



德信發企業有限公司

DHF Precision Tool Co., Ltd.

**營運總部**

台灣台中市南屯區大墩六街425號

No.425, Da Dun 6th St., Nantun District, Taichung 408, Taiwan.

TEL : 886-4-23815088

FAX : 886-4-23814488

<http://www.endmill.com.tw>

E-mail : dhf@endmill.com.tw

**分公司**

**Italy** / Pordenone

DHF Italia Srl

**China** / Shanghai

DHF Shanghai

**Turkey** / Istanbul

DHF Sert Kesici Takımlar

Distributor



微小徑 · 深溝系列

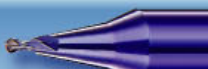


# MICRO CATALOGUE

Micro Diameter & Long Neck Series

Vol.2008 MICRO

# INDEX 目錄

| 產品型號<br>Type NO.        | 產品圖片<br>Product Picture                                                             | 頁碼<br>Page | 切削條件<br>Milling<br>Conditions | 銅<br>Copper | 合金鋼<br>鋼質鋼<br>Alloy Steels,<br>Prehardened<br>Steels | 不鏽鋼<br>Stainless<br>Steels | 熱處理鋼<br>~55HRC<br>Hardened<br>Steels | 熱處理鋼<br>55HRC~<br>Hardened<br>Steels |
|-------------------------|-------------------------------------------------------------------------------------|------------|-------------------------------|-------------|------------------------------------------------------|----------------------------|--------------------------------------|--------------------------------------|
| <b>UMB</b>              |    | P.1        | P.22                          | ★<br>★      | ★<br>★                                               | ★<br>★                     | ★<br>★                               | ★<br>★                               |
| <b>MBTA</b>             |    | P.2        | P.23                          | ★<br>★      | ★<br>★                                               | ★<br>★                     | ★<br>★                               | ★                                    |
| <b>MSB</b>              |    | P.3        | P.23                          | ★<br>★      | ★<br>★                                               | ★<br>★                     | ★<br>★                               | ★                                    |
| <b>MET</b>              |    | P.4        | P.24                          | ★<br>★      | ★<br>★                                               | ★<br>★                     | ★<br>★                               | ★                                    |
| <b>UME</b>              |  | P.5        | P.25                          | ★<br>★      | ★<br>★                                               | ★<br>★                     | ★<br>★                               | ★<br>★                               |
| <b>META</b>             |  | P.6        | P.26                          | ★<br>★      | ★<br>★                                               | ★<br>★                     | ★<br>★                               | ★                                    |
| <b>UNBX</b><br>2 Flutes |  | P.7        | P.27                          | ★<br>★      | ★<br>★                                               | ★<br>★                     | ★<br>★                               | ★<br>★                               |
| <b>UNBX</b><br>4 Flutes |  | P.9        | P.28                          | ★<br>★      | ★<br>★                                               | ★<br>★                     | ★<br>★                               | ★<br>★                               |

# 目錄 INDEX

| 產品型號<br>Type NO. | 產品圖片<br>Product Picture                                                               | 頁碼<br>Page | 切削條件<br>Milling<br>Conditions | 銅<br>Copper | 合金鋼<br>鋼質鋼<br>Alloy Steels,<br>Prehardened<br>Steels | 不鏽鋼<br>Stainless<br>Steels | 熱處理鋼<br>~55HRC<br>Hardened<br>Steels | 熱處理鋼<br>55HRC~<br>Hardened<br>Steels |
|------------------|---------------------------------------------------------------------------------------|------------|-------------------------------|-------------|------------------------------------------------------|----------------------------|--------------------------------------|--------------------------------------|
| <b>LNB</b>       |    | P.10       | P.30                          | ★<br>★      | ★<br>★                                               | ★<br>★                     | ★<br>★                               | ★                                    |
| <b>UNB</b>       |    | P.11       | P.29                          | ★<br>★      | ★<br>★                                               | ★<br>★                     | ★<br>★                               | ★<br>★                               |
| <b>UXE</b>       |    | P.13       |                               | ★<br>★      | ★<br>★                                               | ★<br>★                     | ★<br>★                               | ★<br>★                               |
| <b>UNE</b>       |    | P.15       | P.31                          | ★<br>★      | ★<br>★                                               | ★<br>★                     | ★<br>★                               | ★<br>★                               |
| <b>UNER</b>      |   | P.16       | P.31                          | ★<br>★      | ★<br>★                                               | ★<br>★                     | ★<br>★                               | ★                                    |
| <b>UDE</b>       |  | P.17       |                               | ★<br>★      | ★<br>★                                               | ★<br>★                     | ★<br>★                               | ★<br>★                               |
| <b>LNE</b>       |  | P.19       | P.32                          | ★<br>★      | ★<br>★                                               | ★<br>★                     | ★<br>★                               | ★                                    |
| <b>LNH</b>       |  | P.20       |                               | ★<br>★      | ★<br>★                                               | ★<br>★                     | ★<br>★                               | ★                                    |
| <b>LNK</b>       |  | P.21       | P.33                          | ★<br>★      | ★<br>★                                               | ★<br>★                     | ★<br>★                               | ★                                    |



# UMB Micro Diameter

Ball Nose End Mills 微小徑圓頭立銑刀



| 直徑<br>D1              | R0.1        | R0.15       | R0.2  | R0.25 | R0.3  | R0.35 | R0.4  |
|-----------------------|-------------|-------------|-------|-------|-------|-------|-------|
| 球徑公差值<br>R Tolerance  | ±0.01       | ±0.01       | ±0.01 | ±0.01 | ±0.01 | ±0.01 | ±0.01 |
| 直徑<br>D1              | R0.5        | R0.75       | R1.0  | R1.5  | R2.0  |       |       |
| 球徑公差值<br>R Tolerance  | ±0.01       | ±0.01       | ±0.01 | ±0.01 | ±0.01 |       |       |
| 柄徑<br>Shank(h6)       | Ø3          | Ø4          |       |       |       |       |       |
| 柄徑公差值<br>D2 Tolerance | 0<br>-0.006 | 0<br>-0.008 |       |       |       |       |       |

| 型號<br>Type No. | D1 直徑<br>Diameter | L1 刃長<br>Flute Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-----------------------|-----------------|--------------------|
| UMB0022        | R0.1              | 0.4                   | 50              | 4                  |
| UMB0032        | R0.15             | 0.6                   | 50              | 4                  |
| UMB0042        | R0.2              | 0.8                   | 50              | 4                  |
| UMB0052        | R0.25             | 1.0                   | 50              | 4                  |
| UMB0062        | R0.3              | 1.2                   | 50              | 4                  |
| UMB0072        | R0.35             | 1.4                   | 50              | 4                  |
| UMB0082        | R0.4              | 1.6                   | 50              | 4                  |
| UMB0102S       | R0.5              | 2.0                   | 50              | 3                  |
| UMB0102        | R0.5              | 2.0                   | 50              | 4                  |
| UMB0152S       | R0.75             | 3.0                   | 50              | 3                  |
| UMB0152        | R0.75             | 3.0                   | 50              | 4                  |
| UMB0202S       | R1.0              | 4.0                   | 50              | 3                  |
| UMB0202        | R1.0              | 4.0                   | 50              | 4                  |
| UMB0302S       | R1.5              | 6.0                   | 50              | 3                  |
| UMB0302        | R1.5              | 6.0                   | 50              | 4                  |
| UMB0402        | R2.0              | 8.0                   | 50              | 4                  |

unit : mm

材料升級

Material Upgraded

鍍層升級

Coating Upgraded

精銑  
Finishing



中銑  
Semi-finishing

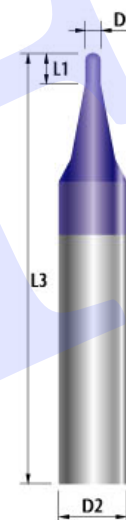


粗銑  
Roughing



# MBTA Micro Diameter

微小徑圓頭立銑刀 Ball Nose End Mills



| 直徑<br>D1              | R0.15       | R0.2  | R0.25 | R0.3  | R0.35 | R0.4  | R0.5  |
|-----------------------|-------------|-------|-------|-------|-------|-------|-------|
| 球徑公差值<br>R Tolerance  | ±0.01       | ±0.01 | ±0.01 | ±0.01 | ±0.01 | ±0.01 | ±0.01 |
| 直徑<br>D1              | R0.6        | R0.7  | R0.75 | R0.8  | R0.9  | R1.0  | R1.5  |
| 球徑公差值<br>R Tolerance  | ±0.01       | ±0.01 | ±0.01 | ±0.01 | ±0.01 | ±0.01 | ±0.01 |
| 柄徑<br>Shank(h6)       | Ø4          |       |       |       |       |       |       |
| 柄徑公差值<br>D2 Tolerance | 0<br>-0.008 |       |       |       |       |       |       |

| 型號<br>Type No. | D1 直徑<br>Diameter | L1 刃長<br>Flute Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-----------------------|-----------------|--------------------|
| MBTA0032       | R0.15             | 0.6                   | 50              | 4                  |
| MBTA0042       | R0.2              | 0.8                   | 50              | 4                  |
| MBTA0052       | R0.25             | 1.0                   | 50              | 4                  |
| MBTA0062       | R0.3              | 1.2                   | 50              | 4                  |
| MBTA0072       | R0.35             | 1.4                   | 50              | 4                  |
| MBTA0082       | R0.4              | 1.6                   | 50              | 4                  |
| MBTA0102       | R0.5              | 2.0                   | 50              | 4                  |
| MBTA0122       | R0.6              | 2.4                   | 50              | 4                  |
| MBTA0142       | R0.7              | 2.8                   | 50              | 4                  |
| MBTA0152       | R0.75             | 3.0                   | 50              | 4                  |
| MBTA0162       | R0.8              | 3.2                   | 50              | 4                  |
| MBTA0182       | R0.9              | 3.6                   | 50              | 4                  |
| MBTA0202       | R1.0              | 4.0                   | 50              | 4                  |
| MBTA0302       | R1.5              | 6.0                   | 50              | 4                  |
| MBTA0402       | R2.0              | 8.0                   | 50              | 4                  |

unit : mm



材料升級

Material Upgraded

鍍層升級

Coating Upgraded

精銑  
Finishing



中銑  
Semi-finishing



粗銑  
Roughing





# MSB Micro Diameter

## Ball Nose End Mills 微小徑圓頭立銑刀



| 直徑<br>D1              | R0.15       | R0.2  | R0.25 | R0.3  | R0.35 | R0.4  | R0.5  |
|-----------------------|-------------|-------|-------|-------|-------|-------|-------|
| 球徑公差值<br>R Tolerance  | ±0.01       | ±0.01 | ±0.01 | ±0.01 | ±0.01 | ±0.01 | ±0.01 |
| 直徑<br>D1              | R0.6        | R0.7  | R0.75 | R0.8  | R0.9  | R1.0  | R1.5  |
| 球徑公差值<br>R Tolerance  | ±0.01       | ±0.01 | ±0.01 | ±0.01 | ±0.01 | ±0.01 | ±0.01 |
| 柄徑<br>Shank(h6)       | Ø3          |       |       |       |       |       |       |
| 柄徑公差值<br>D2 Tolerance | 0<br>-0.006 |       |       |       |       |       |       |

| 型號<br>Type No. | D1 直徑<br>Diameter | L1 刃長<br>Flute Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-----------------------|-----------------|--------------------|
| MSB0032        | R0.15             | 0.6                   | 50              | 3                  |
| MSB0042        | R0.2              | 0.8                   | 50              | 3                  |
| MSB0052        | R0.25             | 1.0                   | 50              | 3                  |
| MSB0062        | R0.3              | 1.2                   | 50              | 3                  |
| MSB0072        | R0.35             | 1.4                   | 50              | 3                  |
| MSB0082        | R0.4              | 1.6                   | 50              | 3                  |
| MSB0102        | R0.5              | 2.0                   | 50              | 3                  |
| MSB0122        | R0.6              | 2.4                   | 50              | 3                  |
| MSB0142        | R0.7              | 2.8                   | 50              | 3                  |
| MSB0152        | R0.75             | 3.0                   | 50              | 3                  |
| MSB0162        | R0.8              | 3.2                   | 50              | 3                  |
| MSB0182        | R0.9              | 3.6                   | 50              | 3                  |
| MSB0202        | R1.0              | 4.0                   | 50              | 3                  |
| MSB0302        | R1.5              | 6.0                   | 50              | 3                  |

unit : mm

材料升級  
Material Upgraded

鍍層升級  
Coating Upgraded

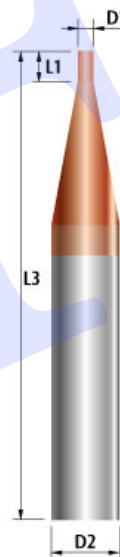
精銑  
Finishing

中銑  
Semi-finishing

粗銑  
Roughing

# MET Micro Diameter

## 微小徑立銑刀 End Mills



| 直徑<br>D1              | 0.2         | 0.3         | 0.4         | 0.5        | 0.6        | 0.8        | 1.0        | 1.2        |
|-----------------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| 直徑公差值<br>D1 Tolerance | 0<br>-0.015 | 0<br>-0.015 | 0<br>-0.015 | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 |
| 直徑<br>D1              | 1.4         | 1.5         | 1.6         | 1.8        | 2.0        | 2.5        | 3.0        |            |
| 直徑公差值<br>D1 Tolerance | 0<br>-0.02  | 0<br>-0.02  | 0<br>-0.02  | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 |            |
| 柄徑<br>Shank(h6)       | Ø3          |             |             |            |            |            |            |            |
| 柄徑公差值<br>D2 Tolerance | 0<br>-0.006 |             |             |            |            |            |            |            |

| 型號<br>Type No. | D1 直徑<br>Diameter | L1 刃長<br>Flute Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-----------------------|-----------------|--------------------|
| MET0022        | 0.2               | 0.4                   | 50              | 3                  |
| MET0032        | 0.3               | 0.6                   | 50              | 3                  |
| MET0042        | 0.4               | 0.8                   | 50              | 3                  |
| MET0052        | 0.5               | 1.0                   | 50              | 3                  |
| MET0062        | 0.6               | 1.2                   | 50              | 3                  |
| MET0082        | 0.8               | 1.6                   | 50              | 3                  |
| MET0102        | 1.0               | 2.5                   | 50              | 3                  |
| MET0122        | 1.2               | 3.0                   | 50              | 3                  |
| MET0142        | 1.4               | 3.0                   | 50              | 3                  |
| MET0152        | 1.5               | 4.0                   | 50              | 3                  |
| MET0162        | 1.6               | 4.0                   | 50              | 3                  |
| MET0182        | 1.8               | 5.0                   | 50              | 3                  |
| MET0202        | 2.0               | 6.0                   | 50              | 3                  |
| MET0252        | 2.5               | 8.0                   | 50              | 3                  |
| MET0302        | 3.0               | 8.0                   | 50              | 3                  |

unit : mm

材料升級  
Material Upgraded

鍍層升級  
Coating Upgraded

精銑  
Finishing

中銑  
Semi-finishing

粗銑  
Roughing



材料升級  
Material Upgraded

鍍層升級  
Coating Upgraded

精銑  
Finishing

中銑  
Semi-finishing

粗銑  
Roughing

# UME Micro Diameter

## End Mills 微小徑立銑刀



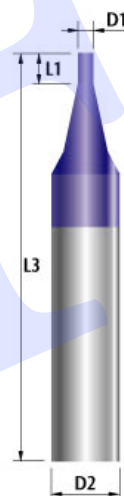
| 直徑<br>D1              | 0.2         | 0.3         | 0.4         | 0.5        | 0.6        | 0.7        | 0.8        | 1.0        |
|-----------------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| 直徑公差值<br>D1 Tolerance | 0<br>-0.015 | 0<br>-0.015 | 0<br>-0.015 | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 |
| 直徑<br>D1              | 1.2         | 1.5         | 1.6         | 1.8        | 2.0        | 2.5        | 3.0        | 4.0        |
| 直徑公差值<br>D1 Tolerance | 0<br>-0.02  | 0<br>-0.02  | 0<br>-0.02  | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 |
| 柄徑<br>Shank(h6)       | Ø4          |             |             |            |            |            |            |            |
| 柄徑公差值<br>D2 Tolerance | 0<br>-0.008 |             |             |            |            |            |            |            |

| 型號<br>Type No. | D1<br>直徑<br>Diameter | L1<br>刃長<br>Flute Length | L3<br>全長<br>O.A.L. | D2<br>柄徑<br>Shank Dia |
|----------------|----------------------|--------------------------|--------------------|-----------------------|
| UME0022        | 0.2                  | 0.4                      | 50                 | 4                     |
| UME0032        | 0.3                  | 0.6                      | 50                 | 4                     |
| UME0042        | 0.4                  | 0.8                      | 50                 | 4                     |
| UME0052        | 0.5                  | 1.0                      | 50                 | 4                     |
| UME0062        | 0.6                  | 1.2                      | 50                 | 4                     |
| UME0072        | 0.7                  | 1.4                      | 50                 | 4                     |
| UME0082        | 0.8                  | 1.6                      | 50                 | 4                     |
| UME0102        | 1.0                  | 2.5                      | 50                 | 4                     |
| UME0122        | 1.2                  | 3.0                      | 50                 | 4                     |
| UME0152        | 1.5                  | 4.0                      | 50                 | 4                     |
| UME0162        | 1.6                  | 4.0                      | 50                 | 4                     |
| UME0182        | 1.8                  | 5.0                      | 50                 | 4                     |
| UME0202        | 2.0                  | 6.0                      | 50                 | 4                     |
| UME0252        | 2.5                  | 8.0                      | 50                 | 4                     |
| UME0302        | 3.0                  | 8.0                      | 50                 | 4                     |
| UME0402        | 4.0                  | 11.0                     | 50                 | 4                     |

unit : mm

# META Micro Diameter

## 微小徑立銑刀 End Mills



| 直徑<br>D1              | 0.2         | 0.3         | 0.4         | 0.5        | 0.6        | 0.7        | 0.8        | 0.9        |
|-----------------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| 直徑公差值<br>D1 Tolerance | 0<br>-0.015 | 0<br>-0.015 | 0<br>-0.015 | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 |
| 直徑<br>D1              | 1.0         | 1.2         | 1.4         | 1.5        | 1.6        | 1.8        | 2.0        | 3.0        |
| 直徑公差值<br>D1 Tolerance | 0<br>-0.02  | 0<br>-0.02  | 0<br>-0.02  | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 |
| 柄徑<br>Shank(h6)       | Ø4          |             |             |            |            |            |            |            |
| 柄徑公差值<br>D2 Tolerance | 0<br>-0.008 |             |             |            |            |            |            |            |

| 型號<br>Type No. | D1<br>直徑<br>Diameter | L1<br>刃長<br>Flute Length | L3<br>全長<br>O.A.L. | D2<br>柄徑<br>Shank Dia |
|----------------|----------------------|--------------------------|--------------------|-----------------------|
| META0022       | 0.2                  | 0.4                      | 50                 | 4                     |
| META0032       | 0.3                  | 0.6                      | 50                 | 4                     |
| META0042       | 0.4                  | 0.8                      | 50                 | 4                     |
| META0052       | 0.5                  | 1.0                      | 50                 | 4                     |
| META0062       | 0.6                  | 1.2                      | 50                 | 4                     |
| META0072       | 0.7                  | 1.4                      | 50                 | 4                     |
| META0082       | 0.8                  | 1.6                      | 50                 | 4                     |
| META0092       | 0.9                  | 1.8                      | 50                 | 4                     |
| META0102       | 1.0                  | 2.5                      | 50                 | 4                     |
| META0122       | 1.2                  | 3.0                      | 50                 | 4                     |
| META0142       | 1.4                  | 3.0                      | 50                 | 4                     |
| META0152       | 1.5                  | 4.0                      | 50                 | 4                     |
| META0162       | 1.6                  | 4.0                      | 50                 | 4                     |
| META0182       | 1.8                  | 5.0                      | 50                 | 4                     |
| META0202       | 2.0                  | 6.0                      | 50                 | 4                     |
| META0252       | 2.5                  | 8.0                      | 50                 | 4                     |
| META0302       | 3.0                  | 8.0                      | 50                 | 4                     |

材料升級  
Material Upgraded

鍍層升級  
Coating Upgraded

精銑  
Finishing

中銑  
Semi-finishing

粗銑  
Roughing





# 2 Flutes UNBX Long Neck

Ball Nose End Mills 深溝用圓頭立銑刀



| 直徑<br>D1              | R0.1        | R0.15       | R0.2  | R0.25 | R0.3  | R0.4  | R0.5  |
|-----------------------|-------------|-------------|-------|-------|-------|-------|-------|
| 球徑公差值<br>R Tolerance  | ±0.01       | ±0.01       | ±0.01 | ±0.01 | ±0.01 | ±0.01 | ±0.01 |
| 直徑<br>D1              | R0.6        | R0.75       | R0.8  | R1.0  | R1.5  | R2.0  |       |
| 球徑公差值<br>R Tolerance  | ±0.01       | ±0.01       | ±0.01 | ±0.01 | ±0.01 | ±0.01 |       |
| 柄徑<br>Shank(h6)       | Ø4          | Ø6          |       |       |       |       |       |
| 柄徑公差值<br>D2 Tolerance | 0<br>-0.008 | 0<br>-0.008 |       |       |       |       |       |

| 型號<br>Type No. | D1 直徑<br>Diameter | D3 頸徑<br>Neck Dia | L1 刃長<br>Flute Length | L2 有效長<br>Effective Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-------------------|-----------------------|----------------------------|-----------------|--------------------|
| UNBX0201       | R0.1              | 0.18              | 0.3                   | 1                          | 50              | 4                  |
| UNBX0202       | R0.1              | 0.18              | 0.3                   | 2                          | 50              | 4                  |
| UNBX0301       | R0.15             | 0.26              | 0.4                   | 1                          | 50              | 4                  |
| UNBX0302       | R0.15             | 0.26              | 0.4                   | 2                          | 50              | 4                  |
| UNBX0303       | R0.15             | 0.26              | 0.4                   | 3                          | 50              | 4                  |
| UNBX0402       | R0.2              | 0.36              | 0.6                   | 2                          | 50              | 4                  |
| UNBX0403       | R0.2              | 0.36              | 0.6                   | 3                          | 50              | 4                  |
| UNBX0404       | R0.2              | 0.36              | 0.6                   | 4                          | 50              | 4                  |
| UNBX0502       | R0.25             | 0.46              | 0.8                   | 2                          | 50              | 4                  |
| UNBX0504       | R0.25             | 0.46              | 0.8                   | 4                          | 50              | 4                  |
| UNBX0506       | R0.25             | 0.46              | 0.8                   | 6                          | 50              | 4                  |

unit : mm

材料升級  
Material Upgraded

鍍層升級  
Coating Upgraded

精銑  
Finishing

中銑  
Semi-finishing

粗銑  
Roughing

# 2 Flutes UNBX Long Neck

深溝用圓頭立銑刀 Ball Nose End Mills

| 型號<br>Type No. | D1 直徑<br>Diameter | D3 頸徑<br>Neck Dia | L1 刃長<br>Flute Length | L2 有效長<br>Effective Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-------------------|-----------------------|----------------------------|-----------------|--------------------|
| UNBX0602       | R0.3              | 0.56              | 0.9                   | 2                          | 50              | 4                  |
| UNBX0604       | R0.3              | 0.56              | 0.9                   | 4                          | 50              | 4                  |
| UNBX0606       | R0.3              | 0.56              | 0.9                   | 6                          | 50              | 4                  |
| UNBX0804       | R0.4              | 0.76              | 1.2                   | 4                          | 50              | 4                  |
| UNBX0806       | R0.4              | 0.76              | 1.2                   | 6                          | 50              | 4                  |
| UNBX0808       | R0.4              | 0.76              | 1.2                   | 8                          | 50              | 4                  |
| UNBX1004       | R0.5              | 0.95              | 1.5                   | 4                          | 50              | 4                  |
| UNBX1006       | R0.5              | 0.95              | 1.5                   | 6                          | 50              | 4                  |
| UNBX1008       | R0.5              | 0.95              | 1.5                   | 8                          | 50              | 4                  |
| UNBX1010       | R0.5              | 0.95              | 1.5                   | 10                         | 50              | 4                  |
| UNBX1012       | R0.5              | 0.95              | 1.5                   | 12                         | 50              | 4                  |
| UNBX1208       | R0.6              | 1.15              | 2                     | 8                          | 50              | 4                  |
| UNBX1212       | R0.6              | 1.15              | 2                     | 12                         | 50              | 4                  |
| UNBX1506       | R0.75             | 1.45              | 2                     | 6                          | 50              | 4                  |
| UNBX1508       | R0.75             | 1.45              | 2                     | 8                          | 50              | 4                  |
| UNBX1510       | R0.75             | 1.45              | 2                     | 10                         | 50              | 4                  |
| UNBX1512       | R0.75             | 1.45              | 2                     | 12                         | 50              | 4                  |
| UNBX1516       | R0.75             | 1.45              | 2                     | 16                         | 50              | 4                  |
| UNBX1520       | R0.75             | 1.45              | 2                     | 20                         | 50              | 4                  |
| UNBX1608       | R0.8              | 1.54              | 2.5                   | 8                          | 50              | 4                  |
| UNBX1612       | R0.8              | 1.54              | 2.5                   | 12                         | 50              | 4                  |
| UNBX1616       | R0.8              | 1.54              | 2.5                   | 16                         | 50              | 4                  |
| UNBX2008       | R1.0              | 1.92              | 3                     | 8                          | 50              | 4                  |
| UNBX2010       | R1.0              | 1.92              | 3                     | 10                         | 50              | 4                  |
| UNBX2012       | R1.0              | 1.92              | 3                     | 12                         | 50              | 4                  |
| UNBX2016       | R1.0              | 1.92              | 3                     | 16                         | 50              | 4                  |
| UNBX2020       | R1.0              | 1.92              | 3                     | 20                         | 50              | 4                  |
| UNBX3008       | R1.5              | 2.90              | 4                     | 8                          | 50              | 6                  |
| UNBX3010       | R1.5              | 2.90              | 4                     | 10                         | 50              | 6                  |
| UNBX3012       | R1.5              | 2.90              | 4                     | 12                         | 50              | 6                  |
| UNBX3016       | R1.5              | 2.90              | 4                     | 16                         | 50              | 6                  |
| UNBX3020       | R1.5              | 2.90              | 4                     | 20                         | 60              | 6                  |
| UNBX3025       | R1.5              | 2.90              | 4                     | 25                         | 60              | 6                  |
| UNBX4010       | R2.0              | 3.88              | 5                     | 10                         | 75              | 6                  |
| UNBX4015       | R2.0              | 3.88              | 5                     | 15                         | 75              | 6                  |
| UNBX4020       | R2.0              | 3.88              | 5                     | 20                         | 75              | 6                  |
| UNBX4025       | R2.0              | 3.88              | 5                     | 25                         | 75              | 6                  |
| UNBX4030       | R2.0              | 3.88              | 5                     | 30                         | 75              | 6                  |



新產品  
New Product



精銑  
Finishing

中銑  
Semi-finishing

粗銑  
Roughing

# 4 Flutes UNBX Long Neck

Ball Nose End Mills 深溝用圓頭立銑刀



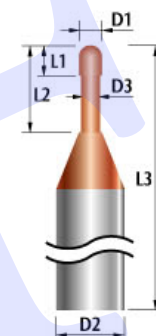
| 直徑<br>D1              | R0.5        | R0.75       | R1.0  | R1.5  | R2.0  |
|-----------------------|-------------|-------------|-------|-------|-------|
| 球徑公差值<br>R Tolerance  | ±0.01       | ±0.01       | ±0.01 | ±0.01 | ±0.01 |
| 柄徑<br>Shank(h6)       | Ø4          | Ø6          |       |       |       |
| 柄徑公差值<br>D2 Tolerance | 0<br>-0.008 | 0<br>-0.008 |       |       |       |

| 型號<br>Type No. | D1 直徑<br>Diameter | D3 頸徑<br>Neck Dia | L1 刃長<br>Flute Length | L2 有效長<br>Effective Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-------------------|-----------------------|----------------------------|-----------------|--------------------|
| UNBX100404     | R0.5              | 0.95              | 1.5                   | 4                          | 50              | 4                  |
| UNBX100604     | R0.5              | 0.95              | 1.5                   | 6                          | 50              | 4                  |
| UNBX100804     | R0.5              | 0.95              | 1.5                   | 8                          | 50              | 4                  |
| UNBX101004     | R0.5              | 0.95              | 1.5                   | 10                         | 50              | 4                  |
| UNBX101204     | R0.5              | 0.95              | 1.5                   | 12                         | 50              | 4                  |
| UNBX150604     | R0.75             | 1.45              | 2                     | 6                          | 50              | 4                  |
| UNBX150804     | R0.75             | 1.45              | 2                     | 8                          | 50              | 4                  |
| UNBX151004     | R0.75             | 1.45              | 2                     | 10                         | 50              | 4                  |
| UNBX151204     | R0.75             | 1.45              | 2                     | 12                         | 50              | 4                  |
| UNBX151604     | R0.75             | 1.45              | 2                     | 16                         | 50              | 4                  |
| UNBX200804     | R1.0              | 1.92              | 3                     | 8                          | 50              | 4                  |
| UNBX201004     | R1.0              | 1.92              | 3                     | 10                         | 50              | 4                  |
| UNBX201204     | R1.0              | 1.92              | 3                     | 12                         | 50              | 4                  |
| UNBX201604     | R1.0              | 1.92              | 3                     | 16                         | 50              | 4                  |
| UNBX202004     | R1.0              | 1.92              | 3                     | 20                         | 50              | 4                  |
| UNBX300804     | R1.5              | 2.90              | 4                     | 8                          | 60              | 6                  |
| UNBX301004     | R1.5              | 2.90              | 4                     | 10                         | 60              | 6                  |
| UNBX301204     | R1.5              | 2.90              | 4                     | 12                         | 60              | 6                  |
| UNBX301604     | R1.5              | 2.90              | 4                     | 16                         | 60              | 6                  |
| UNBX302004     | R1.5              | 2.90              | 4                     | 20                         | 60              | 6                  |
| UNBX302504     | R1.5              | 2.90              | 4                     | 25                         | 60              | 6                  |
| UNBX401004     | R2.0              | 3.88              | 5                     | 10                         | 75              | 6                  |
| UNBX401204     | R2.0              | 3.88              | 5                     | 12                         | 75              | 6                  |
| UNBX401604     | R2.0              | 3.88              | 5                     | 16                         | 75              | 6                  |
| UNBX402004     | R2.0              | 3.88              | 5                     | 20                         | 75              | 6                  |
| UNBX402504     | R2.0              | 3.88              | 5                     | 25                         | 75              | 6                  |

unit : mm

# LNB Long Neck

深溝用圓頭立銑刀 Ball Nose End Mills



| 直徑<br>D1              | R0.5        | R0.75       | R1.0  | R1.5  | R2.0  |
|-----------------------|-------------|-------------|-------|-------|-------|
| 球徑公差值<br>R Tolerance  | ±0.01       | ±0.01       | ±0.01 | ±0.01 | ±0.01 |
| 柄徑<br>Shank(h6)       | Ø4          | Ø6          |       |       |       |
| 柄徑公差值<br>D2 Tolerance | 0<br>-0.008 | 0<br>-0.008 |       |       |       |

| 型號<br>Type No. | D1 直徑<br>Diameter | D3 頸徑<br>Neck Dia | L1 刃長<br>Flute Length | L2 有效長<br>Effective Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-------------------|-----------------------|----------------------------|-----------------|--------------------|
| LNB1006        | R0.5              | 0.95              | 1.5                   | 6                          | 50              | 4                  |
| LNB1008        | R0.5              | 0.95              | 1.5                   | 8                          | 50              | 4                  |
| LNB1010        | R0.5              | 0.95              | 1.5                   | 10                         | 50              | 4                  |
| LNB1012        | R0.5              | 0.95              | 1.5                   | 12                         | 50              | 4                  |
| LNB1508        | R0.75             | 1.45              | 2                     | 8                          | 50              | 4                  |
| LNB1510        | R0.75             | 1.45              | 2                     | 10                         | 50              | 4                  |
| LNB1512        | R0.75             | 1.45              | 2                     | 12                         | 50              | 4                  |
| LNB1516        | R0.75             | 1.45              | 2                     | 16                         | 50              | 4                  |
| LNB1520        | R0.75             | 1.45              | 2                     | 20                         | 50              | 4                  |
| LNB2008        | R1.0              | 1.92              | 3                     | 8                          | 50              | 4                  |
| LNB2010        | R1.0              | 1.92              | 3                     | 10                         | 50              | 4                  |
| LNB2012        | R1.0              | 1.92              | 3                     | 12                         | 50              | 4                  |
| LNB2016        | R1.0              | 1.92              | 3                     | 16                         | 50              | 4                  |
| LNB2020        | R1.0              | 1.92              | 3                     | 20                         | 50              | 4                  |
| LNB3008        | R1.5              | 2.90              | 4                     | 8                          | 50              | 6                  |
| LNB3010        | R1.5              | 2.90              | 4                     | 10                         | 50              | 6                  |
| LNB3012        | R1.5              | 2.90              | 4                     | 12                         | 50              | 6                  |
| LNB3016        | R1.5              | 2.90              | 4                     | 16                         | 50              | 6                  |
| LNB3020        | R1.5              | 2.90              | 4                     | 20                         | 60              | 6                  |
| LNB3025        | R1.5              | 2.90              | 4                     | 25                         | 60              | 6                  |
| LNB4012        | R2.0              | 3.90              | 5                     | 12                         | 60              | 6                  |
| LNB4016        | R2.0              | 3.90              | 5                     | 16                         | 60              | 6                  |
| LNB4020        | R2.0              | 3.90              | 5                     | 20                         | 60              | 6                  |
| LNB4025        | R2.0              | 3.90              | 5                     | 25                         | 75              | 6                  |
| LNB4030        | R2.0              | 3.90              | 5                     | 30                         | 75              | 6                  |

unit : mm



材料升級  
Material Upgraded

鍍層升級  
Coating Upgraded

精銑  
Finishing

中銑  
Semi-finishing

粗銑  
Roughing





# UNB Long Neck

## Ball Nose End Mills 深溝用圓頭立銑刀



| 直徑<br>D1              | R0.25       | R0.3        | R0.4  | R0.5  | R0.6  | R0.75 | R0.8  |
|-----------------------|-------------|-------------|-------|-------|-------|-------|-------|
| 球徑公差值<br>R Tolerance  | ±0.01       | ±0.01       | ±0.01 | ±0.01 | ±0.01 | ±0.01 | ±0.01 |
| 直徑<br>D1              | R1.0        | R1.5        | R2.0  |       |       |       |       |
| 球徑公差值<br>R Tolerance  | ±0.01       | ±0.01       | ±0.01 |       |       |       |       |
| 柄徑<br>Shank(h6)       | Ø4          | Ø6          |       |       |       |       |       |
| 柄徑公差值<br>D2 Tolerance | 0<br>-0.008 | 0<br>-0.008 |       |       |       |       |       |

| 型號<br>Type No. | D1 直徑<br>Diameter | D3 頸徑<br>Neck Dia | L1 刃長<br>Flute Length | L2 有效長<br>Effective Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-------------------|-----------------------|----------------------------|-----------------|--------------------|
| UNB0502        | R0.25             | 0.46              | 0.8                   | 2                          | 50              | 4                  |
| UNB0504        | R0.25             | 0.46              | 0.8                   | 4                          | 50              | 4                  |
| UNB0506        | R0.25             | 0.46              | 0.8                   | 6                          | 50              | 4                  |
| UNB0604        | R0.3              | 0.56              | 0.9                   | 4                          | 50              | 4                  |
| UNB0606        | R0.3              | 0.56              | 0.9                   | 6                          | 50              | 4                  |
| UNB0806        | R0.4              | 0.76              | 1.2                   | 6                          | 50              | 4                  |
| UNB0808        | R0.4              | 0.76              | 1.2                   | 8                          | 50              | 4                  |
| UNB1006        | R0.5              | 0.95              | 1.5                   | 6                          | 50              | 4                  |

unit : mm

### 鍍層升級 Coating Upgraded

|                      |  |
|----------------------|--|
| 精銑<br>Finishing      |  |
| 中銑<br>Semi-finishing |  |
| 粗銑<br>Roughing       |  |

# UNB Long Neck

## 深溝用圓頭立銑刀 Ball Nose End Mills

| 型號<br>Type No. | D1 直徑<br>Diameter | D3 頸徑<br>Neck Dia | L1 刃長<br>Flute Length | L2 有效長<br>Effective Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-------------------|-----------------------|----------------------------|-----------------|--------------------|
| UNB1008        | R0.5              | 0.95              | 1.5                   | 8                          | 50              | 4                  |
| UNB1010        | R0.5              | 0.95              | 1.5                   | 10                         | 50              | 4                  |
| UNB1012        | R0.5              | 0.95              | 1.5                   | 12                         | 50              | 4                  |
| UNB1208        | R0.6              | 1.15              | 2                     | 8                          | 50              | 4                  |
| UNB1212        | R0.6              | 1.15              | 2                     | 12                         | 50              | 4                  |
| UNB1508        | R0.75             | 1.45              | 2                     | 8                          | 50              | 4                  |
| UNB1510        | R0.75             | 1.45              | 2                     | 10                         | 50              | 4                  |
| UNB1512        | R0.75             | 1.45              | 2                     | 12                         | 50              | 4                  |
| UNB1516        | R0.75             | 1.45              | 2                     | 16                         | 50              | 4                  |
| UNB1520        | R0.75             | 1.45              | 2                     | 20                         | 50              | 4                  |
| UNB1608        | R0.8              | 1.54              | 2.5                   | 8                          | 50              | 4                  |
| UNB1612        | R0.8              | 1.54              | 2.5                   | 12                         | 50              | 4                  |
| UNB1616        | R0.8              | 1.54              | 2.5                   | 16                         | 50              | 4                  |
| UNB2008        | R1.0              | 1.92              | 3                     | 8                          | 50              | 4                  |
| UNB2010        | R1.0              | 1.92              | 3                     | 10                         | 50              | 4                  |
| UNB2012        | R1.0              | 1.92              | 3                     | 12                         | 50              | 4                  |
| UNB2016        | R1.0              | 1.92              | 3                     | 16                         | 50              | 4                  |
| UNB2020        | R1.0              | 1.92              | 3                     | 20                         | 50              | 4                  |
| UNB3008        | R1.5              | 2.90              | 4                     | 8                          | 50              | 6                  |
| UNB3010        | R1.5              | 2.90              | 4                     | 10                         | 50              | 6                  |
| UNB3016        | R1.5              | 2.90              | 4                     | 16                         | 50              | 6                  |
| UNB3020        | R1.5              | 2.90              | 4                     | 20                         | 60              | 6                  |
| UNB3025        | R1.5              | 2.90              | 4                     | 25                         | 60              | 6                  |
| UNB4010        | R2.0              | 3.88              | 5                     | 10                         | 75              | 6                  |
| UNB4015        | R2.0              | 3.88              | 5                     | 15                         | 75              | 6                  |
| UNB4020        | R2.0              | 3.88              | 5                     | 20                         | 75              | 6                  |
| UNB4025        | R2.0              | 3.88              | 5                     | 25                         | 75              | 6                  |
| UNB4030        | R2.0              | 3.88              | 5                     | 30                         | 75              | 6                  |

unit : mm





新產品  
New Product



# UXE Long Neck, Corner Radius

## End Mills 深溝用圓鼻立銑刀



| 直徑<br>D1              | 1.0         | 1.5         | 2.0        | 2.5        | 3.0        |
|-----------------------|-------------|-------------|------------|------------|------------|
| R徑公差值<br>R Tolerance  | +0.02<br>0  | +0.02<br>0  | +0.02<br>0 | +0.02<br>0 | +0.02<br>0 |
| 直徑公差值<br>D1 Tolerance | 0<br>-0.02  | 0<br>-0.02  | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 |
| 柄徑<br>Shank(h6)       | Ø4          | Ø6          |            |            |            |
| 柄徑公差值<br>D2 Tolerance | 0<br>-0.008 | 0<br>-0.008 |            |            |            |

| 型號<br>Type No. | D1 直徑<br>Diameter | D3 頸徑<br>Neck Dia | R 角<br>Conner R | L1 刃長<br>Flute Length | L2 有效長<br>Effective Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-------------------|-----------------|-----------------------|----------------------------|-----------------|--------------------|
| UXE100401      | 1.0               | 0.95              | 0.1             | 1.5                   | 4                          | 50              | 6                  |
| UXE100601      | 1.0               | 0.95              | 0.1             | 1.5                   | 6                          | 50              | 6                  |
| UXE100801      | 1.0               | 0.95              | 0.1             | 1.5                   | 8                          | 50              | 6                  |
| UXE101001      | 1.0               | 0.95              | 0.1             | 1.5                   | 10                         | 50              | 6                  |
| UXE101201      | 1.0               | 0.95              | 0.1             | 1.5                   | 12                         | 50              | 6                  |
| UXE100402      | 1.0               | 0.95              | 0.2             | 1.5                   | 4                          | 50              | 6                  |
| UXE100602      | 1.0               | 0.95              | 0.2             | 1.5                   | 6                          | 50              | 6                  |
| UXE100802      | 1.0               | 0.95              | 0.2             | 1.5                   | 8                          | 50              | 6                  |
| UXE101002      | 1.0               | 0.95              | 0.2             | 1.5                   | 10                         | 50              | 6                  |
| UXE101202      | 1.0               | 0.95              | 0.2             | 1.5                   | 12                         | 50              | 6                  |
| UXE150401      | 1.5               | 1.44              | 0.1             | 1.5                   | 4                          | 50              | 6                  |

unit : mm

# UXE Long Neck, Corner Radius

## 深溝用圓鼻立銑刀 End Mills

| 型號<br>Type No. | D1 直徑<br>Diameter | D3 頸徑<br>Neck Dia | R 角<br>Conner R | L1 刃長<br>Flute Length | L2 有效長<br>Effective Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-------------------|-----------------|-----------------------|----------------------------|-----------------|--------------------|
| UXE150601      | 1.5               | 1.44              | 0.1             | 1.5                   | 6                          | 50              | 6                  |
| UXE150801      | 1.5               | 1.44              | 0.1             | 1.5                   | 8                          | 50              | 6                  |
| UXE151001      | 1.5               | 1.44              | 0.1             | 1.5                   | 10                         | 50              | 6                  |
| UXE151201      | 1.5               | 1.44              | 0.1             | 1.5                   | 12                         | 50              | 6                  |
| UXE150402      | 1.5               | 1.44              | 0.2             | 1.5                   | 4                          | 50              | 6                  |
| UXE150602      | 1.5               | 1.44              | 0.2             | 1.5                   | 6                          | 50              | 6                  |
| UXE150802      | 1.5               | 1.44              | 0.2             | 1.5                   | 8                          | 50              | 6                  |
| UXE151002      | 1.5               | 1.44              | 0.2             | 1.5                   | 10                         | 50              | 6                  |
| UXE151202      | 1.5               | 1.44              | 0.2             | 1.5                   | 12                         | 50              | 6                  |
| UXE200801      | 2.0               | 1.92              | 0.1             | 2                     | 8                          | 50              | 6                  |
| UXE201001      | 2.0               | 1.92              | 0.1             | 2                     | 10                         | 50              | 6                  |
| UXE201201      | 2.0               | 1.92              | 0.1             | 2                     | 12                         | 50              | 6                  |
| UXE201601      | 2.0               | 1.92              | 0.1             | 2                     | 16                         | 50              | 6                  |
| UXE202001      | 2.0               | 1.92              | 0.1             | 2                     | 20                         | 50              | 6                  |
| UXE200802      | 2.0               | 1.92              | 0.2             | 2                     | 8                          | 50              | 6                  |
| UXE201002      | 2.0               | 1.92              | 0.2             | 2                     | 10                         | 50              | 6                  |
| UXE201202      | 2.0               | 1.92              | 0.2             | 2                     | 12                         | 50              | 6                  |
| UXE201602      | 2.0               | 1.92              | 0.2             | 2                     | 16                         | 50              | 6                  |
| UXE202002      | 2.0               | 1.92              | 0.2             | 2                     | 20                         | 50              | 6                  |
| UXE300802      | 3.0               | 2.90              | 0.2             | 3                     | 8                          | 50              | 6                  |
| UXE301002      | 3.0               | 2.90              | 0.2             | 3                     | 10                         | 50              | 6                  |
| UXE301202      | 3.0               | 2.90              | 0.2             | 3                     | 12                         | 50              | 6                  |
| UXE301602      | 3.0               | 2.90              | 0.2             | 3                     | 16                         | 50              | 6                  |
| UXE302002      | 3.0               | 2.90              | 0.2             | 3                     | 20                         | 50              | 6                  |
| UXE300803      | 3.0               | 2.90              | 0.3             | 3                     | 8                          | 50              | 6                  |
| UXE301003      | 3.0               | 2.90              | 0.3             | 3                     | 10                         | 50              | 6                  |
| UXE301203      | 3.0               | 2.90              | 0.3             | 3                     | 12                         | 50              | 6                  |
| UXE301603      | 3.0               | 2.90              | 0.3             | 3                     | 16                         | 50              | 6                  |
| UXE302003      | 3.0               | 2.90              | 0.3             | 3                     | 20                         | 50              | 6                  |
| UXE401002      | 4.0               | 3.88              | 0.2             | 4                     | 10                         | 50              | 6                  |
| UXE401202      | 4.0               | 3.88              | 0.2             | 4                     | 12                         | 50              | 6                  |
| UXE401602      | 4.0               | 3.88              | 0.2             | 4                     | 16                         | 50              | 6                  |
| UXE402003      | 4.0               | 3.88              | 0.3             | 4                     | 20                         | 60              | 6                  |
| UXE401003      | 4.0               | 3.88              | 0.3             | 4                     | 10                         | 50              | 6                  |
| UXE401203      | 4.0               | 3.88              | 0.3             | 4                     | 12                         | 50              | 6                  |
| UXE401603      | 4.0               | 3.88              | 0.3             | 4                     | 16                         | 50              | 6                  |
| UXE402003      | 4.0               | 3.88              | 0.3             | 4                     | 20                         | 60              | 6                  |

unit : mm

# UNE Long Neck, Corner Radius

## End Mills 深溝用圓鼻立銑刀



| 直徑<br>D1              | 1.0         | 1.5        | 2.0        | 3.0        | 4.0        |
|-----------------------|-------------|------------|------------|------------|------------|
| R 徑公差值<br>R Tolerance | +0.02<br>0  | +0.02<br>0 | +0.02<br>0 | +0.02<br>0 | +0.02<br>0 |
| 直徑公差值<br>D1 Tolerance | 0<br>-0.02  | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 |
| 柄徑<br>Shank(h6)       | Ø6          |            |            |            |            |
| 柄徑公差值<br>D2 Tolerance | 0<br>-0.008 |            |            |            |            |

| 型號<br>Type No. | D1 直徑<br>Diameter | D3 頸徑<br>Neck Dia | R 角<br>Conner R | L1 刃長<br>Flute Length | L2 有效長<br>Effective Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-------------------|-----------------|-----------------------|----------------------------|-----------------|--------------------|
| UNE1004        | 1.0               | 0.95              | 0.1             | 1.5                   | 4                          | 50              | 6                  |
| UNE1006        | 1.0               | 0.95              | 0.1             | 1.5                   | 6                          | 50              | 6                  |
| UNE1008        | 1.0               | 0.95              | 0.1             | 1.5                   | 8                          | 50              | 6                  |
| UNE1010        | 1.0               | 0.95              | 0.1             | 1.5                   | 10                         | 50              | 6                  |
| UNE1012        | 1.0               | 0.95              | 0.1             | 1.5                   | 12                         | 50              | 6                  |
| UNE1504        | 1.5               | 1.44              | 0.1             | 1.5                   | 4                          | 50              | 6                  |
| UNE1508        | 1.5               | 1.44              | 0.1             | 1.5                   | 8                          | 50              | 6                  |
| UNE1510        | 1.5               | 1.44              | 0.1             | 1.5                   | 10                         | 50              | 6                  |
| UNE1512        | 1.5               | 1.44              | 0.1             | 1.5                   | 12                         | 50              | 6                  |
| UNE2008        | 2.0               | 1.92              | 0.2             | 2                     | 8                          | 50              | 6                  |
| UNE2010        | 2.0               | 1.92              | 0.2             | 2                     | 10                         | 50              | 6                  |
| UNE2012        | 2.0               | 1.92              | 0.2             | 2                     | 12                         | 50              | 6                  |
| UNE2016        | 2.0               | 1.92              | 0.2             | 2                     | 16                         | 50              | 6                  |
| UNE3008        | 3.0               | 2.90              | 0.2             | 3                     | 8                          | 50              | 6                  |
| UNE3012        | 3.0               | 2.90              | 0.2             | 3                     | 12                         | 50              | 6                  |
| UNE3016        | 3.0               | 2.90              | 0.2             | 3                     | 16                         | 50              | 6                  |
| UNE3020        | 3.0               | 2.90              | 0.2             | 3                     | 20                         | 50              | 6                  |
| UNE4010        | 4.0               | 3.88              | 0.2             | 4                     | 10                         | 50              | 6                  |
| UNE4016        | 4.0               | 3.88              | 0.2             | 4                     | 16                         | 50              | 6                  |
| UNE4020        | 4.0               | 3.88              | 0.2             | 4                     | 20                         | 60              | 6                  |

unit : mm

材料升級

Material Upgraded

鍍層升級

Coating Upgraded

精銑  
Finishing



中銑  
Semi-finishing



粗銑  
Roughing



# UNER Long Neck, Corner Radius

## 深溝用圓鼻立銑刀 End Mills



| 直徑<br>D1              | 1.0         | 1.5         | 2.0        | 2.5        | 3.0        |
|-----------------------|-------------|-------------|------------|------------|------------|
| R 徑公差值<br>R Tolerance | +0.02<br>0  | +0.02<br>0  | +0.02<br>0 | +0.02<br>0 | +0.02<br>0 |
| 直徑公差值<br>D1 Tolerance | 0<br>-0.02  | 0<br>-0.02  | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 |
| 柄徑<br>Shank(h6)       | Ø4          | Ø6          |            |            |            |
| 柄徑公差值<br>D2 Tolerance | 0<br>-0.008 | 0<br>-0.008 |            |            |            |

| 型號<br>Type No. | D1 直徑<br>Diameter | D3 頸徑<br>Neck Dia | R 角<br>Conner R | L1 刃長<br>Flute Length | L2 有效長<br>Effective Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-------------------|-----------------|-----------------------|----------------------------|-----------------|--------------------|
| UNER1006       | 1.0               | 0.95              | 0.2             | 1.5                   | 6                          | 50              | 4                  |
| UNER1008       | 1.0               | 0.95              | 0.2             | 1.5                   | 8                          | 50              | 4                  |
| UNER1010       | 1.0               | 0.95              | 0.2             | 1.5                   | 10                         | 50              | 4                  |
| UNER1012       | 1.0               | 0.95              | 0.2             | 1.5                   | 12                         | 50              | 4                  |
| UNER1508       | 1.5               | 1.44              | 0.2             | 2                     | 8                          | 50              | 4                  |
| UNER1510       | 1.5               | 1.44              | 0.2             | 2                     | 10                         | 50              | 4                  |
| UNER1512       | 1.5               | 1.44              | 0.2             | 2                     | 12                         | 50              | 4                  |
| UNER1516       | 1.5               | 1.44              | 0.2             | 2                     | 16                         | 50              | 4                  |
| UNER2008       | 2.0               | 1.92              | 0.2             | 3                     | 8                          | 50              | 4                  |
| UNER2010       | 2.0               | 1.92              | 0.2             | 3                     | 10                         | 50              | 4                  |
| UNER2012       | 2.0               | 1.92              | 0.2             | 3                     | 12                         | 50              | 4                  |
| UNER2016       | 2.0               | 1.92              | 0.2             | 3                     | 16                         | 50              | 4                  |
| UNER2020       | 2.0               | 1.92              | 0.2             | 3                     | 20                         | 50              | 4                  |
| UNER2510       | 2.5               | 2.40              | 0.2             | 3                     | 10                         | 50              | 4                  |
| UNER2512       | 2.5               | 2.40              | 0.2             | 3                     | 12                         | 50              | 4                  |
| UNER2516       | 2.5               | 2.40              | 0.2             | 3                     | 16                         | 50              | 4                  |
| UNER2520       | 2.5               | 2.40              | 0.2             | 3                     | 20                         | 50              | 4                  |
| UNER3010       | 3.0               | 2.90              | 0.2             | 4                     | 10                         | 50              | 6                  |
| UNER3012       | 3.0               | 2.90              | 0.2             | 4                     | 12                         | 50              | 6                  |
| UNER3016       | 3.0               | 2.90              | 0.2             | 4                     | 16                         | 50              | 6                  |
| UNER3020       | 3.0               | 2.90              | 0.2             | 4                     | 20                         | 60              | 6                  |
| UNER3025       | 3.0               | 2.90              | 0.2             | 4                     | 25                         | 60              | 6                  |

unit : mm

精銑  
Finishing



中銑  
Semi-finishing



粗銑  
Roughing







# UDE Long Neck

## End Mills 深溝用立銑刀



| 直徑<br>D1              | 0.5         | 1.0         | 1.5        | 2.0        | 2.5        | 3.0        |
|-----------------------|-------------|-------------|------------|------------|------------|------------|
| 直徑公差值<br>D1 Tolerance | 0<br>-0.02  | 0<br>-0.02  | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 |
| 柄徑<br>Shank(h6)       | Ø4          | Ø6          |            |            |            |            |
| 柄徑公差值<br>D2 Tolerance | 0<br>-0.008 | 0<br>-0.008 |            |            |            |            |

| 型號<br>Type No. | D1 直徑<br>Diameter | D3 頸徑<br>Neck Dia | L1 刃長<br>Flute Length | L2 有效長<br>Effective Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-------------------|-----------------------|----------------------------|-----------------|--------------------|
| UDE0201        | 0.2               | 0.18              | 0.3                   | 1                          | 50              | 4                  |
| UDE0202        | 0.2               | 0.18              | 0.3                   | 2                          | 50              | 4                  |
| UDE0301        | 0.3               | 0.26              | 0.4                   | 1                          | 50              | 4                  |
| UDE0302        | 0.3               | 0.26              | 0.4                   | 2                          | 50              | 4                  |
| UDE0303        | 0.3               | 0.26              | 0.4                   | 3                          | 50              | 4                  |
| UDE0402        | 0.4               | 0.36              | 0.6                   | 2                          | 50              | 4                  |
| UDE0403        | 0.4               | 0.36              | 0.6                   | 3                          | 50              | 4                  |
| UDE0404        | 0.4               | 0.36              | 0.6                   | 4                          | 50              | 4                  |
| UDE0502        | 0.5               | 0.46              | 0.8                   | 2                          | 50              | 4                  |

unit : mm

# UDE Long Neck

## 深溝用立銑刀 End Mills

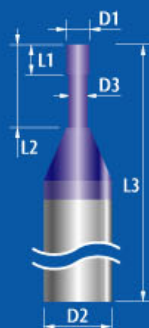
| 型號<br>Type No. | D1 直徑<br>Diameter | D3 頸徑<br>Neck Dia | L1 刃長<br>Flute Length | L2 有效長<br>Effective Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-------------------|-----------------------|----------------------------|-----------------|--------------------|
| UDE0504        | 0.5               | 0.46              | 0.8                   | 4                          | 50              | 4                  |
| UDE0506        | 0.5               | 0.46              | 0.8                   | 6                          | 50              | 4                  |
| UDE0602        | 0.6               | 0.55              | 0.9                   | 2                          | 50              | 4                  |
| UDE0604        | 0.6               | 0.55              | 0.9                   | 4                          | 50              | 4                  |
| UDE0606        | 0.6               | 0.55              | 0.9                   | 6                          | 50              | 4                  |
| UDE0702        | 0.7               | 0.65              | 1                     | 2                          | 50              | 4                  |
| UDE0704        | 0.7               | 0.65              | 1                     | 4                          | 50              | 4                  |
| UDE0706        | 0.7               | 0.65              | 1                     | 6                          | 50              | 4                  |
| UDE0802        | 0.8               | 0.75              | 1.2                   | 2                          | 50              | 4                  |
| UDE0804        | 0.8               | 0.75              | 1.2                   | 4                          | 50              | 4                  |
| UDE0806        | 0.8               | 0.75              | 1.2                   | 6                          | 50              | 4                  |
| UDE0808        | 0.8               | 0.75              | 1.2                   | 8                          | 50              | 4                  |
| UDE1006        | 1.0               | 0.95              | 1.5                   | 6                          | 50              | 4                  |
| UDE1008        | 1.0               | 0.95              | 1.5                   | 8                          | 50              | 4                  |
| UDE1010        | 1.0               | 0.95              | 1.5                   | 10                         | 50              | 4                  |
| UDE1012        | 1.0               | 0.95              | 1.5                   | 12                         | 50              | 4                  |
| UDE1206        | 1.2               | 1.15              | 1.8                   | 6                          | 50              | 4                  |
| UDE1208        | 1.2               | 1.15              | 1.8                   | 8                          | 50              | 4                  |
| UDE1210        | 1.2               | 1.15              | 1.8                   | 10                         | 50              | 4                  |
| UDE1508        | 1.5               | 1.44              | 2                     | 8                          | 50              | 4                  |
| UDE1510        | 1.5               | 1.44              | 2                     | 10                         | 50              | 4                  |
| UDE1512        | 1.5               | 1.44              | 2                     | 12                         | 50              | 4                  |
| UDE1516        | 1.5               | 1.44              | 2                     | 16                         | 50              | 4                  |
| UDE2008        | 2.0               | 1.92              | 3                     | 8                          | 50              | 4                  |
| UDE2010        | 2.0               | 1.92              | 3                     | 10                         | 50              | 4                  |
| UDE2012        | 2.0               | 1.92              | 3                     | 12                         | 50              | 4                  |
| UDE2016        | 2.0               | 1.92              | 3                     | 16                         | 50              | 4                  |
| UDE2020        | 2.0               | 1.92              | 3                     | 20                         | 50              | 4                  |
| UDE2510        | 2.5               | 2.40              | 3                     | 10                         | 50              | 4                  |
| UDE2512        | 2.5               | 2.40              | 3                     | 12                         | 50              | 4                  |
| UDE2516        | 2.5               | 2.40              | 3                     | 16                         | 50              | 4                  |
| UDE2520        | 2.5               | 2.40              | 3                     | 20                         | 50              | 4                  |
| UDE3010        | 3.0               | 2.90              | 4                     | 10                         | 50              | 6                  |
| UDE3012        | 3.0               | 2.90              | 4                     | 12                         | 50              | 6                  |
| UDE3016        | 3.0               | 2.90              | 4                     | 16                         | 50              | 6                  |
| UDE3020        | 3.0               | 2.90              | 4                     | 20                         | 60              | 6                  |
| UDE3025        | 3.0               | 2.90              | 4                     | 25                         | 60              | 6                  |

unit : mm



# LNE Long Neck

## End Mills 深溝用立銑刀



| 直徑<br>D1              | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 |
|-----------------------|-----|-----|-----|-----|-----|-----|
| 直徑公差值<br>D1 Tolerance | 0   | 0   | 0   | 0   | 0   | 0   |
| 柄徑<br>Shank(h6)       | Ø4  | Ø6  |     |     |     |     |
| 柄徑公差值<br>D2 Tolerance | 0   | 0   |     |     |     |     |

| 型號<br>Type No. | D1 直徑<br>Diameter | D3 頸徑<br>Neck Dia | L1 刃長<br>Flute Length | L2 有效長<br>Effective Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-------------------|-----------------------|----------------------------|-----------------|--------------------|
| LNE0502        | 0.5               | 0.46              | 0.8                   | 2                          | 50              | 4                  |
| LNE0504        | 0.5               | 0.46              | 0.8                   | 4                          | 50              | 4                  |
| LNE0506        | 0.5               | 0.46              | 0.8                   | 6                          | 50              | 4                  |
| LNE1006        | 1.0               | 0.95              | 1.5                   | 6                          | 50              | 4                  |
| LNE1008        | 1.0               | 0.95              | 1.5                   | 8                          | 50              | 4                  |
| LNE1010        | 1.0               | 0.95              | 1.5                   | 10                         | 50              | 4                  |
| LNE1012        | 1.0               | 0.95              | 1.5                   | 12                         | 50              | 4                  |
| LNE1508        | 1.5               | 1.45              | 2                     | 8                          | 50              | 4                  |
| LNE1510        | 1.5               | 1.45              | 2                     | 10                         | 50              | 4                  |
| LNE1512        | 1.5               | 1.45              | 2                     | 12                         | 50              | 4                  |
| LNE1516        | 1.5               | 1.45              | 2                     | 16                         | 50              | 4                  |
| LNE2008        | 2.0               | 1.92              | 3                     | 8                          | 50              | 4                  |
| LNE2010        | 2.0               | 1.92              | 3                     | 10                         | 50              | 4                  |
| LNE2012        | 2.0               | 1.92              | 3                     | 12                         | 50              | 4                  |
| LNE2016        | 2.0               | 1.92              | 3                     | 16                         | 50              | 4                  |
| LNE2020        | 2.0               | 1.92              | 3                     | 20                         | 50              | 4                  |
| LNE2510        | 2.5               | 2.42              | 3                     | 10                         | 50              | 4                  |
| LNE2512        | 2.5               | 2.42              | 3                     | 12                         | 50              | 4                  |
| LNE2516        | 2.5               | 2.42              | 3                     | 16                         | 50              | 4                  |
| LNE2520        | 2.5               | 2.42              | 3                     | 20                         | 50              | 4                  |
| LNE3010        | 3.0               | 2.90              | 4                     | 10                         | 50              | 6                  |
| LNE3012        | 3.0               | 2.90              | 4                     | 12                         | 50              | 6                  |
| LNE3016        | 3.0               | 2.90              | 4                     | 16                         | 50              | 6                  |
| LNE3020        | 3.0               | 2.90              | 4                     | 20                         | 60              | 6                  |
| LNE3025        | 3.0               | 2.90              | 4                     | 25                         | 60              | 6                  |

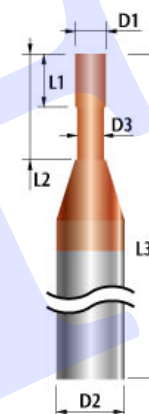
unit : mm

鍍層升級  
Coating Upgraded



# LNH Long Neck

## End Mills 深溝用立銑刀



| 直徑<br>D1              | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 |
|-----------------------|-----|-----|-----|-----|-----|
| 直徑公差值<br>D1 Tolerance | 0   | 0   | 0   | 0   | 0   |
| 柄徑<br>Shank(h6)       | Ø4  | Ø6  |     |     |     |
| 柄徑公差值<br>D2 Tolerance | 0   | 0   |     |     |     |

| 型號<br>Type No. | D1 直徑<br>Diameter | D3 頸徑<br>Neck Dia | L1 刃長<br>Flute Length | L2 有效長<br>Effective Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-------------------|-----------------------|----------------------------|-----------------|--------------------|
| LNH1006        | 1.0               | 0.95              | 1.5                   | 6                          | 50              | 4                  |
| LNH1008        | 1.0               | 0.95              | 1.5                   | 8                          | 50              | 4                  |
| LNH1010        | 1.0               | 0.95              | 1.5                   | 10                         | 50              | 4                  |
| LNH1012        | 1.0               | 0.95              | 1.5                   | 12                         | 50              | 4                  |
| LNH1508        | 1.5               | 1.45              | 2                     | 8                          | 50              | 4                  |
| LNH1510        | 1.5               | 1.45              | 2                     | 10                         | 50              | 4                  |
| LNH1512        | 1.5               | 1.45              | 2                     | 12                         | 50              | 4                  |
| LNH1516        | 1.5               | 1.45              | 2                     | 16                         | 50              | 4                  |
| LNH2008        | 2.0               | 1.92              | 3                     | 8                          | 50              | 4                  |
| LNH2010        | 2.0               | 1.92              | 3                     | 10                         | 50              | 4                  |
| LNH2012        | 2.0               | 1.92              | 3                     | 12                         | 50              | 4                  |
| LNH2016        | 2.0               | 1.92              | 3                     | 16                         | 50              | 4                  |
| LNH2020        | 2.0               | 1.92              | 3                     | 20                         | 50              | 4                  |
| LNH2510        | 2.5               | 2.42              | 3                     | 10                         | 50              | 4                  |
| LNH2512        | 2.5               | 2.42              | 3                     | 12                         | 50              | 4                  |
| LNH2516        | 2.5               | 2.42              | 3                     | 16                         | 50              | 4                  |
| LNH2520        | 2.5               | 2.42              | 3                     | 20                         | 50              | 4                  |
| LNH3010        | 3.0               | 2.90              | 4                     | 10                         | 50              | 6                  |
| LNH3012        | 3.0               | 2.90              | 4                     | 12                         | 50              | 6                  |
| LNH3016        | 3.0               | 2.90              | 4                     | 16                         | 50              | 6                  |
| LNH3020        | 3.0               | 2.90              | 4                     | 20                         | 60              | 6                  |
| LNH3025        | 3.0               | 2.90              | 4                     | 25                         | 60              | 6                  |

unit : mm

鍍層升級  
Coating Upgraded





# LNx Long Neck

## End Mills 深溝用立銑刀



| 直徑<br>D1              | 1.0         | 1.5         | 2.0        | 2.5        | 3.0        |
|-----------------------|-------------|-------------|------------|------------|------------|
| 直徑公差值<br>D1 Tolerance | 0<br>-0.02  | 0<br>-0.02  | 0<br>-0.02 | 0<br>-0.02 | 0<br>-0.02 |
| 柄徑<br>Shank(h6)       | Ø4          | Ø6          |            |            |            |
| 柄徑公差值<br>D2 Tolerance | 0<br>-0.008 | 0<br>-0.008 |            |            |            |

| 型號<br>Type No. | D1 直徑<br>Diameter | D3 頸徑<br>Neck Dia | L1 刃長<br>Flute Length | L2 有效長<br>Effective Length | L3 全長<br>O.A.L. | D2 柄徑<br>Shank Dia |
|----------------|-------------------|-------------------|-----------------------|----------------------------|-----------------|--------------------|
| LNx1006        | 1.0               | 0.95              | 1.5                   | 6                          | 50              | 4                  |
| LNx1008        | 1.0               | 0.95              | 1.5                   | 8                          | 50              | 4                  |
| LNx1010        | 1.0               | 0.95              | 1.5                   | 10                         | 50              | 4                  |
| LNx1012        | 1.0               | 0.95              | 1.5                   | 12                         | 50              | 4                  |
| LNx1508        | 1.5               | 1.45              | 2                     | 8                          | 50              | 4                  |
| LNx1510        | 1.5               | 1.45              | 2                     | 10                         | 50              | 4                  |
| LNx1512        | 1.5               | 1.45              | 2                     | 12                         | 50              | 4                  |
| LNx1516        | 1.5               | 1.45              | 2                     | 16                         | 50              | 4                  |
| LNx2008        | 2.0               | 1.92              | 3                     | 8                          | 50              | 4                  |
| LNx2010        | 2.0               | 1.92              | 3                     | 10                         | 50              | 4                  |
| LNx2012        | 2.0               | 1.92              | 3                     | 12                         | 50              | 4                  |
| LNx2016        | 2.0               | 1.92              | 3                     | 16                         | 50              | 4                  |
| LNx2020        | 2.0               | 1.92              | 3                     | 20                         | 50              | 4                  |
| LNx2510        | 2.5               | 2.42              | 3                     | 10                         | 50              | 4                  |
| LNx2512        | 2.5               | 2.42              | 3                     | 12                         | 50              | 4                  |
| LNx2516        | 2.5               | 2.42              | 3                     | 16                         | 50              | 4                  |
| LNx2520        | 2.5               | 2.42              | 3                     | 20                         | 50              | 4                  |
| LNx3010        | 3.0               | 2.90              | 4                     | 10                         | 50              | 6                  |
| LNx3012        | 3.0               | 2.90              | 4                     | 12                         | 50              | 6                  |
| LNx3016        | 3.0               | 2.90              | 4                     | 16                         | 50              | 6                  |
| LNx3020        | 3.0               | 2.90              | 4                     | 20                         | 60              | 6                  |
| LNx3025        | 3.0               | 2.90              | 4                     | 25                         | 60              | 6                  |

鍍層升級  
Coating Upgraded

精銑  
Finishing



中銑  
Semi-finishing



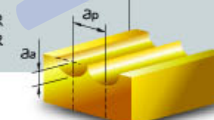
粗銑  
Roughing



# UMB

## 切削條件表 MILLING CONDITIONS

| 被切削材<br>Work Material | 碳素鋼<br>Carbon Steels, S45C, S50C<br>HB150~250                        |                          | 合金鋼<br>Alloy Steels, SCM,<br>P20, PDS3, PDS3<br>(20~35HRC) |                          | 預硬化鋼<br>Prehardened Steels,<br>NAK80, SKD11<br>(35~45HRC)            |                          | 熱處理鋼<br>Hardened Steels, SKD61<br>(45~55HRC) |                          |
|-----------------------|----------------------------------------------------------------------|--------------------------|------------------------------------------------------------|--------------------------|----------------------------------------------------------------------|--------------------------|----------------------------------------------|--------------------------|
| 切削速度 Velocity         | 80~120 m/min                                                         |                          | 60~100 m/min                                               |                          | 40~80 m/min                                                          |                          | 40 m/min                                     |                          |
| 型號<br>Type No.        | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                                | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                      | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                                | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )        | 進給速度<br>Feed<br>(mm/min) |
| UMB0022               | 30000                                                                | 500-700                  | 30000                                                      | 450-600                  | 25000                                                                | 300-600                  | 20000                                        | 200-400                  |
| UMB0032               | 30000                                                                | 500-700                  | 30000                                                      | 450-600                  | 25000                                                                | 300-600                  | 20000                                        | 200-400                  |
| UMB0042               | 30000                                                                | 600-800                  | 30000                                                      | 500-700                  | 25000                                                                | 300-600                  | 20000                                        | 200-400                  |
| UMB0052               | 30000                                                                | 600-800                  | 30000                                                      | 500-700                  | 25000                                                                | 300-600                  | 20000                                        | 200-400                  |
| UMB0062               | 25000                                                                | 800-1000                 | 25000                                                      | 600-1000                 | 20000                                                                | 300-600                  | 18000                                        | 200-400                  |
| UMB0072               | 25000                                                                | 800-1000                 | 25000                                                      | 600-1000                 | 20000                                                                | 300-600                  | 18000                                        | 200-400                  |
| UMB0082               | 20000                                                                | 800-1000                 | 20000                                                      | 600-1000                 | 20000                                                                | 300-600                  | 18000                                        | 200-400                  |
| UMB0102               | 20000                                                                | 800-1000                 | 20000                                                      | 600-1000                 | 20000                                                                | 300-600                  | 18000                                        | 200-400                  |
| 加工深度<br>Depth of cut  | a <sub>a</sub> :<br>HRC45 below 0.05-0.15R<br>HRC50 below 0.05-0.15R |                          |                                                            |                          | a <sub>a</sub> :<br>HRC45 below 0.05-0.15R<br>HRC50 below 0.05-0.08R |                          |                                              |                          |

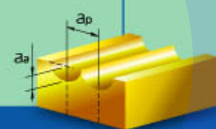


| 被切削材<br>Work Material | 銅<br>Copper                                     |                          | 硬度介於20~30<br>20HRC~30HRC                        |                          | 硬度介於30~48<br>30HRC~48HRC                        |                          |
|-----------------------|-------------------------------------------------|--------------------------|-------------------------------------------------|--------------------------|-------------------------------------------------|--------------------------|
| 切削速度 Velocity         | 230 m/min                                       |                          | 100 m/min                                       |                          | 70 m/min                                        |                          |
| 型號<br>Type No.        | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )           | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )           | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )           | 進給速度<br>Feed<br>(mm/min) |
| UMB0032               | 60000                                           | 600                      | 60000                                           | 600                      | 60000                                           | 500                      |
| UMB0042               | 60000                                           | 600                      | 60000                                           | 600                      | 45000                                           | 500                      |
| UMB0052               | 60000                                           | 600                      | 45000                                           | 600                      | 45000                                           | 500                      |
| UMB0062               | 60000                                           | 1000                     | 45000                                           | 900                      | 32000                                           | 600                      |
| UMB0072               | 60000                                           | 1200                     | 45000                                           | 950                      | 32000                                           | 650                      |
| UMB0082               | 60000                                           | 1200                     | 36000                                           | 950                      | 25000                                           | 650                      |
| UMB0102               | 60000                                           | 1800                     | 32000                                           | 950                      | 18500                                           | 650                      |
| UMB0152               | 49000                                           | 1800                     | 21000                                           | 850                      | 15000                                           | 550                      |
| UMB0202               | 36500                                           | 1800                     | 16000                                           | 850                      | 11000                                           | 550                      |
| UMB0302               | 24000                                           | 1800                     | 10000                                           | 850                      | 7400                                            | 550                      |
| UMB0402               | 18000                                           | 1800                     | 8000                                            | 850                      | 5500                                            | 550                      |
| 加工深度<br>Depth of cut  | a <sub>p</sub> : 0.1D<br>a <sub>a</sub> : 0.01D |                          | a <sub>p</sub> : 0.1D<br>a <sub>a</sub> : 0.01D |                          | a <sub>p</sub> : 0.1D<br>a <sub>a</sub> : 0.01D |                          |

# MBTA · MSB

切削條件表 MILLING CONDITIONS

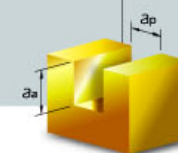
| 被切削材<br>Work Material | 碳素鋼<br>Carbon Steels, S45C, S50C<br>HB150~250 |                          | 合金鋼<br>Alloy Steels, SCM,<br>P20, PD55, PDS3, SKD11<br>(20~35HRC) |                          | 調質鋼<br>Prehardened Steels,<br>NAK80<br>(35~45HRC) |                          | 熱處理鋼<br>Hardened Steels, SKD61<br>(45~55HRC) |                          |
|-----------------------|-----------------------------------------------|--------------------------|-------------------------------------------------------------------|--------------------------|---------------------------------------------------|--------------------------|----------------------------------------------|--------------------------|
| 切削速度 Velocity         | 100 m/min                                     |                          | 80 m/min                                                          |                          | 70 m/min                                          |                          | 40 m/min                                     |                          |
| 型號<br>Type No.        | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )         | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                             | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )             | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )        | 進給速度<br>Feed<br>(mm/min) |
| MBTA0032              | 32000                                         | 450                      | 32000                                                             | 400                      | 32000                                             | 200                      | 25000                                        | 140                      |
| MBTA0042              | 32000                                         | 460                      | 32000                                                             | 410                      | 32000                                             | 200                      | 25000                                        | 135                      |
| MBTA0052              | 32000                                         | 480                      | 32000                                                             | 550                      | 32000                                             | 230                      | 25000                                        | 150                      |
| MBTA0062              | 32000                                         | 530                      | 32000                                                             | 550                      | 32000                                             | 250                      | 25000                                        | 160                      |
| MBTA0072              | 32000                                         | 580                      | 32000                                                             | 580                      | 30000                                             | 250                      | 24000                                        | 160                      |
| MBTA0082              | 32000                                         | 610                      | 32000                                                             | 620                      | 28000                                             | 280                      | 23500                                        | 210                      |
| MBTA0102              | 32000                                         | 750                      | 32000                                                             | 620                      | 22000                                             | 280                      | 19000                                        | 210                      |
| MBTA0122              | 30000                                         | 750                      | 30000                                                             | 620                      | 18500                                             | 280                      | 15500                                        | 210                      |
| MBTA0142              | 27000                                         | 750                      | 22000                                                             | 620                      | 15500                                             | 280                      | 13500                                        | 210                      |
| MBTA0152              | 25000                                         | 750                      | 21000                                                             | 620                      | 14200                                             | 280                      | 12000                                        | 210                      |
| MBTA0162              | 23500                                         | 750                      | 19000                                                             | 620                      | 13500                                             | 280                      | 11500                                        | 210                      |
| MBTA0182              | 21000                                         | 750                      | 18000                                                             | 620                      | 12000                                             | 280                      | 10500                                        | 210                      |
| MBTA0202              | 19000                                         | 750                      | 16000                                                             | 620                      | 11000                                             | 280                      | 9500                                         | 210                      |
| 加工深度<br>Depth of cut  | $a_p : 0.05D$<br>$a_a : 0.2D$                 |                          | $a_p : 0.05D$<br>$a_a : 0.1D$                                     |                          | $a_p : 0.05D$<br>$a_a : 0.1D$                     |                          | $a_p : 0.05D$<br>$a_a : 0.1D$                |                          |



# MET

切削條件表 MILLING CONDITIONS

| 被切削材<br>Work Material | 碳素鋼<br>Carbon Steels, S45C, S50C<br>HB150~250                                                        |                          | 合金鋼<br>Alloy Steels, SCM,<br>P20, PD55, PDS3, SKD11<br>(20~35HRC)                                    |                          | 調質鋼<br>Prehardened Steels,<br>NAK80<br>(35~45HRC)                                                    |                          | 熱處理鋼<br>Hardened Steels, SKD61<br>(45~55HRC)                                                         |                          |
|-----------------------|------------------------------------------------------------------------------------------------------|--------------------------|------------------------------------------------------------------------------------------------------|--------------------------|------------------------------------------------------------------------------------------------------|--------------------------|------------------------------------------------------------------------------------------------------|--------------------------|
| 切削速度 Velocity         | 80~120 m/min                                                                                         |                          | 60~100 m/min                                                                                         |                          | 40~80 m/min                                                                                          |                          | 40 m/min                                                                                             |                          |
| 型號<br>Type No.        | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                                                                | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                                                                | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                                                                | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                                                                | 進給速度<br>Feed<br>(mm/min) |
| MET0022               | 30000                                                                                                | 90                       | 30000                                                                                                | 80                       | 30000                                                                                                | 40                       | 20000                                                                                                | 25                       |
| MET0032               | 30000                                                                                                | 100                      | 30000                                                                                                | 80                       | 30000                                                                                                | 60                       | 16500                                                                                                | 25                       |
| MET0042               | 25000                                                                                                | 110                      | 25000                                                                                                | 90                       | 25000                                                                                                | 65                       | 12500                                                                                                | 25                       |
| MET0052               | 25000                                                                                                | 110                      | 25000                                                                                                | 90                       | 25000                                                                                                | 65                       | 10000                                                                                                | 25                       |
| MET0062               | 25000                                                                                                | 110                      | 25000                                                                                                | 90                       | 25000                                                                                                | 65                       | 8500                                                                                                 | 25                       |
| MET0072               | 25000                                                                                                | 110                      | 25000                                                                                                | 90                       | 25000                                                                                                | 65                       | 6500                                                                                                 | 25                       |
| MET0082               | 25000                                                                                                | 110                      | 25000                                                                                                | 90                       | 25000                                                                                                | 65                       | 6500                                                                                                 | 25                       |
| MET0102               | 20000                                                                                                | 120                      | 15000                                                                                                | 100                      | 13000                                                                                                | 70                       | 6000                                                                                                 | 30                       |
| MET0122               | 20000                                                                                                | 120                      | 15000                                                                                                | 100                      | 13000                                                                                                | 70                       | 5000                                                                                                 | 30                       |
| MET0152               | 15000                                                                                                | 120                      | 10000                                                                                                | 100                      | 8500                                                                                                 | 70                       | 4500                                                                                                 | 35                       |
| MET0162               | 15000                                                                                                | 120                      | 10000                                                                                                | 100                      | 8500                                                                                                 | 70                       | 4500                                                                                                 | 35                       |
| MET0182               | 11000                                                                                                | 120                      | 7500                                                                                                 | 110                      | 6800                                                                                                 | 80                       | 4000                                                                                                 | 35                       |
| MET0202               | 11000                                                                                                | 130                      | 7500                                                                                                 | 110                      | 6800                                                                                                 | 80                       | 4000                                                                                                 | 40                       |
| MET0252               | 9000                                                                                                 | 150                      | 6500                                                                                                 | 110                      | 6000                                                                                                 | 80                       | 3500                                                                                                 | 40                       |
| MET0302               | 7500                                                                                                 | 195                      | 6000                                                                                                 | 110                      | 5500                                                                                                 | 80                       | 2800                                                                                                 | 40                       |
| 加工深度<br>Depth of cut  | $a_p \leq \varnothing 1$<br>$a_a = 0.1D$<br>$\varnothing 1 \leq a_p < \varnothing 3$<br>$a_a = 0.3D$ |                          | $a_p \leq \varnothing 1$<br>$a_a = 0.1D$<br>$\varnothing 1 \leq a_p < \varnothing 3$<br>$a_a = 0.3D$ |                          | $a_p \leq \varnothing 1$<br>$a_a = 0.1D$<br>$\varnothing 1 \leq a_p < \varnothing 3$<br>$a_a = 0.3D$ |                          | $a_p \leq \varnothing 1$<br>$a_a = 0.1D$<br>$\varnothing 1 \leq a_p < \varnothing 3$<br>$a_a = 0.3D$ |                          |

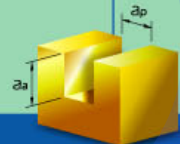




# UME

切削條件表 MILLING CONDITIONS

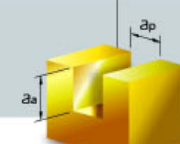
| 被切削材<br>Work Material | 碳素鋼<br>Carbon Steels, S45C, S50C<br>HB150~250                                   |                          | 合金鋼<br>Alloy Steels, SCM,<br>P20, PDS5, PDS3, SKD11<br>(20~35HRC)               |                          | 調質鋼<br>Prehardened Steels,<br>NAK80<br>(35~45HRC)                               |                          | 熱處理鋼<br>Hardened Steels, SKD61<br>(45~55HRC)                                    |                          |
|-----------------------|---------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------|--------------------------|
| 切削速度 Velocity         | 80~120 m/min                                                                    |                          | 60~100 m/min                                                                    |                          | 40~80 m/min                                                                     |                          | 40 m/min                                                                        |                          |
| 型號<br>Type No.        | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                                           | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                                           | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                                           | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                                           | 進給速度<br>Feed<br>(mm/min) |
| UME0022               | 30000                                                                           | 90                       | 30000                                                                           | 80                       | 30000                                                                           | 40                       | 20000                                                                           | 25                       |
| UME0032               | 30000                                                                           | 100                      | 30000                                                                           | 80                       | 30000                                                                           | 60                       | 16500                                                                           | 25                       |
| UME0042               | 25000                                                                           | 110                      | 25000                                                                           | 90                       | 25000                                                                           | 65                       | 12500                                                                           | 25                       |
| UME0052               | 25000                                                                           | 110                      | 25000                                                                           | 90                       | 25000                                                                           | 65                       | 10000                                                                           | 25                       |
| UME0062               | 25000                                                                           | 110                      | 25000                                                                           | 90                       | 25000                                                                           | 65                       | 8500                                                                            | 25                       |
| UME0072               | 25000                                                                           | 110                      | 25000                                                                           | 90                       | 25000                                                                           | 65                       | 6500                                                                            | 25                       |
| UME0082               | 25000                                                                           | 110                      | 25000                                                                           | 90                       | 25000                                                                           | 65                       | 6500                                                                            | 25                       |
| UME0102               | 20000                                                                           | 120                      | 15000                                                                           | 100                      | 13000                                                                           | 70                       | 6000                                                                            | 30                       |
| UME0122               | 20000                                                                           | 120                      | 15000                                                                           | 100                      | 13000                                                                           | 70                       | 5000                                                                            | 30                       |
| UME0152               | 15000                                                                           | 120                      | 10000                                                                           | 100                      | 8500                                                                            | 70                       | 4500                                                                            | 35                       |
| UME0162               | 15000                                                                           | 120                      | 10000                                                                           | 100                      | 8500                                                                            | 70                       | 4500                                                                            | 35                       |
| UME0182               | 11000                                                                           | 120                      | 7500                                                                            | 110                      | 6800                                                                            | 80                       | 4000                                                                            | 35                       |
| UME0202               | 11000                                                                           | 130                      | 7500                                                                            | 110                      | 6800                                                                            | 80                       | 4000                                                                            | 40                       |
| UME0252               | 9000                                                                            | 150                      | 6500                                                                            | 110                      | 6000                                                                            | 80                       | 3500                                                                            | 40                       |
| UME0302               | 7500                                                                            | 195                      | 6000                                                                            | 110                      | 5500                                                                            | 80                       | 2800                                                                            | 40                       |
| 加工深度<br>Depth of cut  | $a_p \leq \phi 1$<br>$a_a = 0.1D$<br>$\phi 1 \leq a_p < \phi 3$<br>$a_a = 0.3D$ |                          | $a_p \leq \phi 1$<br>$a_a = 0.1D$<br>$\phi 1 \leq a_p < \phi 3$<br>$a_a = 0.3D$ |                          | $a_p \leq \phi 1$<br>$a_a = 0.1D$<br>$\phi 1 \leq a_p < \phi 3$<br>$a_a = 0.3D$ |                          | $a_p \leq \phi 1$<br>$a_a = 0.1D$<br>$\phi 1 \leq a_p < \phi 3$<br>$a_a = 0.3D$ |                          |



# META

切削條件表 MILLING CONDITIONS

| 被切削材<br>Work Material | 碳素鋼<br>Carbon Steels, S45C, S50C<br>HB150~250                                   |                          | 合金鋼<br>Alloy Steels, SCM,<br>P20, PDS5, PDS3, SKD11<br>(20~35HRC)               |                          | 調質鋼<br>Prehardened Steels,<br>NAK80<br>(35~45HRC)                               |                          | 熱處理鋼<br>Hardened Steels, SKD61<br>(45~55HRC)                                    |                          |
|-----------------------|---------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------|--------------------------|
| 切削速度 Velocity         | 80~120 m/min                                                                    |                          | 60~100 m/min                                                                    |                          | 40~80 m/min                                                                     |                          | 40 m/min                                                                        |                          |
| 型號<br>Type No.        | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                                           | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                                           | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                                           | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                                           | 進給速度<br>Feed<br>(mm/min) |
| META0022              | 30000                                                                           | 90                       | 30000                                                                           | 80                       | 30000                                                                           | 40                       | 20000                                                                           | 25                       |
| META0032              | 30000                                                                           | 100                      | 30000                                                                           | 80                       | 30000                                                                           | 60                       | 16500                                                                           | 25                       |
| META0042              | 25000                                                                           | 110                      | 25000                                                                           | 90                       | 25000                                                                           | 65                       | 12500                                                                           | 25                       |
| META0052              | 25000                                                                           | 110                      | 25000                                                                           | 90                       | 25000                                                                           | 65                       | 10000                                                                           | 25                       |
| META0062              | 25000                                                                           | 110                      | 25000                                                                           | 90                       | 25000                                                                           | 65                       | 8500                                                                            | 25                       |
| META0072              | 25000                                                                           | 110                      | 25000                                                                           | 90                       | 25000                                                                           | 65                       | 6500                                                                            | 25                       |
| META0082              | 25000                                                                           | 110                      | 25000                                                                           | 90                       | 25000                                                                           | 65                       | 6500                                                                            | 25                       |
| META0102              | 20000                                                                           | 120                      | 15000                                                                           | 100                      | 13000                                                                           | 70                       | 6000                                                                            | 30                       |
| META0122              | 20000                                                                           | 120                      | 15000                                                                           | 100                      | 13000                                                                           | 70                       | 5000                                                                            | 30                       |
| META0142              | 20000                                                                           | 120                      | 15000                                                                           | 100                      | 13000                                                                           | 70                       | 5000                                                                            | 30                       |
| META0152              | 15000                                                                           | 120                      | 10000                                                                           | 100                      | 8500                                                                            | 70                       | 4500                                                                            | 35                       |
| META0162              | 15000                                                                           | 120                      | 10000                                                                           | 100                      | 8500                                                                            | 70                       | 4500                                                                            | 35                       |
| META0182              | 11000                                                                           | 120                      | 7500                                                                            | 110                      | 6800                                                                            | 80                       | 4000                                                                            | 35                       |
| META0202              | 11000                                                                           | 130                      | 7500                                                                            | 110                      | 6800                                                                            | 80                       | 4000                                                                            | 40                       |
| META0252              | 9000                                                                            | 150                      | 6500                                                                            | 110                      | 6000                                                                            | 80                       | 3500                                                                            | 40                       |
| META0302              | 7500                                                                            | 195                      | 6000                                                                            | 110                      | 5500                                                                            | 80                       | 2800                                                                            | 40                       |
| 加工深度<br>Depth of cut  | $a_p \leq \phi 1$<br>$a_a = 0.1D$<br>$\phi 1 \leq a_p < \phi 3$<br>$a_a = 0.3D$ |                          | $a_p \leq \phi 1$<br>$a_a = 0.1D$<br>$\phi 1 \leq a_p < \phi 3$<br>$a_a = 0.3D$ |                          | $a_p \leq \phi 1$<br>$a_a = 0.1D$<br>$\phi 1 \leq a_p < \phi 3$<br>$a_a = 0.3D$ |                          | $a_p \leq \phi 1$<br>$a_a = 0.1D$<br>$\phi 1 \leq a_p < \phi 3$<br>$a_a = 0.3D$ |                          |





# UNBX 2 Flutes

切削條件表 MILLING CONDITIONS

| 被切削材<br>Work Material | 硬度介於30~45<br>30HRC~45HRC              |                          |                                  | 硬度介於45~52<br>45HRC~52HRC              |                          |                                  | 硬度介於52~56<br>52HRC~56HRC              |                          |                                  | 硬度介於56~62<br>56HRC~62HRC              |                          |                                  |
|-----------------------|---------------------------------------|--------------------------|----------------------------------|---------------------------------------|--------------------------|----------------------------------|---------------------------------------|--------------------------|----------------------------------|---------------------------------------|--------------------------|----------------------------------|
|                       | 迴轉速度<br>Speed<br>(min <sup>-1</sup> ) | 進給速度<br>Feed<br>(mm/min) | 切削深度<br>Cutting<br>Depth<br>(mm) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> ) | 進給速度<br>Feed<br>(mm/min) | 切削深度<br>Cutting<br>Depth<br>(mm) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> ) | 進給速度<br>Feed<br>(mm/min) | 切削深度<br>Cutting<br>Depth<br>(mm) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> ) | 進給速度<br>Feed<br>(mm/min) | 切削深度<br>Cutting<br>Depth<br>(mm) |
| UNBX0502              | 60000                                 | 600                      | 0.03                             | 60000                                 | 600                      | 0.03                             | 50000                                 | 510                      | 0.03                             | 12800                                 | 125                      | 0.02                             |
| UNBX0504              | 60000                                 | 600                      | 0.02                             | 60000                                 | 600                      | 0.02                             | 50000                                 | 510                      | 0.02                             | 12800                                 | 125                      | 0.01                             |
| UNBX0506              | 60000                                 | 600                      | 0.01                             | 60000                                 | 600                      | 0.01                             | 50000                                 | 510                      | 0.01                             | 12800                                 | 125                      | 0.01                             |
| UNBX0602              | 60000                                 | 1200                     | 0.04                             | 53000                                 | 1000                     | 0.04                             | 42500                                 | 850                      | 0.04                             | 10000                                 | 210                      | 0.02                             |
| UNBX0604              | 60000                                 | 1200                     | 0.02                             | 53000                                 | 1000                     | 0.02                             | 42500                                 | 850                      | 0.02                             | 10000                                 | 210                      | 0.01                             |
| UNBX0606              | 60000                                 | 600                      | 0.01                             | 53000                                 | 550                      | 0.01                             | 42500                                 | 420                      | 0.01                             | 10000                                 | 100                      | 0.01                             |
| UNBX0804              | 48000                                 | 950                      | 0.05                             | 40000                                 | 800                      | 0.05                             | 32000                                 | 630                      | 0.05                             | 8000                                  | 160                      | 0.02                             |
| UNBX0806              | 48000                                 | 950                      | 0.03                             | 40000                                 | 800                      | 0.03                             | 32000                                 | 630                      | 0.03                             | 8000                                  | 160                      | 0.02                             |
| UNBX0808              | 48000                                 | 950                      | 0.02                             | 40000                                 | 800                      | 0.02                             | 32000                                 | 630                      | 0.02                             | 8000                                  | 160                      | 0.01                             |
| UNBX1006              | 38000                                 | 1100                     | 0.07                             | 32000                                 | 950                      | 0.07                             | 25000                                 | 750                      | 0.07                             | 6400                                  | 190                      | 0.03                             |
| UNBX1008              | 38000                                 | 1100                     | 0.04                             | 32000                                 | 950                      | 0.04                             | 25000                                 | 750                      | 0.04                             | 6400                                  | 190                      | 0.02                             |
| UNBX1010              | 38000                                 | 950                      | 0.02                             | 32000                                 | 650                      | 0.02                             | 25000                                 | 500                      | 0.02                             | 6400                                  | 125                      | 0.01                             |
| UNBX1012              | 38000                                 | 800                      | 0.01                             | 32000                                 | 600                      | 0.01                             | 25000                                 | 500                      | 0.01                             | 6400                                  | 125                      | 0.01                             |
| UNBX1208              | 32000                                 | 1050                     | 0.05                             | 26500                                 | 900                      | 0.05                             | 21000                                 | 700                      | 0.05                             | 5300                                  | 220                      | 0.02                             |
| UNBX1212              | 32000                                 | 1050                     | 0.02                             | 26500                                 | 900                      | 0.02                             | 21000                                 | 700                      | 0.02                             | 5300                                  | 220                      | 0.01                             |
| UNBX1506              | 25000                                 | 1000                     | 0.10                             | 21000                                 | 850                      | 0.10                             | 17000                                 | 635                      | 0.10                             | 4200                                  | 170                      | 0.05                             |
| UNBX1508              | 25000                                 | 1000                     | 0.08                             | 21000                                 | 850                      | 0.08                             | 17000                                 | 635                      | 0.08                             | 4200                                  | 170                      | 0.05                             |
| UNBX1510              | 25000                                 | 1000                     | 0.05                             | 21000                                 | 850                      | 0.05                             | 17000                                 | 635                      | 0.05                             | 4200                                  | 170                      | 0.03                             |
| UNBX1512              | 25000                                 | 1000                     | 0.05                             | 21000                                 | 850                      | 0.05                             | 17000                                 | 635                      | 0.05                             | 4200                                  | 170                      | 0.03                             |
| UNBX1516              | 25000                                 | 780                      | 0.03                             | 21000                                 | 650                      | 0.03                             | 17000                                 | 500                      | 0.03                             | 4200                                  | 125                      | 0.02                             |
| UNBX1520              | 25000                                 | 650                      | 0.02                             | 21000                                 | 650                      | 0.02                             | 17000                                 | 500                      | 0.01                             | 4200                                  | 125                      | 0.01                             |
| UNBX1608              | 24000                                 | 1000                     | 0.10                             | 20000                                 | 850                      | 0.10                             | 16000                                 | 650                      | 0.10                             | 4000                                  | 180                      | 0.05                             |
| UNBX1612              | 24000                                 | 1000                     | 0.10                             | 20000                                 | 850                      | 0.10                             | 16000                                 | 650                      | 0.10                             | 4000                                  | 180                      | 0.05                             |
| UNBX1616              | 24000                                 | 850                      | 0.07                             | 20000                                 | 750                      | 0.07                             | 16000                                 | 500                      | 0.07                             | 4000                                  | 130                      | 0.03                             |
| UNBX2008              | 19000                                 | 950                      | 0.13                             | 16000                                 | 800                      | 0.13                             | 13000                                 | 680                      | 0.13                             | 3200                                  | 160                      | 0.06                             |
| UNBX2010              | 19000                                 | 950                      | 0.13                             | 16000                                 | 800                      | 0.13                             | 13000                                 | 680                      | 0.13                             | 3200                                  | 160                      | 0.06                             |
| UNBX2012              | 19000                                 | 950                      | 0.07                             | 16000                                 | 800                      | 0.07                             | 13000                                 | 680                      | 0.07                             | 3200                                  | 160                      | 0.04                             |
| UNBX2016              | 19000                                 | 950                      | 0.07                             | 16000                                 | 800                      | 0.07                             | 13000                                 | 680                      | 0.07                             | 3200                                  | 160                      | 0.04                             |
| UNBX2020              | 19000                                 | 780                      | 0.04                             | 16000                                 | 800                      | 0.05                             | 13000                                 | 500                      | 0.04                             | 3200                                  | 125                      | 0.02                             |
| UNBX3008              | 12800                                 | 1000                     | 0.20                             | 10000                                 | 850                      | 0.20                             | 8500                                  | 680                      | 0.20                             | 2100                                  | 170                      | 0.09                             |
| UNBX3010              | 12800                                 | 1000                     | 0.20                             | 10000                                 | 850                      | 0.20                             | 8500                                  | 680                      | 0.20                             | 2100                                  | 170                      | 0.09                             |
| UNBX3012              | 12800                                 | 1000                     | 0.15                             | 10000                                 | 850                      | 0.15                             | 8500                                  | 680                      | 0.10                             | 2100                                  | 170                      | 0.06                             |
| UNBX3016              | 12800                                 | 1000                     | 0.15                             | 10000                                 | 850                      | 0.15                             | 8500                                  | 500                      | 0.08                             | 2100                                  | 125                      | 0.04                             |
| UNBX3020              | 12800                                 | 1000                     | 0.15                             | 10000                                 | 850                      | 0.12                             | 8500                                  | 500                      | 0.06                             | 2100                                  | 125                      | 0.03                             |
| UNBX3025              | 12800                                 | 1000                     | 0.08                             | 10000                                 | 850                      | 0.08                             | 8500                                  | 500                      | 0.06                             | 2100                                  | 125                      | 0.03                             |
| UNBX4010              | 9500                                  | 1150                     | 0.25                             | 8000                                  | 900                      | 0.25                             | 6400                                  | 720                      | 0.25                             | 1600                                  | 180                      | 0.10                             |
| UNBX4015              | 9500                                  | 1150                     | 0.25                             | 8000                                  | 900                      | 0.25                             | 6400                                  | 720                      | 0.25                             | 1600                                  | 180                      | 0.10                             |
| UNBX4020              | 9500                                  | 1150                     | 0.20                             | 8000                                  | 900                      | 0.20                             | 6400                                  | 720                      | 0.20                             | 1600                                  | 180                      | 0.08                             |
| UNBX4025              | 9500                                  | 1150                     | 0.20                             | 8000                                  | 900                      | 0.20                             | 6400                                  | 550                      | 0.10                             | 1600                                  | 130                      | 0.05                             |
| UNBX4030              | 9500                                  | 1150                     | 0.10                             | 8000                                  | 900                      | 0.10                             | 6400                                  | 550                      | 0.10                             | 1600                                  | 130                      | 0.04                             |

# UNBX 4 Flutes

切削條件表 MILLING CONDITIONS

| 被切削材<br>Work Material | 硬度介於30~45<br>30HRC~45HRC              |                          |                                  | 硬度介於45~52<br>45HRC~52HRC              |                          |                                  | 硬度介於52~56<br>52HRC~56HRC              |                          |                                  | 硬度介於56~62<br>56HRC~62HRC              |                          |                                  |
|-----------------------|---------------------------------------|--------------------------|----------------------------------|---------------------------------------|--------------------------|----------------------------------|---------------------------------------|--------------------------|----------------------------------|---------------------------------------|--------------------------|----------------------------------|
| 型號<br>Type No.        | 迴轉速度<br>Speed<br>(min <sup>-1</sup> ) | 進給速度<br>Feed<br>(mm/min) | 切削深度<br>Cutting<br>Depth<br>(mm) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> ) | 進給速度<br>Feed<br>(mm/min) | 切削深度<br>Cutting<br>Depth<br>(mm) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> ) | 進給速度<br>Feed<br>(mm/min) | 切削深度<br>Cutting<br>Depth<br>(mm) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> ) | 進給速度<br>Feed<br>(mm/min) | 切削深度<br>Cutting<br>Depth<br>(mm) |
| UNBX100604            | 38000                                 | 1100                     | 0.07                             | 32000                                 | 950                      | 0.07                             | 25000                                 | 750                      | 0.07                             | 6400                                  | 190                      | 0.03                             |
| UNBX100804            | 38000                                 | 1100                     | 0.04                             | 32000                                 | 950                      | 0.04                             | 25000                                 | 750                      | 0.04                             | 6400                                  | 190                      | 0.02                             |
| UNBX101004            | 38000                                 | 950                      | 0.02                             | 32000                                 | 650                      | 0.02                             | 25000                                 | 500                      | 0.02                             | 6400                                  | 125                      | 0.01                             |
| UNBX101204            | 38000                                 | 800                      | 0.01                             | 32000                                 | 600                      | 0.01                             | 25000                                 | 500                      | 0.01                             | 6400                                  | 125                      | 0.01                             |
| UNBX150604            | 25000                                 | 1000                     | 0.10                             | 21000                                 | 850                      | 0.10                             | 17000                                 | 635                      | 0.10                             | 4200                                  | 170                      | 0.05                             |
| UNBX150804            | 25000                                 | 1000                     | 0.08                             | 21000                                 | 850                      | 0.08                             | 17000                                 | 635                      | 0.08                             | 4200                                  | 170                      | 0.05                             |
| UNBX151004            | 25000                                 | 1000                     | 0.05                             | 21000                                 | 850                      | 0.05                             | 17000                                 | 635                      | 0.05                             | 4200                                  | 170                      | 0.03                             |
| UNBX151204            | 25000                                 | 1000                     | 0.05                             | 21000                                 | 850                      | 0.05                             | 17000                                 | 635                      | 0.05                             | 4200                                  | 170                      | 0.03                             |
| UNBX151604            | 25000                                 | 780                      | 0.03                             | 21000                                 | 650                      | 0.03                             | 17000                                 | 500                      | 0.03                             | 4200                                  | 125                      | 0.02                             |
| UNBX200804            | 19000                                 | 950                      | 0.13                             | 16000                                 | 800                      | 0.13                             | 13000                                 | 680                      | 0.13                             | 3200                                  | 160                      | 0.06                             |
| UNBX201004            | 19000                                 | 950                      | 0.13                             | 16000                                 | 800                      | 0.13                             | 13000                                 | 680                      | 0.13                             | 3200                                  | 160                      | 0.06                             |
| UNBX201204            | 19000                                 | 950                      | 0.07                             | 16000                                 | 800                      | 0.07                             | 13000                                 | 680                      | 0.07                             | 3200                                  | 160                      | 0.04                             |
| UNBX201604            | 19000                                 | 950                      | 0.07                             | 16000                                 | 800                      | 0.07                             | 13000                                 | 680                      | 0.07                             | 3200                                  | 160                      | 0.04                             |
| UNBX202004            | 19000                                 | 780                      | 0.04                             | 16000                                 | 800                      | 0.05                             | 13000                                 | 500                      | 0.04                             | 3200                                  | 125                      | 0.02                             |
| UNBX300804            | 12800                                 | 1000                     | 0.20                             | 10000                                 | 850                      | 0.20                             | 8500                                  | 680                      | 0.20                             | 2100                                  | 170                      | 0.09                             |
| UNBX301004            | 12800                                 | 1000                     | 0.20                             | 10000                                 | 850                      | 0.20                             | 8500                                  | 680                      | 0.20                             | 2100                                  | 170                      | 0.09                             |
| UNBX301204            | 12800                                 | 1000                     | 0.15                             | 10000                                 | 850                      | 0.15                             | 8500                                  | 680                      | 0.10                             | 2100                                  | 170                      | 0.06                             |
| UNBX301604            | 12800                                 | 1000                     | 0.15                             | 10000                                 | 850                      | 0.15                             | 8500                                  | 500                      | 0.08                             | 2100                                  | 125                      | 0.04                             |
| UNBX302004            | 12800                                 | 1000                     | 0.15                             | 10000                                 | 850                      | 0.12                             | 8500                                  | 500                      | 0.06                             | 2100                                  | 125                      | 0.03                             |
| UNBX302504            | 12800                                 | 1000                     | 0.08                             | 10000                                 | 850                      | 0.08                             | 8500                                  | 500                      | 0.06                             | 2100                                  | 125                      | 0.03                             |
| UNBX401004            | 9500                                  | 1150                     | 0.25                             | 8000                                  | 900                      | 0.25                             | 6400                                  | 720                      | 0.25                             | 1600                                  | 180                      | 0.10                             |
| UNBX401504            | 9500                                  | 1150                     | 0.25                             | 8000                                  | 900                      | 0.25                             | 6400                                  | 720                      | 0.25                             | 1600                                  | 180                      | 0.10                             |
| UNBX402004            | 9500                                  | 1150                     | 0.20                             | 8000                                  | 900                      | 0.20                             | 6400                                  | 720                      | 0.20                             | 1600                                  | 180                      | 0.08                             |
| UNBX402504            | 9500                                  | 1150                     | 0.20                             | 8000                                  | 900                      | 0.20                             | 6400                                  | 550                      | 0.10                             | 1600                                  | 130                      | 0.05                             |
| UNBX403004            | 9500                                  | 1150                     | 0.10                             | 8000                                  | 900                      | 0.10                             | 6400                                  | 550                      | 0.10                             | 1600                                  | 130                      | 0.04                             |



# UNB

切削條件表 MILLING CONDITIONS

| 被切削材<br>Work Material | S50C, PX-5, SKD11, HPM-1, NAK55       |                          |                                            |                          |                                     |
|-----------------------|---------------------------------------|--------------------------|--------------------------------------------|--------------------------|-------------------------------------|
| 型號<br>Type No.        | 迴轉速度<br>Speed<br>(min <sup>-1</sup> ) | 進給速度<br>Feed<br>(mm/min) | 深溝切削<br>Long Neck Milling<br>(mm/per time) | 進給速度<br>Feed<br>(mm/min) | 3D切削<br>3D Milling<br>(mm/per time) |
| UNB1006               | 12800-30000                           | 300-800                  | 0.01-0.05                                  | 800-1200                 | 0.1-0.3                             |
| UNB1008               | 12800-30000                           | 300-800                  | 0.01-0.05                                  | 800-1200                 | 0.1-0.3                             |
| UNB1010               | 12800-30000                           | 300-800                  | 0.01-0.05                                  | 800-1200                 | 0.1-0.3                             |
| UNB1012               | 12800-30000                           | 300-800                  | 0.01-0.05                                  | 800-1200                 | 0.1-0.3                             |
| UNB1508               | 8500-30000                            | 300-800                  | 0.02-0.10                                  | 800-1200                 | 0.1-0.4                             |
| UNB1512               | 8500-30000                            | 300-800                  | 0.02-0.10                                  | 800-1200                 | 0.1-0.4                             |
| UNB1516               | 8500-30000                            | 300-800                  | 0.02-0.10                                  | 800-1200                 | 0.1-0.4                             |
| UNB1520               | 8500-30000                            | 300-800                  | 0.02-0.10                                  | 800-1200                 | 0.1-0.4                             |
| UNB2008               | 6400-30000                            | 300-800                  | 0.02-0.30                                  | 800-2000                 | 0.1-0.4                             |
| UNB2012               | 6400-30000                            | 300-800                  | 0.02-0.30                                  | 800-2000                 | 0.1-0.4                             |
| UNB2016               | 6400-30000                            | 300-800                  | 0.02-0.30                                  | 800-2000                 | 0.1-0.4                             |
| UNB2020               | 6400-30000                            | 300-800                  | 0.02-0.30                                  | 800-2000                 | 0.1-0.4                             |
| UNB3008               | 4200-20000                            | 300-800                  | 0.02-0.30                                  | 800-2000                 | 0.1-0.4                             |
| UNB3010               | 4200-20000                            | 300-800                  | 0.02-0.30                                  | 800-2000                 | 0.1-0.4                             |
| UNB3016               | 4200-20000                            | 300-800                  | 0.02-0.30                                  | 800-2000                 | 0.1-0.4                             |
| UNB3020               | 4200-20000                            | 300-800                  | 0.02-0.30                                  | 800-2000                 | 0.1-0.4                             |
| UNB3025               | 4200-20000                            | 300-800                  | 0.02-0.30                                  | 800-2000                 | 0.1-0.4                             |
| UNB4010               | 3200-15000                            | 300-800                  | 0.02-0.30                                  | 800-1500                 | 0.1-0.5                             |
| UNB4015               | 3200-15000                            | 300-800                  | 0.02-0.30                                  | 800-1500                 | 0.1-0.5                             |
| UNB4020               | 3200-15000                            | 300-800                  | 0.02-0.30                                  | 800-1500                 | 0.1-0.5                             |
| UNB4025               | 3200-15000                            | 300-800                  | 0.02-0.30                                  | 800-1500                 | 0.1-0.5                             |
| UNB4030               | 3200-15000                            | 300-800                  | 0.02-0.30                                  | 800-1500                 | 0.1-0.5                             |

# LNB

切削條件表 MILLING CONDITIONS

| 被切削材<br>Work Material | 硬度介於30~40<br>S50C, PX-5, SKD11,<br>HPM-1, NAK55<br>30HRC~40HRC |                          |                                  | 硬度介於30~40<br>S50C, PX-5, SKD11, HPM-1, NAK55<br>30HRC~40HRC |                          |                                                 |                          |                                        | 硬度40<br>NAK80<br>40HRC                |                          |                                  |
|-----------------------|----------------------------------------------------------------|--------------------------|----------------------------------|-------------------------------------------------------------|--------------------------|-------------------------------------------------|--------------------------|----------------------------------------|---------------------------------------|--------------------------|----------------------------------|
| 型號<br>Type No.        | 標準 Standard                                                    |                          |                                  | 高速 High Speed                                               |                          |                                                 |                          |                                        | 迴轉速度<br>Speed<br>(min <sup>-1</sup> ) | 進給速度<br>Feed<br>(mm/min) | 切削深度<br>Cutting<br>Depth<br>(mm) |
|                       | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                          | 進給速度<br>Feed<br>(mm/min) | 切削深度<br>Cutting<br>Depth<br>(mm) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                       | 進給速度<br>Feed<br>(mm/min) | 深溝切削深度<br>Long Neck<br>Milling Cutting<br>Depth | 進給速度<br>Feed<br>(mm/min) | 切削深度<br>3D Milling<br>Cutting<br>Depth |                                       |                          |                                  |
| LNB1006               | 30000                                                          | 800                      | 0.05                             | 2800-30000                                                  | 300-800                  | 0.01-0.05                                       | 800-1200                 | 0.01-0.3                               | 20000                                 | 1000                     | 0.05                             |
| LNB1008               | 30000                                                          | 800                      | 0.04                             | 2800-30000                                                  | 300-800                  | 0.01-0.05                                       | 800-1200                 | 0.01-0.3                               | 20000                                 | 1000                     | 0.04                             |
| LNB1010               | 30000                                                          | 800                      | 0.02                             | 2800-30000                                                  | 300-800                  | 0.01-0.05                                       | 800-1200                 | 0.01-0.3                               | 20000                                 | 1000                     | 0.02                             |
| LNB1012               | 30000                                                          | 800                      | 0.02                             | 2800-30000                                                  | 300-800                  | 0.01-0.05                                       | 800-1200                 | 0.01-0.3                               | 20000                                 | 1000                     | 0.02                             |
| LNB1508               | 24000                                                          | 1000                     | 0.1                              | 9500-30000                                                  | 300-800                  | 0.01-0.05                                       | 800-1500                 | 0.01-0.3                               | 16000                                 | 2000                     | 0.1                              |
| LNB1510               | 24000                                                          | 1000                     | 0.08                             | 9500-30000                                                  | 300-800                  | 0.01-0.05                                       | 800-1500                 | 0.01-0.3                               | 16000                                 | 2000                     | 0.08                             |
| LNB1512               | 24000                                                          | 1000                     | 0.06                             | 9500-30000                                                  | 300-800                  | 0.01-0.05                                       | 800-1500                 | 0.01-0.3                               | 16000                                 | 2000                     | 0.06                             |
| LNB1516               | 24000                                                          | 800                      | 0.04                             | 9500-30000                                                  | 300-800                  | 0.01-0.05                                       | 800-1500                 | 0.01-0.3                               | 16000                                 | 1600                     | 0.04                             |
| LNB1520               | 24000                                                          | 800                      | 0.02                             | 9500-30000                                                  | 300-800                  | 0.01-0.05                                       | 800-1500                 | 0.01-0.3                               | 16000                                 | 1600                     | 0.02                             |
| LNB2008               | 20000                                                          | 1200                     | 0.12                             | 6400-30000                                                  | 300-800                  | 0.01-0.15                                       | 800-2000                 | 0.01-0.5                               | 12000                                 | 2500                     | 0.2                              |
| LNB2010               | 20000                                                          | 1200                     | 0.12                             | 6400-30000                                                  | 300-800                  | 0.01-0.15                                       | 800-2000                 | 0.01-0.5                               | 12000                                 | 2500                     | 0.2                              |
| LNB2012               | 20000                                                          | 1200                     | 0.1                              | 6400-30000                                                  | 300-800                  | 0.01-0.15                                       | 800-2000                 | 0.01-0.5                               | 12000                                 | 2500                     | 0.16                             |
| LNB2016               | 20000                                                          | 1000                     | 0.06                             | 6400-30000                                                  | 300-800                  | 0.01-0.15                                       | 800-2000                 | 0.01-0.5                               | 12000                                 | 2000                     | 0.1                              |
| LNB2020               | 20000                                                          | 1000                     | 0.06                             | 6400-30000                                                  | 300-800                  | 0.01-0.15                                       | 800-2000                 | 0.01-0.5                               | 12000                                 | 2000                     | 0.1                              |
| LNB3010               | 13000                                                          | 1500                     | 0.2                              | 4200-20000                                                  | 300-800                  | 0.01-0.3                                        | 800-2000                 | 0.01-0.5                               | 10000                                 | 2500                     | 0.25                             |
| LNB3012               | 13000                                                          | 1500                     | 0.2                              | 4200-20000                                                  | 300-800                  | 0.01-0.3                                        | 800-2000                 | 0.01-0.5                               | 10000                                 | 2500                     | 0.25                             |
| LNB3016               | 13000                                                          | 1500                     | 0.16                             | 4200-20000                                                  | 300-800                  | 0.01-0.3                                        | 800-2000                 | 0.01-0.5                               | 10000                                 | 2500                     | 0.2                              |
| LNB3020               | 13000                                                          | 1200                     | 0.16                             | 4200-20000                                                  | 300-800                  | 0.01-0.3                                        | 800-2000                 | 0.01-0.5                               | 10000                                 | 2000                     | 0.18                             |
| LNB3025               | 13000                                                          | 1200                     | 0.1                              | 4200-20000                                                  | 300-800                  | 0.01-0.3                                        | 800-2000                 | 0.01-0.5                               | 10000                                 | 2000                     | 0.15                             |
| LNB4012               | 9000                                                           | 1200                     | 0.2                              | 3200-15000                                                  | 300-800                  | 0.01-0.3                                        | 800-1500                 | 0.01-0.5                               | 8000                                  | 1600                     | 0.3                              |
| LNB4016               | 9000                                                           | 1200                     | 0.2                              | 3200-15000                                                  | 300-800                  | 0.01-0.3                                        | 800-1500                 | 0.01-0.5                               | 8000                                  | 1600                     | 0.3                              |
| LNB4020               | 9000                                                           | 1200                     | 0.2                              | 3200-15000                                                  | 300-800                  | 0.01-0.3                                        | 800-1500                 | 0.01-0.5                               | 8000                                  | 1600                     | 0.3                              |
| LNB4025               | 9000                                                           | 1200                     | 0.16                             | 3200-15000                                                  | 300-800                  | 0.01-0.3                                        | 800-1500                 | 0.01-0.5                               | 8000                                  | 1600                     | 0.2                              |
| LNB4030               | 9000                                                           | 1200                     | 0.16                             | 3200-15000                                                  | 300-800                  | 0.01-0.3                                        | 800-1500                 | 0.01-0.5                               | 8000                                  | 1600                     | 0.2                              |

# UNE・UNER

切削條件表 MILLING CONDITIONS

| 被切削材<br>Work Material | 碳素鋼、合金鋼<br>Carbon Steels, Alloy Steels,<br>S45C, S50C, SK, SCM, NAK80<br>(20~40HRC) |                          |                                       |                          |                                  | 熱處理鋼<br>Hardened Steels, SKD61<br>(50~60HRC) |                          |                                       |                          |                                  |
|-----------------------|-------------------------------------------------------------------------------------|--------------------------|---------------------------------------|--------------------------|----------------------------------|----------------------------------------------|--------------------------|---------------------------------------|--------------------------|----------------------------------|
|                       | 標準 Standard                                                                         |                          | 高速 High Speed                         |                          | 切削深度<br>Cutting<br>Depth<br>(mm) | 標準 Standard                                  |                          | 高速 High Speed                         |                          | 切削深度<br>Cutting<br>Depth<br>(mm) |
|                       | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )                                               | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> ) | 進給速度<br>Feed<br>(mm/min) |                                  | 迴轉速度<br>Speed<br>(min <sup>-1</sup> )        | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> ) | 進給速度<br>Feed<br>(mm/min) |                                  |
| UNE1004               | 16000                                                                               | 300                      | 32000                                 | 2500                     | 0.12                             | 10000                                        | 200                      | 24000                                 | 600                      | 0.05                             |
| UNE1006               | 16000                                                                               | 300                      | 32000                                 | 2500                     | 0.10                             | 10000                                        | 200                      | 24000                                 | 600                      | 0.04                             |
| UNE1008               | 16000                                                                               | 300                      | 32000                                 | 2500                     | 0.10                             | 10000                                        | 200                      | 24000                                 | 600                      | 0.03                             |
| UNE1010               | 16000                                                                               | 300                      | 32000                                 | 2500                     | 0.10                             | 10000                                        | 200                      | 24000                                 | 600                      | 0.03                             |
| UNE1012               | 16000                                                                               | 300                      | 32000                                 | 2500                     | 0.10                             | 10000                                        | 200                      | 24000                                 | 600                      | 0.02                             |
| UNE1504               | 12000                                                                               | 300                      | 26000                                 | 2000                     | 0.18                             | 6500                                         | 150                      | 18000                                 | 500                      | 0.08                             |
| UNE1508               | 12000                                                                               | 300                      | 26000                                 | 2000                     | 0.16                             | 6500                                         | 150                      | 18000                                 | 500                      | 0.06                             |
| UNE1510               | 12000                                                                               | 300                      | 26000                                 | 2000                     | 0.12                             | 6500                                         | 150                      | 18000                                 | 500                      | 0.04                             |
| UNE1512               | 12000                                                                               | 300                      | 26000                                 | 2000                     | 0.12                             | 6500                                         | 150                      | 18000                                 | 500                      | 0.02                             |
| UNE2008               | 8000                                                                                | 250                      | 21000                                 | 1600                     | 0.25                             | 5000                                         | 100                      | 16000                                 | 500                      | 0.12                             |
| UNE2010               | 8000                                                                                | 250                      | 21000                                 | 1600                     | 0.25                             | 5000                                         | 100                      | 16000                                 | 500                      | 0.10                             |
| UNE2012               | 8000                                                                                | 250                      | 21000                                 | 1600                     | 0.20                             | 5000                                         | 100                      | 16000                                 | 500                      | 0.06                             |
| UNE2016               | 8000                                                                                | 250                      | 21000                                 | 1600                     | 0.20                             | 5000                                         | 100                      | 16000                                 | 500                      | 0.04                             |
| UNE3008               | 5500                                                                                | 250                      | 14000                                 | 1000                     | 0.30                             | 3200                                         | 120                      | 10000                                 | 500                      | 0.25                             |
| UNE3012               | 5500                                                                                | 250                      | 14000                                 | 1000                     | 0.30                             | 3200                                         | 120                      | 10000                                 | 500                      | 0.20                             |
| UNE3016               | 5500                                                                                | 250                      | 14000                                 | 1000                     | 0.25                             | 3200                                         | 120                      | 10000                                 | 500                      | 0.18                             |
| UNE3020               | 5500                                                                                | 250                      | 14000                                 | 1000                     | 0.25                             | 3200                                         | 120                      | 10000                                 | 500                      | 0.15                             |
| UNE4010               | 4000                                                                                | 300                      | 10000                                 | 1000                     | 0.40                             | 2500                                         | 150                      | 6500                                  | 400                      | 0.30                             |
| UNE4016               | 4000                                                                                | 300                      | 10000                                 | 1000                     | 0.35                             | 2500                                         | 150                      | 6500                                  | 400                      | 0.25                             |

# LNE

切削條件表 MILLING CONDITIONS

| 被切削材<br>Work Material | S50c, NAK, HPM, SUS                   |                          |                                       |                          |                                  |
|-----------------------|---------------------------------------|--------------------------|---------------------------------------|--------------------------|----------------------------------|
|                       | 標準 Standard                           |                          | 高速 High Speed                         |                          | 切削深度<br>Cutting<br>Depth<br>(mm) |
|                       | 迴轉速度<br>Speed<br>(min <sup>-1</sup> ) | 進給速度<br>Feed<br>(mm/min) | 迴轉速度<br>Speed<br>(min <sup>-1</sup> ) | 進給速度<br>Feed<br>(mm/min) |                                  |
| LNE1006               | 16000                                 | 400                      | 24000                                 | 2000                     | 0.06                             |
| LNE1008               | 16000                                 | 400                      | 24000                                 | 2000                     | 0.04                             |
| LNE1010               | 16000                                 | 400                      | 24000                                 | 2000                     | 0.03                             |
| LNE1012               | 16000                                 | 400                      | 24000                                 | 2000                     | 0.02                             |
| LNE1508               | 12000                                 | 400                      | 16000                                 | 1400                     | 0.12                             |
| LNE1510               | 12000                                 | 400                      | 16000                                 | 1400                     | 0.08                             |
| LNE1512               | 12000                                 | 400                      | 16000                                 | 1400                     | 0.05                             |
| LNE1516               | 12000                                 | 400                      | 16000                                 | 1400                     | 0.02                             |
| LNE2010               | 8000                                  | 400                      | 12000                                 | 1000                     | 0.20                             |
| LNE2012               | 8000                                  | 400                      | 12000                                 | 1000                     | 0.15                             |
| LNE2016               | 8000                                  | 400                      | 8000                                  | 700                      | 0.08                             |
| LNE2020               | 8000                                  | 400                      | 8000                                  | 650                      | 0.04                             |
| LNE2510               | 6600                                  | 450                      | 10000                                 | 800                      | 0.25                             |
| LNE2512               | 6600                                  | 450                      | 8000                                  | 600                      | 0.20                             |
| LNE2516               | 6600                                  | 450                      | 5000                                  | 400                      | 0.15                             |
| LNE2520               | 6600                                  | 450                      | 4000                                  | 400                      | 0.10                             |
| LNE3010               | 5600                                  | 450                      | 8000                                  | 680                      | 0.30                             |
| LNE3012               | 5600                                  | 450                      | 8000                                  | 680                      | 0.30                             |
| LNE3016               | 5600                                  | 450                      | 5500                                  | 450                      | 0.25                             |
| LNE3020               | 5600                                  | 450                      | 4000                                  | 350                      | 0.25                             |
| LNE3025               | 5600                                  | 450                      | 3200                                  | 260                      | 0.20                             |



# LNx

## 切削條件表 MILLING CONDITIONS

| 被切削材<br>Work Material | 不鏽鋼、預硬化鋼、合金鋼<br>Stainless Steels, Prehardened Steels, Alloy Steels |                       |                            |
|-----------------------|--------------------------------------------------------------------|-----------------------|----------------------------|
| 型號<br>Type No.        | 迴轉速度<br>Speed (min <sup>-1</sup> )                                 | 進給速度<br>Feed (mm/min) | 切削深度<br>Cutting Depth (mm) |
| LNx1006               | 17850                                                              | 2000                  | 0.05                       |
| LNx1008               | 17850                                                              | 2000                  | 0.05                       |
| LNx1010               | 17850                                                              | 2000                  | 0.01                       |
| LNx1012               | 11200                                                              | 1280                  | 0.01                       |
| LNx1508               | 11900                                                              | 1360                  | 0.06                       |
| LNx1510               | 11900                                                              | 1360                  | 0.03                       |
| LNx1512               | 11900                                                              | 1360                  | 0.02                       |
| LNx1516               | 7400                                                               | 850                   | 0.01                       |
| LNx2008               | 9100                                                               | 1000                  | 0.20                       |
| LNx2010               | 6600                                                               | 800                   | 0.14                       |
| LNx2012               | 5600                                                               | 650                   | 0.08                       |
| LNx2016               | 5600                                                               | 600                   | 0.03                       |
| LNx2510               | 5400                                                               | 600                   | 0.03                       |
| LNx2512               | 5400                                                               | 600                   | 0.02                       |
| LNx2516               | 3600                                                               | 400                   | 0.10                       |
| LNx2520               | 2700                                                               | 300                   | 0.08                       |
| LNx3010               | 6000                                                               | 680                   | 0.60                       |
| LNx3012               | 6000                                                               | 680                   | 0.40                       |
| LNx3016               | 3700                                                               | 420                   | 0.20                       |
| LNx3020               | 3000                                                               | 340                   | 0.15                       |
| LNx3025               | 2250                                                               | 260                   | 0.08                       |

## 主軸速度表 SPINDLE SPEED TABLE

| 直徑 Ø<br>Mill Dia.<br>(mm) | 切削速度 V Cutting Speed (mm/min) |       |       |       |       |       |       |       |       |       |       |        |        |        |        |
|---------------------------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|
|                           | 20                            | 30    | 40    | 50    | 60    | 70    | 80    | 90    | 100   | 120   | 150   | 180    | 200    | 250    | 300    |
| 0.5                       | 12740                         | 19110 | 25480 | 31850 | 38220 | 44590 | 50960 | 57320 | 63690 | 76430 | 95540 | 114650 | 127390 | 159240 | 191080 |
| 0.6                       | 10620                         | 15920 | 21230 | 26540 | 31850 | 37150 | 42460 | 47770 | 53080 | 63690 | 79620 | 95540  | 106160 | 132700 | 159240 |
| 0.7                       | 9100                          | 13650 | 18200 | 22750 | 27300 | 31850 | 36400 | 40950 | 45500 | 54590 | 68240 | 81890  | 90990  | 113740 | 136490 |
| 0.8                       | 7960                          | 11940 | 15920 | 19900 | 23890 | 27870 | 31850 | 35830 | 39810 | 47770 | 59710 | 71660  | 79620  | 99520  | 119430 |
| 0.9                       | 7080                          | 10620 | 14150 | 17690 | 21230 | 24770 | 28310 | 31850 | 35390 | 42640 | 53080 | 63690  | 70770  | 88460  | 106160 |
| 1                         | 6370                          | 9550  | 12740 | 15920 | 19110 | 22290 | 25480 | 28660 | 31850 | 38220 | 47770 | 57320  | 63390  | 79620  | 95540  |
| 2                         | 3180                          | 4780  | 6370  | 7960  | 9550  | 11150 | 12740 | 14330 | 15920 | 19110 | 23890 | 28660  | 31850  | 39810  | 47770  |
| 3                         | 2120                          | 3180  | 4250  | 5310  | 6370  | 7430  | 8490  | 9550  | 10620 | 12740 | 15920 | 19110  | 21230  | 26540  | 31850  |
| 4                         | 1590                          | 2390  | 3180  | 3980  | 4780  | 5570  | 6370  | 7170  | 7960  | 9550  | 11940 | 14330  | 15920  | 19900  | 23890  |
| 5                         | 1270                          | 1910  | 2550  | 3180  | 3820  | 4460  | 5100  | 5730  | 6370  | 7640  | 9550  | 11460  | 12740  | 15920  | 19110  |
| 6                         | 1060                          | 1590  | 2120  | 2650  | 3180  | 3720  | 4250  | 4780  | 5310  | 6370  | 7960  | 9550   | 10620  | 13270  | 15920  |
| 8                         | 800                           | 1190  | 1590  | 1990  | 2390  | 2790  | 3180  | 3580  | 3980  | 4780  | 5970  | 7170   | 7960   | 9950   | 11940  |
| 10                        | 640                           | 960   | 1270  | 1590  | 1910  | 2230  | 2550  | 2870  | 3180  | 3820  | 4780  | 5730   | 6370   | 7960   | 9550   |
| 12                        | 530                           | 800   | 1060  | 1330  | 1590  | 1860  | 2120  | 2390  | 2650  | 3180  | 3980  | 4780   | 5310   | 6630   | 7960   |
| 14                        | 450                           | 680   | 910   | 1140  | 1360  | 1590  | 1820  | 2050  | 2270  | 2730  | 3410  | 4090   | 4550   | 5690   | 6820   |
| 15                        | 420                           | 640   | 850   | 1060  | 1270  | 1490  | 1700  | 1910  | 2120  | 2550  | 3180  | 3820   | 4250   | 5310   | 6370   |
| 16                        | 400                           | 600   | 800   | 1000  | 1190  | 1390  | 1590  | 1790  | 1990  | 2390  | 2990  | 3580   | 3980   | 4980   | 5970   |
| 20                        | 320                           | 480   | 640   | 800   | 960   | 1110  | 1270  | 1430  | 1590  | 1910  | 2390  | 2870   | 3180   | 3980   | 4780   |
| 25                        | 250                           | 380   | 510   | 640   | 760   | 890   | 1020  | 1150  | 1270  | 1530  | 1910  | 2290   | 2550   | 3180   | 3820   |

## 換算公式 REDUCTION FORMULA

$$V = \frac{\pi DN}{1000}$$

$$F = N \times Z \times f$$

V: 切削速度 Cutting Speed (m/min)

π: 圓周率 Circular Constant (3.14)

D: 銑刀直徑 Diameter (mm)

N: 轉速 RPM (min<sup>-1</sup>)

Z: 銑刀刃數 Number of Flutes

f: 每刃進給 Feed per Tooth (mm/tooth)

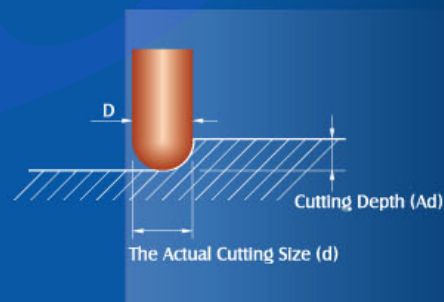
F: 進給 Feed (mm/min)

# 球刀實際切削直徑 Ball Nose Real Cutting Diameter

| 球徑 R<br>Ball R<br>(mm) | 直徑 Ø<br>Mill Dia.<br>(mm) | 切削深度 (Ad) Depth of Cut (mm/min) |       |       |       |       |       |      |       |       |       |       |       |       |       |       |
|------------------------|---------------------------|---------------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|
|                        |                           | 0.01                            | 0.02  | 0.03  | 0.04  | 0.05  | 0.08  | 0.1  | 0.15  | 0.2   | 0.3   | 0.5   | 0.8   | 1.0   | 2.0   | 3.0   |
| 0.1                    | 0.2                       | 0.087                           | 0.12  | 0.143 | 0.16  | 0.173 | 0.196 | 0.2  | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 0.2                    | 0.4                       | 0.125                           | 0.174 | 0.211 | 0.24  | 0.265 | 0.32  | 0.35 | 0.39  | 0.4   | ----- | ----- | ----- | ----- | ----- | ----- |
| 0.3                    | 0.6                       | 0.154                           | 0.215 | 0.262 | 0.299 | 0.332 | 0.41  | 0.45 | 0.52  | 0.57  | 0.6   | ----- | ----- | ----- | ----- | ----- |
| 0.4                    | 0.8                       | 0.178                           | 0.25  | 0.304 | 0.349 | 0.387 | 0.48  | 0.53 | 0.62  | 0.63  | 0.77  | 0.77  | ----- | ----- | ----- | ----- |
| 0.5                    | 1                         | 0.199                           | 0.28  | 0.341 | 0.392 | 0.436 | 0.54  | 0.6  | 0.71  | 0.8   | 0.92  | 1     | ----- | ----- | ----- | ----- |
| 1                      | 2                         | 0.282                           | 0.398 | 0.486 | 0.56  | 0.624 | 0.78  | 0.87 | 1.05  | 1.2   | 1.43  | 1.73  | 1.96  | 2     | ----- | ----- |
| 1.5                    | 3                         | 0.346                           | 0.488 | 0.597 | 0.688 | 0.768 | 0.97  | 1.08 | 1.31  | 1.5   | 1.8   | 2.24  | 2.65  | 2.83  | 2.83  | ----- |
| 2                      | 4                         | 0.399                           | 0.564 | 0.69  | 0.796 | 0.889 | 1.12  | 1.25 | 1.52  | 1.74  | 2.11  | 2.65  | 3.2   | 3.46  | 4     | ----- |
| 2.5                    | 5                         | 0.447                           | 0.631 | 0.772 | 0.891 | 0.995 | 1.25  | 1.4  | 1.71  | 1.96  | 2.37  | 3     | 3.67  | 4     | 4.9   | 4.9   |
| 3                      | 6                         | 0.489                           | 0.692 | 0.846 | 0.977 | 1.091 | 1.38  | 1.54 | 1.87  | 2.15  | 2.62  | 3.32  | 4.08  | 4.47  | 5.66  | 6     |
| 4                      | 8                         | 0.565                           | 0.799 | 0.978 | 1.129 | 1.261 | 1.59  | 1.78 | 2.17  | 2.5   | 3.04  | 3.87  | 4.8   | 5.29  | 6.93  | 7.75  |
| 5                      | 10                        | 0.632                           | 0.894 | 1.094 | 1.262 | 1.411 | 1.78  | 1.99 | 2.43  | 2.8   | 3.41  | 4.36  | 5.43  | 6     | 8     | 9.17  |
| 6                      | 12                        | 0.693                           | 0.979 | 1.198 | 1.383 | 1.546 | 1.95  | 2.18 | 2.67  | 3.07  | 3.75  | 4.8   | 5.99  | 6.63  | 8.94  | 10.39 |
| 7                      | 14                        | 0.748                           | 1.058 | 1.295 | 1.495 | 1.67  | 2.11  | 2.36 | 2.88  | 3.32  | 4.05  | 5.2   | 6.65  | 7.21  | 9.8   | 11.49 |
| 8                      | 16                        | 0.8                             | 1.131 | 1.384 | 1.598 | 1.786 | 2.26  | 2.52 | 3.08  | 3.56  | 4.34  | 5.57  | 6.97  | 7.75  | 10.58 | 12.49 |
| 9                      | 18                        | 0.848                           | 1.199 | 1.468 | 1.695 | 1.895 | 2.39  | 2.68 | 3.27  | 3.77  | 4.61  | 5.92  | 7.42  | 8.25  | 11.31 | 13.42 |
| 10                     | 20                        | 0.894                           | 1.264 | 1.548 | 1.787 | 1.997 | 2.52  | 2.82 | 3.45  | 3.98  | 4.86  | 6.24  | 7.84  | 8.72  | 12    | 14.28 |

## 實際直徑計算 Calculation of Real Dia.

$$d = 2\sqrt{Ad(D-Ad)}$$



## 產品回函卡 REPLY



客戶名稱 /

|          |                   |                                                                                                                                                                                                          |       |               |                   |
|----------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------------|-------------------|
| 產品型號     |                   | 被加工材質                                                                                                                                                                                                    |       | 硬度(HRC)       |                   |
|          |                   | 是否經過熱處理 <input type="checkbox"/> 是 <input type="checkbox"/> 否                                                                                                                                            |       |               |                   |
| 使用機台型式   |                   | 使用軟體版本                                                                                                                                                                                                   |       |               |                   |
|          |                   | <input type="checkbox"/> UG <input type="checkbox"/> CIMATRON <input type="checkbox"/> Power-Mill<br><input type="checkbox"/> Pro-E <input type="checkbox"/> Work NC <input type="checkbox"/> Master CAM |       |               |                   |
| 型號       |                   |                                                                                                                                                                                                          |       |               |                   |
| 挾持方式     |                   | <input type="checkbox"/> ER夾頭 <input type="checkbox"/> 後拉式夾頭 <input type="checkbox"/> 油壓夾頭 <input type="checkbox"/> 燒結式夾頭                                                                                |       |               |                   |
| 所使用夾頭的品號 |                   |                                                                                                                                                                                                          |       |               |                   |
| 冷卻方式     |                   | <input type="checkbox"/> 乾式切削 <input type="checkbox"/> 油霧方式 <input type="checkbox"/> 油性切削(大量) <input type="checkbox"/> 水溶性切削                                                                             |       |               |                   |
| 加工方式     |                   | <input type="checkbox"/> 順銑 <input type="checkbox"/> 逆銑                                                                                                                                                  |       |               |                   |
|          |                   |                                                                                                                                                                                                          |       |               |                   |
| 1.球刀     |                   | 2.平刀                                                                                                                                                                                                     |       |               |                   |
| 轉速       | min <sup>-1</sup> | 進給                                                                                                                                                                                                       | m/min | 轉速            | min <sup>-1</sup> |
|          |                   |                                                                                                                                                                                                          |       |               |                   |
| da= mm   |                   | ap= mm                                                                                                                                                                                                   |       | da= mm ap= mm |                   |
| da= mm   |                   | ap= mm                                                                                                                                                                                                   |       | da= mm ap= mm |                   |
| 結果       |                   | 結果                                                                                                                                                                                                       |       |               |                   |
|          |                   |                                                                                                                                                                                                          |       |               |                   |