | R1.5     | 4.0          | 20               | 75     | 6         |
| VNB 3025 | R1.5     | 4.0          | 25               | 75     | 6         |
| VNB 4010 | R2.0     | 5.0          | 10               | 75     | 6         |
| VNB 4016 | R2.0     | 5.0          | 16               | 75     | 6         |
| VNB 4020 | R2.0     | 5.0          | 20               | 75     | 6         |
| VNB 4025 | R2.0     | 5.0          | 25               | 75     | 6         |
| VNB 4030 | R2.0     | 5.0          | 30               | 75     | 6         |



# High Speed Cutting & High Hard Cutting

Long Neck Short Flutes Length 2 Flutes Ball Nose End Mills



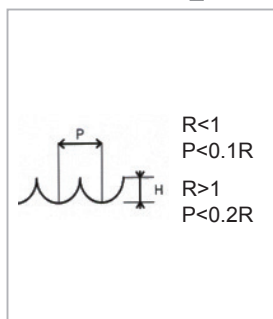
長頸短刃 2刃球型立銑刀 極細微粒碳化鎢 高速極高硬度切削用

Recommended cutting condition for

Long Neck Ball Nose End Mills Series

| Material | Alloy Steels.Tool Steels.Hardened Steels     |              |             |              |
|----------|----------------------------------------------|--------------|-------------|--------------|
|          | S45C,SCM,S50C,SKS,SCr,SNCM,SKD11,SKD61,NAK80 |              |             |              |
| RADIUS   | Effective Length                             | SPEED (mm-1) | FEED mm/min | DEPTH OF CUT |
| 0.25     | 4                                            | 30000-40000  | 200-650     | 0.015        |
| 0.25     | 6                                            | 30000-40000  | 200-650     | 0.013        |
| 0.3      | 4                                            | 27000-40000  | 180-650     | 0.025        |
| 0.3      | 6                                            | 27000-40000  | 180-650     | 0.015        |
| 0.4      | 6                                            | 25000-40000  | 400-750     | 0.025        |
| 0.4      | 8                                            | 25000-40000  | 400-750     | 0.025        |
| 0.5      | 6                                            | 20000-32000  | 500-750     | 0.04         |
| 0.5      | 8                                            | 20000-32000  | 300-750     | 0.03         |
| 0.5      | 10                                           | 20000-32000  | 300-750     | 0.025        |
| 0.5      | 12                                           | 20000-32000  | 300-750     | 0.015        |
| 0.6      | 8                                            | 22000-25000  | 500-600     | 0.05         |
| 0.6      | 12                                           | 22000-25000  | 500-600     | 0.03         |
| 0.75     | 8                                            | 18000-20000  | 300-550     | 0.07         |
| 0.75     | 12                                           | 18000-20000  | 300-550     | 0.04         |
| 0.75     | 16                                           | 18000-20000  | 300-550     | 0.03         |
| 0.75     | 20                                           | 18000-20000  | 300-550     | 0.02         |
| 0.8      | 8                                            | 13000-18000  | 350-800     | 0.08         |
| 0.8      | 12                                           | 13000-18000  | 350-800     | 0.06         |
| 0.8      | 16                                           | 13000-18000  | 350-800     | 0.05         |
| 1.0      | 8                                            | 12000-17000  | 500-900     | 0.1          |
| 1.0      | 12                                           | 12000-17000  | 500-900     | 0.1          |
| 1.0      | 16                                           | 12000-17000  | 500-900     | 0.07         |
| 1.0      | 20                                           | 12000-17000  | 500-900     | 0.04         |
| 1.5      | 8                                            | 8000-11000   | 500-700     | 0.17         |
| 1.5      | 10                                           | 8000-11000   | 500-700     | 0.15         |
| 1.5      | 16                                           | 8000-11000   | 500-700     | 0.14         |
| 1.5      | 20                                           | 8000-11000   | 500-700     | 0.12         |
| 1.5      | 25                                           | 8000-11000   | 500-700     | 0.1          |
| 2.0      | 10                                           | 5000-8000    | 400-600     | 0.18         |
| 2.0      | 15                                           | 5000-8000    | 400-600     | 0.17         |
| 2.0      | 20                                           | 5000-8000    | 400-600     | 0.16         |
| 2.0      | 25                                           | 5000-8000    | 400-600     | 0.15         |
| 2.0      | 30                                           | 5000-8000    | 400-600     | 0.14         |

「DEPTH OF CUT」



# High Speed Cutting & High Hard Cutting

3 Flutes Square End Mills  
4 Flutes Square End Mills  
5 Flutes Square End Mills  
6 Flutes Square End Mills  
6 Flutes Long Shank End Mills  
4 Flutes Corner Radius End Mills  
6 Flutes Corner Radius End Mills  
Standard 4 Flutes Ball Nose End Mills  
Long Flutes Square 2 Flutes End Mills  
4 Flutes Long Shank Square End Mills  
Standard 2 Flutes Ball Nose End Mills  
Long Shank 2 Flutes Ball Nose End Mills  
2 Flutes Corner Radius Square End Mills  
Short length 2 Flutes Ball Nose End Mills  
Micro Diameter Miniature 2 Flutes End Mills  
Micro Diameter 2 Flutes Ball Nose End Mills  
Short flute 4 Flutes Corner Radius End Mills  
2 Flutes Long Neck Corner Radius End Mills  
Long Neck short 2 Flutes Ball Nose End Mills  
4 Flutes Long Shank Corner Radius End Mills  
4 Flutes Short Length Long Square End Mills  
Long Neck Taper 2 Flutes Ball Nose End Mills  
4 Flutes Square Variable helix angle End Mills  
Heavy Cutting 3 Flutes Corner Radius End Mills  
Heavy Cutting 4 Flutes Corner Radius End Mills  
Long Neck Short Length Square 2 Flutes End Mills  
2 Flutes Long Shank Short Length Square End Mills  
2 Flutes Long Shank Corner Radius Square End Mills

高速極高硬度  
切削用



# High Speed Cutting & High Hard Cutting

## Micro Diameter Miniature 2 Flutes End Mills



微小徑 2刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

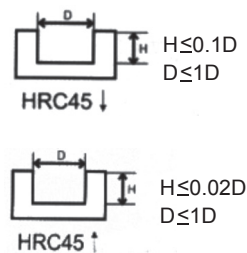


| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刀長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HSE 0022       | 0.2                | 0.4                    | 50              | 4                   |
| HSE 0032       | 0.3                | 0.6                    | 50              | 4                   |
| HSE 0042       | 0.4                | 0.8                    | 50              | 4                   |
| HSE 0052       | 0.5                | 1.0                    | 50              | 4                   |
| HSE 0062       | 0.6                | 1.2                    | 50              | 4                   |
| HSE 0072       | 0.7                | 1.4                    | 50              | 4                   |
| HSE 0082       | 0.8                | 1.6                    | 50              | 4                   |
| HSE 0092       | 0.9                | 1.8                    | 50              | 4                   |
| HSE 0122       | 1.2                | 3                      | 50              | 4                   |
| HSE 0142       | 1.4                | 3                      | 50              | 4                   |
| HSE 0162       | 1.6                | 4                      | 50              | 4                   |
| HSE 0182       | 1.8                | 5                      | 50              | 4                   |

### Recommended cutting condition for Micro Diameter Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 0.2      | 40000                                                           | 100-300        | 30000                                                           | 80-250         | 15000                 | 50-150         |
| 0.3      | 40000                                                           | 100-350        | 30000                                                           | 80-300         | 15000                 | 50-200         |
| 0.4      | 40000                                                           | 100-400        | 25000                                                           | 80-350         | 10000                 | 50-250         |
| 0.5      | 40000                                                           | 100-500        | 25000                                                           | 80-400         | 10000                 | 50-250         |
| 0.6      | 38000                                                           | 100-600        | 25000                                                           | 80-500         | 8000                  | 50-250         |
| 0.7      | 36000                                                           | 100-700        | 20000                                                           | 80-600         | 8000                  | 50-250         |
| 0.8      | 34000                                                           | 100-800        | 20000                                                           | 80-700         | 8000                  | 50-250         |
| 0.9      | 32000                                                           | 100-1000       | 20000                                                           | 80-800         | 8000                  | 50-250         |

### DEPTH OF CUT



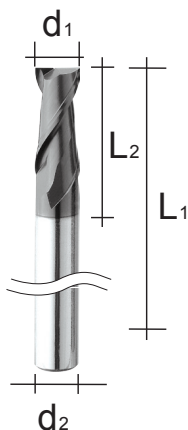


# High Speed Cutting & High Hard Cutting

## 2 Flutes Square End Mills



2刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

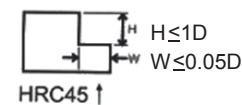
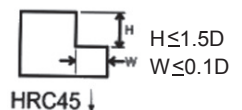


| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HE 0102        | 1.0                | 3                      | 50              | 4                   |
| HE 0152        | 1.5                | 4                      | 50              | 4                   |
| HE 0202        | 2.0                | 6                      | 50              | 4                   |
| HE 0252        | 2.5                | 7                      | 50              | 4                   |
| HE 0302        | 3.0                | 8                      | 50              | 4                   |
| HE 0302A       | 3.0                | 8                      | 50              | 3                   |
| HE 0402        | 4.0                | 11                     | 50              | 4                   |
| HE 0502        | 5.0                | 13                     | 50              | 6                   |
| HE 0602        | 6.0                | 15                     | 50              | 6                   |
| HE 0802        | 8.0                | 20                     | 60              | 8                   |
| HE 1002        | 10.0               | 30                     | 75              | 10                  |
| HE 1202        | 12.0               | 30                     | 75              | 12                  |
| HE 1402        | 14.0               | 45                     | 100             | 16                  |
| HE 1602        | 16.0               | 45                     | 100             | 16                  |
| HE 1802        | 18.0               | 45                     | 100             | 20                  |
| HE 2002        | 20.0               | 50                     | 100             | 20                  |
| HE 2502        | 25.0               | 50                     | 100             | 25                  |

### Recommended cutting condition for Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 20000                                                           | 80             | 15000                                                           | 45             | 11000                 | 30             |
| 1.5      | 13600                                                           | 135            | 10000                                                           | 60             | 9000                  | 40             |
| 2        | 9600                                                            | 150            | 8500                                                            | 50             | 6000                  | 45             |
| 3        | 6500                                                            | 200            | 5800                                                            | 75             | 4000                  | 60             |
| 4        | 5500                                                            | 250            | 4000                                                            | 80             | 3200                  | 60             |
| 5        | 4500                                                            | 300            | 3000                                                            | 80             | 2500                  | 70             |
| 6        | 4000                                                            | 300            | 2500                                                            | 80             | 2200                  | 70             |
| 8        | 3500                                                            | 350            | 2200                                                            | 90             | 1700                  | 70             |
| 10       | 3000                                                            | 400            | 2000                                                            | 90             | 1500                  | 70             |
| 12       | 2500                                                            | 400            | 1500                                                            | 100            | 1000                  | 70             |
| 16       | 200                                                             | 400            | 1200                                                            | 100            | 800                   | 70             |

### DEPTH OF CUT

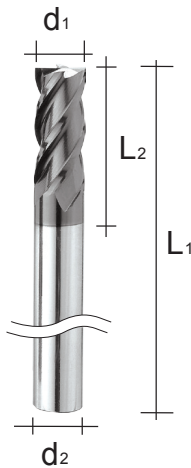


# High Speed Cutting & High Hard Cutting

## 4 Flutes Square End Mills



4刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

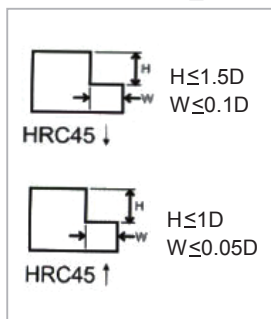


| 型號       | 直徑(D1)   | 刀長(L2)       | 全長(L1) | 柄徑(d2)    |
|----------|----------|--------------|--------|-----------|
| Type No. | Diameter | Flute Length | O.A.L  | Shank Dia |
| HE 0104  | 1.0      | 3            | 50     | 4         |
| HE 0154  | 1.5      | 4            | 50     | 4         |
| HE 0204  | 2.0      | 6            | 50     | 4         |
| HE 0254  | 2.5      | 7            | 50     | 4         |
| HE 0304  | 3.0      | 8            | 50     | 4         |
| HE 0304A | 3.0      | 8            | 50     | 3         |
| HE 0404  | 4.0      | 11           | 50     | 4         |
| HE 0504  | 5.0      | 13           | 50     | 6         |
| HE 0604  | 6.0      | 15           | 50     | 6         |
| HE 0804  | 8.0      | 20           | 60     | 8         |
| HE 1004  | 10.0     | 30           | 75     | 10        |
| HE 1204  | 12.0     | 30           | 75     | 12        |
| HE 1404  | 14.0     | 45           | 100    | 16        |
| HE 1604  | 16.0     | 45           | 100    | 16        |
| HE 1804  | 18.0     | 45           | 100    | 20        |
| HE 2004  | 20.0     | 50           | 100    | 20        |
| HE 2504  | 25.0     | 50           | 100    | 25        |

### Recommended cutting condition for Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 22000                                                           | 400            | 18000                                                          | 200            | 9000                  | 140            |
| 1.5      | 12000                                                           | 500            | 11000                                                          | 280            | 5200                  | 150            |
| 2        | 10000                                                           | 550            | 10000                                                          | 280            | 4600                  | 170            |
| 3        | 9000                                                            | 600            | 5500                                                           | 310            | 3500                  | 220            |
| 4        | 6000                                                            | 600            | 5000                                                           | 400            | 2200                  | 220            |
| 5        | 4800                                                            | 750            | 4000                                                           | 400            | 1700                  | 240            |
| 6        | 4500                                                            | 800            | 3800                                                           | 420            | 1600                  | 300            |
| 8        | 3500                                                            | 82             | 2800                                                           | 420            | 1000                  | 300            |
| 10       | 3000                                                            | 820            | 1800                                                           | 420            | 900                   | 300            |
| 12       | 2000                                                            | 820            | 1600                                                           | 350            | 800                   | 300            |
| 16       | 1500                                                            | 650            | 1000                                                           | 300            | 500                   | 150            |
| 20       | 1200                                                            | 600            | 900                                                            | 300            | 400                   | 150            |

### DEPTH OF CUT

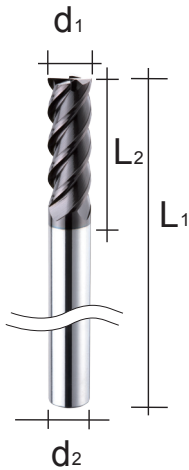


# High Speed Cutting & High Hard Cutting

## 4 Flutes Square End Mills



4刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

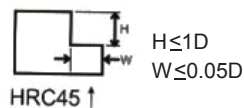
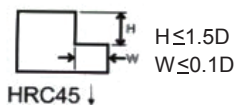


| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L. | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|------------------|---------------------|
| HEA 0104       | 1.0                | 3                      | 50               | 4                   |
| HEA 0154       | 1.5                | 4                      | 50               | 4                   |
| HEA 0204       | 2.0                | 6                      | 50               | 4                   |
| HEA 0254       | 2.5                | 7                      | 50               | 4                   |
| HEA 0304       | 3.0                | 8                      | 50               | 4                   |
| HEA 0404       | 4.0                | 11                     | 50               | 4                   |
| HEA 0504       | 5.0                | 13                     | 50               | 6                   |
| HEA 0604       | 6.0                | 15                     | 50               | 6                   |
| HEA 0804       | 8.0                | 20                     | 60               | 8                   |
| HEA 1004       | 10.0               | 30                     | 75               | 10                  |
| HEA 1204       | 12.0               | 30                     | 75               | 12                  |
| HEA 1404       | 14.0               | 45                     | 100              | 16                  |
| HEA 1604       | 16.0               | 45                     | 100              | 16                  |
| HEA 1804       | 18.0               | 45                     | 100              | 20                  |
| HEA 2004       | 20.0               | 50                     | 100              | 20                  |
| HEA 2504       | 25.0               | 50                     | 100              | 25                  |

### Recommended cutting condition for Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 22000                                                           | 400            | 18000                                                           | 200            | 9000                  | 140            |
| 1.5      | 12000                                                           | 500            | 11000                                                           | 280            | 5200                  | 150            |
| 2        | 10000                                                           | 550            | 10000                                                           | 280            | 4600                  | 170            |
| 3        | 9000                                                            | 600            | 5500                                                            | 310            | 3500                  | 220            |
| 4        | 6000                                                            | 600            | 5000                                                            | 400            | 2200                  | 220            |
| 5        | 4800                                                            | 750            | 4000                                                            | 400            | 1700                  | 240            |
| 6        | 4500                                                            | 800            | 3800                                                            | 420            | 1600                  | 300            |
| 8        | 3500                                                            | 82             | 2800                                                            | 420            | 1000                  | 300            |
| 10       | 3000                                                            | 820            | 1800                                                            | 420            | 900                   | 300            |
| 12       | 2000                                                            | 820            | 1600                                                            | 350            | 800                   | 300            |
| 16       | 1500                                                            | 650            | 1000                                                            | 300            | 500                   | 150            |
| 20       | 1200                                                            | 600            | 900                                                             | 300            | 400                   | 150            |

### DEPTH OF CUT







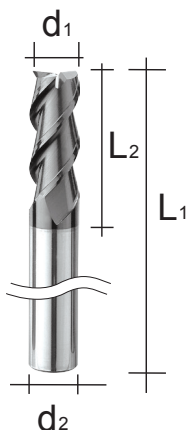
# High Speed Cutting & High Hard Cutting

## 3 Flutes Square End Mills



3刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

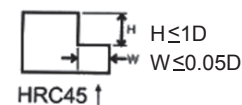
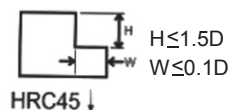
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HEF 0103       | 1.0                | 3                      | 50              | 4                   |
| HEF 0203       | 2.0                | 6                      | 50              | 4                   |
| HEF 0303       | 3.0                | 8                      | 50              | 4                   |
| HEF 0403       | 4.0                | 11                     | 50              | 4                   |
| HEF 0503       | 5.0                | 13                     | 50              | 6                   |
| HEF 0603       | 6.0                | 15                     | 50              | 6                   |
| HEF 0803       | 8.0                | 20                     | 60              | 8                   |
| HEF 1003       | 10.0               | 30                     | 75              | 10                  |
| HEF 1203       | 12.0               | 30                     | 75              | 12                  |
| HEF 1603       | 16.0               | 45                     | 100             | 16                  |
| HEF 2003       | 20.0               | 50                     | 100             | 20                  |
| HEF 2503       | 25.0               | 50                     | 100             | 25                  |



### Recommended cutting condition for Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 22000                                                           | 400            | 18000                                                          | 200            | 9000                  | 140            |
| 1.5      | 12000                                                           | 500            | 11000                                                          | 280            | 5200                  | 150            |
| 2        | 10000                                                           | 550            | 10000                                                          | 280            | 4600                  | 170            |
| 3        | 9000                                                            | 600            | 5500                                                           | 310            | 3500                  | 220            |
| 4        | 6000                                                            | 600            | 5000                                                           | 400            | 2200                  | 220            |
| 5        | 4800                                                            | 750            | 4000                                                           | 400            | 1700                  | 240            |
| 6        | 4500                                                            | 800            | 3800                                                           | 420            | 1600                  | 300            |
| 8        | 3500                                                            | 82             | 2800                                                           | 420            | 1000                  | 300            |
| 10       | 3000                                                            | 820            | 1800                                                           | 420            | 900                   | 300            |
| 12       | 2000                                                            | 820            | 1600                                                           | 350            | 800                   | 300            |
| 16       | 1500                                                            | 650            | 1000                                                           | 300            | 500                   | 150            |
| 20       | 1200                                                            | 600            | 900                                                            | 300            | 400                   | 150            |

### 「DEPTH OF CUT」



# High Speed Cutting & High Hard Cutting

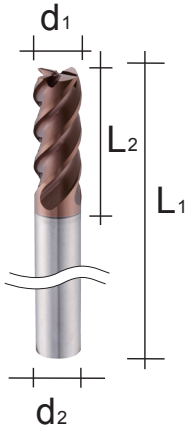
## 4Flutes Square End Mills



4刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用



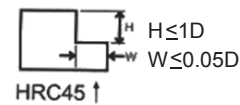
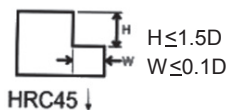
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HEB 0204       | 2.0                | 6                      | 50              | 6                   |
| HEB 0204A      | 2.0                | 6                      | 50              | 4                   |
| HEB 0304       | 3.0                | 8                      | 50              | 6                   |
| HEB 0304A      | 3.0                | 8                      | 50              | 4                   |
| HEB 0404       | 4.0                | 11                     | 50              | 6                   |
| HEB 0404A      | 4.0                | 11                     | 50              | 4                   |
| HEB 0504       | 5.0                | 13                     | 50              | 6                   |
| HEB 0604       | 6.0                | 16                     | 50              | 6                   |
| HEB 0804       | 8.0                | 20                     | 60              | 8                   |
| HEB 1004       | 10.0               | 30                     | 75              | 10                  |
| HEB 1204       | 12.0               | 30                     | 75              | 12                  |
| HEB 1604       | 16.0               | 40                     | 100             | 16                  |
| HEB 2004       | 20.0               | 45                     | 100             | 20                  |



### Recommended cutting condition for Ball Nose End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, S.Cr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|------------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                           |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                  | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 3        | 9000                                                            | 600            | 5500                                                             | 310            | 3500                  | 220            |
| 4        | 6000                                                            | 600            | 5000                                                             | 400            | 2200                  | 220            |
| 5        | 4800                                                            | 750            | 4000                                                             | 400            | 1700                  | 240            |
| 6        | 4500                                                            | 800            | 3800                                                             | 420            | 1600                  | 300            |
| 8        | 3500                                                            | 820            | 2800                                                             | 420            | 1000                  | 300            |
| 10       | 3000                                                            | 820            | 1800                                                             | 420            | 900                   | 300            |
| 12       | 2000                                                            | 820            | 1600                                                             | 350            | 800                   | 300            |
| 16       | 1500                                                            | 650            | 1000                                                             | 300            | 500                   | 150            |
| 20       | 1200                                                            | 600            | 900                                                              | 300            | 400                   | 150            |

### DEPTH OF CUT



# High Speed Cutting & High Hard Cutting

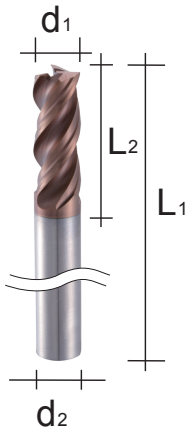
## Heavy Cutting 3 Flutes End Mills



重切削 3刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用



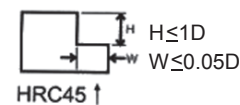
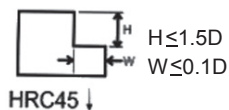
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刀長(L2)<br>Flute Length | 全長(L1)<br>O.A.L. | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|------------------|---------------------|
| HXE 0203       | 2.0                | 6                      | 50               | 4                   |
| HXE 0303       | 3.0                | 8                      | 50               | 4                   |
| HXE 0403       | 4.0                | 11                     | 50               | 4                   |
| HXE 0503       | 5.0                | 13                     | 50               | 6                   |
| HXE 0603       | 6.0                | 16                     | 50               | 6                   |
| HXE 0803       | 8.0                | 20                     | 60               | 8                   |
| HXE 1003       | 10.0               | 30                     | 75               | 10                  |
| HXE 1203       | 12.0               | 30                     | 75               | 12                  |
| HXE 1603       | 16.0               | 40                     | 100              | 16                  |
| HXE 2003       | 20.0               | 45                     | 100              | 20                  |



### Recommended cutting condition for Long Shank Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 3        | 9000                                                            | 600            | 5500                                                            | 310            | 3500                  | 220            |
| 4        | 6000                                                            | 600            | 5000                                                            | 400            | 2200                  | 220            |
| 5        | 4800                                                            | 750            | 4000                                                            | 400            | 1700                  | 240            |
| 6        | 4500                                                            | 800            | 3800                                                            | 420            | 1600                  | 300            |
| 8        | 3500                                                            | 820            | 2800                                                            | 420            | 1000                  | 300            |
| 10       | 3000                                                            | 820            | 1800                                                            | 420            | 900                   | 300            |
| 12       | 2000                                                            | 820            | 1600                                                            | 350            | 800                   | 300            |
| 16       | 1500                                                            | 650            | 1000                                                            | 300            | 500                   | 150            |
| 20       | 1200                                                            | 600            | 900                                                             | 300            | 400                   | 150            |

### DEPTH OF CUT



# High Speed Cutting & High Hard Cutting

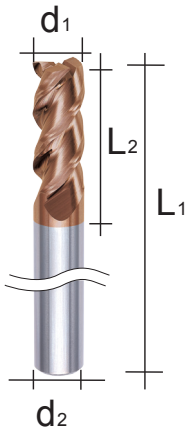
## Heavy Cutting 3 Flutes End Mills



重切削 3刃波浪銑刀 極細微粒碳化鎢 高速極高硬度切削用



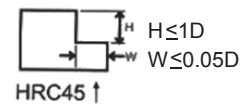
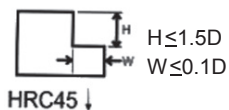
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HXW 0603       | 6.0                | 16                     | 50              | 6                   |
| HXW 0803       | 8.0                | 20                     | 60              | 8                   |
| HXW 1003       | 10.0               | 30                     | 75              | 10                  |
| HXW 1203       | 12.0               | 30                     | 75              | 12                  |
| HXW 1603       | 16.0               | 45                     | 100             | 16                  |
| HXW 2003       | 20.0               | 55                     | 120             | 20                  |



### Recommended cutting condition for Ball Nose End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, S.Cr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|------------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                           |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                  | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 3        | 9000                                                            | 600            | 5500                                                             | 310            | 3500                  | 220            |
| 4        | 6000                                                            | 600            | 5000                                                             | 400            | 2200                  | 220            |
| 5        | 4800                                                            | 750            | 4000                                                             | 400            | 1700                  | 240            |
| 6        | 4500                                                            | 800            | 3800                                                             | 420            | 1600                  | 300            |
| 8        | 3500                                                            | 820            | 2800                                                             | 420            | 1000                  | 300            |
| 10       | 3000                                                            | 820            | 1800                                                             | 420            | 900                   | 300            |
| 12       | 2000                                                            | 820            | 1600                                                             | 350            | 800                   | 300            |
| 16       | 1500                                                            | 650            | 1000                                                             | 300            | 500                   | 150            |
| 20       | 1200                                                            | 600            | 900                                                              | 300            | 400                   | 150            |

### DEPTH OF CUT



# High Speed Cutting & High Hard Cutting

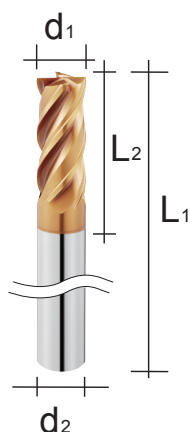
## 4 Flutes Square Variable Helix Angle End Mills



長柄 4刃變化螺旋立銑刀 極細微粒碳化鎢 高速極高硬度切削用



| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HVE 0304       | 3.0                | 8                      | 50              | 6                   |
| HVE 0404       | 4.0                | 11                     | 50              | 6                   |
| HVE 0504       | 5.0                | 13                     | 50              | 6                   |
| HVE 0604       | 6.0                | 16                     | 50              | 6                   |
| HVE 0804       | 8.0                | 20                     | 60              | 8                   |
| HVE 1004       | 10.0               | 25                     | 75              | 10                  |
| HVE 1204       | 12.0               | 30                     | 75              | 12                  |
| HVE 1604       | 16.0               | 40                     | 100             | 16                  |
| HVE 2004       | 20.0               | 45                     | 100             | 20                  |



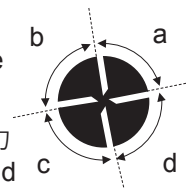
Variable  
helix angle

變換螺旋角  
 $\beta_1 \neq \beta_2$



Variable  
rate

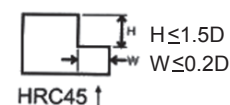
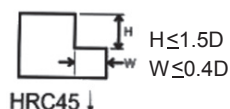
不等分底刃  
 $a \neq b \neq c \neq d$



### Recommended cutting condition for Long Shank Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 3        | 22000                                                           | 1800           | 16000                                                           | 1300           | 10000                 | 800            |
| 4        | 15000                                                           | 1400           | 12000                                                           | 1250           | 7000                  | 700            |
| 5        | 13000                                                           | 1600           | 10000                                                           | 1400           | 6000                  | 650            |
| 6        | 11500                                                           | 1650           | 8500                                                            | 1300           | 5000                  | 800            |
| 8        | 8000                                                            | 1800           | 6500                                                            | 1350           | 3500                  | 700            |
| 10       | 7000                                                            | 1800           | 5000                                                            | 1400           | 2800                  | 750            |
| 12       | 6000                                                            | 1700           | 4000                                                            | 1300           | 2300                  | 650            |
| 16       | 3560                                                            | 1500           | 3000                                                            | 1250           | 1800                  | 700            |
| 20       | 3000                                                            | 1450           | 2500                                                            | 1250           | 1500                  | 780            |

### DEPTH OF CUT

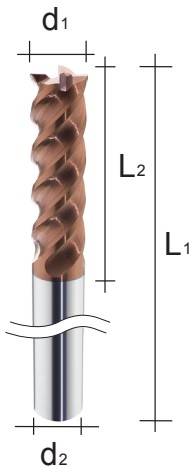


# High Speed Cutting & High Hard Cutting

## Heavy Cutting 4 Flutes End Mills



重切削 4刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

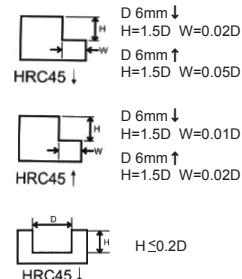


| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HXE 0204       | 2.0                | 6                      | 50              | 4                   |
| HXE 0254       | 2.0                | 6                      | 50              | 4                   |
| HXE 0304       | 3.0                | 8                      | 50              | 4                   |
| HXE 0304A      | 3.0                | 8                      | 75              | 6                   |
| HXE 0404       | 4.0                | 11                     | 50              | 4                   |
| HXE 0404A      | 4.0                | 11                     | 75              | 6                   |
| HXE 0504       | 5.0                | 13                     | 50              | 6                   |
| HXE 0604       | 6.0                | 15                     | 50              | 6                   |
| HXE 0604A      | 6.0                | 15                     | 75              | 6                   |
| HXE 0804       | 8.0                | 20                     | 60              | 8                   |
| HXE 0804A      | 8.0                | 20                     | 100             | 8                   |
| HXE 1004       | 10.0               | 25                     | 75              | 10                  |
| HXE 1004A      | 10.0               | 25                     | 100             | 10                  |
| HXE 1204       | 12.0               | 30                     | 75              | 12                  |
| HXE 1204A      | 12.0               | 30                     | 100             | 12                  |
| HXE 1604       | 16.0               | 40                     | 100             | 16                  |
| HXE 1604A      | 16.0               | 40                     | 150             | 16                  |
| HXE 2004       | 20.0               | 40                     | 100             | 20                  |
| HXE 2004A      | 20.0               | 40                     | 150             | 20                  |

### Recommended cutting condition for Power Square End Mills

| Material     | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|--------------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness     | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER     | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 3            | 20000                                                           | 2000           | 16000                                                           | 1000           | 9000                  | 500            |
| 40           | 19000                                                           | 2000           | 12000                                                           | 1300           | 6000                  | 550            |
| 5            | 13000                                                           | 1800           | 10000                                                           | 1400           | 5000                  | 500            |
| 6            | 10000                                                           | 3000           | 8000                                                            | 1500           | 4500                  | 700            |
| 8            | 8000                                                            | 3200           | 5000                                                            | 1300           | 3500                  | 600            |
| 10           | 7000                                                            | 3000           | 4500                                                            | 1200           | 3000                  | 500            |
| 12           | 5000                                                            | 2000           | 4000                                                            | 1100           | 2000                  | 500            |
| 16           | 4000                                                            | 1800           | 3500                                                            | 1000           | 1800                  | 450            |
| 20           | 3500                                                            | 1600           | 3000                                                            | 1000           | 1300                  | 450            |
| Depth of Cut |                                                                 |                |                                                                 |                |                       |                |
| 3            | 20000                                                           | 2000           | 20000                                                           | 1200           | 16000                 | 1200           |
| 40           | 16000                                                           | 2000           | 16000                                                           | 1200           | 12000                 | 1300           |
| 5            | 13000                                                           | 1800           | 13000                                                           | 1100           | 10000                 | 1400           |
| 6            | 10000                                                           | 3000           | 10000                                                           | 2100           | 8000                  | 1500           |
| 8            | 8000                                                            | 2900           | 8000                                                            | 1800           | 6000                  | 1400           |
| 10           | 7000                                                            | 2800           | 6000                                                            | 1700           | 5000                  | 1300           |
| 12           | 5000                                                            | 2300           | 5500                                                            | 1700           | 4500                  | 1200           |
| 16           | 3500                                                            | 1800           | 4500                                                            | 1800           | 3500                  | 1200           |
| 20           | 3000                                                            | 1400           | 3000                                                            | 1500           | 2600                  | 1100           |

### DEPTH OF CUT





# High Speed Cutting & High Hard Cutting

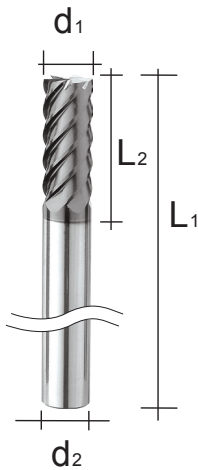
## 6 Flutes Square End Mills



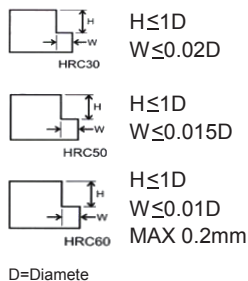
6刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用



| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HVT 0606       | 6.0                | 15                     | 50              | 6                   |
| HVT 0806       | 8.0                | 20                     | 60              | 8                   |
| HVT 1006       | 10.0               | 25                     | 75              | 10                  |
| HVT 1206       | 12.0               | 30                     | 75              | 12                  |
| HVT 1606       | 16.0               | 40                     | 100             | 16                  |
| HVT 2006       | 20.0               | 40                     | 100             | 20                  |
| HVT 2506       | 25.0               | 40                     | 100             | 25                  |



### DEPTH OF CUT



### Recommended cutting condition for High Hardness End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 6        | 12000                                                           | 3000           | 8000                                                            | 2000           | 5600                  | 1400           |
| 8        | 90000                                                           | 2400           | 6700                                                            | 1900           | 3600                  | 1200           |
| 10       | 6900                                                            | 2100           | 5000                                                            | 1600           | 3000                  | 900            |
| 12       | 6000                                                            | 2400           | 4300                                                            | 1700           | 2400                  | 1000           |
| 16       | 4500                                                            | 2100           | 2500                                                            | 1000           | 1600                  | 700            |



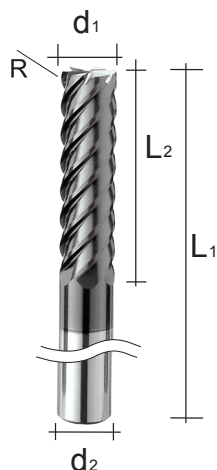
# High Speed Cutting & High Hard Cutting

6 Flutes Long Shank End Mills

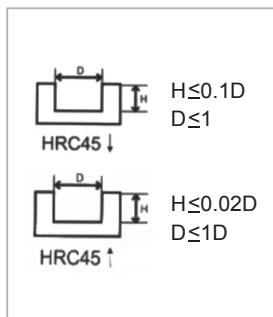


長刃型 6刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刀長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| LHVT 0606      | 6.0                | 25                     | 75              | 6                   |
| LHVT 0606A     | 6.0                | 30                     | 100             | 6                   |
| LHVT 0806      | 8.0                | 35                     | 75              | 8                   |
| LHVT 0806A     | 8.0                | 35                     | 100             | 8                   |
| LHVT 1006      | 10.0               | 40                     | 100             | 10                  |
| LHVT 1006A     | 10.0               | 40                     | 150             | 10                  |
| LHVT 1206      | 12.0               | 45                     | 100             | 12                  |
| LHVT 1206A     | 12.0               | 45                     | 150             | 12                  |
| LHVT 1606      | 16.0               | 60                     | 150             | 16                  |
| LHVT 1606A     | 16.0               | 100                    | 200             | 16                  |
| LHVT 2006      | 20.0               | 80                     | 150             | 20                  |
| LHVT 2006A     | 20.0               | 100                    | 200             | 20                  |



## DEPTH OF CUT



## Recommended cutting condition for Micro Diameter Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 0.2      | 40000                                                           | 100-300        | 30000                                                           | 80-250         | 15000                 | 50-150         |
| 0.3      | 40000                                                           | 100-350        | 30000                                                           | 80-300         | 15000                 | 50-200         |
| 0.4      | 40000                                                           | 100-400        | 25000                                                           | 80-350         | 10000                 | 50-250         |
| 0.5      | 40000                                                           | 100-500        | 25000                                                           | 80-400         | 10000                 | 50-250         |
| 0.6      | 38000                                                           | 100-600        | 25000                                                           | 80-500         | 8000                  | 50-250         |
| 0.7      | 36000                                                           | 100-700        | 20000                                                           | 80-600         | 8000                  | 50-250         |
| 0.8      | 34000                                                           | 100-800        | 20000                                                           | 80-700         | 8000                  | 50-250         |
| 0.9      | 32000                                                           | 100-1000       | 20000                                                           | 80-800         | 8000                  | 50-250         |

# High Speed Cutting & High Hard Cutting

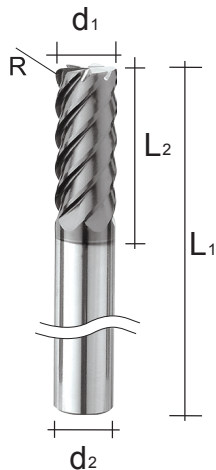
## 6 Flutes Corner Radius End Mills



圓鼻 6刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用



| 型號<br>Type No. | 刀徑(D1)<br>Diameter | R<br>Corner R | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|---------------|------------------------|-----------------|---------------------|
| HVTR 0602      | 6.0                | 0.2           | 12                     | 50              | 6                   |
| HVTR 0605      | 6.0                | 0.5           | 12                     | 50              | 6                   |
| HVTR 0610      | 6.0                | 1.0           | 12                     | 50              | 6                   |
| HVTR 0802      | 8.0                | 0.2           | 16                     | 60              | 8                   |
| HVTR 0805      | 8.0                | 0.5           | 16                     | 60              | 8                   |
| HVTR 0810      | 8.0                | 1.0           | 16                     | 60              | 8                   |
| HVTR 1005      | 10.0               | 0.5           | 20                     | 75              | 10                  |
| HVTR 1010      | 10.0               | 1.0           | 20                     | 75              | 10                  |
| HVTR 1205      | 12.0               | 0.5           | 24                     | 75              | 12                  |
| HVTR 1210      | 12.0               | 1.0           | 24                     | 75              | 12                  |
| HVTR 1605      | 16.0               | 0.5           | 30                     | 100             | 16                  |
| HVTR 1610      | 16.0               | 1.0           | 30                     | 100             | 16                  |



### Recommended cutting condition for

#### High Hardness Corner Radius End Mills

#### DEPTH OF CUT

|  |                                |
|--|--------------------------------|
|  | $H \leq 1D$<br>$W \leq 0.02D$  |
|  | $H \leq 1D$<br>$W \leq 0.015D$ |
|  | $H \leq 1D$<br>$W \leq 0.01D$  |

D=Diameter

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 6        | 15000                                                           | 4000           | 9500                                                            | 2500           | 6800                  | 1800           |
| 8        | 11000                                                           | 3000           | 8000                                                            | 2300           | 4400                  | 1500           |
| 10       | 8500                                                            | 2500           | 6000                                                            | 2000           | 3600                  | 1100           |
| 12       | 7200                                                            | 2800           | 5200                                                            | 2000           | 2900                  | 1200           |
| 16       | 5500                                                            | 2500           | 3000                                                            | 1200           | 2000                  | 900            |



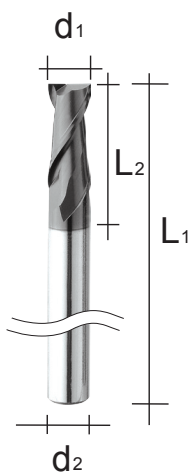
# High Speed Cutting & High Hard Cutting

2 Flutes Long Shank Short Length Square End Mills



長柄短刀 2刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HEL 0102       | 1.0                | 3                      | 75              | 4                   |
| HEL 0202       | 2.0                | 6                      | 75              | 4                   |
| HEL 0302       | 3.0                | 8                      | 75              | 4                   |
| HEL 0402       | 4.0                | 10                     | 75              | 4                   |
| HEL 0502       | 5.0                | 13                     | 75              | 6                   |
| HEL 0602       | 6.0                | 15                     | 75              | 6                   |
| HEL 0802       | 8.0                | 20                     | 75              | 8                   |



| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HEI 0302       | 3.0                | 8                      | 100             | 4                   |
| HEI 0302A      | 3.0                | 8                      | 100             | 6                   |
| HEI 0402       | 4.0                | 10                     | 100             | 4                   |
| HEI 0402A      | 4.0                | 10                     | 100             | 6                   |
| HEI 0502       | 5.0                | 13                     | 100             | 6                   |
| HEI 0602       | 6.0                | 15                     | 100             | 6                   |
| HEI 0802       | 8.0                | 20                     | 100             | 8                   |
| HEI 1002       | 10.0               | 25                     | 100             | 10                  |
| HEI 1202       | 12.0               | 30                     | 100             | 12                  |

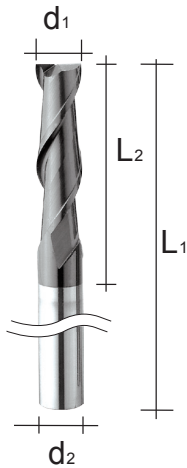
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HEJ 0602       | 6.0                | 15                     | 150             | 6                   |
| HEJ 0802       | 8.0                | 20                     | 150             | 8                   |
| HEJ 1002       | 10.0               | 25                     | 150             | 10                  |
| HEJ 1202       | 12.0               | 30                     | 150             | 12                  |
| HEJ 1402       | 14.0               | 45                     | 150             | 16                  |
| HEJ 1602       | 16.0               | 45                     | 150             | 16                  |
| HEJ 1802       | 18.0               | 45                     | 150             | 20                  |

# High Speed Cutting & High Hard Cutting

Long Flutes Square 2 Flutes End Mills



長刃型 2刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

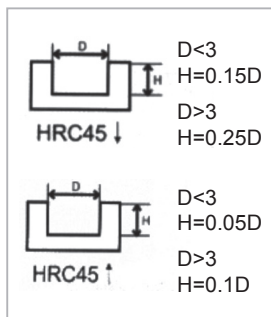


| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HELF 0202      | 2.0                | 15                     | 75              | 4                   |
| HELF 0302      | 3.0                | 15                     | 75              | 4                   |
| HELF 0402      | 4.0                | 20                     | 75              | 4                   |
| HELF 0502      | 5.0                | 25                     | 75              | 6                   |
| HELF 0602      | 6.0                | 25                     | 75              | 6                   |
| HELF 0602A     | 6.0                | 30                     | 100             | 6                   |
| HELF 0802      | 8.0                | 25                     | 75              | 8                   |
| HELF 0802A     | 8.0                | 35                     | 100             | 8                   |
| HELF 1002      | 10.0               | 40                     | 100             | 10                  |
| HELF 1002A     | 10.0               | 40                     | 150             | 10                  |
| HELF 1202      | 12.0               | 45                     | 100             | 12                  |
| HELF 1202A     | 12.0               | 45                     | 150             | 12                  |
| HELF 1402      | 14.0               | 60                     | 150             | 16                  |
| HELF 1602      | 16.0               | 75                     | 150             | 16                  |
| HELF 1802      | 18.0               | 75                     | 150             | 20                  |
| HELF 2002      | 20.0               | 75                     | 150             | 20                  |

## Recommended cutting condition for Long Shank Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 20000                                                           | 80             | 15000                                                           | 45             | 11000                 | 30             |
| 1.5      | 13600                                                           | 135            | 10000                                                           | 60             | 9000                  | 40             |
| 2        | 9600                                                            | 150            | 8500                                                            | 50             | 6000                  | 45             |
| 3        | 6500                                                            | 200            | 5800                                                            | 75             | 4000                  | 60             |
| 4        | 5500                                                            | 250            | 4000                                                            | 80             | 3200                  | 60             |
| 5        | 4500                                                            | 300            | 3000                                                            | 80             | 2500                  | 70             |
| 6        | 4000                                                            | 300            | 2500                                                            | 80             | 2200                  | 70             |
| 8        | 3500                                                            | 350            | 2200                                                            | 90             | 1700                  | 70             |
| 10       | 3000                                                            | 400            | 2000                                                            | 90             | 1500                  | 70             |
| 12       | 2500                                                            | 400            | 1500                                                            | 100            | 1000                  | 70             |
| 16       | 2000                                                            | 400            | 1200                                                            | 100            | 800                   | 70             |

## DEPTH OF CUT

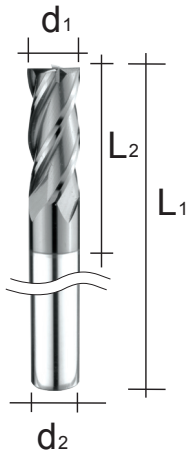


# High Speed Cutting & High Hard Cutting

4 Flutes Short Length Long Square End Mills



長柄型 4刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

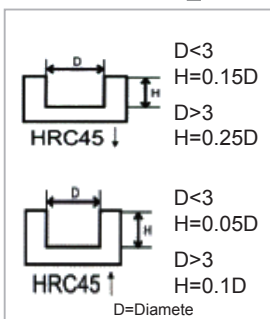


| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HEL 0104       | 1.0                | 3                      | 75              | 4                   |
| HEL 0104A      | 1.0                | 3                      | 100             | 6                   |
| HEL 0154       | 1.5                | 4.5                    | 75              | 4                   |
| HEL 0154A      | 1.5                | 4.5                    | 100             | 6                   |
| HEL 0204       | 2.0                | 6                      | 75              | 4                   |
| HEL 0204A      | 2.0                | 6                      | 100             | 6                   |
| HEL 0304       | 3.0                | 8                      | 75              | 4                   |
| HEL 0304A      | 3.0                | 8                      | 100             | 6                   |
| HEL 0404       | 4.0                | 10                     | 75              | 4                   |
| HEL 0404A      | 4.0                | 10                     | 100             | 6                   |
| HEL 0504       | 5.0                | 13                     | 75              | 6                   |
| HEL 0504A      | 5.0                | 13                     | 100             | 6                   |
| HEL 0604       | 6.0                | 15                     | 75              | 6                   |
| HEL 0604A      | 6.0                | 15                     | 100             | 6                   |
| HEL 0604B      | 6.0                | 15                     | 150             | 6                   |
| HEL 0804       | 8.0                | 20                     | 75              | 8                   |
| HEL 0804A      | 8.0                | 20                     | 100             | 8                   |
| HEL 0804B      | 8.0                | 20                     | 150             | 8                   |
| HEL 1004       | 10.0               | 25                     | 100             | 10                  |
| HEL 1004A      | 10.0               | 25                     | 150             | 10                  |
| HEL 1204       | 12.0               | 30                     | 100             | 12                  |
| HEL 1204A      | 12.0               | 30                     | 150             | 12                  |
| HEL 1604       | 16.0               | 45                     | 150             | 16                  |
| HEL 1604A      | 16.0               | 45                     | 200             | 16                  |
| HEL 2004       | 20.0               | 50                     | 150             | 20                  |
| HEL 2004A      | 20.0               | 50                     | 200             | 20                  |

## Recommended cutting condition for Long Shank Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 22000                                                           | 400            | 18000                                                           | 200            | 9000                  | 140            |
| 1.5      | 12000                                                           | 500            | 11000                                                           | 280            | 5200                  | 150            |
| 2        | 10000                                                           | 550            | 10000                                                           | 280            | 4600                  | 170            |
| 3        | 9000                                                            | 600            | 5500                                                            | 310            | 3500                  | 220            |
| 4        | 6000                                                            | 600            | 5000                                                            | 400            | 2200                  | 220            |
| 5        | 4800                                                            | 750            | 4000                                                            | 400            | 1700                  | 240            |
| 6        | 4500                                                            | 800            | 3800                                                            | 420            | 1600                  | 300            |
| 8        | 3500                                                            | 820            | 2800                                                            | 420            | 1000                  | 300            |
| 10       | 3000                                                            | 820            | 1800                                                            | 420            | 900                   | 300            |
| 12       | 2000                                                            | 820            | 1600                                                            | 350            | 800                   | 300            |
| 16       | 1500                                                            | 650            | 1000                                                            | 300            | 500                   | 150            |
| 20       | 1200                                                            | 600            | 900                                                             | 3000           | 400                   | 150            |

## DEPTH OF CUT



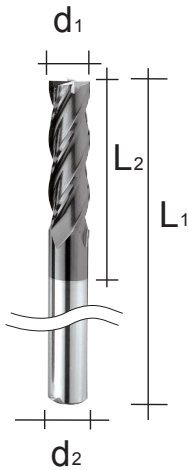


# High Speed Cutting & High Hard Cutting

4 flutes Long Shank Square End Mills



長刃型 4刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

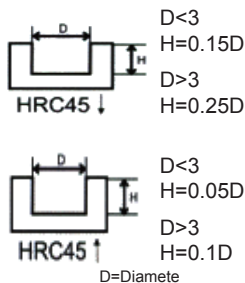


| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HELF 0204      | 2.0                | 15                     | 75              | 4                   |
| HELF 0304      | 3.0                | 15                     | 75              | 6                   |
| HELF 0404      | 4.0                | 20                     | 75              | 6                   |
| HELF 0504      | 5.0                | 25                     | 75              | 6                   |
| HELF 0604      | 6.0                | 25                     | 75              | 6                   |
| HELF 0604A     | 6.0                | 30                     | 100             | 6                   |
| HELF 0804      | 8.0                | 25                     | 75              | 8                   |
| HELF 0804A     | 8.0                | 35                     | 100             | 8                   |
| HELF 1004      | 10.0               | 45                     | 100             | 10                  |
| HELF 1004A     | 10.0               | 45                     | 150             | 10                  |
| HELF 1204      | 12.0               | 45                     | 100             | 12                  |
| HELF 1204A     | 12.0               | 45                     | 150             | 12                  |
| HELF 1404      | 14.0               | 75                     | 150             | 16                  |
| HELF 1604      | 16.0               | 75                     | 150             | 16                  |
| HELF 1804      | 18.0               | 75                     | 150             | 20                  |
| HELF 2004      | 20.0               | 75                     | 150             | 20                  |

## Recommended cutting condition for Long Shank Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 22000                                                           | 400            | 18000                                                          | 200            | 9000                  | 140            |
| 1.5      | 12000                                                           | 500            | 11000                                                          | 280            | 5200                  | 150            |
| 2        | 10000                                                           | 550            | 10000                                                          | 280            | 4600                  | 170            |
| 3        | 9000                                                            | 600            | 5500                                                           | 310            | 3500                  | 220            |
| 4        | 6000                                                            | 600            | 5000                                                           | 400            | 2200                  | 220            |
| 5        | 4800                                                            | 750            | 4000                                                           | 400            | 1700                  | 240            |
| 6        | 4500                                                            | 800            | 3800                                                           | 420            | 1600                  | 300            |
| 8        | 3500                                                            | 820            | 2800                                                           | 420            | 1000                  | 300            |
| 10       | 3000                                                            | 820            | 1800                                                           | 420            | 900                   | 300            |
| 12       | 2000                                                            | 820            | 1600                                                           | 350            | 800                   | 300            |
| 16       | 1500                                                            | 650            | 1000                                                           | 300            | 500                   | 150            |
| 20       | 1200                                                            | 600            | 900                                                            | 3000           | 400                   | 150            |

## DEPTH OF CUT

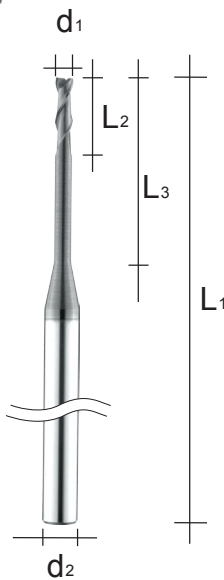


# High Speed Cutting & High Hard Cutting

Long Neck Short Length Square 2 Flutes End Mills



長頸短刃 2刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用



| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 有效長(L3)<br>Effective Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------------------|-----------------|---------------------|
| HNE 0402       | 0.4                | 0.8                    | 2                           | 50              | 4                   |
| HNE 0404       | 0.4                | 0.8                    | 4                           | 50              | 4                   |
| HNE 0504       | 0.5                | 1.0                    | 4                           | 50              | 4                   |
| HNE 0506       | 0.5                | 1.0                    | 6                           | 50              | 4                   |
| HNE 0604       | 0.6                | 1.2                    | 4                           | 50              | 4                   |
| HNE 0606       | 0.6                | 1.2                    | 6                           | 50              | 4                   |
| HNE 0608       | 0.6                | 1.2                    | 8                           | 50              | 4                   |
| HNE 0804       | 0.8                | 1.6                    | 4                           | 50              | 4                   |
| HNE 0806       | 0.8                | 1.6                    | 6                           | 50              | 4                   |
| HNE 0808       | 0.8                | 1.6                    | 8                           | 50              | 4                   |
| HNE 1006       | 1.0                | 3.0                    | 6                           | 50              | 4                   |
| HNE 1008       | 1.0                | 3.0                    | 8                           | 50              | 4                   |
| HNE 1010       | 1.0                | 3.0                    | 10                          | 50              | 4                   |
| HNE 1012       | 1.0                | 3.0                    | 12                          | 50              | 4                   |
| HNE 1016       | 1.0                | 3.0                    | 16                          | 50              | 4                   |
| HNE 1506       | 1.5                | 4.0                    | 6                           | 50              | 4                   |
| HNE 1508       | 1.5                | 4.0                    | 8                           | 50              | 4                   |
| HNE 1510       | 1.5                | 4.0                    | 10                          | 50              | 4                   |
| HNE 1512       | 1.5                | 4.0                    | 12                          | 50              | 4                   |
| HNE 1516       | 1.5                | 4.0                    | 16                          | 50              | 4                   |
| HNE 2008       | 2.0                | 6.0                    | 8                           | 50              | 4                   |
| HNE 2010       | 2.0                | 6.0                    | 10                          | 50              | 4                   |
| HNE 2012       | 2.0                | 6.0                    | 12                          | 50              | 4                   |
| HNE 2014       | 2.0                | 6.0                    | 14                          | 50              | 4                   |
| HNE 2016       | 2.0                | 6.0                    | 16                          | 50              | 4                   |
| HNE 2020       | 2.0                | 6.0                    | 20                          | 50              | 4                   |
| HNE 3010       | 3.0                | 6.0                    | 10                          | 50              | 4                   |
| HNE 3012       | 3.0                | 6.0                    | 12                          | 50              | 4                   |
| HNE 3014       | 3.0                | 6.0                    | 14                          | 50              | 4                   |
| HNE 3016       | 3.0                | 6.0                    | 16                          | 50              | 4                   |
| HNE 3020       | 3.0                | 6.0                    | 20                          | 75              | 4                   |
| HNE 3025       | 3.0                | 6.0                    | 25                          | 75              | 4                   |
| HNE 4014       | 4.0                | 10                     | 14                          | 75              | 6                   |
| HNE 4016       | 4.0                | 10                     | 16                          | 75              | 6                   |
| HNE 4020       | 4.0                | 10                     | 20                          | 75              | 6                   |
| HNE 4025       | 4.0                | 10                     | 25                          | 75              | 6                   |
| HNE 4030       | 4.0                | 10                     | 30                          | 75              | 6                   |

# High Speed Cutting & High Hard Cutting

Long Neck Short Length Square 2 Flutes End Mills

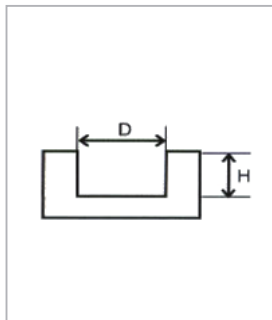


長頸短刃 2刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

Recommended cutting condition for Long Neck End Mills Series

| Material | Alloy Steels.Tool Steels.Hardened Steels<br>S45C,SCM,S50C,SKS,SCr,SNCM,SKD11,SKD61,NAK80 |                  |              |             |
|----------|------------------------------------------------------------------------------------------|------------------|--------------|-------------|
|          | Diameter                                                                                 | Effective Length | SPEED (mm-1) | FEED mm/min |
| 1        | 4                                                                                        | 25000            | 1500         | 0.05        |
| 1        | 6                                                                                        | 25000            | 1500         | 0.03        |
| 1        | 10                                                                                       | 25000            | 1500         | 0.01        |
| 1.5      | 4                                                                                        | 15000            | 1200         | 0.1         |
| 1.5      | 8                                                                                        | 15000            | 1200         | 0.05        |
| 1.5      | 10                                                                                       | 15000            | 1200         | 0.025       |
| 1.5      | 12                                                                                       | 15000            | 1200         | 0.018       |
| 2        | 8                                                                                        | 12000            | 900          | 0.2         |
| 2        | 10                                                                                       | 8800             | 700          | 0.012       |
| 2        | 12                                                                                       | 7500             | 600          | 0.05        |
| 2        | 16                                                                                       | 7000             | 500          | 0.02        |
| 3        | 8                                                                                        | 8000             | 600          | 0.5         |
| 3        | 12                                                                                       | 8000             | 600          | 0.45        |
| 3        | 16                                                                                       | 5500             | 450          | 0.18        |
| 3        | 20                                                                                       | 4000             | 300          | 0.15        |
| 4        | 10                                                                                       | 6000             | 400          | 0.7         |
| 4        | 16                                                                                       | 6000             | 400          | 0.4         |

「DEPTH OF CUT」



# High Speed Cutting & High Hard Cutting

## Micro Diameter 2 Flutes Ball Nose End Mills



微小徑 2刃球型立銑刀 極細微粒碳化鎢 高速極高硬度切削用

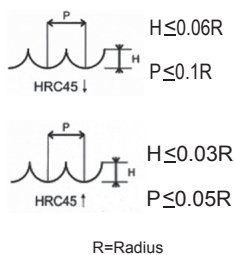


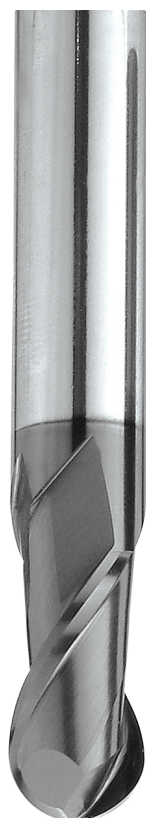
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HSB 0022       | R0.10              | 0.4                    | 50              | 4                   |
| HSB 0032       | R0.15              | 0.6                    | 50              | 4                   |
| HSB 0042       | R0.20              | 0.8                    | 50              | 4                   |
| HSB 0052       | R0.25              | 1.0                    | 50              | 4                   |
| HSB 0062       | R0.30              | 1.2                    | 50              | 4                   |
| HSB 0072       | R0.35              | 1.4                    | 50              | 4                   |
| HSB 0082       | R0.40              | 1.6                    | 50              | 4                   |
| HSB 0092       | R0.45              | 1.8                    | 50              | 4                   |
| HSB 0122       | R0.6               | 2.4                    | 50              | 4                   |
| HSB 0142       | R0.7               | 2.8                    | 50              | 4                   |
| HSB 0162       | R0.8               | 3.2                    | 50              | 4                   |
| HSB 0182       | R0.9               | 3.6                    | 50              | 4                   |

### Recommended cutting condition for Ball Nose End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 0.1      | 32000                                                           | 500-600        | 32000                                                           | 400-500        | 25000                 | 300-400        |
| 0.15     | 32000                                                           | 500-600        | 32000                                                           | 400-500        | 25000                 | 300-400        |
| 0.2      | 32000                                                           | 500-600        | 32000                                                           | 400-500        | 25000                 | 300-400        |
| 0.25     | 32000                                                           | 600-700        | 32000                                                           | 500-600        | 25000                 | 400-500        |
| 0.3      | 32000                                                           | 600-700        | 32000                                                           | 500-600        | 25000                 | 400-500        |
| 0.35     | 32000                                                           | 700-800        | 32000                                                           | 600-700        | 25000                 | 500-600        |
| 0.4      | 32000                                                           | 900-1000       | 32000                                                           | 800-900        | 25000                 | 600-700        |
| 0.45     | 32000                                                           | 1000-1100      | 32000                                                           | 900-1000       | 25000                 | 600-700        |

### DEPTH OF CUT





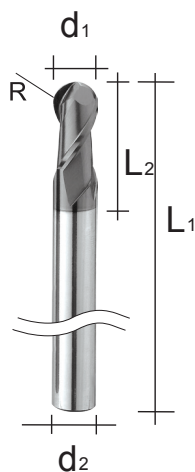
# High Speed Cutting & High Hard Cutting

Standard 2 Flutes Ball Nose End Mills



2刃球型立銑刀 極細微粒碳化鎢 高速極高硬度切削用

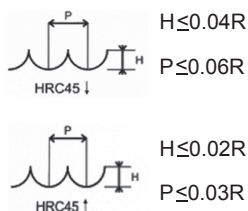
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(φ2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HB 0102        | R0.5               | 2                      | 50              | 4                   |
| HB 0152        | R0.75              | 3                      | 50              | 4                   |
| HB 0202        | R1.0               | 4                      | 50              | 4                   |
| HB 0252        | R1.25              | 5                      | 50              | 4                   |
| HB 0302        | R1.5               | 6                      | 50              | 4                   |
| HB 0302A       | R1.5               | 6                      | 50              | 3                   |
| HB 0402        | R2.0               | 8                      | 50              | 4                   |
| HB 0502        | R2.5               | 10                     | 50              | 6                   |
| HB 0602        | R3.0               | 12                     | 50              | 6                   |
| HB 0802        | R4.0               | 16                     | 60              | 8                   |
| HB 1002        | R5.0               | 20                     | 75              | 10                  |
| HB 1202        | R6.0               | 24                     | 75              | 12                  |
| HB 1602        | R8.0               | 32                     | 100             | 16                  |
| HB 2002        | R10.0              | 32                     | 100             | 20                  |



## Recommended cutting condition for Ball Nose End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 0.5      | 45000                                                           | 2000           | 45000                                                          | 1800           | 28000                 | 1000           |
| 1        | 23000                                                           | 2000           | 22000                                                          | 1800           | 16000                 | 900            |
| 1.5      | 16000                                                           | 2000           | 15000                                                          | 1800           | 11000                 | 900            |
| 2        | 15000                                                           | 2400           | 14000                                                          | 2000           | 10000                 | 1300           |
| 3        | 13000                                                           | 3200           | 11000                                                          | 2000           | 9000                  | 1500           |
| 4        | 9000                                                            | 2300           | 8000                                                           | 1500           | 6200                  | 1400           |
| 5        | 7500                                                            | 1900           | 6500                                                           | 1200           | 5200                  | 900            |
| 6        | 6300                                                            | 1600           | 5500                                                           | 1000           | 4300                  | 800            |
| 8        | 4500                                                            | 1200           | 3800                                                           | 800            | 3300                  | 700            |

## DEPTH OF CUT



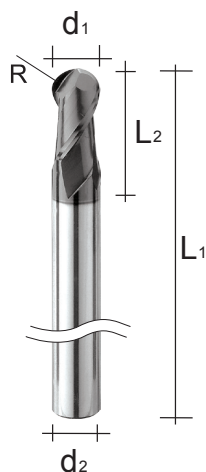


# High Speed Cutting & High Hard Cutting

Long Shank 2 Flutes Ball Nose End Mills



長柄型 2刃球型立銑刀 極細微粒碳化鎢 高速極高硬度切削用



| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HIB 0102       | R0.5               | 2                      | 75              | 4                   |
| HIB 0102A      | R0.5               | 2                      | 75              | 6                   |
| HIB 0152       | R0.75              | 3                      | 75              | 4                   |
| HIB 0152A      | R0.75              | 3                      | 75              | 6                   |
| HIB 0202       | R1.0               | 4                      | 75              | 4                   |
| HIB 0202A      | R1.0               | 4                      | 75              | 6                   |
| HIB 0302       | R1.5               | 6                      | 75              | 4                   |
| HIB 0302A      | R1.5               | 6                      | 75              | 6                   |
| HIB 0402       | R2.0               | 8                      | 75              | 4                   |
| HIB 0402A      | R2.0               | 8                      | 75              | 6                   |
| HIB 0502       | R2.5               | 10                     | 75              | 6                   |
| HIB 0602       | R3.0               | 12                     | 75              | 6                   |
| HIB 0802       | R4.0               | 16                     | 75              | 8                   |

| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HJB 0202       | R1.0               | 4                      | 100             | 6                   |
| HJB 0302       | R1.5               | 6                      | 100             | 6                   |
| HJB 0402       | R2.0               | 8                      | 100             | 6                   |
| HJB 0602       | R3.0               | 12                     | 100             | 6                   |
| HJB 0802       | R4.0               | 16                     | 100             | 8                   |
| HJB 1002       | R5.0               | 20                     | 100             | 10                  |
| HJB 1202       | R6.0               | 24                     | 100             | 12                  |

| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HKB 0602       | R3.0               | 12                     | 150             | 6                   |
| HKB 0802       | R4.5               | 16                     | 150             | 8                   |
| HKB 1002       | R5.0               | 20                     | 150             | 10                  |
| HKB 1202       | R6.0               | 24                     | 150             | 12                  |
| HKB 1602       | R8.0               | 32                     | 150             | 16                  |
| HKB 2002       | R10.0              | 40                     | 150             | 20                  |
| HKB 2502       | R 12.5             | 40                     | 150             | 25                  |



# High Speed Cutting & High Hard Cutting

## Long Shank 2 Flutes Ball Nose End Mills



長柄型 2刃球型立銑刀 極細微粒碳化鎢 高速極高硬度切削用

### Recommended cutting condition for Long Shank Ball Nose End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 23000                                                           | 2000           | 22000                                                           | 1800           | 16000                 | 900            |
| 1.5      | 16000                                                           | 2000           | 15000                                                           | 1800           | 11000                 | 900            |
| 2        | 15000                                                           | 2400           | 14000                                                           | 2000           | 10000                 | 1300           |
| 3        | 13000                                                           | 3200           | 11000                                                           | 2000           | 9000                  | 1500           |
| 4        | 9000                                                            | 2300           | 8000                                                            | 1500           | 6200                  | 1400           |
| 5        | 7500                                                            | 1900           | 6500                                                            | 1200           | 5200                  | 900            |
| 6        | 6300                                                            | 1600           | 5500                                                            | 1000           | 4300                  | 800            |
| 8        | 4500                                                            | 1200           | 3800                                                            | 800            | 3300                  | 700            |

### DEPTH OF CUT

$H \leq 0.04R$   
 $P \leq 0.06R$

$H \leq 0.02R$   
 $P \leq 0.03R$



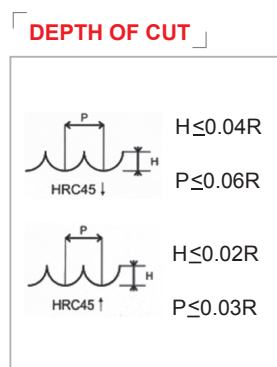
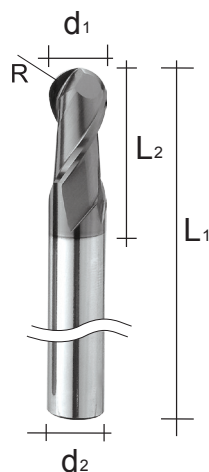
# High Speed Cutting & High Hard Cutting

Standard 2 Flutes Ball Nose End Mills



2刃球型立銑刀 極細微粒碳化鎢 高速極高硬度切削用

| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HBA 0102       | R0.5               | 2                      | 50              | 6                   |
| HBA 0152       | R0.75              | 3                      | 50              | 6                   |
| HBA 0202       | R1.0               | 4                      | 50              | 6                   |
| HBA 0252       | R1.25              | 5                      | 50              | 6                   |
| HBA 0302       | R1.5               | 6                      | 50              | 6                   |
| HBA 0402       | R2.0               | 8                      | 50              | 6                   |



## Recommended cutting condition for Ball Nose End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 0.5      | 20000                                                           | 700            | 15000                                                           | 2000           | 10000                 | 1500           |
| 0.75     | 18500                                                           | 800            | 14500                                                           | 680            | 12000                 | 5000           |
| 1        | 18000                                                           | 830            | 14000                                                           | 740            | 11000                 | 640            |
| 1.25     | 17000                                                           | 1060           | 12800                                                           | 950            | 9900                  | 640            |
| 1.5      | 15360                                                           | 1400           | 11500                                                           | 1020           | 9900                  | 640            |
| 2        | 14700                                                           | 2050           | 10800                                                           | 960            | 8900                  | 870            |



# High Speed Cutting & High Hard Cutting

Standard 4 Flutes Ball Nose End Mills

UMG

0.4  
μm

CO  
12%

HRC  
60

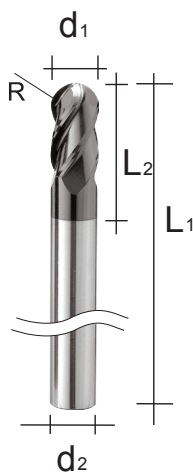
ALTIN

30°

4 Flutes

4刃球型立銑刀 極細微粒碳化鎢 高速極高硬度切削用

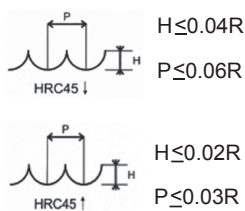
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HB 0104        | R0.5               | 2                      | 50              | 4                   |
| HB 0154        | R0.75              | 3                      | 50              | 4                   |
| HB 0204        | R1.0               | 4                      | 50              | 4                   |
| HB 0304        | R1.5               | 6                      | 50              | 4                   |
| HB 0304A       | R1.5               | 6                      | 50              | 3                   |
| HB 0404        | R2.0               | 8                      | 50              | 4                   |
| HB 0504        | R2.5               | 10                     | 50              | 6                   |
| HB 0604        | R3.0               | 12                     | 50              | 6                   |
| HB 0804        | R4.0               | 16                     | 60              | 8                   |
| HB 1004        | R5.0               | 20                     | 75              | 10                  |
| HB 1204        | R6.0               | 24                     | 75              | 12                  |
| HB 1604        | R8.0               | 32                     | 100             | 16                  |
| HB 2004        | R10.0              | 32                     | 100             | 20                  |



## Recommended cutting condition for Ball Nose End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 2        | 15000                                                           | 3000           | 14000                                                           | 2600           | 10000                 | 1700           |
| 3        | 13000                                                           | 4000           | 11000                                                           | 2600           | 9000                  | 1900           |
| 4        | 9000                                                            | 2900           | 8000                                                            | 1900           | 6200                  | 1800           |
| 5        | 7500                                                            | 2400           | 6500                                                            | 1500           | 5200                  | 1100           |
| 6        | 6300                                                            | 2100           | 5500                                                            | 1300           | 4300                  | 1000           |
| 8        | 4500                                                            | 1500           | 3800                                                            | 1000           | 3300                  | 900            |
| 10       | 3700                                                            | 1200           | 3200                                                            | 750            | 2600                  | 600            |

## DEPTH OF CUT





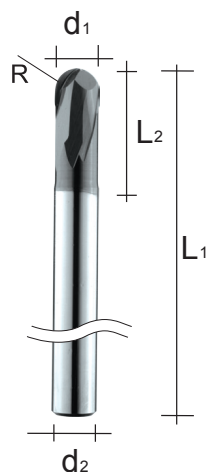
# High Speed Cutting & High Hard Cutting

Short length 2 Flutes Ball Nose End Mills

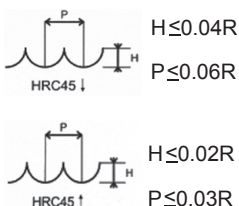


強力短刃 2刃球型立銑刀 極細微粒碳化鎢 高速極高硬度切削用

| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| HOB 0102       | R0.5               | 1.0                    | 50              | 6                   |
| HOB 0152       | R0.75              | 1.5                    | 50              | 6                   |
| HOB 0202       | R1.0               | 1.5                    | 50              | 6                   |
| HOB 0302       | R1.5               | 2.5                    | 50              | 6                   |
| HOB 0402       | R2.0               | 3.0                    | 50              | 6                   |
| HOB 0502       | R2.5               | 3.5                    | 50              | 6                   |
| HOB 0602       | R3.0               | 4.5                    | 50              | 6                   |
| HOB 0602A      | R3.0               | 4.5                    | 100             | 6                   |
| HOB 0802       | R4.0               | 5.5                    | 60              | 8                   |
| HOB 0802A      | R4.0               | 5.5                    | 100             | 8                   |
| HOB 1002       | R5.0               | 6.5                    | 75              | 10                  |
| HOB 1002A      | R5.0               | 6.5                    | 100             | 10                  |
| HOB 1202       | R6.0               | 7.5                    | 75              | 12                  |
| HOB 1202A      | R6.0               | 7.5                    | 100             | 12                  |



## DEPTH OF CUT



## Recommended cutting condition for Power Ball Nose End Mills

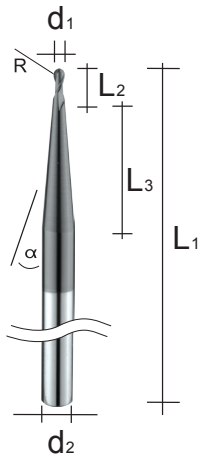
| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 45000                                                           | 2000           | 18000                                                           | 1500           | 12000                 | 1200           |
| 1.5      | 42000                                                           | 2000           | 18000                                                           | 1500           | 12000                 | 1200           |
| 2        | 15000                                                           | 3000           | 18000                                                           | 1500           | 12000                 | 1200           |
| 3        | 13000                                                           | 5000           | 11000                                                           | 3500           | 8000                  | 1700           |
| 4        | 9000                                                            | 3000           | 8000                                                            | 2000           | 4000                  | 1400           |
| 5        | 7500                                                            | 2500           | 6500                                                            | 1800           | 3500                  | 1300           |

# High Speed Cutting & High Hard Cutting

Long Neck Taper 2 Flutes Ball Nose End Mills

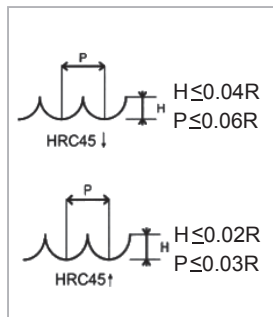


長斜頸 2刃強力球型立銑刀 極細微粒碳化鎢 高速極高硬度切削用



| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刀長(L2)<br>Flute Length | 斜頸(α)<br>Taper Angle | 斜頸長(L3)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|----------------------|-------------------------|-----------------|---------------------|
| HLB 0103       | R0.5               | 2                      | 3°                   | 32                      | 75              | 6                   |
| HLB 0105       | R0.5               | 2                      | 5°                   | 32                      | 75              | 6                   |
| HLB 0203       | R1.0               | 4                      | 3°                   | 27                      | 100             | 6                   |
| HLB 0205       | R1.0               | 4                      | 5°                   | 27                      | 100             | 6                   |
| HLB 0315       | R1.5               | 6                      | 1.5°                 | 35                      | 100             | 6                   |
| HLB 0303       | R1.5               | 6                      | 3°                   | 35                      | 100             | 6                   |
| HLB 0415       | R2.0               | 8                      | 1.5°                 | 28                      | 100             | 6                   |
| HLB 0403       | R2.0               | 8                      | 3°                   | 28                      | 100             | 6                   |
| HLB 0603       | R3.0               | 12                     | 3°                   | 32                      | 100             | 8                   |
| HLB 0605       | R3.0               | 12                     | 5°                   | 35                      | 100             | 10                  |
| HLB 0603A      | R3.0               | 12                     | 3°                   | 32                      | 150             | 8                   |
| HLB 0605A      | R3.0               | 12                     | 5°                   | 35                      | 150             | 10                  |
| HLB 0803       | R4.0               | 16                     | 3°                   | 36                      | 100             | 10                  |
| HLB 0805       | R4.0               | 16                     | 5°                   | 39                      | 100             | 12                  |
| HLB 0803A      | R4.0               | 16                     | 3°                   | 36                      | 150             | 10                  |
| HLB 0805A      | R4.0               | 16                     | 5°                   | 39                      | 150             | 12                  |
| HLB 1003       | R5.0               | 20                     | 3°                   | 40                      | 100             | 12                  |
| HLB 1003A      | R5.0               | 20                     | 3°                   | 40                      | 150             | 12                  |
| HLB 1205       | R6.0               | 24                     | 5°                   | 47                      | 100             | 16                  |

## DEPTH OF CUT



## Recommended cutting condition for Taper Neck Ball Nose End Mills

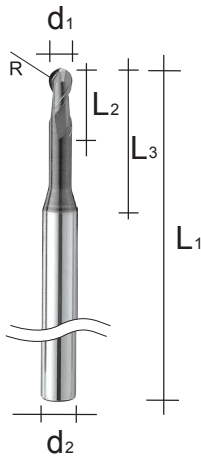
| Material | Carbon Steels, Alloy Steels<br>S45C,FC,FCD,SCM,S50C,SKS... |                | Alloy Steels,Tool Steels.SCr,<br>SNCM,SKD11,SKD61,NAK80... |                | Hardened Steels SKD11 |                |
|----------|------------------------------------------------------------|----------------|------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                     |                | ~HRC50                                                     |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                            | FEED<br>mm/min | SPEED<br>(mm-1)                                            | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 23000                                                      | 2000           | 22000                                                      | 1800           | 16000                 | 900            |
| 1.5      | 16000                                                      | 2000           | 15000                                                      | 1800           | 11000                 | 900            |
| 2        | 15000                                                      | 2400           | 14000                                                      | 2000           | 10000                 | 1300           |
| 3        | 13000                                                      | 3200           | 11000                                                      | 2000           | 9000                  | 1500           |

# High Speed Cutting & High Hard Cutting

Long Neck short 2 Flutes Ball Nose End Mills



長頸短刀 2刃球型立銑刀 極細微粒碳化鎢 高速極高硬度切削用



| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 有效長(L3)<br>Effective Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------------------|-----------------|---------------------|
| HNB 0402       | R0.2               | 0.8                    | 2                           | 50              | 4                   |
| HNB 0404       | R0.2               | 0.8                    | 4                           | 50              | 4                   |
| HNB 0504       | R0.25              | 1.0                    | 4                           | 50              | 4                   |
| HNB 0506       | R0.25              | 1.0                    | 6                           | 50              | 4                   |
| HNB 0604       | R0.3               | 1.2                    | 4                           | 50              | 4                   |
| HNB 0606       | R0.3               | 1.2                    | 6                           | 50              | 4                   |
| HNB 0608       | R0.3               | 1.2                    | 8                           | 50              | 4                   |
| HNB 0804       | R0.4               | 1.2                    | 4                           | 50              | 4                   |
| HNB 0806       | R0.4               | 1.2                    | 6                           | 50              | 4                   |
| HNB 0808       | R0.4               | 1.2                    | 8                           | 50              | 4                   |
| HNB 0810       | R0.4               | 1.2                    | 10                          | 50              | 4                   |
| HNB 1004       | R0.5               | 1.5                    | 4                           | 50              | 4                   |
| HNB 1006       | R0.5               | 1.5                    | 6                           | 50              | 4                   |
| HNB 1008       | R0.5               | 1.5                    | 8                           | 50              | 4                   |
| HNB 1010       | R0.5               | 1.5                    | 10                          | 50              | 4                   |
| HNB 1012       | R0.5               | 1.5                    | 12                          | 50              | 4                   |
| HNB 1506       | R0.75              | 3.0                    | 6                           | 50              | 4                   |
| HNB 1508       | R0.75              | 3.0                    | 8                           | 50              | 4                   |
| HNB 1512       | R0.75              | 3.0                    | 12                          | 50              | 4                   |
| HNB 1516       | R0.75              | 3.0                    | 16                          | 50              | 4                   |
| HNB 1520       | R0.75              | 3.0                    | 20                          | 50              | 4                   |
| HNB 2006       | R1.0               | 4.0                    | 6                           | 50              | 4                   |
| HNB 2008       | R1.0               | 4.0                    | 8                           | 50              | 4                   |
| HNB 2012       | R1.0               | 4.0                    | 12                          | 50              | 4                   |
| HNB 2016       | R1.0               | 4.0                    | 16                          | 50              | 4                   |
| HNB 2020       | R1.0               | 4.0                    | 20                          | 50              | 4                   |
| HNB 3008       | R1.5               | 4.0                    | 8                           | 50              | 4                   |
| HNB 3012       | R1.5               | 4.0                    | 12                          | 50              | 4                   |
| HNB 3016       | R1.5               | 4.0                    | 16                          | 50              | 4                   |
| HNB 3020       | R1.5               | 4.0                    | 20                          | 75              | 6                   |
| HNB 3025       | R1.5               | 4.0                    | 25                          | 75              | 6                   |
| HNB 4010       | R2.0               | 5.0                    | 10                          | 75              | 6                   |
| HNB 4016       | R2.0               | 5.0                    | 16                          | 75              | 6                   |
| HNB 4020       | R2.0               | 5.0                    | 20                          | 75              | 6                   |
| HNB 4025       | R2.0               | 5.0                    | 25                          | 75              | 6                   |
| HNB 4030       | R2.0               | 5.0                    | 30                          | 75              | 6                   |



# High Speed Cutting & High Hard Cutting

Long Neck short 2 Flutes Ball Nose End Mills



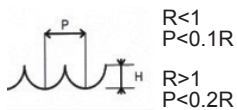
長頸短刃 2刃球型立銑刀 極細微粒碳化鎢 高速極高硬度切削用

Recommended cutting condition for

Long Neck Ball Nose End Mills Series

| Material | Alloy Steels.Tool Steels.Hardened Steels<br>S45C,SCM,S50C,SKS,SCr,SNCM,SKD11,SKD61,NAK80 |                  |              |             |
|----------|------------------------------------------------------------------------------------------|------------------|--------------|-------------|
|          | RADIUS                                                                                   | Effective Length | SPEED (mm-1) | FEED mm/min |
|          | 0.25                                                                                     | 4                | 30000-40000  | 200-650     |
|          | 0.25                                                                                     | 6                | 30000-40000  | 200-650     |
|          | 0.3                                                                                      | 4                | 27000-40000  | 180-650     |
|          | 0.3                                                                                      | 6                | 27000-40000  | 180-650     |
|          | 0.4                                                                                      | 6                | 25000-40000  | 400-750     |
|          | 0.4                                                                                      | 8                | 25000-40000  | 400-750     |
|          | 0.5                                                                                      | 6                | 20000-32000  | 500-750     |
|          | 0.5                                                                                      | 8                | 20000-32000  | 300-750     |
|          | 0.5                                                                                      | 10               | 20000-32000  | 300-750     |
|          | 0.5                                                                                      | 12               | 20000-32000  | 300-750     |
|          | 0.6                                                                                      | 8                | 22000-25000  | 500-600     |
|          | 0.6                                                                                      | 12               | 22000-25000  | 500-600     |
|          | 0.75                                                                                     | 8                | 18000-20000  | 300-550     |
|          | 0.75                                                                                     | 12               | 18000-20000  | 300-550     |
|          | 0.75                                                                                     | 16               | 18000-20000  | 300-550     |
|          | 0.75                                                                                     | 20               | 18000-20000  | 300-550     |
|          | 0.8                                                                                      | 8                | 13000-18000  | 350-800     |
|          | 0.8                                                                                      | 12               | 13000-18000  | 350-800     |
|          | 0.8                                                                                      | 16               | 13000-18000  | 350-800     |
|          | 1.0                                                                                      | 8                | 12000-17000  | 500-900     |
|          | 1.0                                                                                      | 12               | 12000-17000  | 500-900     |
|          | 1.0                                                                                      | 16               | 12000-17000  | 500-900     |
|          | 1.0                                                                                      | 20               | 12000-17000  | 500-900     |
|          | 1.5                                                                                      | 8                | 8000-11000   | 500-700     |
|          | 1.5                                                                                      | 10               | 8000-11000   | 500-700     |
|          | 1.5                                                                                      | 16               | 8000-11000   | 500-700     |
|          | 1.5                                                                                      | 20               | 8000-11000   | 500-700     |
|          | 1.5                                                                                      | 25               | 8000-11000   | 500-700     |
|          | 2.0                                                                                      | 10               | 5000-8000    | 400-600     |
|          | 2.0                                                                                      | 15               | 5000-8000    | 400-600     |
|          | 2.0                                                                                      | 20               | 5000-8000    | 400-600     |
|          | 2.0                                                                                      | 25               | 5000-8000    | 400-600     |
|          | 2.0                                                                                      | 30               | 5000-8000    | 400-600     |

DEPTH OF CUT



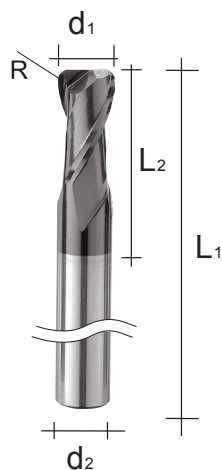


# High Speed Cutting & High Hard Cutting

## 2 Flutes Corner Radius Square End Mills



圓鼻 2刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

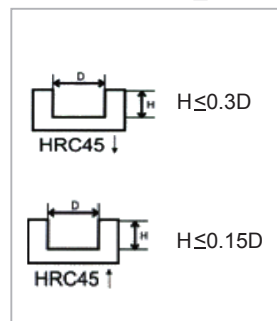


| 型號       | 刀徑(D1)   | R        | 刀長(L2)       | 全長(L1) | 柄徑(d2)    |
|----------|----------|----------|--------------|--------|-----------|
| Type No. | Diameter | Corner R | Flute Length | O.A.L  | Shank Dia |
| HNR 0102 | 1.0      | 0.2      | 2            | 50     | 4         |
| HNR 0202 | 2.0      | 0.2      | 4            | 50     | 4         |
| HNR 0205 | 2.0      | 0.5      | 4            | 50     | 4         |
| HNR 0302 | 3.0      | 0.2      | 6            | 50     | 4         |
| HNR 0305 | 3.0      | 0.5      | 6            | 50     | 4         |
| HNR 0310 | 3.0      | 1.0      | 6            | 50     | 4         |
| HNR 0402 | 4.0      | 0.2      | 8            | 50     | 4         |
| HNR 0405 | 4.0      | 0.5      | 8            | 50     | 4         |
| HNR 0410 | 4.0      | 1.0      | 8            | 50     | 4         |
| HNR 0602 | 6.0      | 0.2      | 12           | 50     | 6         |
| HNR 0605 | 6.0      | 0.5      | 12           | 50     | 6         |
| HNR 0610 | 6.0      | 1.0      | 12           | 50     | 6         |
| HNR 0620 | 6.0      | 2.0      | 12           | 60     | 6         |
| HNR 0805 | 8.0      | 0.5      | 16           | 60     | 8         |
| HNR 0810 | 8.0      | 1.0      | 16           | 60     | 8         |
| HNR 0820 | 8.0      | 2.0      | 16           | 60     | 8         |
| HNR 1005 | 10.0     | 0.5      | 20           | 75     | 10        |
| HNR 1010 | 10.0     | 1.0      | 20           | 75     | 10        |
| HNR 1020 | 10.0     | 2.0      | 20           | 75     | 10        |
| HNR 1205 | 12.0     | 0.5      | 24           | 75     | 12        |
| HNR 1210 | 12.0     | 1.0      | 24           | 75     | 12        |
| HNR 1220 | 12.0     | 2.0      | 24           | 75     | 12        |
| HNR 1230 | 12.0     | 3.0      | 24           | 75     | 12        |

### Recommended cutting condition for Corner Radius End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 3        | 7600                                                            | 180            | 4800                                                            | 120            | 2900                  | 50             |
| 4        | 6500                                                            | 260            | 4000                                                            | 160            | 2500                  | 55             |
| 5        | 5500                                                            | 270            | 3200                                                            | 160            | 2000                  | 60             |
| 6        | 4800                                                            | 300            | 2900                                                            | 170            | 1800                  | 70             |
| 8        | 3700                                                            | 325            | 2200                                                            | 170            | 1500                  | 85             |
| 10       | 2900                                                            | 280            | 1700                                                            | 140            | 1100                  | 70             |
| 12       | 2400                                                            | 230            | 1400                                                            | 120            | 1000                  | 65             |
| 16       | 1800                                                            | 170            | 1100                                                            | 90             | 700                   | 45             |

### DEPTH OF CUT

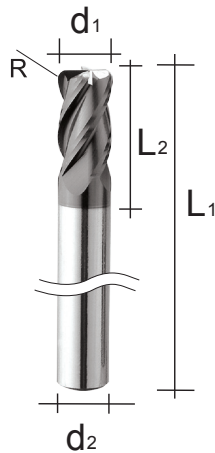


# High Speed Cutting & High Hard Cutting

## 4 Flutes Corner Radius End Mills



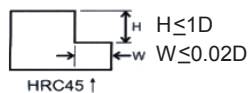
圓鼻 4刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用



| 型號       | 刀徑(D1)   | R        | 刃長(L2)       | 全長(L1) | 柄徑(d2)    |
|----------|----------|----------|--------------|--------|-----------|
| Type No. | Diameter | Corner R | Flute Length | O.A.L  | Shank Dia |
| HER 0102 | 1.0      | 0.2      | 2            | 50     | 4         |
| HER 0202 | 2.0      | 0.2      | 4            | 50     | 4         |
| HER 0205 | 2.0      | 0.5      | 4            | 50     | 4         |
| HER 0252 | 2.5      | 0.2      | 5            | 50     | 4         |
| HER 0255 | 2.5      | 0.5      | 5            | 50     | 4         |
| HER 0302 | 3.0      | 0.2      | 6            | 50     | 4         |
| HER 0305 | 3.0      | 0.5      | 6            | 50     | 4         |
| HER 0310 | 3.0      | 1.0      | 6            | 50     | 4         |
| HER 0402 | 4.0      | 0.2      | 8            | 50     | 4         |
| HER 0405 | 4.0      | 0.5      | 8            | 50     | 4         |
| HER 0410 | 4.0      | 1.0      | 8            | 50     | 4         |
| HER 0505 | 5.0      | 0.5      | 10           | 50     | 6         |
| HER 0510 | 5.0      | 1.0      | 10           | 50     | 6         |
| HER 0602 | 6.0      | 0.2      | 12           | 50     | 6         |
| HER 0605 | 6.0      | 0.5      | 12           | 50     | 6         |
| HER 0610 | 6.0      | 1.0      | 12           | 50     | 6         |
| HER 0615 | 6.0      | 1.5      | 12           | 50     | 6         |
| HER 0620 | 6.0      | 2.0      | 12           | 50     | 6         |
| HER 0805 | 8.0      | 0.5      | 16           | 60     | 8         |
| HER 0810 | 8.0      | 1.0      | 16           | 60     | 8         |
| HER 0820 | 8.0      | 2.0      | 16           | 60     | 8         |
| HER 1005 | 10.0     | 0.5      | 20           | 75     | 10        |
| HER 1010 | 10.0     | 1.0      | 20           | 75     | 10        |
| HER 1020 | 10.0     | 2.0      | 20           | 75     | 10        |
| HER 1030 | 10.0     | 3.0      | 20           | 75     | 10        |
| HER 1205 | 12.0     | 0.5      | 24           | 75     | 12        |
| HER 1210 | 12.0     | 1.0      | 24           | 75     | 12        |
| HER 1220 | 12.0     | 2.0      | 24           | 75     | 12        |
| HER 1230 | 12.0     | 3.0      | 24           | 75     | 12        |

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 2        | 26000                                                           | 1600           | 16500                                                          | 1000           | 7500                  | 300            |
| 3        | 19000                                                           | 1800           | 12000                                                          | 1200           | 5400                  | 380            |
| 4        | 16000                                                           | 3200           | 10000                                                          | 1900           | 4800                  | 480            |
| 5        | 14000                                                           | 3300           | 8000                                                           | 2000           | 3800                  | 500            |
| 6        | 12000                                                           | 3600           | 7200                                                           | 2200           | 3500                  | 650            |
| 8        | 9600                                                            | 4000           | 5600                                                           | 2200           | 2700                  | 750            |
| 10       | 7000                                                            | 3400           | 4400                                                           | 1700           | 2100                  | 650            |
| 12       | 6000                                                            | 2800           | 3600                                                           | 1400           | 1800                  | 600            |
| 16       | 4500                                                            | 2000           | 2800                                                           | 1000           | 1400                  | 450            |

### DEPTH OF CUT



# High Speed Cutting & High Hard Cutting

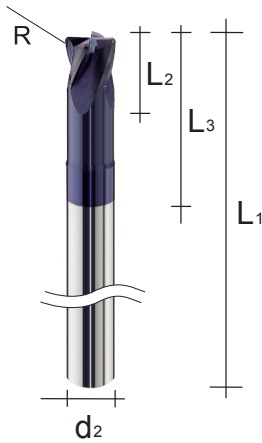
Short flute 4 Flutes Corner Radius End Mills



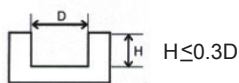
短刃 圓鼻4刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用



| 型號<br>Type No. | 刀徑(D1)<br>Diameter | R<br>Corner R | 刃長(L2)<br>Flute Length | 有效長(L3)<br>Effective Length | 全長(L1)<br>O.A.L. | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|---------------|------------------------|-----------------------------|------------------|---------------------|
| HMR 0605       | 6                  | 0.5           | 6                      | 15                          | 50               | 6                   |
| HMR 0610       | 6                  | 1.0           | 6                      | 15                          | 50               | 6                   |
| HMR 0805       | 8                  | 0.5           | 8                      | 20                          | 50               | 8                   |
| HMR 0810       | 8                  | 1.0           | 8                      | 20                          | 50               | 8                   |
| HMR 1010       | 10                 | 1.0           | 10                     | 25                          | 50               | 10                  |
| HMR 1020       | 10                 | 2.0           | 10                     | 25                          | 75               | 10                  |
| HMR 1030       | 10                 | 3.0           | 10                     | 25                          | 75               | 10                  |
| HMR 1210       | 12                 | 1.0           | 12                     | 30                          | 75               | 12                  |
| HMR 1220       | 12                 | 2.0           | 12                     | 30                          | 75               | 12                  |



## DEPTH OF CUT



## Recommended cutting condition for Corner Radius End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 6        | 12000                                                           | 12000          | 8000                                                           | 8000           | 5000                  | 4000           |
| 8        | 10000                                                           | 10000          | 8000                                                           | 8000           | 6000                  | 4800           |
| 10       | 7000                                                            | 5000           | 6000                                                           | 4000           | 4500                  | 2000           |
| 12       | 5000                                                            | 7000           | 4000                                                           | 6000           | 3000                  | 3000           |

# High Speed Cutting & High Hard Cutting

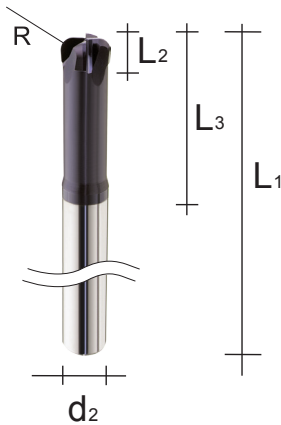
Heavy Cutting 4 Flutes Corner Radius End Mills



重切削 圓鼻4刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用



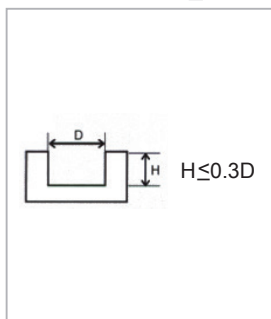
| 型號        | 直徑(D1)   | 頸徑(D1)   | R        | 刃長(L2)       | 有效長(L3)          | 全長(L1) | 柄徑(d2)    |
|-----------|----------|----------|----------|--------------|------------------|--------|-----------|
| Type No.  | Diameter | Diameter | Corner R | Flute Length | Effective Length | O.A.L. | Shank Dia |
| HXR 0615  | 6.0      | 5.4      | 1.5      | 3            | 18               | 50     | 6         |
| HXR 0615A | 6.0      | 5.4      | 1.5      | 3            | 18               | 75     | 6         |
| HXR 0820  | 8.0      | 7.2      | 2.0      | 4            | 24               | 60     | 8         |
| HXR 0820A | 8.0      | 7.2      | 2.0      | 4            | 24               | 75     | 8         |
| HXR 1020  | 10.0     | 9.0      | 2.0      | 5            | 30               | 75     | 10        |
| HXR 1020A | 10.0     | 9.0      | 2.0      | 5            | 30               | 100    | 10        |
| HXR 1230  | 12.0     | 11.0     | 3.0      | 6            | 36               | 75     | 12        |
| HXR 1230A | 12.0     | 11.0     | 3.0      | 6            | 36               | 100    | 12        |



## Recommended cutting condition for Corner Radius End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 2×0.8    | 30250                                                           | 9500           | 30400                                                           | 9050           | 22800                 | 6120           |
| 3×0.8    | 19950                                                           | 11850          | 19950                                                           | 11000          | 15200                 | 7250           |
| 4×1      | 15200                                                           | 11500          | 15200                                                           | 11400          | 11400                 | 7590           |
| 6×1.5    | 10050                                                           | 12500          | 10000                                                           | 11500          | 9050                  | 8150           |
| 8×2      | 7550                                                            | 13000          | 7550                                                            | 12050          | 5650                  | 8150           |
| 10×2     | 6030                                                            | 13000          | 4510                                                            | 9070           | 3040                  | 3610           |
| 12×3     | 5030                                                            | 13000          | 5030                                                            | 12050          | 3800                  | 8150           |

### DEPTH OF CUT



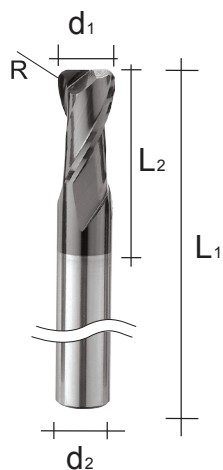


# High Speed Cutting & High Hard Cutting

2 Flutes Long Shank Corner Radius Square End Mills



長柄圓鼻 2刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用



| 型號        | 刀徑(D1)   | R        | 刀長(L2)       | 全長(L1) | 柄徑(d2)    |
|-----------|----------|----------|--------------|--------|-----------|
| Type No.  | Diameter | Corner R | Flute Length | O.A.L  | Shank Dia |
| HLNR 0402 | 4.0      | 0.2      | 8            | 75     | 4         |
| HLNR 0405 | 4.0      | 0.5      | 8            | 75     | 4         |
| HLNR 0410 | 4.0      | 1.0      | 8            | 75     | 4         |
| HLNR 0602 | 6.0      | 0.2      | 12           | 100    | 6         |
| HLNR 0605 | 6.0      | 0.5      | 12           | 100    | 6         |
| HLNR 0610 | 6.0      | 1.0      | 12           | 100    | 6         |
| HLNR 0620 | 6.0      | 2.0      | 12           | 100    | 6         |
| HLNR 0805 | 8.0      | 0.5      | 16           | 100    | 8         |
| HLNR 0810 | 8.0      | 1.0      | 16           | 100    | 8         |
| HLNR 0820 | 8.0      | 2.0      | 16           | 100    | 8         |
| HLNR 1005 | 10.0     | 0.5      | 20           | 100    | 10        |
| HLNR 1010 | 10.0     | 1.0      | 20           | 100    | 10        |
| HLNR 1020 | 10.0     | 2.0      | 20           | 100    | 10        |
| HLNR 1030 | 10.0     | 3.0      | 20           | 100    | 10        |
| HLNR 1205 | 12.0     | 0.5      | 24           | 100    | 12        |
| HLNR 1210 | 12.0     | 1.0      | 24           | 100    | 12        |
| HLNR 1220 | 12.0     | 2.0      | 20           | 100    | 12        |
| HLNR 1230 | 12.0     | 3.0      | 20           | 100    | 12        |

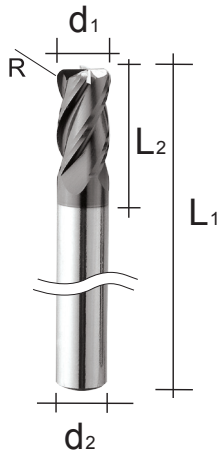


# High Speed Cutting & High Hard Cutting

4 Flutes Long Shank Corner Radius End Mills

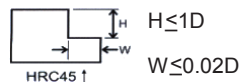
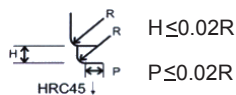


長柄圓鼻 4刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用



| 型號        | 直徑(D1)   | R        | 刃長(L2)       | 全長(L1) | 柄徑(d2)    |
|-----------|----------|----------|--------------|--------|-----------|
| Type No.  | Diameter | Corner R | Flute Length | O.A.L  | Shank Dia |
| HLR 0305  | 3.0      | 0.5      | 6            | 75     | 3         |
| HLR 0305A | 3.0      | 0.5      | 6            | 75     | 4         |
| HLR 0402  | 4.0      | 0.2      | 8            | 75     | 4         |
| HLR 0405  | 4.0      | 0.5      | 8            | 75     | 4         |
| HLR 0602  | 6.0      | 0.2      | 12           | 75     | 6         |
| HLR 0605  | 6.0      | 0.5      | 12           | 75     | 6         |
| HLR 0605A | 6.0      | 0.5      | 12           | 100    | 6         |
| HLR 0610  | 6.0      | 1.0      | 12           | 75     | 6         |
| HLR 0610A | 6.0      | 1.0      | 12           | 100    | 6         |
| HLR 0805  | 8.0      | 0.5      | 16           | 75     | 8         |
| HLR 0805A | 8.0      | 0.5      | 16           | 100    | 8         |
| HLR 0810  | 8.0      | 1.0      | 16           | 75     | 8         |
| HLR 0810A | 8.0      | 1.0      | 16           | 100    | 8         |
| HLR 1005  | 10.0     | 0.5      | 20           | 100    | 10        |
| HLR 1005A | 10.0     | 0.5      | 20           | 150    | 10        |
| HLR 1010  | 10.0     | 1.0      | 20           | 100    | 10        |
| HLR 1010A | 10.0     | 1.0      | 20           | 150    | 10        |
| HLR 1020  | 10.0     | 2.0      | 20           | 100    | 10        |
| HLR 1020A | 10.0     | 2.0      | 20           | 150    | 10        |
| HLR 1030  | 10.0     | 3.0      | 20           | 100    | 10        |
| HLR 1030A | 10.0     | 3.0      | 20           | 150    | 10        |
| HLR 1205  | 12.0     | 0.5      | 24           | 100    | 12        |
| HLR 1205A | 12.0     | 0.5      | 24           | 150    | 12        |
| HLR 1210  | 12.0     | 1.0      | 24           | 100    | 12        |
| HLR 1210A | 12.0     | 1.0      | 24           | 150    | 12        |
| HLR 1220  | 12.0     | 2.0      | 24           | 100    | 12        |
| HLR 1220A | 12.0     | 2.0      | 24           | 150    | 12        |
| HLR 1230  | 12.0     | 3.0      | 24           | 100    | 12        |
| HLR 1230A | 12.0     | 3.0      | 24           | 150    | 12        |

## DEPTH OF CUT



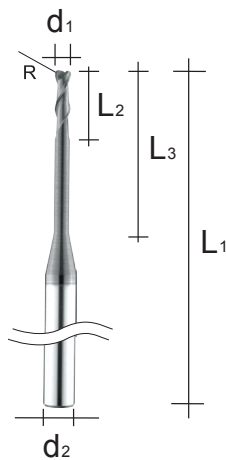
| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCR,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 2        | 26000                                                           | 1600           | 16500                                                           | 1000           | 7500                  | 300            |
| 3        | 19000                                                           | 1800           | 12000                                                           | 1200           | 5400                  | 380            |
| 4        | 16000                                                           | 3200           | 10000                                                           | 1900           | 4800                  | 480            |
| 5        | 14000                                                           | 3300           | 8000                                                            | 2000           | 3800                  | 500            |
| 6        | 12000                                                           | 3600           | 7200                                                            | 2200           | 3500                  | 650            |
| 8        | 9600                                                            | 4000           | 5600                                                            | 2200           | 2700                  | 750            |
| 10       | 7000                                                            | 3400           | 4400                                                            | 1700           | 2100                  | 650            |
| 12       | 6000                                                            | 2800           | 3600                                                            | 1400           | 1800                  | 600            |

# High Speed Cutting & High Hard Cutting

2 Flutes Long Neck Corner Radius End Mills



長頸短刃圓鼻 2刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用



| 型號<br>Type No. | 刃徑(D1)<br>Diameter | R<br>Corner R | 刃長(L2)<br>Flute Length | 有效長(L3)<br>Effective Length | 全長(L1)<br>O.A.L. | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|---------------|------------------------|-----------------------------|------------------|---------------------|
| HNMR 1004      | 1.0                | 0.2           | 2.0                    | 4                           | 50               | 4                   |
| HNMR 1006      | 1.0                | 0.2           | 2.0                    | 6                           | 50               | 4                   |
| HNMR 1008      | 1.0                | 0.2           | 2.0                    | 8                           | 50               | 4                   |
| HNMR 1012      | 1.0                | 0.2           | 2.0                    | 12                          | 50               | 4                   |
| HNMR 1504      | 1.5                | 0.2           | 2.0                    | 4                           | 50               | 4                   |
| HNMR 1506      | 1.5                | 0.2           | 2.0                    | 6                           | 50               | 4                   |
| HNMR 1508      | 1.5                | 0.2           | 2.0                    | 8                           | 50               | 4                   |
| HNMR 1512      | 1.5                | 0.2           | 2.0                    | 12                          | 50               | 4                   |
| HNMR 2008      | 2.0                | 0.2           | 4.0                    | 8                           | 50               | 4                   |
| HNMR 2010      | 2.0                | 0.2           | 4.0                    | 10                          | 50               | 4                   |
| HNMR 2012      | 2.0                | 0.2           | 4.0                    | 12                          | 50               | 4                   |
| HNMR 2016      | 2.0                | 0.2           | 4.0                    | 16                          | 50               | 4                   |
| HNMR 2008A     | 2.0                | 0.5           | 4.0                    | 8                           | 50               | 4                   |
| HNMR 2010A     | 2.0                | 0.5           | 4.0                    | 10                          | 50               | 4                   |
| HNMR 2012A     | 2.0                | 0.5           | 4.0                    | 12                          | 50               | 4                   |
| HNMR 2016A     | 2.0                | 0.5           | 4.0                    | 16                          | 50               | 4                   |
| HNMR 3008A     | 3.0                | 0.5           | 6.0                    | 8                           | 50               | 4                   |
| HNMR 3012A     | 3.0                | 0.5           | 6.0                    | 12                          | 50               | 4                   |
| HNMR 3016A     | 3.0                | 0.5           | 6.0                    | 16                          | 50               | 6                   |
| HNMR 3020A     | 3.0                | 0.5           | 6.0                    | 20                          | 50               | 6                   |
| HNMR 0308      | 3.0                | 0.2           | 6.0                    | 8                           | 50               | 4                   |
| HNMR 0312      | 3.0                | 0.2           | 6.0                    | 12                          | 50               | 4                   |
| HNMR 0316      | 3.0                | 0.2           | 6.0                    | 16                          | 50               | 4                   |
| HNMR 0320      | 3.0                | 0.2           | 6.0                    | 20                          | 50               | 4                   |
| HNMR 4012A     | 4.0                | 0.5           | 8.0                    | 12                          | 50               | 6                   |
| HNMR 4016A     | 4.0                | 0.5           | 8.0                    | 16                          | 75               | 6                   |
| HNMR 4020A     | 4.0                | 0.5           | 8.0                    | 20                          | 75               | 6                   |
| HNMR 4025A     | 4.0                | 0.5           | 8.0                    | 25                          | 75               | 6                   |
| HNMR 4030A     | 4.0                | 0.5           | 8.0                    | 30                          | 75               | 6                   |
| HNMR 0412      | 4.0                | 0.2           | 8.0                    | 12                          | 50               | 6                   |
| HNMR 0416      | 4.0                | 0.2           | 8.0                    | 16                          | 75               | 6                   |
| HNMR 0420      | 4.0                | 0.2           | 8.0                    | 20                          | 75               | 6                   |
| HNMR 0425      | 4.0                | 0.2           | 8.0                    | 25                          | 75               | 6                   |
| HNMR 0430      | 4.0                | 0.2           | 8.0                    | 30                          | 75               | 6                   |

# High Speed Cutting & High Hard Cutting

## 2 Flutes Long Neck Corner Radius End Mills

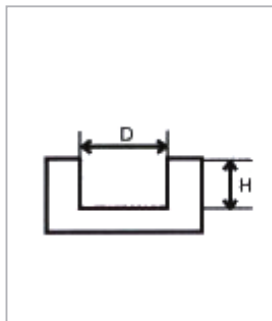


長頸短刃圓鼻 2刃立銑刀 極細微粒碳化鎢 高速極高硬度切削用

### Recommended cutting condition for Corner Radius Long Neck End Mills

| Material | Alloy Steels.Tool Steels.Hardened Steels     |              |             |              |
|----------|----------------------------------------------|--------------|-------------|--------------|
|          | S45C,SCM,S50C,SKS,SCr,SNCM,SKD11,SKD61,NAK80 |              |             |              |
| RADIUS   | Effective Length                             | SPEED (mm-1) | FEED mm/min | DEPTH OF CUT |
| 1        | 4                                            | 30000        | 2200        | 0.15         |
| 1        | 6                                            | 30000        | 2200        | 0.12         |
| 1        | 8                                            | 30000        | 2200        | 0.12         |
| 1        | 10                                           | 30000        | 2200        | 0.12         |
| 1.5      | 4                                            | 25000        | 1800        | 0.20         |
| 1.5      | 6                                            | 25000        | 1800        | 0.18         |
| 1.5      | 8                                            | 25000        | 1800        | 0.15         |
| 1.5      | 10                                           | 25000        | 1800        | 0.15         |
| 1.5      | 12                                           | 25000        | 1800        | 0.15         |
| 2        | 8                                            | 20000        | 1500        | 0.30         |
| 2        | 10                                           | 20000        | 1500        | 0.30         |
| 2        | 12                                           | 20000        | 1500        | 0.25         |
| 2        | 16                                           | 20000        | 1500        | 0.25         |
| 3        | 8                                            | 12000        | 900         | 0.40         |
| 3        | 12                                           | 12000        | 900         | 0.40         |
| 3        | 16                                           | 12000        | 900         | 0.30         |
| 3        | 20                                           | 12000        | 900         | 0.30         |
| 4        | 10                                           | 9000         | 850         | 0.50         |
| 4        | 16                                           | 9000         | 850         | 0.40         |

「DEPTH OF CUT」



# End Mills Series

2 Flutes Square End Mills  
3 Flutes Square End Mills  
4 Flutes Square End Mills  
4 Flutes Long Shank Square End Mills  
4 Flutes Short Length Long Square End Mills  
2 Flutes short Length Long Square End Mills  
2 Flutes Long Short Length Square End Mills

## 平刀系列



# End Mills Series

## 2 Flutes Square End Mills

MG

0.6  
μm

CO  
10%

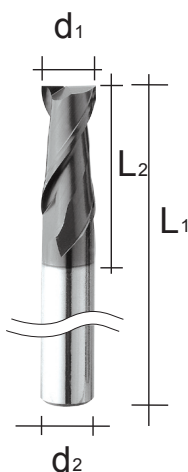
HRC  
55

TIALN

35°

2 Flutes

2刃立銑刀 超微粒碳化鎢 立銑刀系列

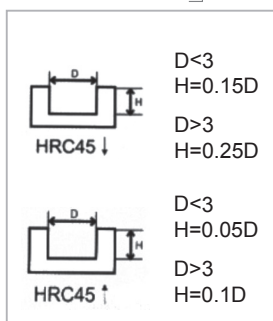


| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| JE 0102        | 1.0                | 3                      | 50              | 4                   |
| JE 0152        | 1.5                | 4                      | 50              | 4                   |
| JE 0202        | 2.0                | 6                      | 50              | 4                   |
| JE 0252        | 2.5                | 7                      | 50              | 4                   |
| JE 0302        | 3.0                | 8                      | 50              | 4                   |
| JE 0302A       | 3.0                | 8                      | 50              | 3                   |
| JE 0402        | 4.0                | 11                     | 50              | 4                   |
| JE 0502        | 5.0                | 13                     | 50              | 6                   |
| JE 0602        | 6.0                | 15                     | 50              | 6                   |
| JE 0802        | 8.0                | 20                     | 60              | 8                   |
| JE 1002        | 10.0               | 30                     | 75              | 10                  |
| JE 1202        | 12.0               | 30                     | 75              | 12                  |
| JE 1402        | 14.0               | 45                     | 100             | 16                  |
| JE 1602        | 16.0               | 45                     | 100             | 16                  |
| JE 1802        | 18.0               | 45                     | 100             | 20                  |
| JE 2002        | 20.0               | 50                     | 100             | 20                  |
| JE 2502        | 25.0               | 50                     | 100             | 25                  |

### Recommended cutting condition for Roughing Cut Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 20000                                                           | 80             | 15000                                                           | 45             | 11000                 | 30             |
| 1.5      | 13600                                                           | 135            | 10000                                                           | 60             | 9000                  | 40             |
| 2        | 9600                                                            | 150            | 8500                                                            | 50             | 6000                  | 45             |
| 3        | 6500                                                            | 200            | 5800                                                            | 75             | 4000                  | 60             |
| 4        | 5500                                                            | 250            | 4000                                                            | 80             | 3200                  | 60             |
| 5        | 4500                                                            | 300            | 3000                                                            | 80             | 2500                  | 70             |
| 6        | 4000                                                            | 300            | 2500                                                            | 80             | 2200                  | 70             |
| 8        | 3500                                                            | 350            | 2200                                                            | 90             | 1700                  | 70             |
| 10       | 3000                                                            | 400            | 2000                                                            | 90             | 1500                  | 70             |
| 12       | 2500                                                            | 400            | 1500                                                            | 100            | 1000                  | 70             |
| 16       | 2000                                                            | 400            | 1200                                                            | 100            | 800                   | 70             |

### 「DEPTH OF CUT」

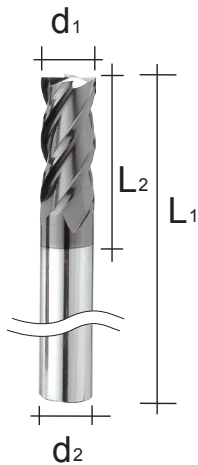


# End Mills Series

## 4 Flutes Square End Mills



4刃立銑刀 超微粒碳化鎢 立銑刀系列

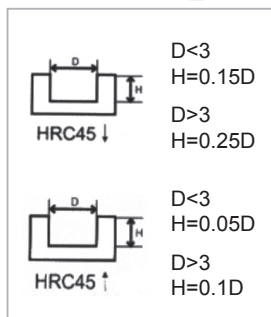


| 型號        | 直徑(D1)   | 刀長(L2)       | 全長(L1) | 柄徑(d2)    |
|-----------|----------|--------------|--------|-----------|
| Type No.  | Diameter | Flute Length | O.A.L. | Shank Dia |
| JEA 0104  | 1.0      | 3            | 50     | 4         |
| JEA 0154  | 1.5      | 4            | 50     | 4         |
| JEA 0204  | 2.0      | 6            | 50     | 4         |
| JEA 0254  | 2.5      | 7            | 50     | 4         |
| JEA 0304  | 3.0      | 8            | 50     | 4         |
| JEA 0304A | 3.0      | 8            | 50     | 3         |
| JEA 0404  | 4.0      | 11           | 50     | 4         |
| JEA 0504  | 5.0      | 13           | 50     | 6         |
| JEA 0604  | 6.0      | 15           | 50     | 6         |
| JEA 0804  | 8.0      | 20           | 60     | 8         |
| JEA 1004  | 10.0     | 30           | 75     | 10        |
| JEA 1204  | 12.0     | 30           | 75     | 12        |
| JEA 1404  | 14.0     | 45           | 100    | 16        |
| JEA 1604  | 16.0     | 45           | 100    | 16        |
| JEA 1804  | 18.0     | 45           | 100    | 20        |
| JEA 2004  | 20.0     | 50           | 100    | 20        |
| JEA 2504  | 25.0     | 50           | 100    | 25        |

### Recommended cutting condition for Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCR,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 20000                                                           | 80             | 15000                                                          | 45             | 11000                 | 30             |
| 1.5      | 13600                                                           | 135            | 10000                                                          | 60             | 9000                  | 40             |
| 2        | 9600                                                            | 150            | 8500                                                           | 50             | 6000                  | 45             |
| 3        | 6500                                                            | 200            | 5800                                                           | 75             | 4000                  | 60             |
| 4        | 5500                                                            | 250            | 4000                                                           | 80             | 3200                  | 60             |
| 5        | 4500                                                            | 300            | 3000                                                           | 80             | 2500                  | 70             |
| 6        | 4000                                                            | 300            | 2500                                                           | 80             | 2200                  | 70             |
| 8        | 3500                                                            | 350            | 2200                                                           | 90             | 1700                  | 70             |
| 10       | 3000                                                            | 400            | 2000                                                           | 90             | 1500                  | 70             |
| 12       | 2500                                                            | 400            | 1500                                                           | 100            | 1000                  | 70             |
| 16       | 2000                                                            | 400            | 1200                                                           | 100            | 800                   | 70             |

### 「DEPTH OF CUT」





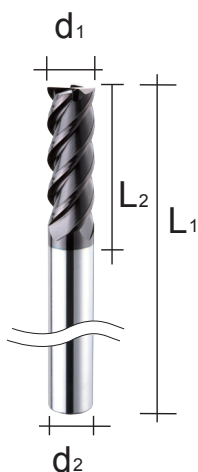


# End Mills Series

## 4 Flutes Square End Mills



4刃立銑刀 超微粒碳化鎢 立銑刀系列

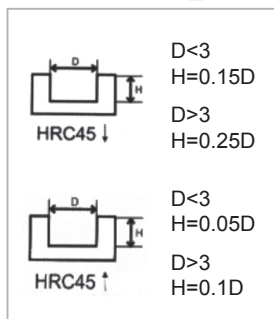


| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刀長(L2)<br>Flute Length | 全長(L1)<br>O.A.L. | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|------------------|---------------------|
| JE 0104        | 1.0                | 3                      | 50               | 4                   |
| JE 0154        | 1.5                | 4                      | 50               | 4                   |
| JE 0204        | 2.0                | 6                      | 50               | 4                   |
| JE 0254        | 2.5                | 7                      | 50               | 4                   |
| JE 0304        | 3.0                | 8                      | 50               | 4                   |
| JE 0304A       | 3.0                | 8                      | 50               | 3                   |
| JE 0404        | 4.0                | 11                     | 50               | 4                   |
| JE 0504        | 5.0                | 13                     | 50               | 6                   |
| JE 0604        | 6.0                | 15                     | 50               | 6                   |
| JE 0804        | 8.0                | 20                     | 60               | 8                   |
| JE 1004        | 10.0               | 30                     | 75               | 10                  |
| JE 1204        | 12.0               | 30                     | 75               | 12                  |
| JE 1404        | 14.0               | 45                     | 100              | 16                  |
| JE 1604        | 16.0               | 45                     | 100              | 16                  |
| JE 1804        | 18.0               | 45                     | 100              | 20                  |
| JE 2004        | 20.0               | 50                     | 100              | 20                  |
| JE 2504        | 25.0               | 50                     | 100              | 25                  |

### Recommended cutting condition for Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 20000                                                           | 80             | 15000                                                           | 45             | 11000                 | 30             |
| 1.5      | 13600                                                           | 135            | 10000                                                           | 60             | 9000                  | 40             |
| 2        | 9600                                                            | 150            | 8500                                                            | 50             | 6000                  | 45             |
| 3        | 6500                                                            | 200            | 5800                                                            | 75             | 4000                  | 60             |
| 4        | 5500                                                            | 250            | 4000                                                            | 80             | 3200                  | 60             |
| 5        | 4500                                                            | 300            | 3000                                                            | 80             | 2500                  | 70             |
| 6        | 4000                                                            | 300            | 2500                                                            | 80             | 2200                  | 70             |
| 8        | 3500                                                            | 350            | 2200                                                            | 90             | 1700                  | 70             |
| 10       | 3000                                                            | 400            | 2000                                                            | 90             | 1500                  | 70             |
| 12       | 2500                                                            | 400            | 1500                                                            | 100            | 1000                  | 70             |
| 16       | 2000                                                            | 400            | 1200                                                            | 100            | 800                   | 70             |

### 「DEPTH OF CUT」





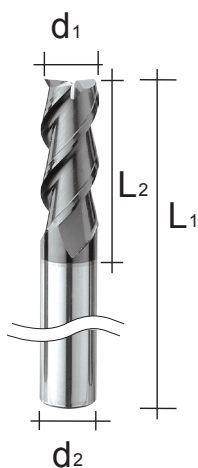
# End Mills Series

## 3 Flutes Square End Mills



3刃立銑刀 超微粒碳化鎢 立銑刀系列

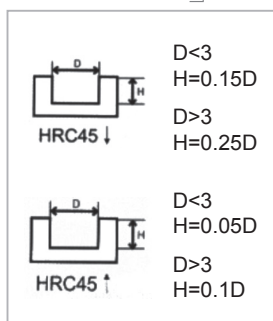
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| JEF 0103       | 1.0                | 3                      | 50              | 4                   |
| JEF 0203       | 2.0                | 6                      | 50              | 4                   |
| JEF 0303       | 3.0                | 8                      | 50              | 4                   |
| JEF 0403       | 4.0                | 11                     | 50              | 4                   |
| JEF 0503       | 5.0                | 13                     | 50              | 6                   |
| JEF 0603       | 6.0                | 15                     | 50              | 6                   |
| JEF 0803       | 8.0                | 20                     | 60              | 8                   |
| JEF 1003       | 10.0               | 30                     | 75              | 10                  |
| JEF 1203       | 12.0               | 30                     | 75              | 12                  |
| JEF 1603       | 16.0               | 45                     | 100             | 16                  |
| JEF 2003       | 20.0               | 50                     | 100             | 20                  |
| JEF 2503       | 25.0               | 50                     | 100             | 25                  |



### Recommended cutting condition for Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 3        | 8000                                                            | 550(300)       | 5500                                                            | 300(100)       | 3500                  | 200(95)        |
| 4        | 6500                                                            | 550(300)       | 4500                                                            | 300(100)       | 2200                  | 200(95)        |
| 5        | 5000                                                            | 800(400)       | 3600                                                            | 350(120)       | 1800                  | 210(100)       |
| 6        | 4000                                                            | 800(400)       | 2800                                                            | 350(120)       | 1500                  | 210(110)       |
| 8        | 3500                                                            | 800(400)       | 2600                                                            | 350(120)       | 1300                  | 210(100)       |
| 10       | 2500                                                            | 800(400)       | 2000                                                            | 350(120)       | 1100                  | 210(100)       |
| 12       | 1800                                                            | 750(350)       | 1500                                                            | 350(120)       | 700                   | 210(100)       |
| 16       | 1400                                                            | 700(300)       | 1000                                                            | 300(100)       | 500                   | 170(70)        |

### 「DEPTH OF CUT」

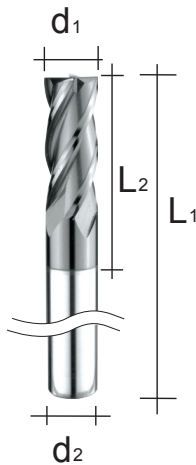


# End Mills Series

4 Flutes Long Shank Square End Mills



長柄型 4刃立銑刀 超微粒碳化鎢 立銑刀系列

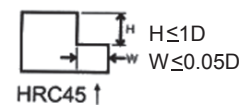
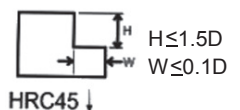


| 型號        | 直徑(D1)   | 刃長(L2)       | 全長(L1) | 柄徑(d2)    |
|-----------|----------|--------------|--------|-----------|
| Type No.  | Diameter | Flute Length | O.A.L  | Shank Dia |
| JEL 0104  | 1.0      | 3            | 75     | 4         |
| JEL 0104A | 1.0      | 3            | 100    | 6         |
| JEL 0154  | 1.5      | 4.5          | 75     | 4         |
| JEL 0154A | 1.5      | 4.5          | 100    | 6         |
| JEL 0204  | 2.0      | 6            | 75     | 4         |
| JEL 0204A | 2.0      | 6            | 100    | 6         |
| JEL 0304  | 3.0      | 8            | 75     | 4         |
| JEL 0304A | 3.0      | 8            | 100    | 6         |
| JEL 0404  | 4.0      | 10           | 75     | 4         |
| JEL 0404A | 4.0      | 10           | 100    | 6         |
| JEL 0504  | 5.0      | 13           | 75     | 6         |
| JEL 0504A | 5.0      | 13           | 100    | 6         |
| JEL 0604  | 6.0      | 15           | 75     | 6         |
| JEL 0604A | 6.0      | 15           | 100    | 6         |
| JEL 0604B | 6.0      | 15           | 150    | 6         |
| JEL 0804  | 8.0      | 20           | 75     | 8         |
| JEL 0804A | 8.0      | 20           | 100    | 8         |
| JEL 0804B | 8.0      | 20           | 150    | 8         |
| JEL 1004  | 10.0     | 30           | 100    | 10        |
| JEL 1004A | 10.0     | 30           | 150    | 10        |
| JEL 1204  | 12.0     | 30           | 100    | 12        |
| JEL 1204A | 12.0     | 30           | 150    | 12        |
| JEL 1604  | 16.0     | 45           | 150    | 16        |
| JEL 1604A | 16.0     | 45           | 200    | 16        |
| JEL 2004  | 20.0     | 50           | 150    | 20        |
| JEL 2004A | 20.0     | 50           | 200    | 20        |

## Recommended cutting condition for Long Shank Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 20000                                                           | 80             | 15000                                                          | 45             | 11000                 | 30             |
| 1.5      | 13600                                                           | 135            | 10000                                                          | 60             | 9000                  | 40             |
| 2        | 9600                                                            | 150            | 8500                                                           | 50             | 6000                  | 45             |
| 3        | 6500                                                            | 200            | 5800                                                           | 75             | 4000                  | 60             |
| 4        | 5500                                                            | 250            | 4000                                                           | 80             | 3200                  | 60             |
| 5        | 4500                                                            | 300            | 3000                                                           | 80             | 2500                  | 70             |
| 6        | 4000                                                            | 300            | 2500                                                           | 80             | 2200                  | 70             |
| 8        | 3500                                                            | 350            | 2200                                                           | 90             | 1700                  | 70             |
| 10       | 3000                                                            | 400            | 2000                                                           | 90             | 1500                  | 70             |
| 12       | 2500                                                            | 400            | 1500                                                           | 100            | 1000                  | 70             |
| 16       | 2000                                                            | 400            | 1200                                                           | 100            | 800                   | 70             |

## DEPTH OF CUT

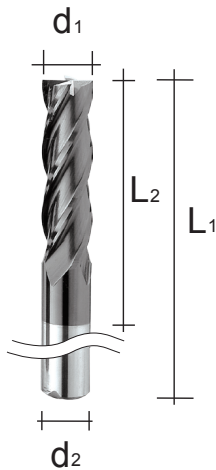


# End Mills Series

4 Flutes Short Length Long Square End Mills



長刃型 4刃立銑刀 超微粒碳化鎢 立銑刀系列

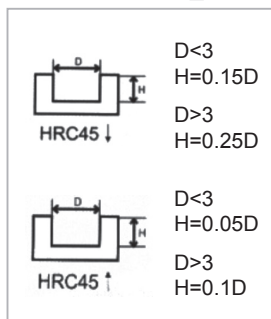


| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刀長(L2)<br>Flute Length | 全長(L1)<br>O.A.L. | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|------------------|---------------------|
| JELF 0204      | 2.0                | 15                     | 75               | 4                   |
| JELF 0304      | 3.0                | 15                     | 75               | 6                   |
| JELF 0404      | 4.0                | 20                     | 75               | 6                   |
| JELF 0504      | 5.0                | 25                     | 75               | 6                   |
| JELF 0604      | 6.0                | 25                     | 75               | 6                   |
| JELF 0604A     | 6.0                | 30                     | 100              | 6                   |
| JELF 0804      | 8.0                | 25                     | 75               | 8                   |
| JELF 0804A     | 8.0                | 35                     | 100              | 8                   |
| JELF 1004      | 10.0               | 45                     | 100              | 10                  |
| JELF 1004A     | 10.0               | 50                     | 150              | 10                  |
| JELF 1204      | 12.0               | 45                     | 100              | 12                  |
| JELF 1204A     | 12.0               | 50                     | 150              | 12                  |
| JELF 1404      | 14.0               | 60                     | 150              | 16                  |
| JELF 1604      | 16.0               | 75                     | 150              | 16                  |
| JELF 1804      | 18.0               | 75                     | 150              | 20                  |
| JELF 2004      | 20.0               | 75                     | 150              | 20                  |

## Recommended cutting condition for Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 2        | 3000                                                            | 25             | 1700                                                            | 20             | 1000                  | 15             |
| 3        | 2300                                                            | 35             | 1900                                                            | 25             | 800                   | 10             |
| 4        | 2000                                                            | 45             | 1600                                                            | 35             | 650                   | 15             |
| 5        | 1800                                                            | 40             | 1400                                                            | 40             | 600                   | 20             |
| 6        | 1700                                                            | 60             | 1300                                                            | 50             | 550                   | 25             |
| 8        | 1300                                                            | 60             | 1000                                                            | 50             | 450                   | 25             |
| 10       | 1000                                                            | 60             | 800                                                             | 50             | 350                   | 25             |
| 12       | 800                                                             | 60             | 700                                                             | 50             | 300                   | 25             |
| 16       | 700                                                             | 50             | 600                                                             | 40             | 250                   | 20             |
| 20       | 500                                                             | 40             | 400                                                             | 30             | 200                   | 20             |

## DEPTH OF CUT

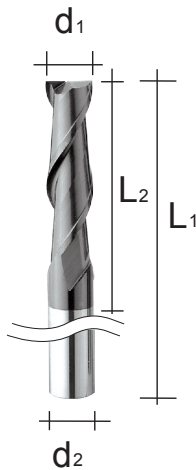


# End Mills Series

2 Flutes short Length Long Square End Mills



長刃型 2刃立銑刀 超微粒碳化鎢 立銑刀系列

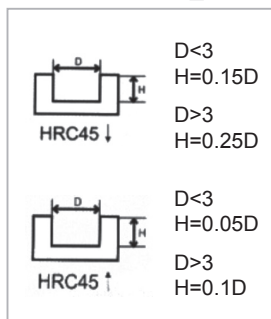


| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L. | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|------------------|---------------------|
| JELF 0202      | 2.0                | 15                     | 75               | 4                   |
| JELF 0302      | 3.0                | 15                     | 75               | 4                   |
| JELF 0402      | 4.0                | 20                     | 75               | 4                   |
| JELF 0502      | 5.0                | 25                     | 75               | 6                   |
| JELF 0602      | 6.0                | 25                     | 75               | 6                   |
| JELF 0602A     | 6.0                | 30                     | 100              | 6                   |
| JELF 0802      | 8.0                | 25                     | 75               | 8                   |
| JELF 0802A     | 8.0                | 35                     | 100              | 8                   |
| JELF 1002      | 10.0               | 40                     | 100              | 10                  |
| JELF 1002A     | 10.0               | 40                     | 150              | 10                  |
| JELF 1202      | 12.0               | 45                     | 100              | 12                  |
| JELF 1202A     | 12.0               | 45                     | 150              | 12                  |
| JELF 1402      | 14.0               | 60                     | 150              | 16                  |
| JELF 1602      | 16.0               | 75                     | 150              | 16                  |
| JELF 1802      | 18.0               | 75                     | 150              | 20                  |
| JELF 2002      | 20.0               | 75                     | 150              | 20                  |

## Recommended cutting condition for Long Flute Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCR,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 2        | 3000                                                            | 50             | 2500                                                            | 40             | 1000                  | 15             |
| 3        | 2500                                                            | 60             | 2000                                                            | 50             | 800                   | 20             |
| 4        | 2000                                                            | 80             | 1700                                                            | 70             | 700                   | 30             |
| 5        | 1800                                                            | 110            | 1500                                                            | 85             | 600                   | 40             |
| 6        | 1500                                                            | 110            | 1400                                                            | 75             | 550                   | 50             |
| 8        | 1300                                                            | 110            | 1100                                                            | 75             | 450                   | 50             |
| 10       | 1000                                                            | 110            | 800                                                             | 75             | 300                   | 50             |
| 12       | 900                                                             | 110            | 700                                                             | 75             | 250                   | 40             |
| 16       | 800                                                             | 95             | 500                                                             | 70             | 150                   | 20             |
| 20       | 500                                                             | 80             | 400                                                             | 60             | 120                   | 20             |

## DEPTH OF CUT



# End Mills Series

2 Flutes Long Short Length Square End Mills



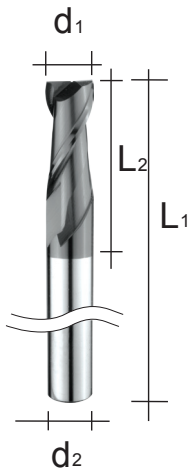
長柄型 2刃立銑刀 超微粒碳化鎢 立銑刀系列



| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| JEL 0102       | 1.0                | 3                      | 75              | 4                   |
| JEL 0202       | 2.0                | 6                      | 75              | 4                   |
| JEL 0302       | 3.0                | 8                      | 75              | 4                   |
| JEL 0402       | 4.0                | 10                     | 75              | 4                   |
| JEL 0502       | 5.0                | 13                     | 75              | 6                   |
| JEL 0602       | 6.0                | 15                     | 75              | 6                   |
| JEL 0802       | 8.0                | 20                     | 75              | 8                   |

| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| JEI 0302       | 3.0                | 8                      | 100             | 4                   |
| JEI 0302A      | 3.0                | 8                      | 100             | 6                   |
| JEI 0402       | 4.0                | 10                     | 100             | 4                   |
| JEI 0402A      | 4.0                | 10                     | 100             | 6                   |
| JEI 0502       | 5.0                | 13                     | 100             | 6                   |
| JEI 0602       | 6.0                | 15                     | 100             | 6                   |
| JEI 0802       | 8.0                | 20                     | 100             | 8                   |
| JEI 1002       | 10.0               | 25                     | 100             | 10                  |
| JEI 1202       | 12.0               | 30                     | 100             | 12                  |

| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| JEJ 0602       | 6.0                | 15                     | 150             | 6                   |
| JEJ 0802       | 8.0                | 20                     | 150             | 8                   |
| JEJ 1002       | 10.0               | 25                     | 150             | 10                  |
| JEJ 1202       | 12.0               | 30                     | 150             | 12                  |
| JEJ 1402       | 14.0               | 45                     | 150             | 16                  |
| JEJ 1602       | 16.0               | 45                     | 150             | 16                  |
| JEJ 1802       | 18.0               | 45                     | 150             | 20                  |
| JEJ 2002       | 20.0               | 50                     | 150             | 20                  |





# End Mills Series

## 2 Flutes Long Short Length Square End Mills

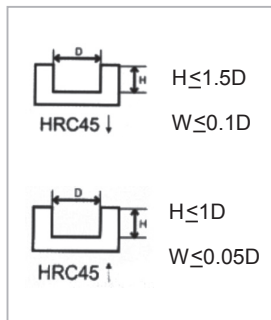


長柄型 2刃立銑刀 超微粒碳化鎢 立銑刀系列

### Recommended cutting condition for Long Shank Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 20000                                                           | 80             | 15000                                                           | 45             | 11000                 | 30             |
| 1.5      | 13600                                                           | 135            | 10000                                                           | 60             | 9000                  | 40             |
| 2        | 9600                                                            | 150            | 8500                                                            | 50             | 6000                  | 45             |
| 3        | 6500                                                            | 200            | 5800                                                            | 75             | 4000                  | 60             |
| 4        | 5500                                                            | 250            | 4000                                                            | 80             | 3200                  | 60             |
| 5        | 4500                                                            | 300            | 3000                                                            | 80             | 2500                  | 70             |
| 6        | 4000                                                            | 300            | 2500                                                            | 80             | 2200                  | 70             |
| 8        | 3500                                                            | 350            | 2200                                                            | 90             | 1700                  | 70             |
| 10       | 3000                                                            | 400            | 2000                                                            | 90             | 1500                  | 70             |
| 12       | 2500                                                            | 400            | 1500                                                            | 100            | 1000                  | 70             |
| 16       | 2000                                                            | 400            | 1200                                                            | 100            | 800                   | 70             |

### DEPTH OF CUT

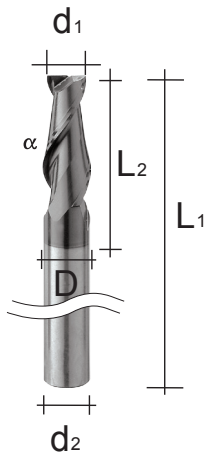


# End Mills Series

## 2 Flutes Taper Square End Mills



斜度刀 2刃立銑刀 超微粒碳化鎢 平刀系列



| 型號         | 先端徑(D1)        | 刀長(L2)       | 斜度(α)        | 粗端徑(D)         | 全長(L1) | 柄徑(d2)    |
|------------|----------------|--------------|--------------|----------------|--------|-----------|
| Type No.   | Small Mill Dia | Flute Length | Flute Length | Large Mill Dia | O.A.L. | Shank Dia |
| JTA 010005 | 1.0            | 4            | 0.5°         | 1.07           | 50     | 4         |
| JTA 010010 | 1.0            | 4            | 1°           | 1.14           | 50     | 4         |
| JTA 010015 | 1.0            | 4            | 1.5°         | 1.21           | 50     | 4         |
| JTA 010020 | 1.0            | 4            | 2°           | 1.28           | 50     | 4         |
| JTA 010025 | 1.0            | 4            | 2.5°         | 1.35           | 50     | 4         |
| JTA 010030 | 1.0            | 4            | 3°           | 1.42           | 50     | 4         |
| JTA 010050 | 1.0            | 5            | 5°           | 1.7            | 50     | 4         |
| JTA 010070 | 1.0            | 5            | 7°           | 1.98           | 50     | 4         |
| JTA 010100 | 1.5            | 5            | 10°          | 2.41           | 50     | 4         |
| JTA 015005 | 1.5            | 5            | 0.5°         | 1.59           | 50     | 4         |
| JTA 015010 | 1.5            | 5            | 1°           | 1.67           | 50     | 4         |
| JTA 015015 | 1.5            | 5            | 1.5°         | 1.76           | 50     | 4         |
| JTA 015020 | 1.5            | 5            | 2°           | 1.85           | 50     | 4         |
| JTA 015025 | 1.5            | 5            | 2.5°         | 1.93           | 50     | 4         |
| JTA 015030 | 1.5            | 5            | 3°           | 2.02           | 50     | 4         |
| JTA 015050 | 1.5            | 5            | 5°           | 2.37           | 50     | 4         |
| JTA 015070 | 1.5            | 5            | 7°           | 2.73           | 50     | 4         |
| JTA 015100 | 1.5            | 5            | 10°          | 3.26           | 50     | 4         |
| JTA 020005 | 2.0            | 6            | 0.5°         | 2.10           | 50     | 4         |
| JTA 020010 | 2.0            | 6            | 1°           | 2.21           | 50     | 4         |
| JTA 020015 | 2.0            | 6            | 1.5°         | 2.31           | 50     | 4         |
| JTA 020020 | 2.0            | 6            | 2°           | 2.41           | 50     | 4         |
| JTA 020025 | 2.0            | 6            | 2.5°         | 2.52           | 50     | 4         |
| JTA 020030 | 2.0            | 6            | 3°           | 2.62           | 50     | 4         |
| JTA 020050 | 2.0            | 6            | 5°           | 3.05           | 50     | 4         |
| JTA 020070 | 2.0            | 6            | 7°           | 3.47           | 50     | 4         |
| JTA 020100 | 2.0            | 6            | 10°          | 4.12           | 50     | 4         |
| JTA 025005 | 2.5            | 8            | 0.5°         | 2.64           | 50     | 4         |
| JTA 025010 | 2.5            | 8            | 1°           | 2.78           | 50     | 4         |
| JTA 025015 | 2.5            | 8            | 1.5°         | 2.91           | 50     | 4         |
| JTA 025020 | 2.5            | 8            | 2°           | 3.05           | 50     | 4         |
| JTA 025025 | 2.5            | 8            | 2.5°         | 3.20           | 50     | 4         |
| JTA 025030 | 2.5            | 8            | 3°           | 3.33           | 50     | 4         |
| JTA 025050 | 2.5            | 8            | 5°           | 3.90           | 50     | 4         |
| JTA 025070 | 2.5            | 8            | 7°           | 4.46           | 50     | 4         |
| JTA 025100 | 2.5            | 8            | 10°          | 5.32           | 50     | 4         |
| JTA 030005 | 3.0            | 10           | 0.5°         | 3.17           | 50     | 4         |
| JTA 030010 | 3.0            | 10           | 1°           | 3.35           | 50     | 4         |
| JTA 030015 | 3.0            | 10           | 1.5°         | 3.52           | 50     | 4         |
| JTA 030020 | 3.0            | 10           | 2°           | 3.69           | 50     | 4         |
| JTA 030025 | 3.0            | 10           | 2.5°         | 3.87           | 50     | 4         |
| JTA 030030 | 3.0            | 10           | 3°           | 4.05           | 50     | 6         |
| JTA 030050 | 3.0            | 10           | 5°           | 4.75           | 50     | 6         |
| JTA 030070 | 3.0            | 10           | 7°           | 5.45           | 50     | 6         |
| JTA 030100 | 3.0            | 10           | 10°          | 6.53           | 60     | 8         |

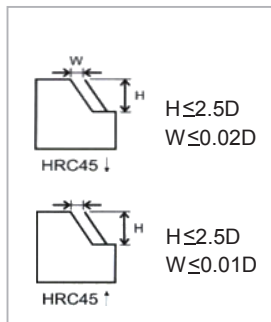
# End Mills Series

## 2 Flutes Taper Square End Mills



斜度刀 2刃立銑刀 超微粒碳化鎢 平刀系列

### DEPTH OF CUT



### Recommended cutting condition for Long Flute, Taper End Mills

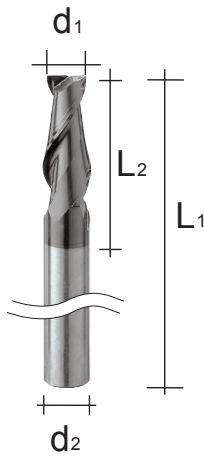
| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 1        | 12000                                                           | 65             | 6800                                                           | 40             | 500                   | 15             |
| 1.5      | 9600                                                            | 70             | 5200                                                           | 45             | 2000                  | 15             |
| 2        | 7500                                                            | 85             | 4000                                                           | 48             | 1500                  | 18             |
| 2.5      | 6800                                                            | 100            | 3700                                                           | 60             | 1700                  | 20             |
| 4        | 3500                                                            | 120            | 1800                                                           | 60             | 600                   | 20             |
| 6        | 2500                                                            | 150            | 1600                                                           | 80             | 550                   | 25             |
| 8        | 2000                                                            | 150            | 1200                                                           | 80             | 450                   | 25             |
| 10       | 1500                                                            | 150            | 1000                                                           | 80             | 350                   | 25             |

# End Mills Series

## 2 Flutes Taper Square End Mills



斜度刀 2刃立銑刀 超微粒碳化鎢 平刀系列



| 型號         | 先端徑(D1)        | 刀長(L2)       | 斜度(α)        | 粗端徑(D)         | 全長(L1) | 柄徑(d2)    |
|------------|----------------|--------------|--------------|----------------|--------|-----------|
| Type No.   | Small Mill Dia | Flute Length | Flute Length | Large Mill Dia | O.A.L  | Shank Dia |
| JTA 040005 | 4.0            | 15           | 0.5°         | 4.26           | 50     | 6         |
| JTA 040010 | 4.0            | 15           | 1°           | 4.52           | 50     | 6         |
| JTA 040015 | 4.0            | 15           | 1.5°         | 4.79           | 50     | 6         |
| JTA 040020 | 4.0            | 15           | 2°           | 5.04           | 50     | 6         |
| JTA 040025 | 4.0            | 15           | 2.5°         | 5.31           | 50     | 6         |
| JTA 040030 | 4.0            | 15           | 3°           | 5.57           | 50     | 6         |
| JTA 040050 | 4.0            | 15           | 5°           | 6.62           | 60     | 8         |
| JTA 040070 | 4.0            | 15           | 7°           | 7.68           | 60     | 8         |
| JTA 040100 | 4.0            | 15           | 10°          | 9.30           | 75     | 10        |
| JTA 050005 | 5.0            | 20           | 0.5°         | 5.34           | 55     | 6         |
| JTA 050010 | 5.0            | 20           | 1°           | 5.70           | 55     | 6         |
| JTA 050015 | 5.0            | 20           | 1.5°         | 6.04           | 60     | 8         |
| JTA 050020 | 5.0            | 20           | 2°           | 6.39           | 60     | 8         |
| JTA 050025 | 5.0            | 20           | 2.5°         | 6.74           | 60     | 8         |
| JTA 050030 | 5.0            | 20           | 3°           | 7.10           | 60     | 8         |
| JTA 050050 | 5.0            | 20           | 5°           | 8.50           | 75     | 10        |
| JTA 050070 | 5.0            | 20           | 7°           | 9.91           | 75     | 10        |
| JTA 050100 | 5.0            | 20           | 10°          | 12.05          | 75     | 12        |
| JTA 060005 | 6.0            | 20           | 0.5°         | 6.35           | 60     | 8         |
| JTA 060010 | 6.0            | 20           | 1°           | 6.70           | 60     | 8         |
| JTA 060015 | 6.0            | 20           | 1.5°         | 7.05           | 60     | 8         |
| JTA 060020 | 6.0            | 20           | 2°           | 7.40           | 60     | 8         |
| JTA 060025 | 6.0            | 20           | 2.5°         | 7.75           | 60     | 8         |
| JTA 060030 | 6.0            | 20           | 3°           | 8.10           | 75     | 10        |
| JTA 060050 | 6.0            | 20           | 5°           | 9.50           | 75     | 10        |
| JTA 060070 | 6.0            | 20           | 7°           | 10.91          | 75     | 12        |
| JTA 060100 | 6.0            | 20           | 10°          | 13.05          | 75     | 12        |
| JTA 080005 | 8.0            | 25           | 0.5°         | 8.44           | 75     | 10        |
| JTA 080010 | 8.0            | 25           | 1°           | 8.87           | 75     | 10        |
| JTA 080015 | 8.0            | 25           | 1.5°         | 9.31           | 75     | 10        |
| JTA 080020 | 8.0            | 25           | 2°           | 9.74           | 75     | 10        |
| JTA 080025 | 8.0            | 25           | 2.5°         | 10.18          | 75     | 12        |
| JTA 080030 | 8.0            | 25           | 3°           | 10.62          | 75     | 12        |
| JTA 080050 | 8.0            | 25           | 5°           | 12.37          | 100    | 12        |
| JTA 080070 | 8.0            | 25           | 7°           | 14.14          | 100    | 16        |
| JTA 080100 | 8.0            | 25           | 10°          | 16.82          | 100    | 16        |
| JTA 100005 | 10.0           | 35           | 0.5°         | 10.61          | 100    | 12        |
| JTA 100010 | 10.0           | 35           | 1°           | 11.22          | 100    | 12        |
| JTA 100015 | 10.0           | 35           | 1.5°         | 11.83          | 100    | 12        |
| JTA 100020 | 10.0           | 35           | 2°           | 12.44          | 100    | 12        |
| JTA 100025 | 10.0           | 35           | 2.5°         | 13.06          | 100    | 12        |
| JTA 100030 | 10.0           | 35           | 3°           | 13.67          | 100    | 12        |
| JTA 100050 | 10.0           | 35           | 5°           | 16.12          | 100    | 16        |
| JTA 100070 | 10.0           | 35           | 7°           | 18.60          | 100    | 16        |
| JTA 100100 | 10.0           | 35           | 10°          | 22.34          | 100    | 16        |

# End Mills Series

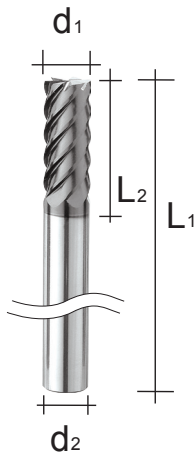
## 6 Flutes Standard End Mills



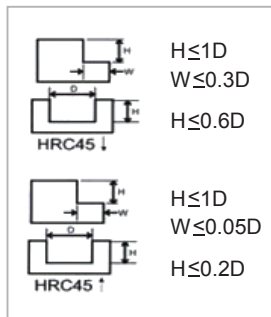
6刃立銑刀 超微粒碳化鎢 平刀系列



| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| JVT 0606       | 6.0                | 15                     | 50              | 6                   |
| JVT 0806       | 8.0                | 20                     | 60              | 8                   |
| JVT 1006       | 10.0               | 25                     | 75              | 10                  |
| JVT 1206       | 12.0               | 30                     | 75              | 12                  |
| JVT 1606       | 16.0               | 40                     | 100             | 16                  |
| JVT 2006       | 20.0               | 40                     | 100             | 20                  |
| JVT 2506       | 25.0               | 40                     | 100             | 25                  |



### DEPTH OF CUT



### Recommended cutting condition for Corner Radius End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCR,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 6        | 5500                                                            | 1000           | 4500                                                            | 850            | 3800                  | 650            |
| 8        | 4000                                                            | 1000           | 3500                                                            | 850            | 3000                  | 650            |
| 10       | 3300                                                            | 1000           | 3100                                                            | 850            | 2400                  | 650            |
| 12       | 3000                                                            | 900            | 2500                                                            | 700            | 2000                  | 600            |
| 16       | 2500                                                            | 700            | 2000                                                            | 550            | 1500                  | 450            |
| 20       | 1800                                                            | 550            | 1500                                                            | 420            | 1200                  | 380            |



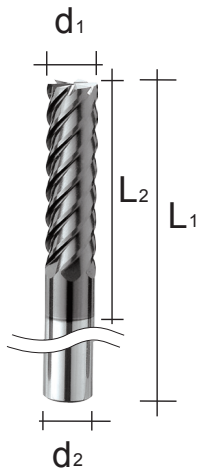
# End Mills Series

6 Flutes Long Shank End Mills



長刃型 6刃立銑刀 超微粒碳化鎢 平刀系列

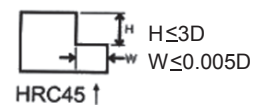
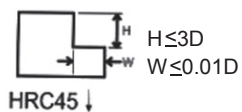
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刀長(L2)<br>Flute Length | 全長(L1)<br>O.A.L. | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|------------------|---------------------|
| LJVT 0606      | 6.0                | 25                     | 75               | 6                   |
| LJVT 0606A     | 6.0                | 30                     | 100              | 6                   |
| LJVT 0806      | 8.0                | 35                     | 75               | 8                   |
| LJVT 0806A     | 8.0                | 35                     | 100              | 8                   |
| LJVT 1006      | 10.0               | 40                     | 100              | 10                  |
| LJVT 1006A     | 10.0               | 40                     | 150              | 10                  |
| LJVT 1206      | 12.0               | 45                     | 100              | 12                  |
| LJVT 1206A     | 12.0               | 45                     | 150              | 12                  |
| LJVT 1606      | 16.0               | 60                     | 150              | 16                  |
| LJVT 1606A     | 16.0               | 100                    | 200              | 16                  |
| LJVT 2006      | 20.0               | 80                     | 150              | 20                  |
| LJVT 2006A     | 20.0               | 100                    | 200              | 20                  |



## Recommended cutting condition for Long Flute

### High Hardness Square End Mills

#### DEPTH OF CUT



| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCR,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 6        | 1900                                                            | 400            | 1500                                                           | 300            | 1200                  | 220            |
| 8        | 1500                                                            | 380            | 1100                                                           | 280            | 900                   | 200            |
| 10       | 1200                                                            | 360            | 850                                                            | 260            | 750                   | 190            |
| 12       | 1000                                                            | 340            | 700                                                            | 230            | 650                   | 180            |
| 16       | 750                                                             | 280            | 550                                                            | 200            | 450                   | 150            |
| 20       | 600                                                             | 240            | 450                                                            | 170            | 350                   | 120            |





# End Mills Series

## 3 Flutes Roughing End Mills

**MG**

**0.6**  
μm

**CO**  
10%

**HRC**  
▶ 55

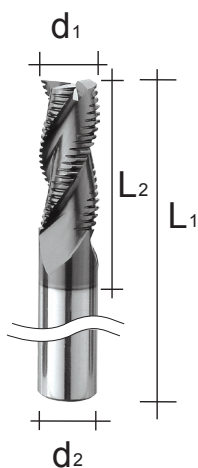
**TIALN**

**45°**

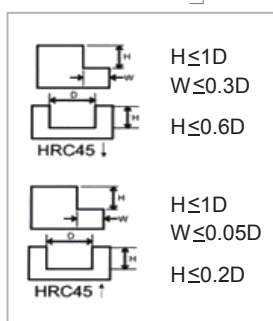
**3 Flutes**

3刃粗立銑刀 超微粒碳化鎢 平刀系列

| 型號       | 直徑(D1)   | 刀長(L2)       | 全長(L1) | 柄徑(d2)    |
|----------|----------|--------------|--------|-----------|
| Type No. | Diameter | Flute Length | O.A.L  | Shank Dia |
| JWA 0603 | 6.0      | 15           | 50     | 6         |
| JWA 0803 | 8.0      | 20           | 60     | 8         |
| JWA 1003 | 10.0     | 25           | 75     | 10        |
| JWA 1203 | 12.0     | 30           | 75     | 12        |
| JWA 1603 | 16.0     | 40           | 100    | 16        |
| JWA 2003 | 20.0     | 40           | 100    | 20        |



### DEPTH OF CUT



### Recommended cutting condition for Roughing Cut Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, S.Cr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|------------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                           |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                  | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 6        | 5500                                                            | 550            | 3000                                                             | 310            | 1150                  | 120            |
| 8        | 4600                                                            | 550            | 2500                                                             | 310            | 920                   | 120            |
| 10       | 3700                                                            | 550            | 2000                                                             | 310            | 730                   | 120            |
| 12       | 3000                                                            | 500            | 1700                                                             | 310            | 600                   | 120            |
| 16       | 2300                                                            | 520            | 1200                                                             | 310            | 460                   | 120            |



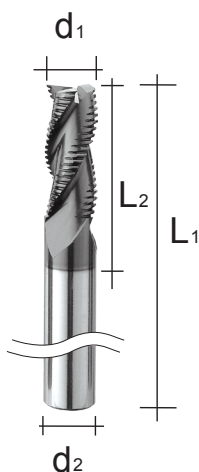
# End Mills Series

3 Flutes Long Shank Square Roughing End Mills

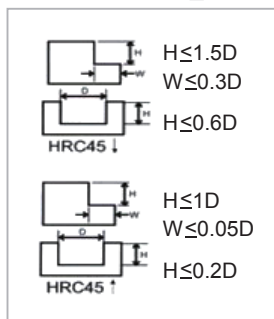


長柄長刃粗銑刀 超微粒碳化鎢 平刀系列

| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刀長(L2)<br>Flute Length | 全長(L1)<br>O.A.L. | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|------------------|---------------------|
| LJWA 0603      | 6.0                | 15                     | 100              | 6                   |
| LJWA 0803      | 8.0                | 20                     | 100              | 8                   |
| LJWA 1003      | 10.0               | 25                     | 100              | 10                  |
| LJWA 1203      | 12.0               | 30                     | 100              | 12                  |
| LJWA 1603      | 16.0               | 40                     | 150              | 16                  |
| LJWA 2003      | 20.0               | 40                     | 150              | 20                  |



## 「DEPTH OF CUT」



## Recommended cutting condition for Roughing Cut Square End Mills

| Material | Carbon Steels. Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels. Tool Steels. SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 6        | 4400                                                            | 440            | 2400                                                            | 250            | 920                   | 100            |
| 8        | 3600                                                            | 440            | 2000                                                            | 250            | 730                   | 100            |
| 10       | 3000                                                            | 440            | 1600                                                            | 250            | 580                   | 100            |
| 12       | 2400                                                            | 440            | 1350                                                            | 250            | 480                   | 100            |
| 16       | 1800                                                            | 440            | 960                                                             | 250            | 370                   | 100            |

# End Mills Series

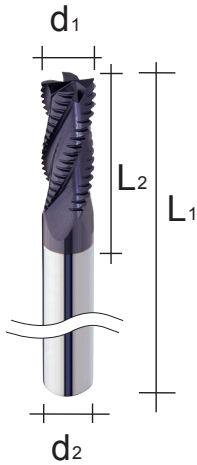
## 4 Flutes Roughing End Mills



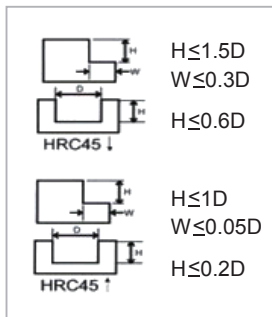
4刃粗立銑刀 超微粒碳化鎢 平刀系列



| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| JWA 0604       | 6.0                | 15                     | 50              | 6                   |
| JWA 0804       | 8.0                | 20                     | 60              | 8                   |
| JWA 1004       | 10.0               | 25                     | 75              | 10                  |
| JWA 1204       | 12.0               | 30                     | 75              | 12                  |
| JWA 1604       | 16.0               | 40                     | 100             | 16                  |
| JWA 2004       | 20.0               | 40                     | 100             | 20                  |



### DEPTH OF CUT



### Recommended cutting condition for Roughing Cut Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCR,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 6        | 5500                                                            | 550            | 3000                                                           | 310            | 1150                  | 120            |
| 8        | 4600                                                            | 550            | 2500                                                           | 310            | 920                   | 120            |
| 10       | 3700                                                            | 550            | 2000                                                           | 310            | 730                   | 120            |
| 12       | 3000                                                            | 500            | 1700                                                           | 310            | 600                   | 120            |
| 16       | 2300                                                            | 520            | 1200                                                           | 310            | 460                   | 120            |

# End Mills Series

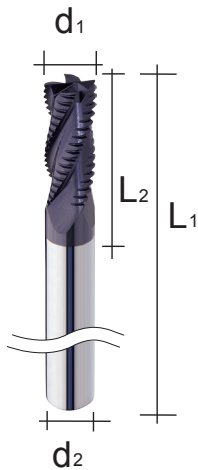
4 Flutes Long Shank Square Roughing End Mills



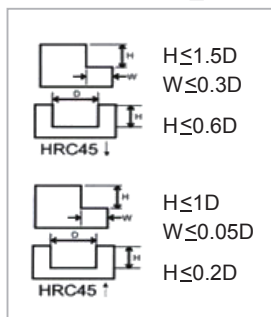
長柄4刃粗銑刀 超微粒碳化鎢 平刀系列



| 型號        | 直徑(D1)   | 刀長(L2)       | 全長(L1) | 柄徑(d2)    |
|-----------|----------|--------------|--------|-----------|
| Type No.  | Diameter | Flute Length | O.A.L  | Shank Dia |
| LJWA 0604 | 6.0      | 15           | 100    | 6         |
| LJWA 0804 | 8.0      | 20           | 100    | 8         |
| LJWA 1004 | 10.0     | 25           | 100    | 10        |
| LJWA 1204 | 12.0     | 30           | 100    | 12        |
| LJWA 1604 | 16.0     | 40           | 150    | 16        |
| LJWA 2004 | 20.0     | 40           | 150    | 20        |



## DEPTH OF CUT

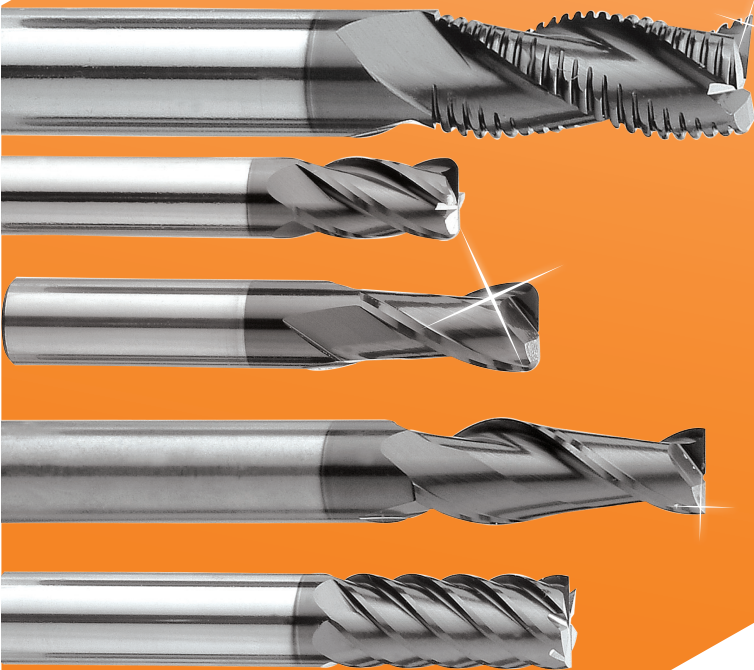


## Recommended cutting condition for Roughing Cut Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 6        | 4400                                                            | 440            | 2400                                                            | 250            | 920                   | 00             |
| 8        | 3600                                                            | 440            | 2000                                                            | 250            | 730                   | 100            |
| 10       | 3000                                                            | 440            | 1600                                                            | 250            | 580                   | 100            |
| 12       | 2400                                                            | 440            | 1350                                                            | 250            | 480                   | 100            |
| 16       | 1800                                                            | 440            | 960                                                             | 250            | 370                   | 100            |

I

# Corner Radius End Mills



- 3 Flutes Roughing End Mills
- 4 Flutes Roughing End Mills
- 6 Flutes Long Shank End Mills
- 2 Flutes Taper Square End Mills
- 4 Flutes Corner Radius End Mills
- 2 Flutes Corner Radius Square End Mills
- 4 Flutes Long Shank Corner Radius End Mills
- 2 Flutes Long Shank Corner Radius End Mills
- 3 Flutes Long Shank Square Roughing End Mills
- 4 Flutes Long Shank Square Roughing End Mills

圓鼻刀系列

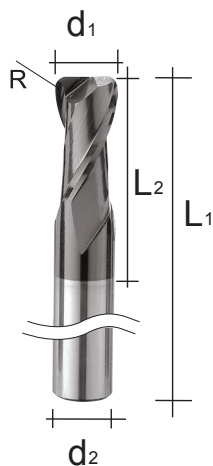


# Corner Radius End Mills

2 Flutes Corner Radius Square End Mills



圓鼻 2刃立銑刀 超微粒碳化鎢 圓鼻刀系列

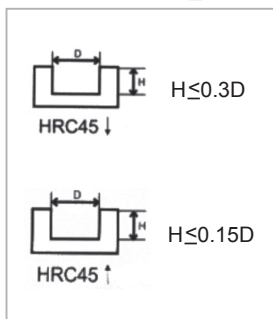


| 型號<br>Type No. | 刀徑(D1)<br>Diameter | R<br>Corner R | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|---------------|------------------------|-----------------|---------------------|
| JNR 0102       | 1.0                | 0.2           | 2                      | 50              | 4                   |
| JNR 0202       | 2.0                | 0.2           | 4                      | 50              | 4                   |
| JNR 0205       | 2.0                | 0.5           | 4                      | 50              | 4                   |
| JNR 0302       | 3.0                | 0.2           | 6                      | 50              | 4                   |
| JNR 0305       | 3.0                | 0.5           | 6                      | 50              | 4                   |
| JNR 0310       | 3.0                | 1.0           | 6                      | 50              | 4                   |
| JNR 0402       | 4.0                | 0.2           | 8                      | 50              | 4                   |
| JNR 0405       | 4.0                | 0.5           | 8                      | 50              | 4                   |
| JNR 0410       | 4.0                | 1.0           | 8                      | 50              | 4                   |
| JNR 0602       | 6.0                | 0.2           | 12                     | 50              | 6                   |
| JNR 0605       | 6.0                | 0.5           | 12                     | 50              | 6                   |
| JNR 0610       | 6.0                | 1.0           | 12                     | 50              | 6                   |
| JNR 0620       | 6.0                | 2.0           | 12                     | 60              | 6                   |
| JNR 0805       | 8.0                | 0.5           | 16                     | 60              | 8                   |
| JNR 0810       | 8.0                | 1.0           | 16                     | 60              | 8                   |
| JNR 0820       | 8.0                | 2.0           | 16                     | 60              | 8                   |
| JNR 1005       | 10.0               | 0.5           | 20                     | 75              | 10                  |
| JNR 1010       | 10.0               | 1.0           | 20                     | 75              | 10                  |
| JNR 1020       | 10.0               | 2.0           | 20                     | 75              | 10                  |
| JNR 1205       | 12.0               | 0.5           | 24                     | 75              | 12                  |
| JNR 1210       | 12.0               | 1.0           | 24                     | 75              | 12                  |
| JNR 1220       | 12.0               | 2.0           | 24                     | 75              | 12                  |
| JNR 1230       | 12.0               | 3.0           | 24                     | 75              | 12                  |

## Recommended cutting condition for Corner Radius End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 3        | 7600                                                            | 180            | 4800                                                           | 120            | 2900                  | 50             |
| 4        | 6500                                                            | 260            | 4000                                                           | 160            | 2500                  | 55             |
| 5        | 5500                                                            | 270            | 3200                                                           | 160            | 2000                  | 60             |
| 6        | 4800                                                            | 300            | 2900                                                           | 170            | 1800                  | 70             |
| 8        | 3700                                                            | 350            | 2200                                                           | 170            | 1500                  | 85             |
| 10       | 2900                                                            | 280            | 1700                                                           | 140            | 1100                  | 70             |
| 12       | 2400                                                            | 230            | 1400                                                           | 120            | 1000                  | 65             |
| 16       | 1800                                                            | 170            | 1100                                                           | 90             | 700                   | 45             |

## DEPTH OF CUT







# Corner Radius End Mills

2 Flutes Long Shank Corner Radius End Mills



長柄圓鼻 2刃立銑刀 超微粒碳化鎢 圓鼻刀系列



| 型號<br>Type No. | 刀徑(D1)<br>Diameter | R<br>Corner R | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|---------------|------------------------|-----------------|---------------------|
| JLNR 0402      | 4.0                | 0.2           | 8                      | 75              | 4                   |
| JLNR 0405      | 4.0                | 0.5           | 8                      | 75              | 4                   |
| JLNR 0410      | 4.0                | 1.0           | 8                      | 75              | 4                   |
| JLNR 0602      | 6.0                | 0.2           | 12                     | 100             | 6                   |
| JLNR 0605      | 6.0                | 0.5           | 12                     | 100             | 6                   |
| JLNR 0610      | 6.0                | 1.0           | 12                     | 100             | 6                   |
| JLNR 0620      | 6.0                | 2.0           | 12                     | 100             | 6                   |
| JLNR 0805      | 8.0                | 0.5           | 16                     | 100             | 8                   |
| JLNR 0810      | 8.0                | 1.0           | 16                     | 100             | 8                   |
| JLNR 0820      | 8.0                | 2.0           | 16                     | 100             | 8                   |
| JLNR 1005      | 10.0               | 0.5           | 20                     | 100             | 10                  |
| JLNR 1010      | 10.0               | 1.0           | 20                     | 100             | 10                  |
| JLNR 1020      | 10.0               | 2.0           | 20                     | 100             | 10                  |
| JLNR 1030      | 10.0               | 3.0           | 20                     | 100             | 10                  |
| JLNR 1205      | 12.0               | 0.5           | 24                     | 100             | 12                  |
| JLNR 1210      | 12.0               | 1.0           | 24                     | 100             | 12                  |
| JLNR 1220      | 12.0               | 2.0           | 20                     | 100             | 12                  |
| JLNR 1230      | 12.0               | 3.0           | 20                     | 100             | 12                  |

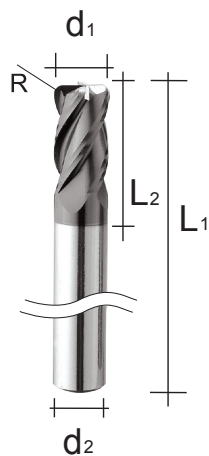


# Corner Radius End Mills

4 Flutes Corner Radius End Mills



圓鼻 4刃立銑刀 超微粒碳化鎢 圓鼻刀系列



| 型號<br>Type No. | 刀徑(D1)<br>Diameter | R<br>Corner R | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|---------------|------------------------|-----------------|---------------------|
| JER 0102       | 1.0                | 0.2           | 2                      | 50              | 4                   |
| JER 0202       | 2.0                | 0.2           | 4                      | 50              | 4                   |
| JER 0205       | 2.0                | 0.5           | 4                      | 50              | 4                   |
| JER 0252       | 2.5                | 0.2           | 5                      | 50              | 4                   |
| JER 0255       | 2.5                | 0.5           | 5                      | 50              | 4                   |
| JER 0302       | 3.0                | 0.2           | 6                      | 50              | 4                   |
| JER 0305       | 3.0                | 0.5           | 6                      | 50              | 4                   |
| JER 0310       | 3.0                | 1.0           | 6                      | 50              | 4                   |
| JER 0402       | 4.0                | 0.2           | 8                      | 50              | 4                   |
| JER 0405       | 4.0                | 0.5           | 8                      | 50              | 4                   |
| JER 0410       | 4.0                | 1.0           | 8                      | 50              | 4                   |
| JER 0505       | 5.0                | 0.5           | 10                     | 50              | 6                   |
| JER 0510       | 5.0                | 1.0           | 10                     | 50              | 6                   |
| JER 0602       | 6.0                | 0.2           | 12                     | 50              | 6                   |
| JER 0605       | 6.0                | 0.5           | 12                     | 50              | 6                   |
| JER 0610       | 6.0                | 1.0           | 12                     | 50              | 6                   |
| JER 0615       | 6.0                | 1.5           | 12                     | 50              | 6                   |
| JER 0620       | 6.0                | 2.0           | 12                     | 50              | 6                   |
| JER 0805       | 8.0                | 0.5           | 16                     | 60              | 8                   |
| JER 0810       | 8.0                | 1.0           | 16                     | 60              | 8                   |
| JER 0820       | 8.0                | 2.0           | 16                     | 60              | 8                   |
| JER 1005       | 10.0               | 0.5           | 20                     | 75              | 10                  |
| JER 1010       | 10.0               | 1.0           | 20                     | 75              | 10                  |
| JER 1020       | 10.0               | 2.0           | 20                     | 75              | 10                  |
| JER 1030       | 10.0               | 3.0           | 20                     | 75              | 10                  |
| JER 1205       | 12.0               | 0.5           | 24                     | 75              | 12                  |
| JER 1210       | 12.0               | 1.0           | 24                     | 75              | 12                  |
| JER 1220       | 12.0               | 2.0           | 24                     | 75              | 12                  |
| JER 1230       | 12.0               | 3.0           | 24                     | 75              | 12                  |

# Corner Radius End Mills

## 4 Flutes Corner Radius End Mills

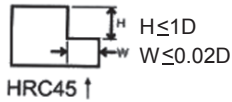


圓鼻 4刃立銑刀 超微粒碳化鎢 圓鼻刀系列

### Recommended cutting condition for Corner Radius End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 3        | 9500                                                            | 450            | 6000                                                            | 290            | 3600                  | 120            |
| 4        | 8000                                                            | 800            | 5000                                                            | 480            | 3200                  | 160            |
| 5        | 6800                                                            | 820            | 4000                                                            | 500            | 2500                  | 170            |
| 6        | 6000                                                            | 900            | 3600                                                            | 530            | 2300                  | 220            |
| 8        | 4600                                                            | 1000           | 2800                                                            | 530            | 1800                  | 250            |
| 10       | 3500                                                            | 850            | 2200                                                            | 420            | 1400                  | 220            |
| 12       | 3000                                                            | 720            | 1800                                                            | 350            | 1200                  | 200            |
| 16       | 2300                                                            | 520            | 1400                                                            | 250            | 900                   | 150            |

### DEPTH OF CUT



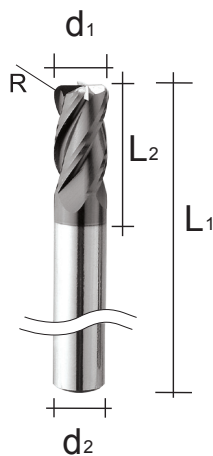


# Corner Radius End Mills

4 Flutes Long Shank Corner Radius End Mills



長柄圓鼻 4刃立銑刀 超微粒碳化鎢 圓鼻刀系列

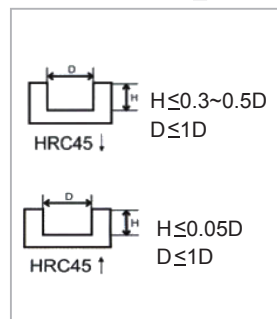


| 型號<br>Type No. | 刀徑(D1)<br>Diameter | R<br>Corner R | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|---------------|------------------------|-----------------|---------------------|
| JLR 0305       | 3.0                | 0.5           | 6                      | 75              | 3                   |
| JLR 0305A      | 3.0                | 0.5           | 6                      | 75              | 4                   |
| JLR 0402       | 4.0                | 0.2           | 8                      | 75              | 4                   |
| JLR 0405       | 4.0                | 0.5           | 8                      | 75              | 4                   |
| JLR 0602       | 6.0                | 0.2           | 12                     | 75              | 6                   |
| JLR 0605       | 6.0                | 0.5           | 12                     | 75              | 6                   |
| JLR 0605A      | 6.0                | 0.5           | 12                     | 100             | 6                   |
| JLR 0610       | 6.0                | 1.0           | 12                     | 75              | 6                   |
| JLR 0610A      | 6.0                | 1.0           | 12                     | 100             | 6                   |
| JLR 0805       | 8.0                | 0.5           | 16                     | 75              | 8                   |
| JLR 0805A      | 8.0                | 0.5           | 16                     | 100             | 8                   |
| JLR 0810       | 8.0                | 1.0           | 16                     | 75              | 8                   |
| JLR 0810A      | 8.0                | 1.0           | 16                     | 100             | 8                   |
| JLR 1005       | 10.0               | 0.5           | 20                     | 100             | 10                  |
| JLR 1005A      | 10.0               | 0.5           | 20                     | 150             | 10                  |
| JLR 1010       | 10.0               | 1.0           | 20                     | 100             | 10                  |
| JLR 1010A      | 10.0               | 1.0           | 20                     | 150             | 10                  |
| JLR 1020       | 10.0               | 2.0           | 20                     | 100             | 10                  |
| JLR 1020A      | 10.0               | 2.0           | 20                     | 150             | 10                  |
| JLR 1030       | 10.0               | 3.0           | 20                     | 100             | 10                  |
| JLR 1030A      | 10.0               | 3.0           | 20                     | 150             | 10                  |
| JLR 1205       | 12.0               | 0.5           | 24                     | 100             | 12                  |
| JLR 1205A      | 12.0               | 0.5           | 24                     | 150             | 12                  |
| JLR 1210       | 12.0               | 1.0           | 24                     | 100             | 12                  |
| JLR 1210A      | 12.0               | 1.0           | 24                     | 150             | 12                  |
| JLR 1220       | 12.0               | 2.0           | 24                     | 100             | 12                  |
| JLR 1220A      | 12.0               | 2.0           | 24                     | 150             | 12                  |
| JLR 1230       | 12.0               | 3.0           | 24                     | 100             | 12                  |
| JLR 1230A      | 12.0               | 3.0           | 24                     | 150             | 12                  |

## Recommended cutting condition for Corner Radius End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCR,<br>SNM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                         |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 2        | 9900                                                            | 245            | 6500                                                           | 1500           | 4400                  | 65             |
| 3        | 7600                                                            | 270            | 4800                                                           | 180            | 2900                  | 80             |
| 4        | 6500                                                            | 490            | 4000                                                           | 300            | 2500                  | 100            |
| 5        | 5500                                                            | 510            | 3200                                                           | 320            | 2000                  | 110            |
| 6        | 4800                                                            | 560            | 2900                                                           | 330            | 1800                  | 140            |
| 8        | 3700                                                            | 620            | 2200                                                           | 330            | 1500                  | 160            |
| 10       | 2900                                                            | 530            | 1700                                                           | 260            | 1100                  | 140            |
| 12       | 2400                                                            | 45             | 1400                                                           | 220            | 1000                  | 125            |
| 16       | 1800                                                            | 320            | 1100                                                           | 160            | 700                   | 90             |

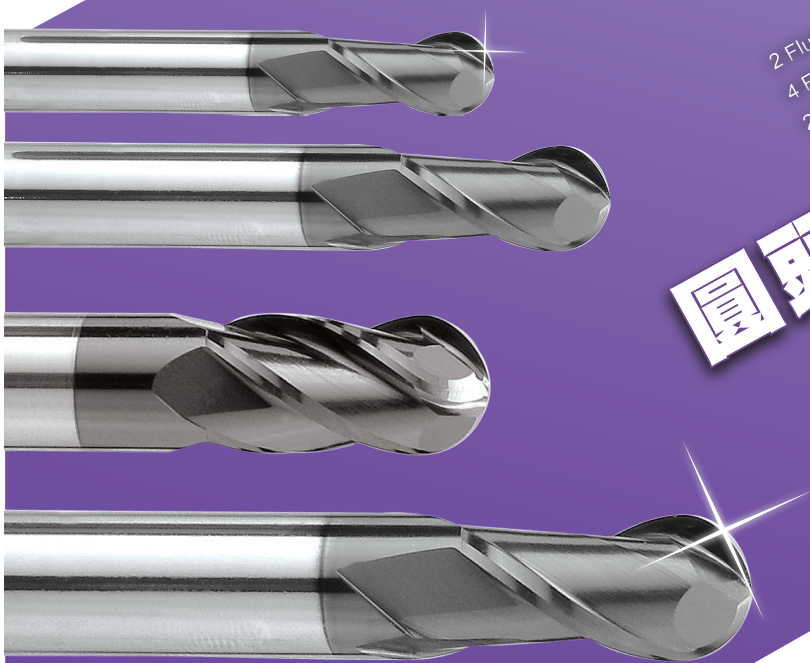
## DEPTH OF CUT



# Ball Nose End Mills Series

2 Flutes Ball Nose End Mills  
4 Flutes Ball Nose End Mills  
2 Flutes Long Shank Ball Nose End Mills

圓頭立銑刀系列



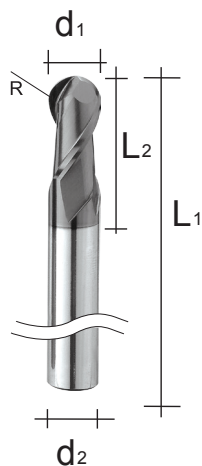


# Ball Nose End Mills Series

## 2 Flutes Ball Nose End Mills



2刃球型立銑刀 超微粒碳化鎢 圓頭立銑刀系列

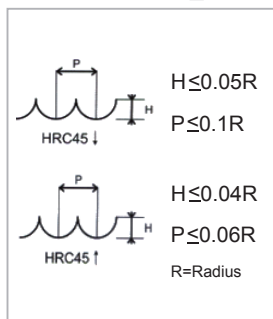


| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| JB 0102        | R0.5               | 2                      | 50              | 4                   |
| JB 0152        | R0.75              | 3                      | 50              | 4                   |
| JB 0202        | R1.0               | 4                      | 50              | 4                   |
| JB 0252        | R1.25              | 5                      | 50              | 4                   |
| JB 0302        | R1.5               | 6                      | 50              | 4                   |
| JB 0302A       | R1.5               | 6                      | 50              | 3                   |
| JB 0402        | R2.0               | 8                      | 50              | 4                   |
| JB 0502        | R2.5               | 10                     | 50              | 6                   |
| JB 0602        | R3.0               | 12                     | 50              | 6                   |
| JB 0802        | R4.0               | 16                     | 60              | 8                   |
| JB 1002        | R5.0               | 20                     | 75              | 10                  |
| JB 1202        | R6.0               | 24                     | 75              | 12                  |
| JB 1602        | R8.0               | 32                     | 100             | 16                  |
| JB 2002        | R10.0              | 32                     | 100             | 20                  |

### Recommended cutting condition for Ball Nose End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 0.5      | 45000                                                           | 800            | 35000                                                           | 600            | 20000                 | 200            |
| 1        | 23000                                                           | 800            | 18000                                                           | 600            | 10000                 | 200            |
| 1.5      | 16000                                                           | 1000           | 12000                                                           | 600            | 6500                  | 200            |
| 2        | 12000                                                           | 1000           | 9500                                                            | 700            | 5000                  | 300            |
| 3        | 8000                                                            | 1100           | 6000                                                            | 700            | 3500                  | 300            |
| 4        | 6000                                                            | 1200           | 5000                                                            | 800            | 2500                  | 350            |
| 5        | 5000                                                            | 1100           | 4000                                                            | 800            | 2000                  | 350            |
| 6        | 4000                                                            | 1000           | 3000                                                            | 700            | 1500                  | 300            |
| 8        | 3000                                                            | 1000           | 2000                                                            | 700            | 1000                  | 300            |

### 「DEPTH OF CUT」





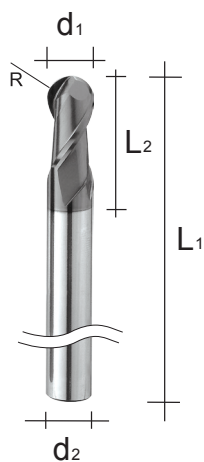
# Ball Nose End Mills Series

## 2 Flutes Ball Nose End Mills



2刃球型立銑刀 超微粒碳化鎢 圓頭立銑刀系列

| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| JBA 0102       | R0.5               | 2                      | 50              | 6                   |
| JBA 0152       | R0.75              | 3                      | 50              | 6                   |
| JBA 0202       | R1.0               | 4                      | 50              | 6                   |
| JBA 0252       | R1.25              | 5                      | 50              | 6                   |
| JBA 0302       | R1.5               | 6                      | 50              | 6                   |
| JBA 0402       | R2.0               | 8                      | 50              | 6                   |





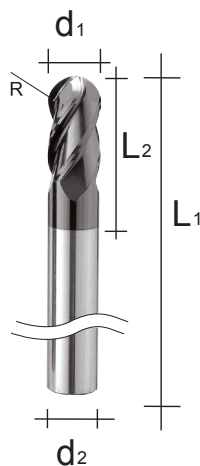
# Ball Nose End Mills Series

## 4 Flutes Ball Nose End Mills



4刃球型立銑刀 超微粒碳化鎢 圓頭立銑刀系列

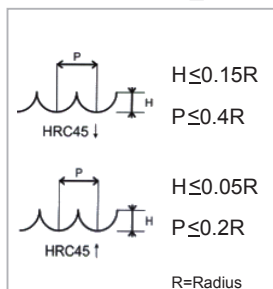
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| JB 0104        | R0.5               | 2                      | 50              | 4                   |
| JB 0154        | R0.75              | 3                      | 50              | 4                   |
| JB 0204        | R1.0               | 4                      | 50              | 4                   |
| JB 0304        | R1.5               | 6                      | 50              | 4                   |
| JB 0304A       | R1.5               | 6                      | 50              | 3                   |
| JB 0404        | R2.0               | 8                      | 50              | 4                   |
| JB 0504        | R2.5               | 10                     | 50              | 6                   |
| JB 0604        | R3.0               | 12                     | 50              | 6                   |
| JB 0804        | R4.0               | 16                     | 60              | 8                   |
| JB 1004        | R5.0               | 20                     | 75              | 10                  |
| JB 1204        | R6.0               | 24                     | 75              | 12                  |
| JB 1604        | R8.0               | 32                     | 100             | 16                  |
| JB 2004        | R10.0              | 32                     | 100             | 20                  |



## Recommended cutting condition for Long Shank Ball Nose End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, S.Cr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|------------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                           |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                  | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 2        | 12000                                                           | 1200           | 9500                                                             | 900            | 5000                  | 400            |
| 3        | 8000                                                            | 1400           | 6000                                                             | 900            | 3500                  | 500            |
| 4        | 6000                                                            | 1600           | 5000                                                             | 1000           | 2500                  | 600            |
| 5        | 5000                                                            | 1400           | 4000                                                             | 1000           | 2000                  | 600            |
| 6        | 4000                                                            | 1200           | 3000                                                             | 900            | 1500                  | 500            |
| 8        | 3000                                                            | 1200           | 2500                                                             | 900            | 1000                  | 500            |
| 10       | 2500                                                            | 1000           | 2000                                                             | 600            | 900                   | 300            |

## DEPTH OF CUT



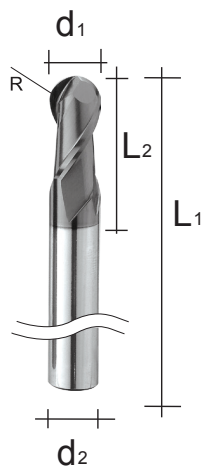


# Ball Nose End Mills Series

2 Flutes Long Shank Ball Nose End Mills



長柄 2刃球型立銑刀 超微粒碳化鎢 圓頭立銑刀系列

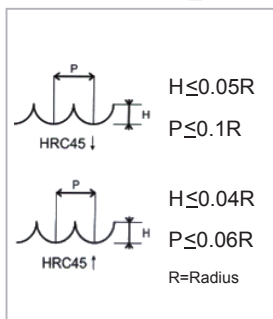


| 型號<br>Type No. | 直徑(d1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| JIB 0102       | R0.5               | 2                      | 75              | 4                   |
| JIB 0102A      | R0.5               | 2                      | 75              | 6                   |
| JIB 0152       | R0.75              | 3                      | 75              | 4                   |
| JIB 0152A      | R0.75              | 3                      | 75              | 6                   |
| JIB 0202       | R1.0               | 4                      | 75              | 4                   |
| JIB 0202A      | R1.0               | 4                      | 75              | 6                   |
| JIB 0302       | R1.5               | 6                      | 75              | 4                   |
| JIB 0302A      | R1.5               | 6                      | 75              | 6                   |
| JIB 0402       | R2.0               | 8                      | 75              | 4                   |
| JIB 0402A      | R2.0               | 8                      | 75              | 6                   |
| JIB 0502       | R2.5               | 10                     | 75              | 6                   |
| JIB 0602       | R3.0               | 12                     | 75              | 6                   |
| JIB 0802       | R4.0               | 16                     | 75              | 8                   |
| JJB 0202       | R1.0               | 4                      | 100             | 6                   |
| JJB 0302       | R1.5               | 6                      | 100             | 6                   |
| JJB 0402       | R2.0               | 8                      | 100             | 6                   |
| JJB 0602       | R3.0               | 12                     | 100             | 6                   |
| JJB 0802       | R4.0               | 16                     | 100             | 8                   |
| JJB 1002       | R5.0               | 20                     | 100             | 10                  |
| JJB 1202       | R6.0               | 24                     | 100             | 12                  |
| JKB 0602       | R3.0               | 12                     | 150             | 6                   |
| JKB 0802       | R4.0               | 16                     | 150             | 8                   |
| JKB 1002       | R5.0               | 20                     | 150             | 10                  |
| JKB 1202       | R6.0               | 24                     | 150             | 12                  |
| JKB 1602       | R8.0               | 32                     | 150             | 16                  |
| JKB 2002       | R10.0              | 40                     | 150             | 20                  |
| JKB 2502       | R12.5              | 40                     | 150             | 25                  |

## Recommended cutting condition for Long Shank Ball Nose End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, S.Cr,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|------------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                           |                | ~HRC60                |                |
| RADIUS   | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                  | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 0.5      | 45000                                                           | 800            | 35000                                                            | 600            | 20000                 | 200            |
| 1        | 23000                                                           | 800            | 18000                                                            | 600            | 10000                 | 200            |
| 1.5      | 16000                                                           | 1000           | 12000                                                            | 600            | 6500                  | 200            |
| 2        | 12000                                                           | 1000           | 9500                                                             | 700            | 5000                  | 300            |
| 3        | 8000                                                            | 1100           | 6000                                                             | 700            | 3500                  | 300            |
| 4        | 6000                                                            | 1200           | 5000                                                             | 800            | 2500                  | 350            |
| 5        | 5000                                                            | 1100           | 4000                                                             | 800            | 2000                  | 350            |
| 6        | 4000                                                            | 1000           | 3000                                                             | 700            | 1500                  | 300            |
| 8        | 3000                                                            | 1000           | 2000                                                             | 700            | 1000                  | 300            |

## DEPTH OF CUT



# Soft Materials Cutting Series

3F Corner Rounding Cutter  
2 Flutes Aluminum Square End Mills  
3 Flutes Aluminum Square End Mills  
3 Flutes Aluminum Square End Mills  
2 Flutes Long Shank Square End Mills  
3 Flutes Long Shank Square End Mills  
2 Flutes Aluminum Ball Nose End Mills  
NC Spot Drills 60°, 90°, 120° Degree End Mills

## 軟金屬系列



# Soft Materials Cutting Series

## 2 Flutes Aluminum Square End Mills

MG

0.6  
μm

CO  
10%

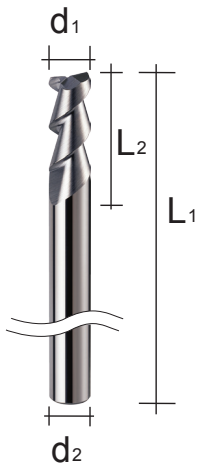
55°

2 Flutes

鋁合金專用 2刃立銑刀 超微粒碳化鎢 軟金屬系列



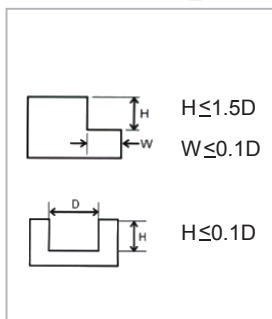
| 型號       | 直徑(D1)   | 刀長(L2)       | 全長(L1) | 柄徑(d2)    |
|----------|----------|--------------|--------|-----------|
| Type No. | Diameter | Flute Length | O.A.L  | Shank Dia |
| AE 0102  | 1.0      | 3            | 50     | 4         |
| AE 0202  | 2.0      | 6            | 50     | 4         |
| AE 0302  | 3.0      | 8            | 50     | 4         |
| AE 0402  | 4.0      | 10           | 50     | 4         |
| AE 0502  | 5.0      | 13           | 50     | 6         |
| AE 0602  | 6.0      | 15           | 50     | 6         |
| AE 0802  | 8.0      | 20           | 60     | 8         |
| AE 1002  | 10.0     | 30           | 75     | 10        |
| AE 1202  | 12.0     | 30           | 75     | 12        |
| AE 1602  | 16.0     | 50           | 100    | 16        |
| AE 2002  | 20.0     | 50           | 100    | 20        |



### Recommended cutting condition for Square End Mills

| Material | Aluminum<br>1070 |                | Aluminum alloy<br>2014/4032/5052/6061/7075 |                | Aluminum alloy<br>AC85 |                |
|----------|------------------|----------------|--------------------------------------------|----------------|------------------------|----------------|
|          | SPEED<br>(mm-1)  | FEED<br>mm/min | SPEED<br>(mm-1)                            | FEED<br>mm/min | SPEED<br>(mm-1)        | FEED<br>mm/min |
| DIAMETER |                  |                |                                            |                |                        |                |
| 2        | 37000            | 2000(800)      | 16000                                      | 850(350)       | 20000                  | 1100(450)      |
| 3        | 35000            | 2000(900)      | 14000                                      | 850(450)       | 18000                  | 1100(550)      |
| 4        | 26000            | 2000(1100)     | 11000                                      | 850(550)       | 13000                  | 1100(660)      |
| 5        | 21000            | 2000(1100)     | 9000                                       | 850(550)       | 10000                  | 1100(660)      |
| 6        | 17000            | 2000(1100)     | 7000                                       | 850(550)       | 9000                   | 1100(660)      |
| 8        | 13000            | 2000(1100)     | 5500                                       | 850(650)       | 7000                   | 1100(800)      |
| 10       | 11000            | 2000(1300)     | 7000                                       | 850(650)       | 5500                   | 1100(800)      |
| 12       | 8800             | 2000(1300)     | 3600                                       | 850(800)       | 4500                   | 1100(800)      |
| 16       | 6500             | 2000(1100)     | 3000                                       | 850(550)       | 3500                   | 1100(900)      |
| 20       | 5300             | 2000(1100)     | 2200                                       | 850(550)       | 2500                   | 1100(650)      |

### 「DEPTH OF CUT」



# Soft Materials Cutting Series

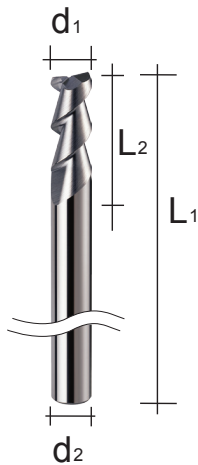
2 Flutes Long Shank Square End Mills



鋁合金專用 2刃長刃立銑刀 超微粒碳化鎢 軟金屬系列



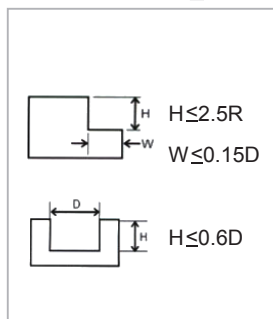
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| LAE 0302       | 3.0                | 12                     | 75              | 6                   |
| LAE 0402       | 4.0                | 16                     | 75              | 6                   |
| LAE 0502       | 5.0                | 20                     | 75              | 6                   |
| LAE 0602       | 6.0                | 25                     | 75              | 6                   |
| LAE 0802       | 8.0                | 35                     | 75              | 8                   |
| LAE 0802A      | 8.0                | 35                     | 100             | 8                   |
| LAE 1002       | 10.0               | 50                     | 100             | 10                  |
| LAE 1202       | 12.0               | 50                     | 100             | 12                  |
| LAE 1602       | 16.0               | 75                     | 150             | 16                  |
| LAE 2002       | 20.0               | 75                     | 150             | 20                  |



## Recommended cutting condition for Long Flute Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C, FC, FCD, SCM, S50C, SKS... |                | Alloy Steels, Tool Steels, SCR,<br>SNCM, SKD11, SKD61, NAK80... |                | Hardened Steels SKD11 |                |
|----------|-----------------------------------------------------------------|----------------|-----------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                          |                | ~HRC50                                                          |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)                                                 | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 2        | 30000                                                           | 600(500)       | 15000                                                           | 250(250)       | 18000                 | 300(300)       |
| 3        | 26000                                                           | 600(500)       | 11000                                                           | 250(250)       | 13500                 | 300(350)       |
| 4        | 20000                                                           | 600(550)       | 8500                                                            | 250(200)       | 10000                 | 300(350)       |
| 5        | 15600                                                           | 600(550)       | 6700                                                            | 250(200)       | 8000                  | 300(350)       |
| 6        | 13500                                                           | 600(550)       | 5500                                                            | 250(200)       | 6700                  | 300(350)       |
| 8        | 10000                                                           | 600(600)       | 4200                                                            | 250(200)       | 5000                  | 300(350)       |
| 10       | 7500                                                            | 600(600)       | 3300                                                            | 250(200)       | 4000                  | 300(350)       |
| 12       | 6700                                                            | 600(600)       | 2700                                                            | 250(200)       | 3400                  | 300(350)       |
| 16       | 5000                                                            | 600(500)       | 2300                                                            | 250(200)       | 2500                  | 300(350)       |
| 20       | 4000                                                            | 600(500)       | 1700                                                            | 250(200)       | 2000                  | 300(350)       |

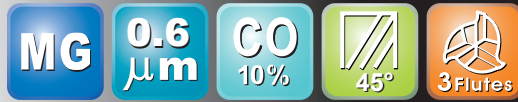
## 「DEPTH OF CUT」





# Soft Materials Cutting Series

## 3 Flutes Aluminum Square End Mills



鋁合金專用 3刃立銑刀 超微粒碳化鎢 軟金屬系列

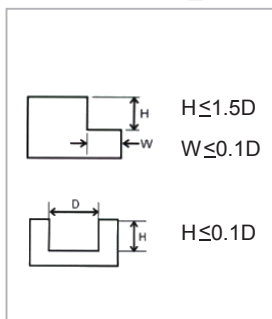
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刀長(L2)<br>Flute Length | 全長(L1)<br>O.A.L. | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|------------------|---------------------|
| AEW 0606       | 6.0                | 16                     | 50               | 6                   |
| AEW 0808       | 8.0                | 20                     | 60               | 8                   |
| AEW 1010       | 10.0               | 25                     | 75               | 10                  |
| AEW 1212       | 12.0               | 30                     | 75               | 12                  |
| AEW 1616       | 16.0               | 50                     | 100              | 16                  |
| AEW 2020       | 20.0               | 50                     | 100              | 20                  |



### Recommended cutting condition for Square End Mills

| Material | Aluminum<br>1070 |                | Aluminum alloy<br>2014/4032/5052/6061/7075 |                | Aluminum alloy<br>AC85 |                |
|----------|------------------|----------------|--------------------------------------------|----------------|------------------------|----------------|
|          | SPEED<br>(mm-1)  | FEED<br>mm/min | SPEED<br>(mm-1)                            | FEED<br>mm/min | SPEED<br>(mm-1)        | FEED<br>mm/min |
| DIAMETER |                  |                |                                            |                |                        |                |
| 2        | 37000            | 2000(800)      | 16000                                      | 850(350)       | 20000                  | 1100(450)      |
| 3        | 35000            | 2000(900)      | 14000                                      | 850(450)       | 18000                  | 1100(550)      |
| 4        | 26000            | 2000(1100)     | 11000                                      | 850(550)       | 13000                  | 1100(660)      |
| 5        | 21000            | 2000(1100)     | 9000                                       | 850(550)       | 10000                  | 1100(660)      |
| 6        | 17000            | 2000(1100)     | 7000                                       | 850(550)       | 9000                   | 1100(660)      |
| 8        | 13000            | 2000(1100)     | 5500                                       | 850(650)       | 7000                   | 1100(800)      |
| 10       | 11000            | 2000(1300)     | 7000                                       | 850(650)       | 5500                   | 1100(800)      |
| 12       | 8800             | 2000(1300)     | 3600                                       | 850(800)       | 4500                   | 1100(800)      |
| 16       | 6500             | 2000(1100)     | 3000                                       | 850(550)       | 3500                   | 1100(900)      |
| 20       | 5300             | 2000(1100)     | 2200                                       | 850(550)       | 2500                   | 1100(650)      |

### 「DEPTH OF CUT」



# Soft Materials Cutting Series

## 3 Flutes Aluminum Square End Mills

MG

0.6  
μm

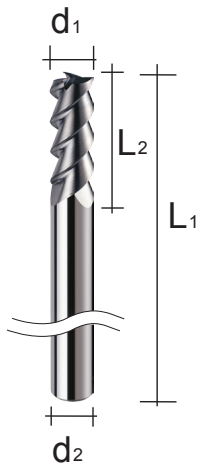
CO  
10%

55°

3 Flutes

鋁合金專用 3刃立銑刀 超微粒碳化鎢 軟金屬系列

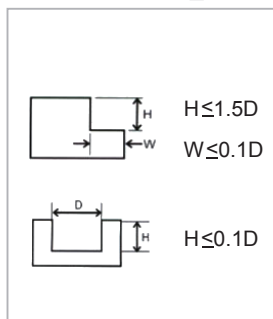
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刀長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| AE 0103        | 1.0                | 3                      | 50              | 4                   |
| AE 0203        | 2.0                | 6                      | 50              | 4                   |
| AE 0303        | 3.0                | 8                      | 50              | 4                   |
| AE 0403        | 4.0                | 10                     | 50              | 4                   |
| AE 0503        | 5.0                | 13                     | 50              | 6                   |
| AE 0603        | 6.0                | 15                     | 50              | 6                   |
| AE 0803        | 8.0                | 20                     | 60              | 8                   |
| AE 1003        | 10.0               | 30                     | 75              | 10                  |
| AE 1203        | 12.0               | 30                     | 75              | 12                  |
| AE 1603        | 16.0               | 50                     | 100             | 16                  |
| AE 2003        | 20.0               | 50                     | 100             | 20                  |



### Recommended cutting condition for Square End Mills

| Material | Aluminum<br>1070 |                | Aluminum alloy<br>2014/4032/5052/6061/7075 |                | Aluminum alloy<br>AC85 |                |
|----------|------------------|----------------|--------------------------------------------|----------------|------------------------|----------------|
|          | SPEED<br>(mm-1)  | FEED<br>mm/min | SPEED<br>(mm-1)                            | FEED<br>mm/min | SPEED<br>(mm-1)        | FEED<br>mm/min |
| DIAMETER |                  |                |                                            |                |                        |                |
| 2        | 37000            | 2400(950)      | 16000                                      | 1000(380)      | 20000                  | 1300(500)      |
| 3        | 35000            | 2400(1050)     | 14000                                      | 1000(500)      | 18000                  | 1300(600)      |
| 4        | 26000            | 2400(1200)     | 11000                                      | 1000(600)      | 13000                  | 1300(720)      |
| 5        | 21000            | 2400(1200)     | 9000                                       | 1000(600)      | 10000                  | 1300(720)      |
| 6        | 17000            | 2400(1200)     | 7000                                       | 1000(600)      | 9000                   | 1300(720)      |
| 8        | 13000            | 2400(1200)     | 5500                                       | 1000(700)      | 7000                   | 1300(880)      |
| 10       | 11000            | 2400(1400)     | 7000                                       | 1000(700)      | 5500                   | 1300(880)      |
| 12       | 8800             | 2400(1400)     | 3600                                       | 1000(880)      | 4500                   | 1300(880)      |
| 16       | 6500             | 2400(1200)     | 3000                                       | 1000(600)      | 3500                   | 1300(1000)     |
| 20       | 5300             | 2400(1200)     | 2200                                       | 1000(600)      | 2500                   | 1300(700)      |

### 「DEPTH OF CUT」



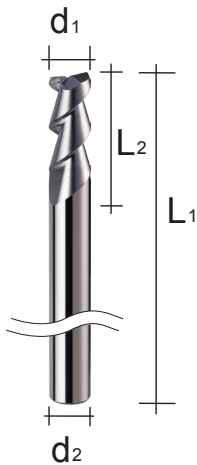
# Soft Materials Cutting Series

## 3 Flutes Long Shank Square End Mills



鋁合金專用 3刃立銑刀 超微粒碳化鎢 軟金屬系列

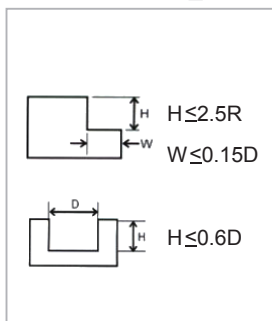
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刃長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| LAE 0303       | 3.0                | 12                     | 75              | 6                   |
| LAE 0403       | 4.0                | 16                     | 75              | 6                   |
| LAE 0503       | 5.0                | 20                     | 75              | 6                   |
| LAE 0603       | 6.0                | 25                     | 75              | 6                   |
| LAE 0803       | 8.0                | 35                     | 75              | 8                   |
| LAE 0803A      | 8.0                | 35                     | 100             | 8                   |
| LAE 1003       | 10.0               | 45                     | 100             | 10                  |
| LAE 1203       | 12.0               | 50                     | 100             | 12                  |
| LAE 1603       | 16.0               | 75                     | 150             | 16                  |
| LAE 2003       | 20.0               | 75                     | 150             | 20                  |



### Recommended cutting condition for Long Shank Square End Mills

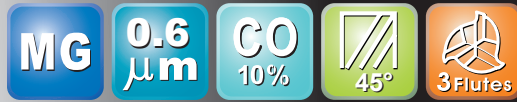
| Material | Aluminum<br>1070 |                | Aluminum alloy<br>2014/4032/5052/6061/7075 |                | Aluminum alloy<br>AC85 |                |
|----------|------------------|----------------|--------------------------------------------|----------------|------------------------|----------------|
|          | SPEED<br>(mm-1)  | FEED<br>mm/min | SPEED<br>(mm-1)                            | FEED<br>mm/min | SPEED<br>(mm-1)        | FEED<br>mm/min |
| DIAMETER |                  |                |                                            |                |                        |                |
| 2        | 37000            | 2400(950)      | 16000                                      | 1000(380)      | 20000                  | 1300(500)      |
| 3        | 35000            | 2400(1050)     | 14000                                      | 1000(500)      | 18000                  | 1300(600)      |
| 4        | 26000            | 2400(1200)     | 11000                                      | 1000(600)      | 13000                  | 1300(720)      |
| 5        | 21000            | 2400(1200)     | 9000                                       | 1000(600)      | 10000                  | 1300(720)      |
| 6        | 17000            | 2400(1200)     | 7000                                       | 1000(600)      | 9000                   | 1300(720)      |
| 8        | 13000            | 2400(1200)     | 5500                                       | 1000(700)      | 7000                   | 1300(880)      |
| 10       | 11000            | 2400(1400)     | 7000                                       | 1000(700)      | 5500                   | 1300(880)      |
| 12       | 8800             | 2400(1400)     | 3600                                       | 1000(880)      | 4500                   | 1300(880)      |
| 16       | 6500             | 2400(1200)     | 3000                                       | 1000(600)      | 3500                   | 1300(1000)     |
| 20       | 5300             | 2400(1200)     | 2200                                       | 1000(600)      | 2500                   | 1300(700)      |

### 「DEPTH OF CUT」



# High Speed Cutting & High Hard Cutting

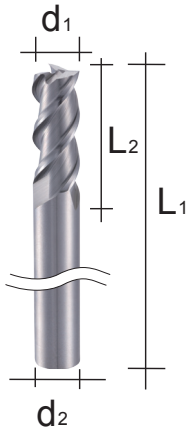
## 3 Flutes Aluminum Square End Mills



鋁合金專用 3刃立銑刀 超微粒碳化鎢 軟金屬系列



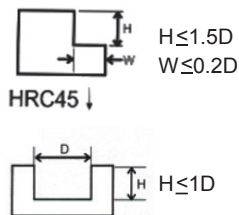
| 型號       | 直徑(D1)   | 刀長(L2)       | 全長(L1) | 柄徑(d2)    |
|----------|----------|--------------|--------|-----------|
| Type No. | Diameter | Flute Length | O.A.L  | Shank Dia |
| AEE 0203 | 2.0      | 6            | 50     | 4         |
| AEE 0303 | 3.0      | 9            | 50     | 4         |
| AEE 0403 | 4.0      | 12           | 50     | 4         |
| AEE 0503 | 5.0      | 15           | 50     | 6         |
| AEE 0603 | 6.0      | 18           | 50     | 6         |
| AEE 0803 | 8.0      | 20           | 60     | 8         |
| AEE 1003 | 10.0     | 30           | 75     | 10        |
| AEE 1203 | 12.0     | 30           | 75     | 12        |
| AEE 1603 | 16.0     | 50           | 100    | 16        |
| AEE 2003 | 20.0     | 50           | 100    | 20        |



### Recommended cutting condition for Long Shank Square End Mills

| Material | Carbon Steels, Alloy Steels<br>S45C,FC,PCD,SCM,S50C,SKS... |                | Alloy Steels,Tool Steels,SCr,<br>SNCM,SKD11,SKD61,NAK80... |                | Hardened Steels SKD11 |                |
|----------|------------------------------------------------------------|----------------|------------------------------------------------------------|----------------|-----------------------|----------------|
| Hardness | ~HRC30                                                     |                | ~HRC50                                                     |                | ~HRC60                |                |
| DIAMETER | SPEED<br>(mm-1)                                            | FEED<br>mm/min | SPEED<br>(mm-1)                                            | FEED<br>mm/min | SPEED<br>(mm-1)       | FEED<br>mm/min |
| 2        | 37000                                                      | 2400(950)      | 16000                                                      | 1000(380)      | 20000                 | 1300(500)      |
| 3        | 35000                                                      | 2400(1050)     | 14000                                                      | 1000(500)      | 18000                 | 1300(600)      |
| 4        | 26000                                                      | 2400(1200)     | 11000                                                      | 1000(600)      | 13000                 | 1300(720)      |
| 5        | 21000                                                      | 2400(1200)     | 9000                                                       | 1000(600)      | 10000                 | 1300(720)      |
| 6        | 17000                                                      | 2400(1200)     | 7000                                                       | 1000(600)      | 9000                  | 1300(720)      |
| 8        | 1300                                                       | 2400(1200)     | 5500                                                       | 1000(700)      | 7000                  | 1300(880)      |
| 10       | 11000                                                      | 2400(1400)     | 7000                                                       | 1000(700)      | 5500                  | 1300(880)      |
| 12       | 8800                                                       | 2400(1400)     | 3600                                                       | 1000(880)      | 4500                  | 1300(880)      |
| 16       | 6500                                                       | 2400(1200)     | 3000                                                       | 1000(600)      | 3500                  | 1300(1000)     |
| 20       | 5300                                                       | 2400(1200)     | 2200                                                       | 1000(600)      | 2500                  | 1300(700)      |

### DEPTH OF CUT



# Soft Materials Cutting Series

## 2 Flutes Aluminum Ball Nose End Mills

MG

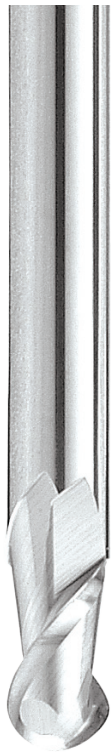
0.6  
μm

CO  
10%

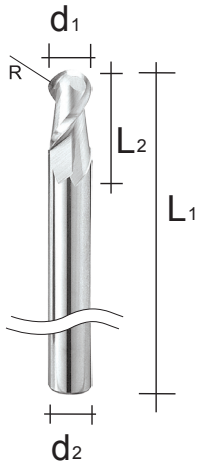
25°

2 Flutes

鋁合金專用 2刃球型立銑刀 超微粒碳化鎢 軟金屬系列



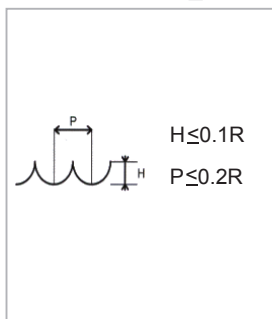
| 型號       | 直徑(D1)   | 刀長(L2)       | 全長(L1) | 柄徑(d2)    |
|----------|----------|--------------|--------|-----------|
| Type No. | Diameter | Flute Length | O.A.L  | Shank Dia |
| AB 0102  | R0.5     | 2            | 50     | 4         |
| AB 0152  | R0.75    | 3            | 50     | 4         |
| AB 0202  | R1.0     | 4            | 50     | 4         |
| AB 0302  | R1.5     | 6            | 50     | 4         |
| AB 0402  | R2.0     | 8            | 50     | 4         |
| AB 0502  | R2.5     | 10           | 50     | 6         |
| AB 0602  | R3.0     | 12           | 50     | 6         |
| AB 0802  | R4.0     | 16           | 60     | 8         |
| AB 1002  | R5.0     | 20           | 75     | 10        |
| AB 1202  | R6.0     | 24           | 75     | 12        |
| AB 1602  | R8.0     | 32           | 100    | 16        |
| AB 2002  | R10.0    | 32           | 100    | 20        |



### Recommended cutting condition for Ball Nose End Mills

| Material | Aluminum<br>1070 |                | Aluminum alloy<br>2014/4032/5052/6061/7075 |                | Aluminum alloy<br>AC85 |                |
|----------|------------------|----------------|--------------------------------------------|----------------|------------------------|----------------|
| RADIUS   | SPEED<br>(mm-1)  | FEED<br>mm/min | SPEED<br>(mm-1)                            | FEED<br>mm/min | SPEED<br>(mm-1)        | FEED<br>mm/min |
| 0.5      | 50000            | 2300           | 37000                                      | 2000           | 50000                  | 1400           |
| 0.75     | 50000            | 3000           | 28000                                      | 2000           | 50000                  | 1800           |
| 1        | 44000            | 4000           | 18500                                      | 2000           | 44000                  | 2500           |
| 1.5      | 28000            | 4000           | 11500                                      | 2000           | 28000                  | 2500           |
| 2        | 22000            | 4000           | 8800                                       | 2000           | 22000                  | 2500           |
| 3        | 16000            | 4000           | 6400                                       | 2000           | 16000                  | 2500           |
| 4        | 12000            | 4000           | 4800                                       | 2000           | 12000                  | 2500           |
| 5        | 10000            | 4000           | 4000                                       | 2000           | 10000                  | 2500           |
| 6        | 8000             | 4000           | 3200                                       | 2000           | 8000                   | 2500           |

### 「DEPTH OF CUT」





# Soft Materials Cutting Series

3F Corner Rounding Cutter

MG

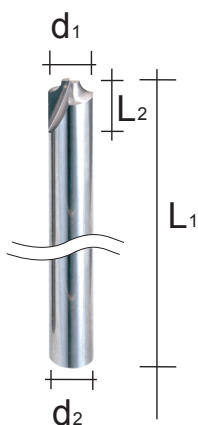
0.6  
μm

CO  
10%

HRC  
▶ 55

外角R刀 3刃立銑刀 超微粒碳化鎢 軟金屬系列

| R角<br>Corner R | 先端徑(D1)<br>Small Mill Dia | 外徑(L2)<br>Diameter | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|---------------------------|--------------------|-----------------|---------------------|
| R0.5           | 1.5                       | 2.7                | 50              | 4                   |
| R0.75          | 1.5                       | 3.2                | 50              | 4                   |
| R1.0           | 1.5                       | 3.7                | 50              | 4                   |
| R1.25          | 1.5                       | 4.2                | 50              | 4                   |
| R1.5           | 1.5                       | 4.7                | 50              | 6                   |
| R1.75          | 1.5                       | 5.2                | 50              | 6                   |
| R2.0           | 1.5                       | 5.7                | 50              | 6                   |
| R2.5           | 1.5                       | 6.7                | 50              | 8                   |
| R3.0           | 1.5                       | 7.7                | 50              | 8                   |
| R4.0           | 2                         | 10.2               | 60              | 12                  |
| R5.0           | 3                         | 13.2               | 75              | 16                  |
| R6.0           | 3                         | 15.2               | 75              | 16                  |





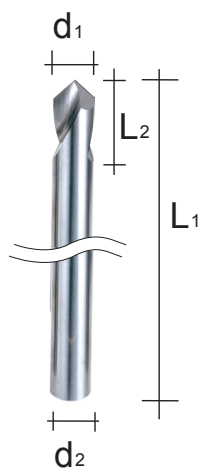


# Soft Materials Cutting Series

NC Spot Drills 60, 90, 120, Degree End Mills



60度 90度 120度 2刃定位鑽頭 超微粒碳化鎢 軟金屬系列

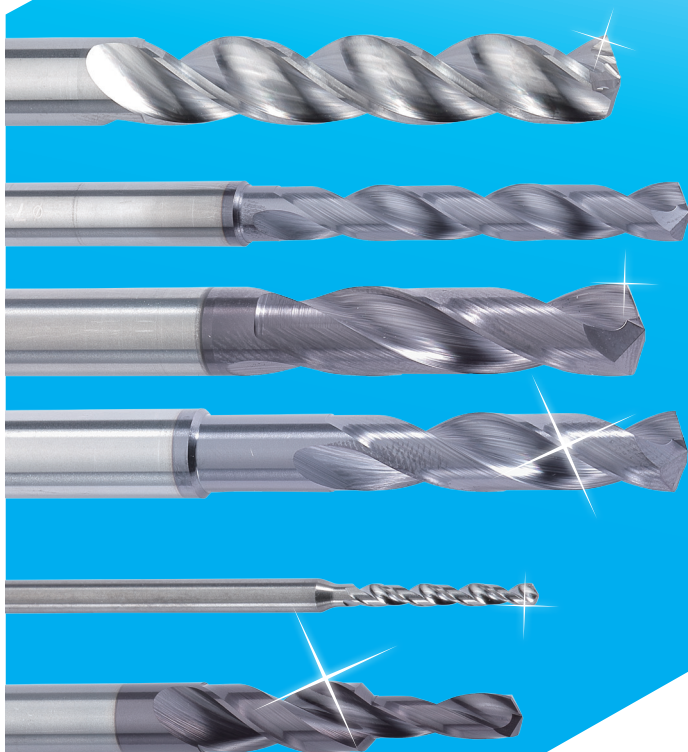


| 刀徑(d1)<br>Diameter | 刀長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|--------------------|------------------------|-----------------|---------------------|
| 2.0                | 4                      | 50              | 2                   |
| 3.0                | 6                      | 50              | 3                   |
| 4.0                | 8                      | 50              | 4                   |
| 4.0                | 8                      | 75              | 4                   |
| 4.0                | 8                      | 100             | 4                   |
| 6.0                | 12                     | 50              | 6                   |
| 6.0                | 12                     | 75              | 6                   |
| 6.0                | 12                     | 100             | 6                   |
| 6.0                | 12                     | 150             | 6                   |
| 8.0                | 16                     | 60              | 8                   |
| 8.0                | 16                     | 100             | 8                   |
| 8.0                | 16                     | 150             | 8                   |
| 8.0                | 16                     | 200             | 8                   |
| 10.0               | 20                     | 75              | 10                  |
| 10.0               | 20                     | 100             | 10                  |
| 10.0               | 20                     | 150             | 10                  |
| 10.0               | 20                     | 200             | 10                  |
| 12.0               | 24                     | 75              | 12                  |
| 12.0               | 24                     | 100             | 12                  |
| 12.0               | 24                     | 150             | 12                  |
| 12.0               | 24                     | 200             | 12                  |
| 16.0               | 30                     | 100             | 16                  |
| 16.0               | 30                     | 150             | 16                  |
| 16.0               | 30                     | 200             | 16                  |
| 20.0               | 30                     | 100             | 20                  |
| 20.0               | 30                     | 150             | 20                  |
| 20.0               | 30                     | 200             | 20                  |

# Carbide Drills Series High Performance Drills

Micro Precision Drills  
High Performance Drills  
3-Flute Drills For Aluminium, Copper  
Combined Drill and Chamfer Tool

鑽頭系列



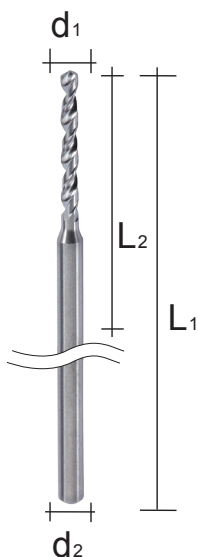


# Micro Precision Drills

For Aluminium, Copper, Plastics, Composite Material

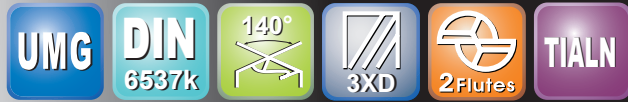


鋁、銅、塑膠、塑膠複合材料 超微粒鎢鋼微小徑鑽頭

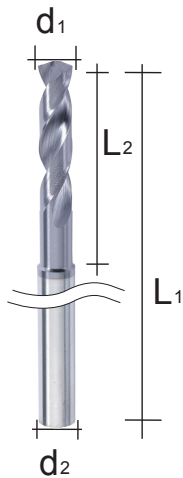


| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刀長(L2)<br>Flute Length | 全長(L1)<br>O.A.L | 柄徑(d2)<br>Shank Dia |
|----------------|--------------------|------------------------|-----------------|---------------------|
| DSE 0030       | 0.30               | 1.9                    | 25              | 1.00                |
| DSE 0035       | 0.35               | 2.4                    | 25              | 1.00                |
| DSE 0040       | 0.40               | 3.0                    | 25              | 1.00                |
| DSE 0045       | 0.45               | 3.0                    | 25              | 1.00                |
| DSE 0050       | 0.50               | 3.4                    | 25              | 1.00                |
| DSE 0055       | 0.55               | 3.9                    | 25              | 1.00                |
| DSE 0060       | 0.60               | 3.9                    | 25              | 1.00                |
| DSE 0065       | 0.65               | 4.2                    | 25              | 1.00                |
| DSE 0070       | 0.70               | 4.8                    | 25              | 1.00                |
| DSE 0075       | 0.75               | 4.8                    | 25              | 1.00                |
| DSE 0080       | 0.80               | 5.3                    | 25              | 1.50                |
| DSE 0085       | 0.85               | 5.3                    | 25              | 1.50                |
| DSE 0090       | 0.90               | 6.0                    | 25              | 1.50                |
| DSE 0095       | 0.95               | 6.0                    | 25              | 1.50                |
| DSE 0100       | 1.00               | 6.8                    | 25              | 1.50                |
| DSE 0105       | 1.05               | 6.8                    | 25              | 1.50                |
| DSE 0110       | 1.10               | 7.6                    | 25              | 1.50                |
| DSE 0115       | 1.15               | 7.6                    | 25              | 1.50                |
| DSE 0120       | 1.20               | 8.5                    | 25              | 1.50                |
| DSE 0125       | 1.25               | 8.5                    | 25              | 1.50                |
| DSE 0130       | 1.30               | 8.5                    | 25              | 1.50                |
| DSE 0135       | 1.35               | 9.5                    | 25              | 1.50                |
| DSE 0140       | 1.40               | 9.5                    | 25              | 1.50                |

# High Performance Drills



高速加工用 極超硬 極超微粒鎢鋼塗層高速鑽頭



| 型號       | 直徑(D1)   | 刃長(L2)       | 全長(L1) | 柄徑(d2)    |
|----------|----------|--------------|--------|-----------|
| Type No. | Diameter | Flute Length | O.A.L  | Shank Dia |
| DE 0300  | 3.0      | 20           | 62     | 6         |
| DE 0310  | 3.1      | 20           | 62     | 6         |
| DE 0320  | 3.2      | 20           | 62     | 6         |
| DE 0330  | 3.3      | 20           | 62     | 6         |
| DE 0340  | 3.4      | 20           | 62     | 6         |
| DE 0350  | 3.5      | 20           | 62     | 6         |
| DE 0360  | 3.6      | 20           | 62     | 6         |
| DE 0370  | 3.7      | 20           | 62     | 6         |
| DE 0380  | 3.8      | 24           | 66     | 6         |
| DE 0390  | 3.9      | 24           | 66     | 6         |
| DE 0400  | 4.0      | 24           | 66     | 6         |
| DE 0410  | 4.1      | 24           | 66     | 6         |
| DE 0420  | 4.2      | 24           | 66     | 6         |
| DE 0430  | 4.3      | 24           | 66     | 6         |
| DE 0440  | 4.4      | 24           | 66     | 6         |
| DE 0450  | 4.5      | 24           | 66     | 6         |
| DE 0460  | 4.6      | 24           | 66     | 6         |
| DE 0470  | 4.7      | 24           | 66     | 6         |
| DE 0480  | 4.8      | 28           | 66     | 6         |
| DE 0490  | 4.9      | 28           | 66     | 6         |
| DE 0500  | 5.0      | 28           | 66     | 6         |
| DE 0510  | 5.1      | 28           | 66     | 6         |
| DE 0520  | 5.2      | 28           | 66     | 6         |
| DE 0530  | 5.3      | 28           | 66     | 6         |
| DE 0540  | 5.4      | 28           | 66     | 6         |
| DE 0550  | 5.5      | 28           | 66     | 6         |
| DE 0560  | 5.6      | 28           | 66     | 6         |
| DE 0570  | 5.7      | 28           | 66     | 6         |
| DE 0580  | 5.8      | 28           | 66     | 6         |
| DE 0590  | 5.9      | 28           | 66     | 6         |
| DE 0600  | 6.0      | 28           | 66     | 6         |
| DE 0610  | 6.1      | 34           | 79     | 8         |
| DE 0620  | 6.2      | 34           | 79     | 8         |
| DE 0630  | 6.3      | 34           | 79     | 8         |
| DE 0640  | 6.4      | 34           | 79     | 8         |
| DE 0650  | 6.5      | 34           | 79     | 8         |
| DE 0660  | 6.6      | 34           | 79     | 8         |
| DE 0670  | 6.7      | 34           | 79     | 8         |
| DE 0680  | 6.8      | 34           | 79     | 8         |

# High Performance Drills

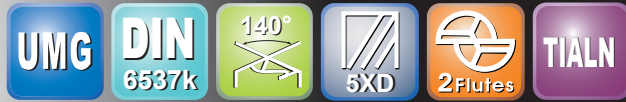


高速加工用 極超硬 極超微粒鎢鋼塗層高速鑽頭

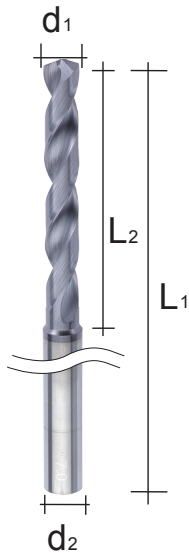
| 型號       | 直徑(D1)   | 刃長(L2)       | 全長(L1) | 柄徑(d2)    |
|----------|----------|--------------|--------|-----------|
| Type No. | Diameter | Flute Length | O.A.L  | Shank Dia |
| DE 0690  | 6.9      | 34           | 79     | 8         |
| DE 0700  | 7.0      | 34           | 79     | 8         |
| DE 0710  | 7.1      | 41           | 79     | 8         |
| DE 0720  | 7.2      | 41           | 79     | 8         |
| DE 0730  | 7.3      | 41           | 79     | 8         |
| DE 0740  | 7.4      | 41           | 79     | 8         |
| DE 0750  | 7.5      | 41           | 79     | 8         |
| DE 0760  | 7.6      | 41           | 79     | 8         |
| DE 0770  | 7.7      | 41           | 79     | 8         |
| DE 0780  | 7.8      | 41           | 79     | 8         |
| DE 0790  | 7.9      | 41           | 79     | 8         |
| DE 0800  | 8.0      | 41           | 79     | 8         |
| DE 0810  | 8.1      | 47           | 89     | 10        |
| DE 0820  | 8.2      | 47           | 89     | 10        |
| DE 0830  | 8.3      | 47           | 89     | 10        |
| DE 0840  | 8.4      | 47           | 89     | 10        |
| DE 0850  | 8.5      | 47           | 89     | 10        |
| DE 0860  | 8.6      | 47           | 89     | 10        |
| DE 0870  | 8.7      | 47           | 89     | 10        |
| DE 0880  | 8.8      | 47           | 89     | 10        |
| DE 0890  | 8.9      | 47           | 89     | 10        |
| DE 0900  | 9.0      | 47           | 89     | 10        |
| DE 0910  | 9.1      | 47           | 89     | 10        |
| DE 0920  | 9.2      | 47           | 89     | 10        |
| DE 0930  | 9.3      | 47           | 89     | 10        |
| DE 0940  | 9.4      | 47           | 89     | 10        |
| DE 0950  | 9.5      | 47           | 89     | 10        |
| DE 0960  | 9.6      | 47           | 89     | 10        |
| DE 0970  | 9.7      | 47           | 89     | 10        |
| DE 0980  | 9.8      | 47           | 89     | 10        |
| DE 0990  | 9.9      | 47           | 89     | 10        |
| DE 1000  | 10.0     | 47           | 89     | 10        |
| DE 1020  | 10.2     | 55           | 102    | 12        |
| DE 1050  | 10.5     | 55           | 102    | 12        |
| DE 1080  | 10.8     | 55           | 102    | 12        |
| DE 1100  | 11.0     | 55           | 102    | 12        |
| DE 1150  | 11.5     | 55           | 102    | 12        |
| DE 1200  | 12.0     | 55           | 102    | 12        |
| DE 1250  | 12.5     | 60           | 107    | 14        |

| 型號       | 直徑(D1)   | 刃長(L2)       | 全長(L1) | 柄徑(d2)    |
|----------|----------|--------------|--------|-----------|
| Type No. | Diameter | Flute Length | O.A.L  | Shank Dia |
| DE 1300  | 13.0     | 60           | 107    | 14        |
| DE 1350  | 13.5     | 60           | 107    | 14        |
| DE 1400  | 14.0     | 60           | 107    | 14        |
| DE 1450  | 14.5     | 65           | 115    | 16        |
| DE 1500  | 15.0     | 65           | 115    | 16        |
| DE 1550  | 15.5     | 65           | 115    | 16        |
| DE 1600  | 16.0     | 65           | 115    | 16        |
| DE 1650  | 16.5     | 73           | 123    | 18        |
| DE 1700  | 17.0     | 73           | 123    | 18        |
| DE 1750  | 17.5     | 73           | 123    | 18        |
| DE 1800  | 18.0     | 73           | 123    | 18        |
| DE 1850  | 18.5     | 79           | 131    | 20        |
| DE 1900  | 19.0     | 79           | 131    | 20        |
| DE 1950  | 19.5     | 79           | 131    | 20        |
| DE 2000  | 20.0     | 79           | 131    | 20        |

# High Performance Drills



高速加工用 極超硬 極超微粒鎢鋼塗層高速鑽頭



| 型號       | 直徑(D1)   | 刃長(L2)       | 全長(L1) | 柄徑(d2)    |
|----------|----------|--------------|--------|-----------|
| Type No. | Diameter | Flute Length | O.A.L  | Shank Dia |
| DEF 0300 | 3.0      | 28           | 66     | 6         |
| DEF 0310 | 3.1      | 28           | 66     | 6         |
| DEF 0320 | 3.2      | 28           | 66     | 6         |
| DEF 0330 | 3.3      | 28           | 66     | 6         |
| DEF 0340 | 3.4      | 28           | 66     | 6         |
| DEF 0350 | 3.5      | 28           | 66     | 6         |
| DEF 0360 | 3.6      | 28           | 66     | 6         |
| DEF 0370 | 3.7      | 28           | 66     | 6         |
| DEF 0380 | 3.8      | 36           | 74     | 6         |
| DEF 0390 | 3.9      | 36           | 74     | 6         |
| DEF 0400 | 4.0      | 36           | 74     | 6         |
| DEF 0410 | 4.1      | 36           | 74     | 6         |
| DEF 0420 | 4.2      | 36           | 74     | 6         |
| DEF 0430 | 4.3      | 36           | 74     | 6         |
| DEF 0440 | 4.4      | 36           | 74     | 6         |
| DEF 0450 | 4.5      | 36           | 74     | 6         |
| DEF 0460 | 4.6      | 36           | 74     | 6         |
| DEF 0470 | 4.7      | 36           | 74     | 6         |
| DEF 0480 | 4.8      | 44           | 82     | 6         |
| DEF 0490 | 4.9      | 44           | 82     | 6         |
| DEF 0500 | 5.0      | 44           | 82     | 6         |
| DEF 0510 | 5.1      | 44           | 82     | 6         |
| DEF 0520 | 5.2      | 44           | 82     | 6         |
| DEF 0530 | 5.3      | 44           | 82     | 6         |
| DEF 0540 | 5.4      | 44           | 82     | 6         |
| DEF 0550 | 5.5      | 44           | 82     | 6         |
| DEF 0560 | 5.6      | 44           | 82     | 6         |
| DEF 0570 | 5.7      | 44           | 82     | 6         |
| DEF 0580 | 5.8      | 44           | 82     | 6         |
| DEF 0590 | 5.9      | 44           | 82     | 6         |
| DEF 0600 | 6.0      | 44           | 82     | 6         |
| DEF 0610 | 6.1      | 53           | 91     | 8         |
| DEF 0620 | 6.2      | 53           | 91     | 8         |
| DEF 0630 | 6.3      | 53           | 91     | 8         |
| DEF 0640 | 6.4      | 53           | 91     | 8         |
| DEF 0650 | 6.5      | 53           | 91     | 8         |
| DEF 0660 | 6.6      | 53           | 91     | 8         |
| DEF 0670 | 6.7      | 53           | 91     | 8         |
| DEF 0680 | 6.8      | 53           | 91     | 8         |



# High Performance Drills



高速加工用 極超硬 極超微粒鎢鋼塗層高速鑽頭

| 型號       | 直徑(D1)   | 刃長(L2)       | 全長(L1) | 柄徑(d2)    | 型號       | 直徑(D1)   | 刃長(L2)       | 全長(L1) | 柄徑(d2)    |
|----------|----------|--------------|--------|-----------|----------|----------|--------------|--------|-----------|
| Type No. | Diameter | Flute Length | O.A.L  | Shank Dia | Type No. | Diameter | Flute Length | O.A.L  | Shank Dia |
| DEF 0690 | 6.9      | 53           | 91     | 8         | DEF 1300 | 13.0     | 77           | 124    | 14        |
| DEF 0700 | 7.0      | 53           | 91     | 8         | DEF 1350 | 13.5     | 77           | 124    | 14        |
| DEF 0710 | 7.1      | 53           | 91     | 8         | DEF 1400 | 14.0     | 77           | 124    | 14        |
| DEF 0720 | 7.2      | 53           | 91     | 8         | DEF 1450 | 14.5     | 83           | 133    | 16        |
| DEF 0730 | 7.3      | 53           | 91     | 8         | DEF 1500 | 15.0     | 83           | 133    | 16        |
| DEF 0740 | 7.4      | 53           | 91     | 8         | DEF 1550 | 15.5     | 83           | 133    | 16        |
| DEF 0750 | 7.5      | 53           | 91     | 8         | DEF 1600 | 16.0     | 83           | 133    | 16        |
| DEF 0760 | 7.6      | 53           | 91     | 8         | DEF 1650 | 16.5     | 93           | 143    | 18        |
| DEF 0770 | 7.7      | 53           | 91     | 8         | DEF 1700 | 17.0     | 93           | 143    | 18        |
| DEF 0780 | 7.8      | 53           | 91     | 8         | DEF 1750 | 17.5     | 93           | 143    | 18        |
| DEF 0790 | 7.9      | 53           | 91     | 8         | DEF 1800 | 18.0     | 93           | 143    | 18        |
| DEF 0800 | 8.0      | 53           | 91     | 8         | DEF 1850 | 18.5     | 101          | 153    | 20        |
| DEF 0810 | 8.1      | 61           | 103    | 10        | DEF 1900 | 19.0     | 101          | 153    | 20        |
| DEF 0820 | 8.2      | 61           | 103    | 10        | DEF 1950 | 19.5     | 101          | 153    | 20        |
| DEF 0830 | 8.3      | 61           | 103    | 10        | DEF 2000 | 20.0     | 101          | 153    | 20        |
| DEF 0840 | 8.4      | 61           | 103    | 10        |          |          |              |        |           |
| DEF 0850 | 8.5      | 61           | 103    | 10        |          |          |              |        |           |
| DEF 0860 | 8.6      | 61           | 103    | 10        |          |          |              |        |           |
| DEF 0870 | 8.7      | 61           | 103    | 10        |          |          |              |        |           |
| DEF 0880 | 8.8      | 61           | 103    | 10        |          |          |              |        |           |
| DEF 0890 | 8.9      | 61           | 103    | 10        |          |          |              |        |           |
| DEF 0900 | 9.0      | 61           | 103    | 10        |          |          |              |        |           |
| DEF 0910 | 9.1      | 61           | 103    | 10        |          |          |              |        |           |
| DEF 0920 | 9.2      | 61           | 103    | 10        |          |          |              |        |           |
| DEF 0930 | 9.3      | 61           | 103    | 10        |          |          |              |        |           |
| DEF 0940 | 9.4      | 61           | 103    | 10        |          |          |              |        |           |
| DEF 0950 | 9.5      | 61           | 103    | 10        |          |          |              |        |           |
| DEF 0960 | 9.6      | 61           | 103    | 10        |          |          |              |        |           |
| DEF 0970 | 9.7      | 61           | 103    | 10        |          |          |              |        |           |
| DEF 0980 | 9.8      | 61           | 103    | 10        |          |          |              |        |           |
| DEF 0990 | 9.9      | 61           | 103    | 10        |          |          |              |        |           |
| DEF 1000 | 10.0     | 61           | 103    | 10        |          |          |              |        |           |
| DEF 1020 | 10.2     | 71           | 118    | 12        |          |          |              |        |           |
| DEF 1050 | 10.5     | 71           | 118    | 12        |          |          |              |        |           |
| DEF 1080 | 10.8     | 71           | 118    | 12        |          |          |              |        |           |
| DEF 1100 | 11.0     | 71           | 118    | 12        |          |          |              |        |           |
| DEF 1150 | 11.5     | 71           | 118    | 12        |          |          |              |        |           |
| DEF 1200 | 12.0     | 71           | 118    | 12        |          |          |              |        |           |
| DEF 1250 | 12.5     | 77           | 124    | 14        |          |          |              |        |           |

# High Performance Drills

**MG**

**DIN**  
6539

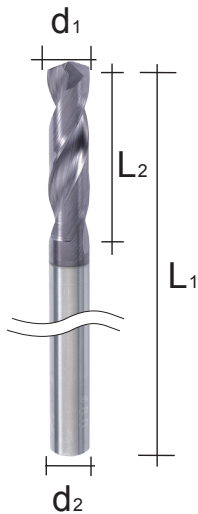
140°

3XD

2 Flutes

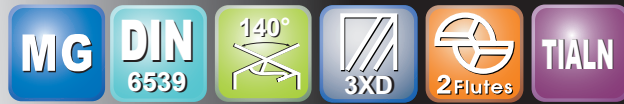
**TIALN**

高速加工用 超硬 超微粒鎢鋼塗層高速鑽頭



| 型號       | 直徑(D1)   | 刀長(L2)       | 全長(L1) |
|----------|----------|--------------|--------|
| Type No. | Diameter | Flute Length | O.A.L. |
| DEE 0200 | 2.0      | 12           | 38     |
| DEE 0210 | 2.1      | 12           | 38     |
| DEE 0220 | 2.2      | 13           | 40     |
| DEE 0230 | 2.3      | 13           | 40     |
| DEE 0240 | 2.4      | 14           | 43     |
| DEE 0250 | 2.5      | 14           | 43     |
| DEE 0260 | 2.6      | 14           | 43     |
| DEE 0270 | 2.7      | 16           | 46     |
| DEE 0280 | 2.8      | 16           | 46     |
| DEE 0290 | 2.9      | 16           | 46     |
| DEE 0300 | 3.0      | 16           | 46     |
| DEE 0310 | 3.1      | 18           | 49     |
| DEE 0320 | 3.2      | 18           | 49     |
| DEE 0330 | 3.3      | 18           | 49     |
| DEE 0340 | 3.4      | 20           | 52     |
| DEE 0350 | 3.5      | 20           | 52     |
| DEE 0360 | 3.6      | 20           | 52     |
| DEE 0370 | 3.7      | 20           | 55     |
| DEE 0380 | 3.8      | 22           | 55     |
| DEE 0390 | 3.9      | 22           | 55     |
| DEE 0400 | 4.0      | 22           | 55     |
| DEE 0410 | 4.1      | 22           | 55     |
| DEE 0420 | 4.2      | 22           | 55     |
| DEE 0430 | 4.3      | 24           | 58     |
| DEE 0440 | 4.4      | 24           | 58     |
| DEE 0450 | 4.5      | 24           | 58     |
| DEE 0460 | 4.6      | 24           | 58     |
| DEE 0470 | 4.7      | 24           | 58     |
| DEE 0480 | 4.8      | 26           | 62     |
| DEE 0490 | 4.9      | 26           | 62     |
| DEE 0500 | 5.0      | 26           | 62     |
| DEE 0510 | 5.1      | 26           | 62     |
| DEE 0520 | 5.2      | 26           | 62     |
| DEE 0530 | 5.3      | 26           | 62     |
| DEE 0540 | 5.4      | 28           | 66     |
| DEE 0550 | 5.5      | 28           | 66     |
| DEE 0560 | 5.6      | 28           | 66     |
| DEE 0570 | 5.7      | 28           | 66     |
| DEE 0580 | 5.8      | 28           | 66     |

# High Performance Drills



高速加工用 超硬 超微粒鎢鋼塗層高速鑽頭

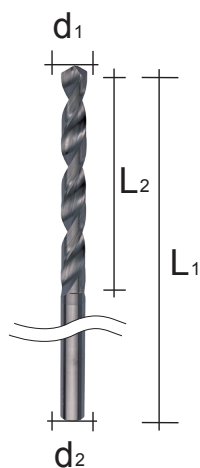
| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刀長(L2)<br>Flute Length | 全長(L1)<br>O.A.L |
|----------------|--------------------|------------------------|-----------------|
| DEE 0590       | 5.9                | 28                     | 66              |
| DEE 0600       | 6.0                | 28                     | 66              |
| DEE 0610       | 6.1                | 31                     | 70              |
| DEE 0620       | 6.2                | 31                     | 70              |
| DEE 0630       | 6.3                | 31                     | 70              |
| DEE 0640       | 6.4                | 31                     | 70              |
| DEE 0650       | 6.5                | 31                     | 70              |
| DEE 0660       | 6.6                | 31                     | 70              |
| DEE 0670       | 6.7                | 31                     | 70              |
| DEE 0680       | 6.8                | 34                     | 74              |
| DEE 0690       | 6.9                | 34                     | 74              |
| DEE 0700       | 7.0                | 34                     | 74              |
| DEE 0710       | 7.1                | 34                     | 74              |
| DEE 0720       | 7.2                | 34                     | 74              |
| DEE 0730       | 7.3                | 34                     | 74              |
| DEE 0740       | 7.4                | 34                     | 74              |
| DEE 0750       | 7.5                | 34                     | 74              |
| DEE 0760       | 7.6                | 37                     | 79              |
| DEE 0770       | 7.7                | 37                     | 79              |
| DEE 0780       | 7.8                | 37                     | 79              |
| DEE 0790       | 7.9                | 37                     | 79              |
| DEE 0800       | 8.0                | 37                     | 79              |
| DEE 0810       | 8.1                | 37                     | 79              |
| DEE 0820       | 8.2                | 37                     | 79              |
| DEE 0830       | 8.3                | 37                     | 79              |
| DEE 0840       | 8.4                | 37                     | 79              |
| DEE 0850       | 8.5                | 37                     | 79              |
| DEE 0860       | 8.6                | 40                     | 84              |
| DEE 0870       | 8.7                | 40                     | 84              |
| DEE 0880       | 8.8                | 40                     | 84              |
| DEE 0890       | 8.9                | 40                     | 84              |
| DEE 0900       | 9.0                | 40                     | 84              |
| DEE 0910       | 9.1                | 40                     | 84              |
| DEE 0920       | 9.2                | 40                     | 84              |
| DEE 0930       | 9.3                | 40                     | 84              |
| DEE 0940       | 9.4                | 40                     | 84              |
| DEE 0950       | 9.5                | 40                     | 84              |
| DEE 0960       | 9.6                | 43                     | 89              |
| DEE 0970       | 9.7                | 43                     | 89              |

| 型號<br>Type No. | 直徑(D1)<br>Diameter | 刀長(L2)<br>Flute Length | 全長(L1)<br>O.A.L |
|----------------|--------------------|------------------------|-----------------|
| DEE 0980       | 9.8                | 43                     | 89              |
| DEE 0990       | 9.9                | 43                     | 89              |
| DEE 1000       | 10.0               | 43                     | 89              |
| DEE 1020       | 10.2               | 43                     | 89              |
| DEE 1050       | 10.5               | 43                     | 89              |
| DEE 1080       | 10.8               | 47                     | 95              |
| DEE 1100       | 11.0               | 47                     | 95              |
| DEE 1150       | 11.5               | 47                     | 95              |
| DEE 1200       | 12.0               | 51                     | 102             |
| DEE 1250       | 12.5               | 51                     | 102             |
| DEE 1300       | 13.0               | 51                     | 102             |

# High Performance Drills



高速加工用 超硬 超微粒鎢鋼塗層高速鑽頭



| 型號        | 直徑(D1)   | 刀長(L2)       | 全長(L1) |
|-----------|----------|--------------|--------|
| Type No.  | Diameter | Flute Length | O.A.L  |
| DEEF 0200 | 2.0      | 24           | 49     |
| DEEF 0210 | 2.1      | 24           | 49     |
| DEEF 0220 | 2.2      | 27           | 53     |
| DEEF 0230 | 2.3      | 27           | 53     |
| DEEF 0240 | 2.4      | 30           | 57     |
| DEEF 0250 | 2.5      | 30           | 57     |
| DEEF 0260 | 2.6      | 30           | 57     |
| DEEF 0270 | 2.7      | 33           | 61     |
| DEEF 0280 | 2.8      | 33           | 61     |
| DEEF 0290 | 2.9      | 33           | 61     |
| DEEF 0300 | 3.0      | 33           | 61     |
| DEEF 0310 | 3.1      | 36           | 65     |
| DEEF 0320 | 3.2      | 36           | 65     |
| DEEF 0330 | 3.3      | 36           | 65     |
| DEEF 0340 | 3.4      | 39           | 70     |
| DEEF 0350 | 3.5      | 39           | 70     |
| DEEF 0360 | 3.6      | 39           | 70     |
| DEEF 0370 | 3.7      | 39           | 70     |
| DEEF 0380 | 3.8      | 43           | 75     |
| DEEF 0390 | 3.9      | 43           | 75     |
| DEEF 0400 | 4.0      | 43           | 75     |
| DEEF 0410 | 4.1      | 43           | 75     |
| DEEF 0420 | 4.2      | 43           | 75     |
| DEEF 0430 | 4.3      | 47           | 80     |
| DEEF 0440 | 4.4      | 47           | 80     |
| DEEF 0450 | 4.5      | 47           | 80     |
| DEEF 0460 | 4.6      | 47           | 80     |
| DEEF 0470 | 4.7      | 47           | 80     |
| DEEF 0480 | 4.8      | 52           | 86     |
| DEEF 0490 | 4.9      | 52           | 86     |
| DEEF 0500 | 5.0      | 52           | 86     |
| DEEF 0510 | 5.1      | 52           | 86     |
| DEEF 0520 | 5.2      | 52           | 86     |
| DEEF 0530 | 5.3      | 52           | 86     |
| DEEF 0540 | 5.4      | 57           | 93     |
| DEEF 0550 | 5.5      | 57           | 93     |
| DEEF 0560 | 5.6      | 57           | 93     |
| DEEF 0570 | 5.7      | 57           | 93     |
| DEEF 0580 | 5.8      | 57           | 93     |

# High Performance Drills



高速加工用 超硬 超微粒鎢鋼塗層高速鑽頭

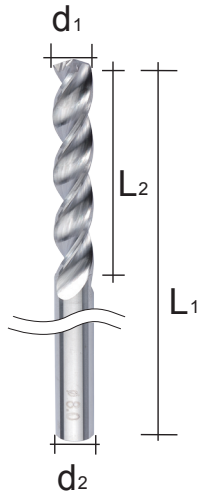
| 型號        | 直徑(D1)   | 刃長(L2)       | 全長(L1) |
|-----------|----------|--------------|--------|
| Type No.  | Diameter | Flute Length | O.A.L  |
| DEEF 0590 | 5.9      | 57           | 93     |
| DEEF 0600 | 6.0      | 57           | 93     |
| DEEF 0610 | 6.1      | 63           | 101    |
| DEEF 0620 | 6.2      | 63           | 101    |
| DEEF 0630 | 6.3      | 63           | 101    |
| DEEF 0640 | 6.4      | 63           | 101    |
| DEEF 0650 | 6.5      | 63           | 101    |
| DEEF 0660 | 6.6      | 63           | 101    |
| DEEF 0670 | 6.7      | 63           | 101    |
| DEEF 0680 | 6.8      | 69           | 109    |
| DEEF 0690 | 6.9      | 69           | 109    |
| DEEF 0700 | 7.0      | 69           | 109    |
| DEEF 0710 | 7.1      | 69           | 109    |
| DEEF 0720 | 7.2      | 69           | 109    |
| DEEF 0730 | 7.3      | 69           | 109    |
| DEEF 0740 | 7.4      | 69           | 109    |
| DEEF 0750 | 7.5      | 69           | 109    |
| DEEF 0760 | 7.6      | 75           | 117    |
| DEEF 0770 | 7.7      | 75           | 117    |
| DEEF 0780 | 7.8      | 75           | 117    |
| DEEF 0790 | 7.9      | 75           | 117    |
| DEEF 0800 | 8.0      | 75           | 117    |
| DEEF 0810 | 8.1      | 75           | 117    |
| DEEF 0820 | 8.2      | 75           | 117    |
| DEEF 0830 | 8.3      | 75           | 117    |
| DEEF 0840 | 8.4      | 75           | 117    |
| DEEF 0850 | 8.5      | 75           | 117    |
| DEEF 0860 | 8.6      | 81           | 125    |
| DEEF 0870 | 8.7      | 81           | 125    |
| DEEF 0880 | 8.8      | 81           | 125    |
| DEEF 0890 | 8.9      | 81           | 125    |
| DEEF 0900 | 9.0      | 81           | 125    |
| DEEF 0910 | 9.1      | 81           | 125    |
| DEEF 0920 | 9.2      | 81           | 125    |
| DEEF 0930 | 9.3      | 81           | 125    |
| DEEF 0940 | 9.4      | 81           | 125    |
| DEEF 0950 | 9.5      | 81           | 125    |
| DEEF 0960 | 9.6      | 87           | 133    |
| DEEF 0970 | 9.7      | 87           | 133    |

| 型號        | 直徑(D1)   | 刃長(L2)       | 全長(L1) |
|-----------|----------|--------------|--------|
| Type No.  | Diameter | Flute Length | O.A.L  |
| DEEF 0980 | 9.8      | 87           | 133    |
| DEEF 0990 | 9.9      | 87           | 133    |
| DEEF 1000 | 10.0     | 87           | 133    |
| DEEF 1020 | 10.2     | 87           | 133    |
| DEEF 1050 | 10.5     | 87           | 133    |
| DEEF 1080 | 10.8     | 94           | 142    |
| DEEF 1100 | 11.0     | 94           | 142    |
| DEEF 1150 | 11.5     | 94           | 142    |
| DEEF 1200 | 12.0     | 101          | 151    |
| DEEF 1250 | 12.5     | 101          | 151    |
| DEEF 1300 | 13.0     | 101          | 151    |

## 3-Flute Drills For Aluminium, Copper



鋁銅合金專用 3刃鑽頭



| 型號       | 直徑(D1)   | 刃長(L2)       | 全長(L1) | 型號       | 直徑(D1)   | 刃長(L2)       | 全長(L1) |
|----------|----------|--------------|--------|----------|----------|--------------|--------|
| Type No. | Diameter | Flute Length | O.A.L. | Type No. | Diameter | Flute Length | O.A.L. |
| DA 0300  | 3.0      | 22           | 46     | DA 0700  | 7.0      | 45           | 74     |
| DA 0310  | 3.1      | 24           | 49     | DA 0710  | 7.1      | 45           | 74     |
| DA 0320  | 3.2      | 24           | 49     | DA 0720  | 7.2      | 45           | 74     |
| DA 0330  | 3.3      | 24           | 49     | DA 0730  | 7.3      | 45           | 74     |
| DA 0340  | 3.4      | 27           | 52     | DA 0740  | 7.4      | 45           | 74     |
| DA 0350  | 3.5      | 27           | 52     | DA 0750  | 7.5      | 45           | 74     |
| DA 0360  | 3.6      | 27           | 52     | DA 0760  | 7.6      | 48           | 79     |
| DA 0370  | 3.7      | 27           | 52     | DA 0770  | 7.7      | 48           | 79     |
| DA 0380  | 3.8      | 30           | 55     | DA 0780  | 7.8      | 48           | 79     |
| DA 0390  | 3.9      | 30           | 55     | DA 0790  | 7.9      | 48           | 79     |
| DA 0400  | 4.0      | 30           | 55     | DA 0800  | 8.0      | 48           | 79     |
| DA 0410  | 4.1      | 30           | 55     | DA 0810  | 8.1      | 48           | 79     |
| DA 0420  | 4.2      | 30           | 55     | DA 0820  | 8.2      | 48           | 79     |
| DA 0430  | 4.3      | 32           | 58     | DA 0830  | 8.3      | 48           | 79     |
| DA 0440  | 4.4      | 32           | 58     | DA 0840  | 8.4      | 48           | 79     |
| DA 0450  | 4.5      | 32           | 58     | DA 0850  | 8.5      | 48           | 79     |
| DA 0460  | 4.6      | 32           | 58     | DA 0860  | 8.6      | 52           | 84     |
| DA 0470  | 4.7      | 32           | 58     | DA 0870  | 8.7      | 52           | 84     |
| DA 0480  | 4.8      | 35           | 62     | DA 0880  | 8.8      | 52           | 84     |
| DA 0490  | 4.9      | 35           | 62     | DA 0890  | 8.9      | 52           | 84     |
| DA 0500  | 5.0      | 35           | 62     | DA 0900  | 9.0      | 52           | 84     |
| DA 0510  | 5.1      | 35           | 62     | DA 0910  | 9.1      | 52           | 84     |
| DA 0520  | 5.2      | 35           | 62     | DA 0920  | 9.2      | 52           | 84     |
| DA 0530  | 5.3      | 35           | 62     | DA 0930  | 9.3      | 52           | 84     |
| DA 0540  | 5.4      | 39           | 66     | DA 0940  | 9.4      | 52           | 84     |
| DA 0550  | 5.5      | 39           | 66     | DA 0950  | 9.5      | 52           | 84     |
| DA 0560  | 5.6      | 39           | 66     | DA 0960  | 9.6      | 55           | 89     |
| DA 0570  | 5.7      | 39           | 66     | DA 0970  | 9.7      | 55           | 89     |
| DA 0580  | 5.8      | 39           | 66     | DA 0980  | 9.8      | 55           | 89     |
| DA 0590  | 5.9      | 39           | 66     | DA 0990  | 9.9      | 55           | 89     |
| DA 0600  | 6.0      | 39           | 66     | DA 1000  | 10.0     | 55           | 89     |
| DA 0610  | 6.1      | 42           | 70     | DA 1020  | 10.2     | 55           | 89     |
| DA 0620  | 6.2      | 42           | 70     | DA 1050  | 10.5     | 55           | 89     |
| DA 0630  | 6.3      | 42           | 70     | DA 1080  | 10.8     | 60           | 95     |
| DA 0640  | 6.4      | 42           | 70     | DA 1100  | 11.0     | 60           | 95     |
| DA 0650  | 6.5      | 42           | 70     | DA 1150  | 11.5     | 60           | 95     |
| DA 0660  | 6.6      | 42           | 70     | DA 1200  | 12.0     | 65           | 102    |
| DA 0670  | 6.7      | 42           | 70     | DA 1250  | 12.5     | 65           | 102    |
| DA 0680  | 6.8      | 45           | 74     | DA 1300  | 13.0     | 65           | 102    |
| DA 0690  | 6.9      | 45           | 74     |          |          |              |        |

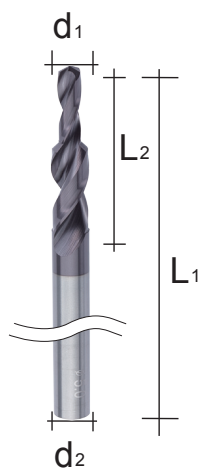


# Combined Drill and Chamfer Tool



極超硬 極超微粒鎢鋼塗層階梯鑽頭

| 型號       | 直徑(D1)   | 刃長(L1)       | 刃長(L2)       | 全長(L) | 柄徑(d2)    |
|----------|----------|--------------|--------------|-------|-----------|
| Type No. | Diameter | Flute Length | Flute Length | O.A.L | Shank Dia |
| M4       | 3.3      | 11.4         | 28           | 66    | 6         |
| M5       | 4.2      | 13.6         | 28           | 66    | 6         |
| M6       | 5.0      | 16.5         | 41           | 79    | 8         |
| M8       | 6.8      | 21.0         | 47           | 89    | 10        |
| M10      | 8.5      | 25.5         | 55           | 102   | 12        |
| M12      | 10.2     | 30.0         | 60           | 107   | 14        |
| M14      | 12.0     | 34.5         | 65           | 115   | 16        |
| M16      | 14.0     | 38.5         | 73           | 123   | 18        |



# THREAD MILLING TOOL SERIES



Thread Milling Tool Series

## 螺紋銑刀系列

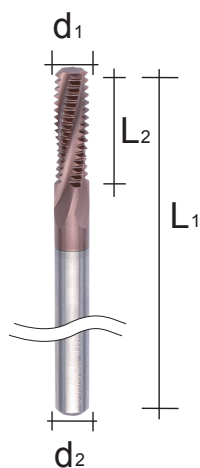


# Thread Milling Tool Series



高硬度用螺紋銑刀

| 型號         | 螺距(D1) | 粗牙(L2) | 細牙(L1) | 直徑(L1)   | 柄徑(d2)    | 刀數(d2) | 刃長(d2)       | 全長(d2) |
|------------|--------|--------|--------|----------|-----------|--------|--------------|--------|
| Type No.   | Pitch  | Coarse | Fine   | Diameter | Shank Dia | Flute  | Flute Length | O.A.L  |
| TR 230505  | 0.5    | M3     | ≧ M4   | 2.3      | 6         | 4      | 5.2          | 40     |
| TR 230507  | 0.5    | M3     | ≧ M4   | 2.3      | 6         | 4      | 7.2          | 40     |
| TR 300707  | 0.7    | M4     |        | 3.0      | 6         | 4      | 7.28         | 40     |
| TR 300710  | 0.7    | M4     |        | 3.0      | 6         | 4      | 10.08        | 40     |
| TR 380809  | 0.8    | M5     |        | 3.8      | 6         | 4      | 9.12         | 50     |
| TR 380812  | 0.8    | M5     |        | 3.8      | 6         | 4      | 12.32        | 50     |
| TR 451010  | 1.0    | M6     | ≧ M8   | 4.5      | 6         | 4      | 10.4         | 60     |
| TR 451014  | 1.0    | M6     | ≧ M8   | 4.5      | 6         | 4      | 14.4         | 60     |
| TR 6012514 | 1.25   | M8     | ≧ M10  | 6.0      | 6         | 4      | 14.25        | 60     |
| TR 6012519 | 1.25   | M8     | ≧ M10  | 6.0      | 6         | 4      | 19.25        | 60     |



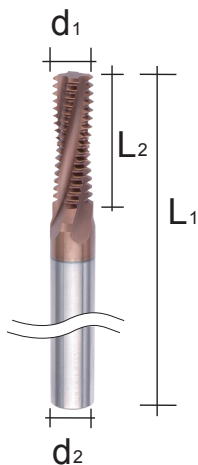
# Thread Milling Tool Series



高硬度用螺紋銑刀



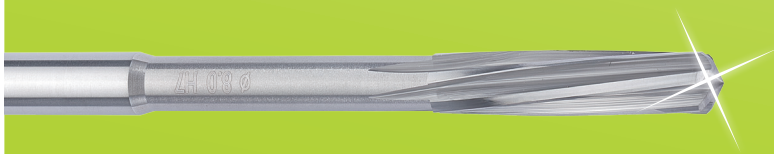
| 型號           | 直徑(L1)   | 刃長(d2)       | 全長(d2) | 柄徑(d2)    | 刃數(d2) | 螺距(d2) | 螺牙(d2)      |
|--------------|----------|--------------|--------|-----------|--------|--------|-------------|
| Type No.     | Diameter | Flute Length | O.A.L  | Shank Dia | Flute  | Pitch  | Thread Size |
| TH 023005M3  | 2.3      | 5.2          | 40     | 6         | 3      | 0.5    | M3          |
| TH 023007M3  | 2.3      | 7.2          | 40     | 6         | 3      | 0.5    | M3          |
| TH 030007M4  | 3.0      | 7.28         | 40     | 6         | 3      | 0.7    | M4          |
| TH 030010M4  | 3.0      | 10.08        | 40     | 6         | 3      | 0.7    | M4          |
| TH 038009M5  | 3.8      | 9.12         | 50     | 6         | 3      | 0.8    | M5          |
| TH 038012M5  | 3.8      | 12.32        | 50     | 6         | 3      | 0.8    | M5          |
| TH 045010M6  | 4.5      | 10.4         | 60     | 6         | 3      | 1.0    | M6          |
| TH 045014M6  | 4.5      | 14.4         | 60     | 6         | 3      | 1.0    | M6          |
| TH 060014M8  | 6.0      | 14.25        | 60     | 8         | 3      | 1.25   | M8          |
| TH 060019M8  | 6.0      | 19.25        | 60     | 8         | 3      | 1.25   | M8          |
| TH 075017M10 | 7.5      | 17.1         | 60     | 8         | 3      | 1.5    | M10         |
| TH 075024M10 | 7.5      | 24.6         | 75     | 8         | 3      | 1.5    | M10         |
| TH 080019M12 | 8.0      | 19.95        | 60     | 8         | 3      | 1.75   | M12         |
| TH 080028M12 | 8.0      | 28.7         | 75     | 8         | 3      | 1.75   | M12         |
| TH 090019M12 | 9.0      | 19.95        | 75     | 10        | 4      | 1.75   | M12         |
| TH 090028M12 | 9.0      | 28.7         | 75     | 10        | 4      | 1.75   | M12         |
| TH 100026M14 | 10.0     | 26.8         | 75     | 10        | 4      | 2.0    | M14         |
| TH 100038M14 | 10.0     | 38.8         | 100    | 10        | 4      | 2.0    | M14         |
| TH 120026M16 | 12.0     | 26.8         | 80     | 12        | 4      | 2.0    | M16         |
| TH 120038M16 | 12.0     | 38.8         | 100    | 12        | 4      | 2.0    | M16         |
| TH 120031M18 | 12.0     | 31           | 100    | 12        | 4      | 2.5    | M18         |
| TH 120043M18 | 12.0     | 43.5         | 100    | 12        | 4      | 2.5    | M18         |
| TH 140033M20 | 14.0     | 33.5         | 100    | 14        | 4      | 2.5    | M20         |
| TH 140048M20 | 14.0     | 48.5         | 100    | 14        | 4      | 2.5    | M20         |
| TH 160040M24 | 16.0     | 40.2         | 100    | 16        | 5      | 3.0    | M24         |
| TH 160058M24 | 16.0     | 58.2         | 120    | 16        | 5      | 3.0    | M24         |



# Carbide Reamers

Machine Reamers In Steps of 0.1mm  
NC Machine Reamers

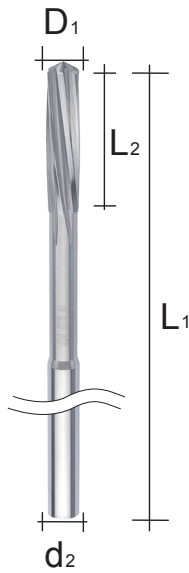
銑刀系列



# Machine Reamers In Steps of 0.1mm



鎢鋼絞刀 超硬(0.1mm指定單位)



| 型號       | 直徑(D1)   | 刀長(L2)       | 全長(L1) | 刀數    |
|----------|----------|--------------|--------|-------|
| Type No. | Diameter | Flute Length | O.A.L  | Flute |
| RE 0100  | 1.0      | 6            | 34     | 4     |
| RE 0110  | 1.1      | 7            | 36     | 4     |
| RE 0120  | 1.2      | 7            | 38     | 4     |
| RE 0120  | 1.3      | 7            | 38     | 4     |
| RE 0140  | 1.4      | 8            | 40     | 4     |
| RE 0150  | 1.5      | 8            | 40     | 4     |
| RE 0160  | 1.6      | 9            | 43     | 4     |
| RE 0170  | 1.7      | 9            | 43     | 4     |
| RE 0180  | 1.8      | 10           | 46     | 4     |
| RE 0190  | 1.9      | 10           | 46     | 4     |
| RE 0200  | 2.0      | 11           | 49     | 4     |
| RE 0210  | 2.1      | 11           | 49     | 4     |
| RE 0220  | 2.2      | 12           | 53     | 4     |
| RE 0230  | 2.3      | 12           | 53     | 4     |
| RE 0240  | 2.4      | 14           | 57     | 4     |
| RE 0250  | 2.5      | 14           | 57     | 4     |
| RE 0260  | 2.6      | 14           | 57     | 4     |
| RE 0270  | 2.7      | 15           | 61     | 4     |
| RE 0280  | 2.8      | 15           | 61     | 4     |
| RE 0290  | 2.9      | 15           | 61     | 4     |
| RE 0300  | 3.0      | 15           | 61     | 4     |
| RE 0310  | 3.1      | 16           | 65     | 4     |
| RE 0320  | 3.2      | 16           | 65     | 4     |
| RE 0330  | 3.3      | 16           | 65     | 4     |
| RE 0340  | 3.4      | 18           | 70     | 4     |
| RE 0350  | 3.5      | 18           | 70     | 4     |
| RE 0360  | 3.6      | 18           | 70     | 4     |
| RE 0370  | 3.7      | 19           | 70     | 4     |
| RE 0380  | 3.8      | 19           | 75     | 4     |
| RE 0390  | 3.9      | 19           | 75     | 4     |
| RE 0400  | 4.0      | 19           | 75     | 4     |
| RE 0410  | 4.1      | 19           | 75     | 4     |
| RE 0420  | 4.2      | 19           | 75     | 4     |
| RE 0430  | 4.3      | 21           | 80     | 4     |
| RE 0440  | 4.4      | 21           | 80     | 4     |
| RE 0450  | 4.5      | 21           | 80     | 4     |
| RE 0460  | 4.6      | 21           | 80     | 6     |
| RE 0470  | 4.7      | 21           | 80     | 6     |
| RE 0480  | 4.8      | 23           | 86     | 6     |
| RE 0490  | 4.9      | 23           | 86     | 6     |



# Machine Reamers In Steps of 0.1mm



鎢鋼絞刀 超硬(0.1mm指定單位)

| 型號       | 直徑(D1)   | 刀長(L2)       | 全長(L1) | 刀數    | 型號       | 直徑(D1)   | 刀長(L2)       | 全長(L1) | 刀數    |
|----------|----------|--------------|--------|-------|----------|----------|--------------|--------|-------|
| Type No. | Diameter | Flute Length | O.A.L  | Flute | Type No. | Diameter | Flute Length | O.A.L  | Flute |
| RE 0500  | 5.0      | 23           | 86     | 6     | RE 0900  | 9.0      | 36           | 125    | 6     |
| RE 0510  | 5.1      | 23           | 86     | 6     | RE 0910  | 9.1      | 36           | 125    | 6     |
| RE 0520  | 5.2      | 23           | 86     | 6     | RE 0920  | 9.2      | 36           | 125    | 6     |
| RE 0530  | 5.3      | 23           | 86     | 6     | RE 0930  | 9.3      | 36           | 125    | 6     |
| RE 0540  | 5.4      | 26           | 93     | 6     | RE 0940  | 9.4      | 36           | 125    | 6     |
| RE 0550  | 5.5      | 26           | 93     | 6     | RE 0950  | 9.5      | 36           | 125    | 6     |
| RE 0560  | 5.6      | 26           | 93     | 6     | RE 0960  | 9.6      | 38           | 133    | 6     |
| RE 0570  | 5.7      | 26           | 93     | 6     | RE 0970  | 9.7      | 38           | 133    | 6     |
| RE 0580  | 5.8      | 26           | 93     | 6     | RE 0980  | 9.8      | 38           | 133    | 6     |
| RE 0590  | 5.9      | 26           | 93     | 6     | RE 0990  | 9.9      | 38           | 133    | 6     |
| RE 0600  | 6.0      | 26           | 93     | 6     | RE 1000  | 10.0     | 38           | 133    | 6     |
| RE 0610  | 6.1      | 28           | 101    | 6     | RE 1010  | 10.1     | 38           | 133    | 6     |
| RE 0620  | 6.2      | 28           | 101    | 6     | RE 1020  | 10.2     | 38           | 133    | 6     |
| RE 0630  | 6.3      | 28           | 101    | 6     | RE 1030  | 10.3     | 38           | 133    | 6     |
| RE 0640  | 6.4      | 28           | 101    | 6     | RE 1040  | 10.4     | 38           | 133    | 6     |
| RE 0650  | 6.5      | 28           | 101    | 6     | RE 1050  | 10.5     | 38           | 133    | 6     |
| RE 0660  | 6.6      | 28           | 101    | 6     | RE 1060  | 10.6     | 38           | 133    | 6     |
| RE 0670  | 6.7      | 31           | 101    | 6     | RE 1070  | 10.7     | 41           | 142    | 6     |
| RE 0680  | 6.8      | 31           | 109    | 6     | RE 1080  | 10.8     | 41           | 142    | 6     |
| RE 0690  | 6.9      | 31           | 109    | 6     | RE 1090  | 10.9     | 41           | 142    | 6     |
| RE 0700  | 7.0      | 31           | 109    | 6     | RE 1100  | 11.0     | 41           | 142    | 6     |
| RE 0710  | 7.1      | 31           | 109    | 6     | RE 1110  | 11.1     | 41           | 142    | 6     |
| RE 0720  | 7.2      | 31           | 109    | 6     | RE 1120  | 11.2     | 41           | 142    | 6     |
| RE 0730  | 7.3      | 31           | 109    | 6     | RE 1130  | 11.3     | 41           | 142    | 6     |
| RE 0740  | 7.4      | 31           | 109    | 6     | RE 1140  | 11.4     | 41           | 142    | 6     |
| RE 0750  | 7.5      | 31           | 109    | 6     | RE 1150  | 11.5     | 41           | 142    | 6     |
| RE 0760  | 7.6      | 33           | 117    | 6     | RE 1160  | 11.6     | 41           | 142    | 6     |
| RE 0770  | 7.7      | 33           | 117    | 6     | RE 1170  | 11.7     | 41           | 142    | 6     |
| RE 0780  | 7.8      | 33           | 117    | 6     | RE 1180  | 11.8     | 41           | 142    | 6     |
| RE 0790  | 7.9      | 33           | 117    | 6     | RE 1190  | 11.9     | 44           | 151    | 6     |
| RE 0800  | 8.0      | 33           | 117    | 6     | RE 1200  | 12.0     | 44           | 151    | 6     |
| RE 0810  | 8.1      | 33           | 117    | 6     |          |          |              |        |       |
| RE 0820  | 8.2      | 33           | 117    | 6     |          |          |              |        |       |
| RE 0830  | 8.3      | 33           | 117    | 6     |          |          |              |        |       |
| RE 0840  | 8.4      | 33           | 117    | 6     |          |          |              |        |       |
| RE 0850  | 8.5      | 33           | 117    | 6     |          |          |              |        |       |
| RE 0860  | 8.6      | 36           | 125    | 6     |          |          |              |        |       |
| RE 0870  | 8.7      | 36           | 125    | 6     |          |          |              |        |       |
| RE 0880  | 8.8      | 36           | 125    | 6     |          |          |              |        |       |
| RE 0890  | 8.9      | 36           | 125    | 6     |          |          |              |        |       |

# NC Machine Reamers



## 超微粒鎢鋼NC機械鉋刀

| 型號       | 直徑(D1)   | 刃長(L2)       | 全長(L1) | 柄徑(L1)    | 刃數(L1) | 型號       | 直徑(D1)   | 刃長(L2)       | 全長(L1) | 柄徑(L1)    | 刃數(L1) |
|----------|----------|--------------|--------|-----------|--------|----------|----------|--------------|--------|-----------|--------|
| Type No. | Diameter | Flute Length | O.A.L  | Shank Dia | Flute  | Type No. | Diameter | Flute Length | O.A.L  | Shank Dia | Flute  |
| REA0198  | 1.98     | 11           | 49     | 2         | 4      | REA0803  | 8.03     | 33           | 117    | 8         | 6      |
| REA0199  | 1.99     | 11           | 49     | 2         | 4      | REA0997  | 9.97     | 38           | 133    | 10        | 6      |
| REA0200  | 2.00     | 11           | 49     | 2         | 4      | REA0998  | 9.98     | 38           | 133    | 10        | 6      |
| REA0201  | 2.01     | 11           | 49     | 2         | 4      | REA0999  | 9.99     | 38           | 133    | 10        | 6      |
| REA0202  | 2.02     | 11           | 49     | 2         | 4      | REA1000  | 10.00    | 38           | 133    | 10        | 6      |
| REA0203  | 2.03     | 11           | 49     | 2         | 4      | REA1001  | 10.01    | 38           | 133    | 10        | 6      |
| REA0297  | 2.97     | 15           | 61     | 3         | 4      | REA1002  | 10.02    | 38           | 133    | 10        | 6      |
| REA0298  | 2.98     | 15           | 61     | 3         | 4      | REA1003  | 10.03    | 38           | 133    | 10        | 6      |
| REA0299  | 2.99     | 15           | 61     | 3         | 4      | REA1197  | 11.97    | 44           | 151    | 12        | 6      |
| REA0300  | 3.00     | 15           | 61     | 3         | 4      | REA1198  | 11.98    | 44           | 151    | 12        | 6      |
| REA0301  | 3.01     | 15           | 61     | 3         | 4      | REA1199  | 11.99    | 44           | 151    | 12        | 6      |
| REA0302  | 3.02     | 15           | 61     | 3         | 4      | REA1200  | 12.00    | 44           | 151    | 12        | 6      |
| REA0303  | 3.03     | 15           | 61     | 3         | 4      | REA1201  | 12.01    | 44           | 151    | 12        | 6      |
| REA0397  | 3.97     | 19           | 75     | 4         | 4      | REA1202  | 12.02    | 44           | 151    | 12        | 6      |
| REA0398  | 3.98     | 19           | 75     | 4         | 4      | REA1203  | 12.03    | 44           | 151    | 12        | 6      |
| REA0399  | 3.99     | 19           | 75     | 4         | 4      |          |          |              |        |           |        |
| REA0400  | 4.00     | 19           | 75     | 4         | 4      |          |          |              |        |           |        |
| REA0401  | 4.01     | 19           | 75     | 4         | 4      |          |          |              |        |           |        |
| REA0402  | 4.02     | 19           | 75     | 4         | 4      |          |          |              |        |           |        |
| REA0403  | 4.03     | 19           | 75     | 4         | 4      |          |          |              |        |           |        |
| REA0497  | 4.97     | 23           | 86     | 5         | 6      |          |          |              |        |           |        |
| REA0498  | 4.98     | 23           | 86     | 5         | 6      |          |          |              |        |           |        |
| REA0499  | 4.99     | 23           | 86     | 5         | 6      |          |          |              |        |           |        |
| REA0500  | 5.00     | 23           | 86     | 5         | 6      |          |          |              |        |           |        |
| REA0501  | 5.01     | 23           | 86     | 5         | 6      |          |          |              |        |           |        |
| REA0502  | 5.02     | 23           | 86     | 5         | 6      |          |          |              |        |           |        |
| REA0503  | 5.03     | 23           | 86     | 5         | 6      |          |          |              |        |           |        |
| REA0579  | 5.97     | 26           | 93     | 6         | 6      |          |          |              |        |           |        |
| REA0598  | 5.98     | 26           | 93     | 6         | 6      |          |          |              |        |           |        |
| REA0599  | 5.99     | 26           | 93     | 6         | 6      |          |          |              |        |           |        |
| REA0600  | 6.00     | 26           | 93     | 6         | 6      |          |          |              |        |           |        |
| REA0601  | 6.01     | 26           | 93     | 6         | 6      |          |          |              |        |           |        |
| REA0602  | 6.02     | 26           | 93     | 6         | 6      |          |          |              |        |           |        |
| REA0603  | 6.03     | 26           | 93     | 6         | 6      |          |          |              |        |           |        |
| REA0797  | 7.97     | 33           | 117    | 8         | 6      |          |          |              |        |           |        |
| REA0798  | 7.98     | 33           | 117    | 8         | 6      |          |          |              |        |           |        |
| REA0799  | 7.99     | 33           | 117    | 8         | 6      |          |          |              |        |           |        |
| REA0800  | 8.00     | 33           | 117    | 8         | 6      |          |          |              |        |           |        |
| REA0801  | 8.01     | 33           | 117    | 8         | 6      |          |          |              |        |           |        |
| REA0802  | 8.02     | 33           | 117    | 8         | 6      |          |          |              |        |           |        |

