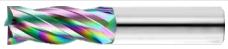
# Index 索引

## A100 Series

- For aluminum, copper, plastic.
- High speed cutting.
- Excellent chip evacuation design.
- NDLC coating is available.

- 適用鋁，銅及塑料
- 高速加工
- 深溝槽易排屑設計
- 彩鑽塗層可供選擇



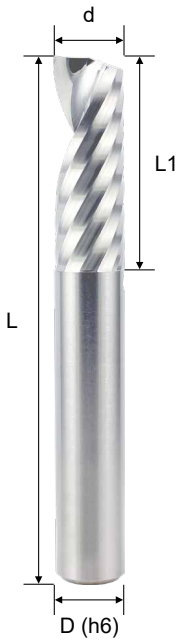
| Appearance 外觀 | Name 名稱 | Code No. 編碼 | Diameter 外徑 | Helix 螺旋角 | Coating 塗層 | P | M | K | N | S | H | Page 頁碼 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A100 Series** for Aluminum Alloy・Plastic・Copper 適用鋁合金・塑料・銅加工 | | | | | | | | | | | | |
| | Square · Standard · 1F<br>平銑刀・標準型・1 刃 | ENSSC | Ø1~Ø12 | 30° | – | | | | ● | | | B175 |
| | Square · Standard · 2F<br>平銑刀・標準型・2 刃 | ENSSS | Ø1~Ø20 | 45° | – | | | | ● | | | B176 |
| | Square · Standard · 3F<br>平銑刀・標準型・3 刃 | ENSSS | Ø2~Ø20 | 45° | – | | | | ● | | | B177 |
| | Square · Long Flute · 3F<br>平銑刀・長刃型・3 刃 | ENSCS | Ø3~Ø20 | 45° | – | | | | ● | | | B178 |
| | Square · High Helix · 3F<br>平銑刀・高導型・3 刃 | ENSSH | Ø4~Ø16 | 55° | – | | | | ● | | | B179 |
| | Square · High Performance(for side milling) · 3F<br>平銑刀・高導型・3 刃 | ENSSB | Ø3~Ø20 | 45° | – | | | | ● | | | B180 |
| | Square · AL Finishing · 3F<br>平銑刀・AL 高光鏡面型・3 刃 | ENSSF | Ø1~Ø12 | 45° | – | | | | ● | | | B181 |
| | Square · AL-U Finishing · 3F<br>平銑刀・AL-U 高光鏡面型・3 刃 | ENSSP | Ø6~Ø16 | 45° | – | | | | ● | | | B182 |
| | Square · Unequal Spacing · Standard · 3F<br>不等分割平銑刀 - 標準型・3 刃 | ENSSV | Ø3~Ø16 | 40° | – | | | | ● | | | B183 |
| | Square · Roughing · 3F<br>平銑刀・粗銑型・3 刃 | ENSSR | Ø6~Ø20 | 30° | – | | | | ● | | | B184 |
| | Square · Roughing · 4F<br>平銑刀・粗銑型・4 刃 | ENSSR | Ø6~Ø20 | 30° | – | | | | ● | | | B185 |
| | Square · Wave Edge · 3F<br>平銑刀・波浪型・3 刃 | ENSSW | Ø6~Ø12 | 30° | – | | | | ● | | | B186 |
| | Ball Nose · Standard · 2F<br>球型銑刀・標準型・2 刃 | ENBSA | 0.5R~3R | 35° | – | | | | ● | | | B187 |
| | Corner Radius · Standard · 3F<br>圓鼻銑刀・標準型・3 刃 | ENCSS | Ø6~Ø16 | 45° | – | | | | ● | | | B188 |
|  | Square · Standard · 4F (for CU & AL)<br>平銑刀・標準型・4 刃 | ENSSC | Ø5~Ø12 | 30° | NDLC | | | | ● | | | B189 |
| | Long Neck · Square · 2F (for CU & AL)<br>長頸型・平銑刀・2 刃 | ENSRC | Ø0.5~Ø4 | 38° | NDLC | | | | ● | | | B190 |
| | Long Neck · Ball Nose · 2F (for CU & AL)<br>長頸型・球型銑刀・2 刃 | ENBRC | 0.25R~2R | 30° | NDLC | | | | ● | | | B191 |
| | Long Neck · Corner Radius · 2F (for CU & AL)<br>長頸型・圓鼻銑刀・2 刃 | ENCRC | Ø0.5~Ø4 | 38° | NDLC | | | | ● | | | B192 |

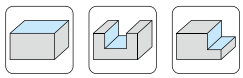
## *A100 - Square · Standard · 1F* 平銑刀・標準型・1 刃

- 30° helix design for general milling.
- Single flute endmill has large chip evacuation.
- Sharp and polishing cutting edge produces an excellent surface finish.
- Suitable for aluminum, copper and plastic material.

# ENSSC

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |



| Order No. 訂購編碼 | Dia. (d) | CL (L1) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|
| ENSSC141000 | 1 | 3 | 50 | 4 | 1 |
| ENSSC142000 | 2 | 6 | 50 | 4 | 1 |
| ENSSC143000 | 3 | 9 | 50 | 4 | 1 |
| ENSSC144000 | 4 | 12 | 50 | 4 | 1 |
| ENSSC104000 | 4 | 12 | 50 | 6 | 1 |
| ENSSC105000 | 5 | 13 | 50 | 6 | 1 |
| ENSSC106000 | 6 | 15 | 50 | 6 | 1 |
| ENSSC108000 | 8 | 20 | 60 | 8 | 1 |
| ENSSC110000 | 10 | 30 | 75 | 10 | 1 |
| ENSSC112000 | 12 | 30 | 75 | 12 | 1 |

Cutting conditions：Page B267

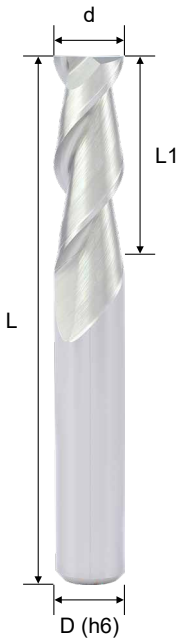
| d Tolerance | |
|---|---|
| d ≤ 10 | 0 ~ -0.03 |
| d > 10 | 0 ~ -0.04 |

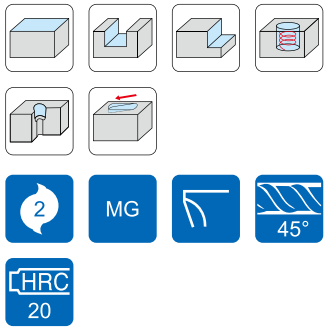
## *A100 - Square · Standard · 2F* 平銑刀・標準型・2 刃

- Suitable for cutting non-ferrous metals, Aluminum, Aluminum Alloy, Copper (HRC< 20).
- High Helix offers excellent and stable finished surfaces in high speed.
- Great chip evacuation and flute polishing increase cutting surface and feed rate.

# ENSSS

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |




| d Tolerance | |
|---|---|
| d ≤ 6 | 0 ~ -0.02 |
| 6 < d ≤ 12 | 0 ~ -0.03 |
| d > 12 | 0 ~ -0.04 |

| Order No. 訂購編碼 | Dia. (d) | CL (L1) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|
| ENSSS241000 | 1 | 3 | 50 | 4 | 2 |
| ENSSS242000 | 2 | 6 | 50 | 4 | 2 |
| ENSSS233000 | 3 | 9 | 50 | 3 | 2 |
| ENSSS243000 | 3 | 9 | 50 | 4 | 2 |
| ENSSS244000 | 4 | 12 | 50 | 4 | 2 |
| ENSSS204000 | 4 | 12 | 50 | 6 | 2 |
| ENSSS205000 | 5 | 15 | 50 | 6 | 2 |
| ENSSS206000 | 6 | 15 | 50 | 6 | 2 |
| ENSSS208000 | 8 | 20 | 60 | 8 | 2 |
| ENSSS210000 | 10 | 30 | 75 | 10 | 2 |
| ENSSS212000 | 12 | 30 | 75 | 12 | 2 |
| ENSSS216000 | 16 | 40 | 100 | 16 | 2 |
| ENSSS220000 | 20 | 45 | 100 | 20 | 2 |

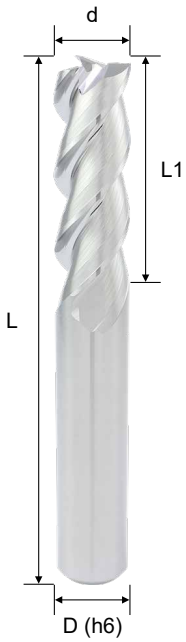
Cutting conditions：Page B268

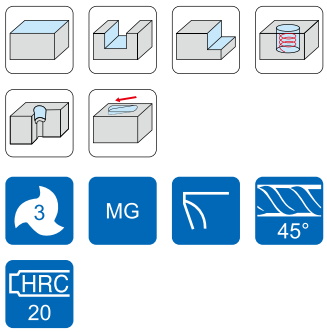
## *A100 - Square · Standard · 3F* 平銑刀・標準型・3 刃

- Suitable for cutting non-ferrous metals, Aluminum, Aluminum Alloy, Copper (HRC< 20)
- High Helix offers excellent and stable finished surfaces in high speed.
- Great chip evacuation and flute polishing get good cutting surface and high feed rate.

# ENSSS

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |




| d Tolerance | |
|---|---|
| d ≤ 6 | 0 ~ -0.02 |
| 6 < d ≤ 12 | 0 ~ -0.03 |
| d > 12 | 0 ~ -0.04 |

| Order No. 訂購編碼 | Dia. (d) | CL (L1) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|
| ENSSS342000 | 2 | 6 | 50 | 4 | 3 |
| ENSSS333000 | 3 | 9 | 50 | 3 | 3 |
| ENSSS343000 | 3 | 9 | 50 | 4 | 3 |
| ENSSS344000 | 4 | 12 | 50 | 4 | 3 |
| ENSSS304000 | 4 | 12 | 50 | 6 | 3 |
| ENSSS305000 | 5 | 15 | 50 | 6 | 3 |
| ENSSS306000 | 6 | 15 | 50 | 6 | 3 |
| ENSSS308000 | 8 | 20 | 60 | 8 | 3 |
| ENSSS310000 | 10 | 30 | 75 | 10 | 3 |
| ENSSS312000 | 12 | 30 | 75 | 12 | 3 |
| ENSSS316000 | 16 | 40 | 100 | 16 | 3 |
| ENSSS320000 | 20 | 45 | 100 | 20 | 3 |

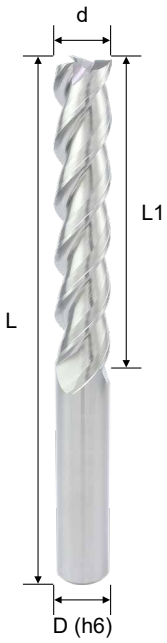
Cutting conditions：Page B268

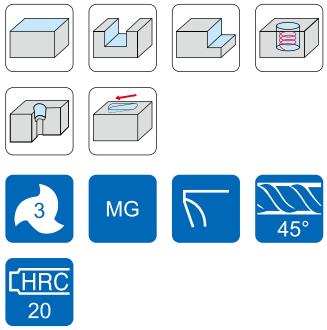
## *A100 - Square · Long Flute · 3F* 平銑刀・長刃型・3 刃

- Suitable for cutting non-ferrous metals, Aluminum, Aluminum Alloy, Copper (HRC< 20)
- High Helix offers excellent and stable finished surfaces in high speed.
- Great chip evacuation and flute polishing get good cutting surface and high feed rate.

# ENSCS

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |




| d Tolerance | |
|---|---|
| d ≤ 6 | 0 ~ -0.03 |
| 6 < d ≤ 12 | 0 ~ -0.04 |
| d > 12 | 0 ~ -0.05 |

| Order No. 訂購編碼 | Dia. (d) | CL (L1) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|
| ENSCS303000 | 3 | 15 | 60 | 6 | 3 |
| ENSCS304000 | 4 | 20 | 60 | 6 | 3 |
| ENSCS305000 | 5 | 25 | 60 | 6 | 3 |
| ENSCS306000 | 6 | 30 | 75 | 6 | 3 |
| ENSCS308000 | 8 | 45 | 100 | 8 | 3 |
| ENSCS310000 | 10 | 55 | 100 | 10 | 3 |
| ENSCS312000 | 12 | 55 | 100 | 12 | 3 |
| ENSCS316000 | 16 | 75 | 150 | 16 | 3 |
| ENSCS320000 | 20 | 90 | 150 | 20 | 3 |

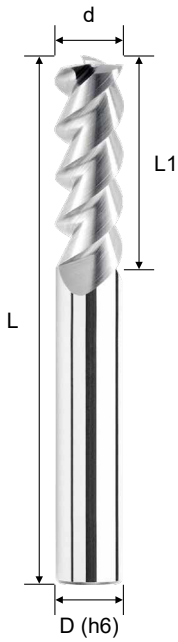
Cutting conditions：Page B268

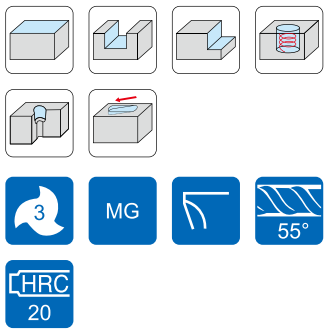
## *A100 - Square · High Helix · 3F* 平銑刀・高導型・3 刃

- Suitable for cutting non-ferrous metals, Aluminum, Aluminum Alloy, Copper (HRC< 20).
- 55° degree Helix offers excellent and stable finished surfaces in high speed side milling.
- Flute polishing gives a very good cutting surface and high feed rate.

# ENSSH

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |




| d Tolerance | |
|---|---|
| d ≤ 6 | 0 ~ -0.02 |
| 6 < d ≤ 12 | 0 ~ -0.03 |
| d > 12 | 0 ~ -0.04 |

| Order No. 訂購編碼 | Dia. (d) | CL (L1) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|
| ENSSH304000 | 4 | 12 | 50 | 6 | 3 |
| ENSSH305000 | 5 | 15 | 50 | 6 | 3 |
| ENSSH306000 | 6 | 15 | 50 | 6 | 3 |
| ENSSH308000 | 8 | 20 | 60 | 8 | 3 |
| ENSSH310000 | 10 | 30 | 75 | 10 | 3 |
| ENSSH312000 | 12 | 30 | 75 | 12 | 3 |
| ENSSH316000 | 16 | 40 | 100 | 16 | 3 |

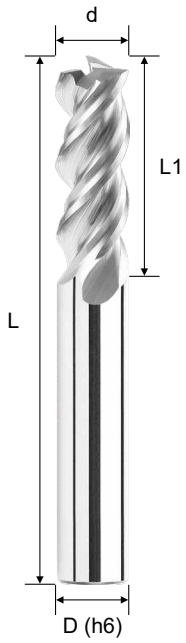
Cutting conditions：Page B268

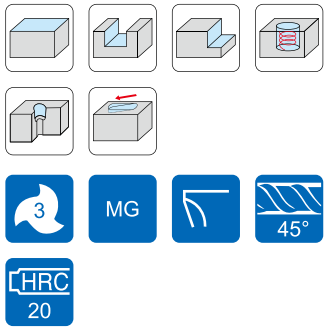
## *A100 - Square · High Performance(for side milling) · 3F* 平銑刀・高導型・3 刃

- Suitable for cutting non-ferrous metals, Aluminum, Aluminum Alloy, Copper (HRC< 20).
- U-flute design with high chips volume space and easy to remove chips.
- Excellent for high feed rough milling.
- Also suitable for surface finish in high speed milling.

# ENSSB

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |




| d Tolerance | |
|---|---|
| d ≤ 6 | 0 ~ -0.02 |
| 6 < d ≤ 12 | 0 ~ -0.03 |
| d > 12 | 0 ~ -0.04 |

| Order No. 訂購編碼 | Dia. (d) | CL (L1) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|
| ENSSB343000 | 3 | 9 | 50 | 4 | 3 |
| ENSSB344000 | 4 | 12 | 50 | 4 | 3 |
| ENSSB304000 | 4 | 12 | 50 | 6 | 3 |
| ENSSB305000 | 5 | 15 | 50 | 6 | 3 |
| ENSSB306000 | 6 | 15 | 50 | 6 | 3 |
| ENSSB308000 | 8 | 20 | 60 | 8 | 3 |
| ENSSB310000 | 10 | 30 | 75 | 10 | 3 |
| ENSSB312000 | 12 | 30 | 75 | 12 | 3 |
| ENSSB316000 | 16 | 40 | 100 | 16 | 3 |
| ENSSB320000 | 20 | 45 | 100 | 20 | 3 |

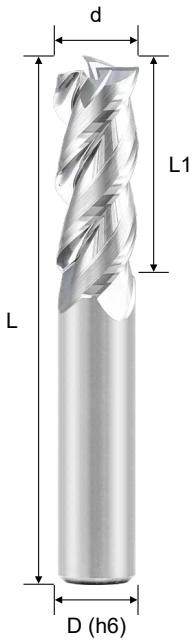
Cutting conditions：Page B268

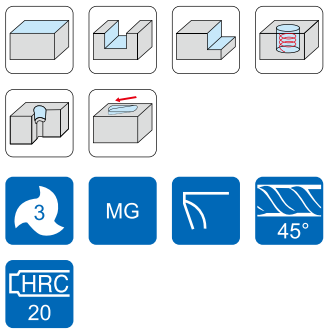
## *A100 - Square · AL Finishing · 3F* 平銑刀・AL 高光鏡面型・3 刃

- Mirror-like flute surface design.
- For finishing cutting of aluminum alloys.
- Medium to high speed cutting.

# ENSSF

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |




| d Tolerance | |
|---|---|
| d ≤ 6 | 0 ~ -0.02 |
| 6 < d ≤ 12 | 0 ~ -0.03 |
| d > 12 | 0 ~ -0.04 |

| Order No. 訂購編碼 | Dia. (d) | CL (L1) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|
| ENSSF301000 | 1 | 3 | 50 | 6 | 3 |
| ENSSF302000 | 2 | 6 | 50 | 6 | 3 |
| ENSSF303000 | 3 | 11 | 60 | 6 | 3 |
| ENSSF304000 | 4 | 13 | 60 | 6 | 3 |
| ENSSF305000 | 5 | 17 | 60 | 6 | 3 |
| ENSSF306000 | 6 | 17 | 60 | 6 | 3 |
| ENSSF308000 | 8 | 22 | 75 | 8 | 3 |
| ENSSF310000 | 10 | 27 | 75 | 10 | 3 |
| ENSSF312000 | 12 | 32 | 75 | 12 | 3 |

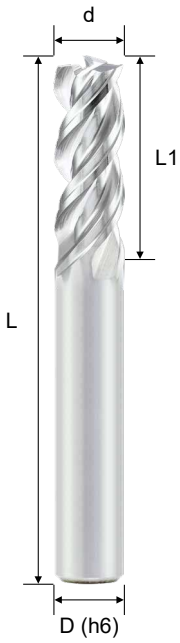
Cutting conditions：Page B268

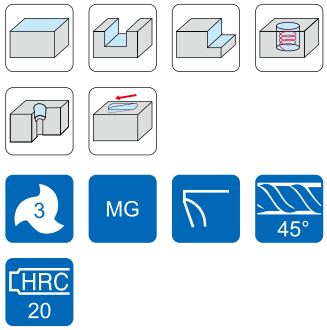
## *A100 - Square · AL-U Finishing · 3F* 平銑刀・AL-U 高光鏡面型・3 刃

- U-flute and Mirror-like flute surface design.
- For medium to finishing cutting of aluminum alloys.
- High speed cutting.
- Is better for Aluminum alloy with Si ≥ 8%.

# ENSSP

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |




| d Tolerance | |
|---|---|
| d ≤ 6 | 0 ~ -0.02 |
| 6 < d ≤ 12 | 0 ~ -0.03 |
| d > 12 | 0 ~ -0.04 |

| Order No. 訂購編碼 | Dia. (d) | CL (L1) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|
| ENSSP303000 | 3 | 9 | 50 | 6 | 3 |
| ENSSP304000 | 4 | 12 | 50 | 6 | 3 |
| ENSSP305000 | 5 | 15 | 50 | 6 | 3 |
| ENSSP306000 | 6 | 15 | 50 | 6 | 3 |
| ENSSP307000 | 7 | 18 | 60 | 8 | 3 |
| ENSSP308000 | 8 | 20 | 60 | 8 | 3 |
| ENSSP309000 | 9 | 23 | 75 | 10 | 3 |
| ENSSP310000 | 10 | 30 | 75 | 10 | 3 |
| ENSSP312000 | 12 | 30 | 75 | 12 | 3 |
| ENSSP316000 | 16 | 40 | 100 | 16 | 3 |
| ENSSP318000 | 18 | 40 | 100 | 20 | 3 |
| ENSSP320000 | 20 | 45 | 100 | 20 | 3 |
| ENSSP325000 | 25 | 45 | 100 | 25 | 3 |

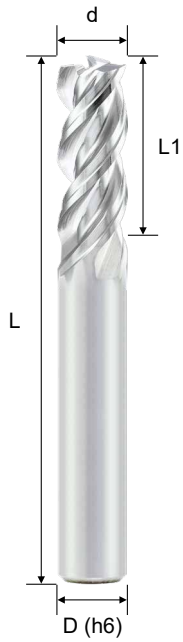
Cutting conditions：Page B269

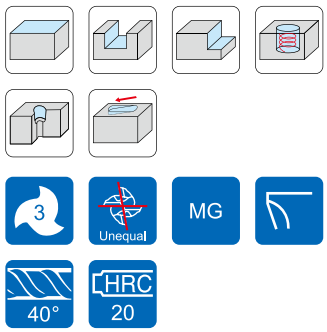
## *A100 - Square · Unequal Spacing · Standard · 3F* 不等分割平銑刀・標準型・3 刃

- Unequal flute spacing, good for high performance machining.
- No chattering surface due to anti-vibration design.
- Polished and U flute designs provide excellent chip evacuation.
- Good for semi-fininshing and roughing of aluminum parts(5052/6061/7075).

# ENSSV

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |




| d Tolerance | |
|---|---|
| d ≤ 6 | 0 ~ -0.02 |
| 6 < d ≤ 12 | 0 ~ -0.03 |
| d > 12 | 0 ~ -0.04 |

| Order No. 訂購編碼 | Dia. (d) | CL (L1) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|
| ENSSV303000 | 3 | 9 | 50 | 6 | 3 |
| ENSSV304000 | 4 | 12 | 50 | 6 | 3 |
| ENSSV305000 | 5 | 15 | 50 | 6 | 3 |
| ENSSV306000 | 6 | 18 | 50 | 6 | 3 |
| ENSSV308000 | 8 | 24 | 60 | 8 | 3 |
| ENSSV310000 | 10 | 30 | 75 | 10 | 3 |
| ENSSV312000 | 12 | 35 | 75 | 12 | 3 |
| ENSSV316000 | 16 | 40 | 100 | 16 | 3 |
| INCH Size | | | | | |
| ENS2V30120500 | 1/8 | 1/2 | 2 | 1/8 | 3 |
| ENS2V30250300 | 1/4 | 3/8 | 2 | 1/4 | 3 |
| ENS2V30310500 | 5/16 | 1/2 | 2 | 5/16 | 3 |
| ENS2V30370600 | 3/8 | 5/8 | 3 | 3/8 | 3 |
| ENS3V30371000 | 3/8 | 1 | 3 | 3/8 | 3 |
| ENS2V30501000 | 1/2 | 1 | 3 | 1/2 | 3 |
| ENS3V30621600 | 5/8 | 1 5/8 | 3 1/2 | 5/8 | 3 |

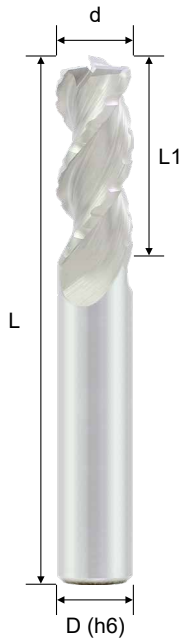
Cutting conditions：Page B269

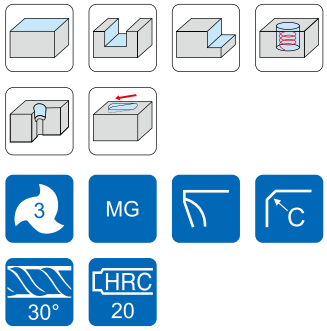
## *A100 - Square · Roughing · 3F* 平銑刀・粗銑型・3 刃

- Suitable for cutting non-ferrous metals, Aluminum, Aluminum Alloy, Copper (HRC< 20)
- Suitable for rough and high remove rate cutting environment.
- Chamfering design provides a stronger cutting edge.
- Middle coarse pitch provides hi performance and avoids tip fracture.
-

# ENSSR

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |




| d Tolerance | |
|---|---|
| d ≤ 6 | 0 ~ -0.02 |
| 6 < d ≤ 12 | 0 ~ -0.03 |
| d > 12 | 0 ~ -0.04 |

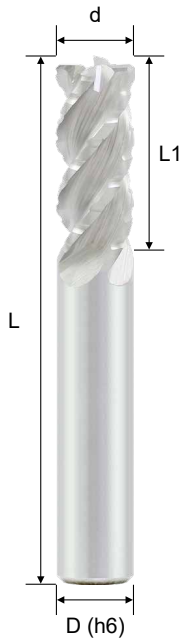
| Order No. 訂購編碼 | Dia. (d) | CL (L1) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|
| ENSSR306000 | 6 | 15 | 50 | 6 | 3 |
| ENSSR308000 | 8 | 20 | 60 | 8 | 3 |
| ENSSR310000 | 10 | 25 | 75 | 10 | 3 |
| ENSSR312000 | 12 | 30 | 75 | 12 | 3 |
| ENSSR316000 | 16 | 40 | 100 | 16 | 3 |
| ENSSR320000 | 20 | 45 | 100 | 20 | 3 |

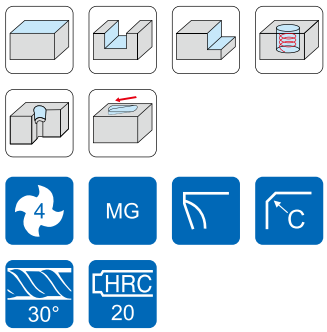
## *A100 - Square · Roughing · 4F* 平銑刀・粗銑型・4 刃

- Suitable for cutting non-ferrous metals, Aluminum, Aluminum Alloy, Copper (HRC< 20)
- Suitable for rough and high remove rate cutting environment.
- Chamfering design provides a stronger cutting edge.
- Middle coarse pitch provides hi performance and avoids tip fracture.
-

# ENSSR

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |




| d Tolerance | |
|---|---|
| d ≤ 6 | 0 ~ -0.02 |
| 6 < d ≤ 12 | 0 ~ -0.03 |
| d > 12 | 0 ~ -0.04 |

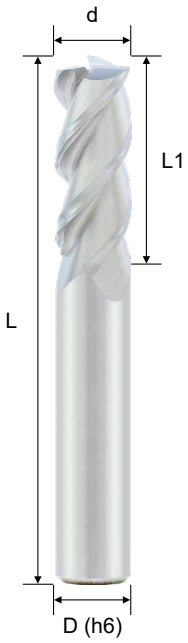
| Order No. 訂購編碼 | Dia. (d) | CL (L1) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|
| ENSSR406000 | 6 | 15 | 50 | 6 | 4 |
| ENSSR408000 | 8 | 20 | 60 | 8 | 4 |
| ENSSR410000 | 10 | 25 | 75 | 10 | 4 |
| ENSSR412000 | 12 | 30 | 75 | 12 | 4 |
| ENSSR416000 | 16 | 40 | 100 | 16 | 4 |
| ENSSR420000 | 20 | 45 | 100 | 20 | 4 |

## *A100 - Square · Wave Edge · 3F* 平銑刀・波浪型・3 刃

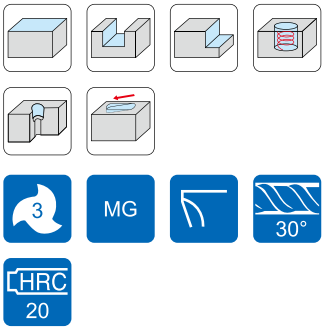
- Suitable for cutting non-ferrous metals, Aluminum, Aluminum Alloy, Copper (HRC< 20)
- Incredible toughness and vibration reduction at high speeds.
- Wave type increases the performance.

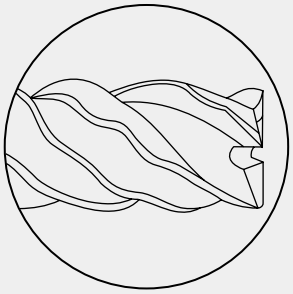
# ENSSW

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |




| Order No. 訂購編碼 | Dia. (d) | CL (L1) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|
| ENSSW306000 | 6 | 15 | 50 | 6 | 3 |
| ENSSW308000 | 8 | 20 | 60 | 8 | 3 |
| ENSSW310000 | 10 | 30 | 75 | 10 | 3 |
| ENSSW312000 | 12 | 30 | 75 | 12 | 3 |



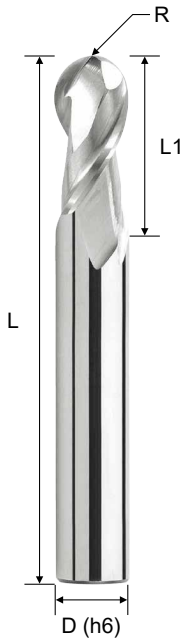
| d Tolerance | |
|---|---|
| d ≤ 6 | 0 ~ -0.02 |
| 6 < d ≤ 12 | 0 ~ -0.03 |
| d > 12 | 0 ~ -0.04 |

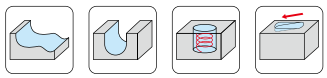
## *A100 - Ball Nose · Standard · 2F* 球型銑刀・標準型・2 刃

- Suitable for cutting non-ferrous metals, Aluminum, Aluminum Alloy, Copper (HRC< 20).
- Great chip evacuation.
- Due to polish surface grinding of cutting it provides an excellent surface.
- New tool geometry increases wear resistance and cutting force is decreased.

# ENBSA

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |



| R Tolerance | |
|---|---|
| R ≤ 3 | ±0.015 |
| R > 3 | ±0.020 |

| Order No. 訂購編碼 | Radius (R) | Dia. (d) | CL (L1) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|---|
| ENBSA241000 | 0.5R | 1 | 2 | 50 | 4 | 2 |
| ENBSA242000 | 1.0R | 2 | 4 | 50 | 4 | 2 |
| ENBSA243000 | 1.5R | 3 | 6 | 50 | 4 | 2 |
| ENBSA244000 | 2.0R | 4 | 8 | 50 | 4 | 2 |
| ENBSA204000 | 2.0R | 4 | 8 | 50 | 6 | 2 |
| ENBSA205000 | 2.5R | 5 | 10 | 50 | 6 | 2 |
| ENBSA206000 | 3.0R | 6 | 12 | 50 | 6 | 2 |
| ENBSA208000 | 4.0R | 8 | 16 | 60 | 8 | 2 |
| ENBSA210000 | 5.0R | 10 | 20 | 75 | 10 | 2 |
| ENBSA212000 | 6.0R | 12 | 24 | 75 | 12 | 2 |
| ENBSA216000 | 8.0R | 16 | 32 | 100 | 16 | 2 |

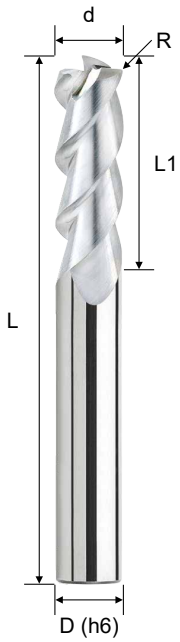
Cutting conditions：Page B270

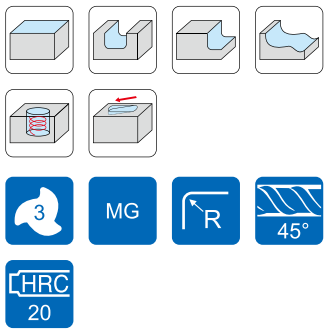
## *A100 - Corner Radius · Standard · 3F* 圓鼻銑刀・標準型・3 刃

- Suitable for cutting non-ferrous metals, Aluminum, Aluminum Alloy, Copper (HRC< 20)
- High Helix offers excellent and stable finished surfaces in high speed.
- Great chip evacuation and flute polishing get good cutting surface and high feed rate.

# ENCSS

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |




| Order No. 訂購編碼 | Dia. (d) | Corner Radius (R) | CL (L1) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|---|
| ENCSS343005 | 3 | 0.5R | 9 | 50 | 4 | 3 |
| ENCSS344005 | 4 | 0.5R | 12 | 50 | 4 | 3 |
| ENCSS306005 | 6 | 0.5R | 15 | 50 | 6 | 3 |
| ENCSS308005 | 8 | 0.5R | 20 | 60 | 8 | 3 |
| ENCSS308010 | 8 | 1.0R | 20 | 60 | 8 | 3 |
| ENCSS310005 | 10 | 0.5R | 30 | 75 | 10 | 3 |
| ENCSS310010 | 10 | 1.0R | 30 | 75 | 10 | 3 |
| ENCSS312010 | 12 | 1.0R | 30 | 75 | 12 | 3 |
| ENCSS312015 | 12 | 1.5R | 30 | 75 | 12 | 3 |
| ENCSS316010 | 16 | 1.0R | 40 | 100 | 16 | 3 |
| ENCSS316020 | 16 | 2.0R | 40 | 100 | 16 | 3 |

Cutting conditions：Page B268

| d Tolerance | |
|---|---|
| d ≤ 6 | 0 ~ -0.02 |
| 6 < d ≤ 12 | 0 ~ -0.03 |
| d > 12 | 0 ~ -0.04 |

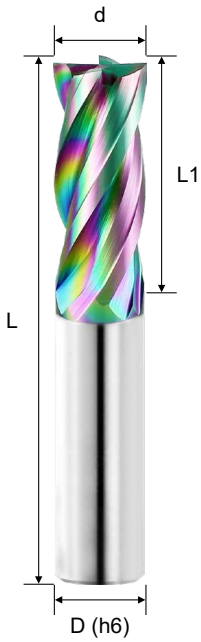
| R Tolerance | |
|---|---|
| R < 2 | ±0.015 |
| R ≥ 2 | ±0.020 |

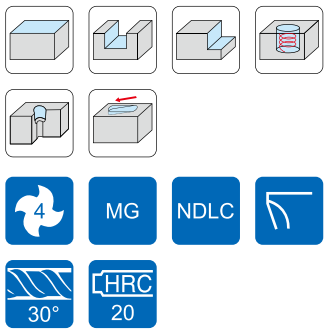
## *A100 - Square · Standard · 4F (for CU & AL)* 平銑刀・標準型・4 刃

- Suitable for copper alloy, copper electrodes, aluminum processing special.
- Sharp cutting edge and flute polished.
- Multiple processing efficiency, coefficient of friction <0.1μm.
- Large positive rake angle and deep flute design, improves cutting efficiency.
- NDLC - Nano DLC coating provides exceptional wear resistance and good tool life.

# ENSSC

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |




| d Tolerance | |
|---|---|
| d ≤ 6 | 0 ~ -0.02 |
| 6 < d ≤ 12 | 0 ~ -0.03 |
| d > 12 | 0 ~ -0.04 |

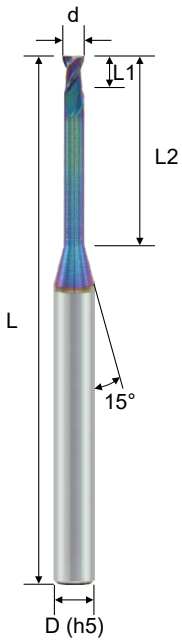
| Order No. 訂購編碼 | Dia. (d) | CL (L1) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|
| ENSSC405000L | 5 | 13 | 50 | 6 | 4 |
| ENSSC406000L | 6 | 15 | 50 | 6 | 4 |
| ENSSC408000L | 8 | 20 | 60 | 8 | 4 |
| ENSSC410000L | 10 | 25 | 75 | 10 | 4 |
| ENSSC412000L | 12 | 30 | 75 | 12 | 4 |

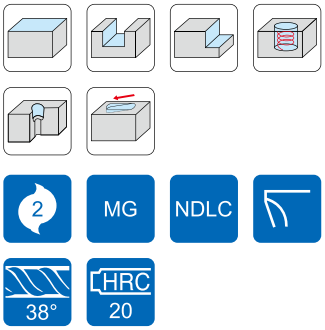
## *A100 - Long Neck · Square · 2F (for CU & AL)* 長頸型・平銑刀・2 刃

- Suitable for copper alloy, copper electrodes, aluminum processing special.
- Sharp cutting edge and flute polished.
- Available in various cut lengths.
- Suitable for deep cutting application.
- NDLC - Nano DLC coating provides exceptional wear resistance and good tool life.

# ENSRC

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |




| d Tolerance | |
|---|---|
| d | 0 ~ -0.015 |

| Order No. 訂購編碼 | Dia. (d) | CL (L1) | EFF-L (L2) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|---|
| ENSRC240501L | 0.5 | 1 | 1.5 | 50 | 4 | 2 |
| ENSRC240502L | 0.5 | 1 | 2 | 50 | 4 | 2 |
| ENSRC240503L | 0.5 | 1 | 3 | 50 | 4 | 2 |
| ENSRC240504L | 0.5 | 1 | 4 | 50 | 4 | 2 |
| ENSRC240506L | 0.5 | 1 | 6 | 50 | 4 | 2 |
| ENSRC241003L | 1 | 2 | 3 | 50 | 4 | 2 |
| ENSRC241004L | 1 | 2 | 4 | 50 | 4 | 2 |
| ENSRC241005L | 1 | 2 | 5 | 50 | 4 | 2 |
| ENSRC241006L | 1 | 2 | 6 | 50 | 4 | 2 |
| ENSRC241008L | 1 | 2 | 8 | 50 | 4 | 2 |
| ENSRC241010L | 1 | 2 | 10 | 50 | 4 | 2 |
| ENSRC241012L | 1 | 2 | 12 | 50 | 4 | 2 |
| ENSRC242006L | 2 | 4 | 6 | 50 | 4 | 2 |
| ENSRC242008L | 2 | 4 | 8 | 50 | 4 | 2 |
| ENSRC242010L | 2 | 4 | 10 | 50 | 4 | 2 |
| ENSRC242012L | 2 | 4 | 12 | 50 | 4 | 2 |
| ENSRC242014L | 2 | 4 | 14 | 50 | 4 | 2 |
| ENSRC242016L | 2 | 4 | 16 | 50 | 4 | 2 |
| ENSRC242020L | 2 | 4 | 20 | 50 | 4 | 2 |
| ENSRC243010L | 3 | 6 | 10 | 50 | 4 | 2 |
| ENSRC243016L | 3 | 6 | 16 | 50 | 4 | 2 |
| ENSRC243020L | 3 | 6 | 20 | 50 | 4 | 2 |
| ENSRC244016L | 4 | 8 | 16 | 50 | 4 | 2 |
| ENSRC244020L | 4 | 8 | 20 | 50 | 4 | 2 |

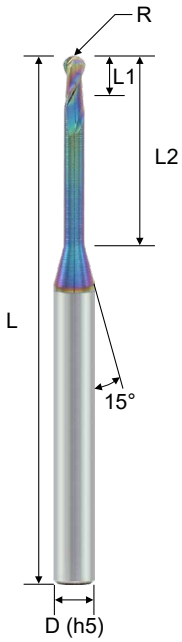
Cutting conditions：Page B271

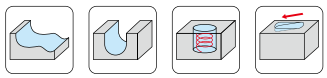
## *A100 - Long Neck · Ball Nose · 2F (for CU & AL)* 長頸型・球型銑刀・2 刃

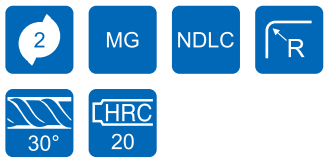
- Suitable for copper alloy, copper electrodes, aluminum processing special.
- Sharp cutting edge and flute polished.
- It provides an excellent surface due to better surface grindings.
- Long neck design is suitable for rid cutting.
- NDLC - Nano DLC coating provides exceptional wear resistance and good tool life.

# ENBRC

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |






| R Tolerance | |
|---|---|
| R | ±0.01 |

| Order No. 訂購編碼 | Radius (R) | Dia. (d) | CL (L1) | EFF-L (L2) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|---|---|
| ENBRC240502L | 0.25R | 0.5 | 0.35 | 2 | 50 | 4 | 2 |
| ENBRC240503L | 0.25R | 0.5 | 0.35 | 3 | 50 | 4 | 2 |
| ENBRC240504L | 0.25R | 0.5 | 0.35 | 4 | 50 | 4 | 2 |
| ENBRC240505L | 0.25R | 0.5 | 0.35 | 5 | 50 | 4 | 2 |
| ENBRC241003L | 0.5R | 1 | 0.75 | 3 | 50 | 4 | 2 |
| ENBRC241004L | 0.5R | 1 | 0.75 | 4 | 50 | 4 | 2 |
| ENBRC241005L | 0.5R | 1 | 0.75 | 5 | 50 | 4 | 2 |
| ENBRC241006L | 0.5R | 1 | 0.75 | 6 | 50 | 4 | 2 |
| ENBRC241008L | 0.5R | 1 | 0.75 | 8 | 50 | 4 | 2 |
| ENBRC241010L | 0.5R | 1 | 0.75 | 10 | 50 | 4 | 2 |
| ENBRC241012L | 0.5R | 1 | 0.75 | 12 | 50 | 4 | 2 |
| ENBRC242004L | 1.0R | 2 | 1.5 | 4 | 50 | 4 | 2 |
| ENBRC242006L | 1.0R | 2 | 1.5 | 6 | 50 | 4 | 2 |
| ENBRC242008L | 1.0R | 2 | 1.5 | 8 | 50 | 4 | 2 |
| ENBRC242010L | 1.0R | 2 | 1.5 | 10 | 50 | 4 | 2 |
| ENBRC242012L | 1.0R | 2 | 1.5 | 12 | 50 | 4 | 2 |
| ENBRC242016L | 1.0R | 2 | 1.5 | 16 | 50 | 4 | 2 |
| ENBRC242020L | 1.0R | 2 | 1.5 | 20 | 50 | 4 | 2 |
| ENBRC243008L | 1.5R | 3 | 2.5 | 8 | 50 | 4 | 2 |
| ENBRC243010L | 1.5R | 3 | 2.5 | 10 | 50 | 4 | 2 |
| ENBRC243016L | 1.5R | 3 | 2.5 | 16 | 50 | 4 | 2 |
| ENBRC243020L | 1.5R | 3 | 2.5 | 20 | 50 | 4 | 2 |
| ENBRC244012L | 2.0R | 4 | 3 | 12 | 50 | 4 | 2 |
| ENBRC244016L | 2.0R | 4 | 3 | 16 | 50 | 4 | 2 |
| ENBRC244020L | 2.0R | 4 | 3 | 20 | 50 | 4 | 2 |

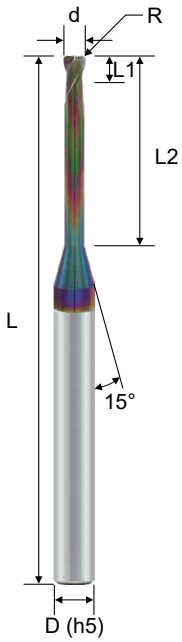
Cutting conditions：Page B272

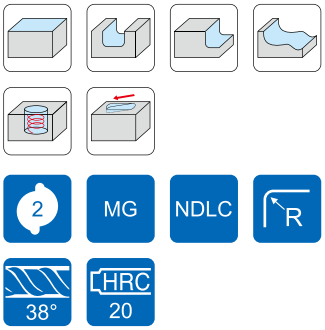
## *A100 - Long Neck · Corner Radius · 2F (for CU & AL)* 長頸型・圓鼻銑刀・2 刃

- Suitable for copper alloy, copper electrodes, aluminum processing special.
- Sharp cutting edge and flute polished.
- Available in various cut lengths.
- Corner radius with long neck are suitable for deep general cutting and 3D milling.
- NDLC - Nano DLC coating provides exceptional wear resistance and good tool life.

# ENCRC

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | ● | | |




| d Tolerance | |
|---|---|
| d | 0 ~ -0.015 |

| R Tolerance | |
|---|---|
| R | ±0.0015 |

| Order No. 訂購編碼 | Dia. (d) | Corner Radius (R) | CL (L1) | EFF-L (L2) | OAL (L) | Shank (D) | Flutes (Z) |
|---|---|---|---|---|---|---|---|
| ENCRC24050102L | 0.5 | 0.1R | 1 | 2 | 50 | 4 | 2 |
| ENCRC24050103L | 0.5 | 0.1R | 1 | 3 | 50 | 4 | 2 |
| ENCRC24050104L | 0.5 | 0.1R | 1 | 4 | 50 | 4 | 2 |
| ENCRC24050105L | 0.5 | 0.1R | 1 | 5 | 50 | 4 | 2 |
| ENCRC24100103L | 1 | 0.1R | 2 | 3 | 50 | 4 | 2 |
| ENCRC24100104L | 1 | 0.1R | 2 | 4 | 50 | 4 | 2 |
| ENCRC24100105L | 1 | 0.1R | 2 | 5 | 50 | 4 | 2 |
| ENCRC24100106L | 1 | 0.1R | 2 | 6 | 50 | 4 | 2 |
| ENCRC24100108L | 1 | 0.1R | 2 | 8 | 50 | 4 | 2 |
| ENCRC24100110L | 1 | 0.1R | 2 | 10 | 50 | 4 | 2 |
| ENCRC24100203L | 1 | 0.2R | 2 | 3 | 50 | 4 | 2 |
| ENCRC24100204L | 1 | 0.2R | 2 | 4 | 50 | 4 | 2 |
| ENCRC24100205L | 1 | 0.2R | 2 | 5 | 50 | 4 | 2 |
| ENCRC24100206L | 1 | 0.2R | 2 | 6 | 50 | 4 | 2 |
| ENCRC24100208L | 1 | 0.2R | 2 | 8 | 50 | 4 | 2 |
| ENCRC24100210L | 1 | 0.2R | 2 | 10 | 50 | 4 | 2 |
| ENCRC24200105L | 2 | 0.1R | 4 | 5 | 50 | 4 | 2 |
| ENCRC24200108L | 2 | 0.1R | 4 | 8 | 50 | 4 | 2 |
| ENCRC24200110L | 2 | 0.1R | 4 | 10 | 50 | 4 | 2 |
| ENCRC24200115L | 2 | 0.1R | 4 | 15 | 50 | 4 | 2 |
| ENCRC24200120L | 2 | 0.1R | 4 | 20 | 50 | 4 | 2 |
| ENCRC24200305L | 2 | 0.3R | 4 | 5 | 50 | 4 | 2 |
| ENCRC24200308L | 2 | 0.3R | 4 | 8 | 50 | 4 | 2 |
| ENCRC24200310L | 2 | 0.3R | 4 | 10 | 50 | 4 | 2 |
| ENCRC24200315L | 2 | 0.3R | 4 | 15 | 50 | 4 | 2 |
| ENCRC24200320L | 2 | 0.3R | 4 | 20 | 50 | 4 | 2 |
| ENCRC24300212L | 3 | 0.2R | 6 | 12 | 50 | 4 | 2 |
| ENCRC24300215L | 3 | 0.2R | 6 | 15 | 50 | 4 | 2 |
| ENCRC24300220L | 3 | 0.2R | 6 | 20 | 50 | 4 | 2 |
| ENCRC24300512L | 3 | 0.5R | 6 | 12 | 50 | 4 | 2 |
| ENCRC24300515L | 3 | 0.5R | 6 | 15 | 50 | 4 | 2 |
| ENCRC24300520L | 3 | 0.5R | 6 | 20 | 50 | 4 | 2 |
| ENCRC24400216L | 4 | 0.2R | 8 | 16 | 50 | 4 | 2 |
| ENCRC24400220L | 4 | 0.2R | 8 | 20 | 50 | 4 | 2 |
| ENCRC24400516L | 4 | 0.5R | 8 | 16 | 50 | 4 | 2 |
| ENCRC24400520L | 4 | 0.5R | 8 | 20 | 50 | 4 | 2 |

Cutting conditions：Page B273

## *Recommended Cutting Conditions* 建議切削參數

# V53X Seires ESSUVB4

| Working Material | Cutting Application | ae×d | ap×d | Vc | fz | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 4 | 6 | 8 | 10 | 12 | 16 |
| Carbon steel (S45C，S55C) | Slot milling | 1 | 0.5 ~ 1.0 | 100 ~ 180 | 0.035 | 0.041 | 0.055 | 0.069 | 0.083 | 0.110 |
| | Side milling | 0.1 ~ 0.3 | 0.7 ~ 1.2 | 130 ~ 280 | 0.048 | 0.058 | 0.077 | 0.097 | 0.116 | 0.154 |
| Alloy steel / Tool steel (SK, SCM, SKD) | Slot milling | 1 | 0.5 ~ 1.0 | 80 ~ 160 | 0.030 | 0.037 | 0.049 | 0.064 | 0.077 | 0.102 |
| | Side milling | 0.1 ~ 0.3 | 0.7 ~ 1.2 | 110 ~ 220 | 0.043 | 0.053 | 0.069 | 0.091 | 0.108 | 0.144 |
| Stainless steel (SUS304, SUS316) | Slot milling | 1 | 0.3 ~ 0.6 | 60 ~ 120 | 0.021 | 0.028 | 0.041 | 0.048 | 0.055 | 0.077 |
| | Side milling | 0.1 ~ 0.2 | 0.7 ~ 1.2 | 80 ~ 140 | 0.029 | 0.039 | 0.058 | 0.068 | 0.077 | 0.108 |
| Superalloy | Slot milling | 1 | 0.2 ~ 0.4 | 30 ~ 60 | 0.021 | 0.028 | 0.035 | 0.041 | 0.048 | 0.067 |
| | Side milling | 0.05 ~ 0.1 | 0.7 ~ 1.2 | 65 ~ 100 | 0.029 | 0.039 | 0.048 | 0.058 | 0.068 | 0.092 |
| d = tool diameter | | | | | | | | | | |

※If the machine not stable, please reduce the feed about 20%. 若機床條件較不穩定，請將進給率調降 20%
If using trochoidal milling, please refer to the side milling cutting data. 若使用擺線加工，請參考側銑切削數據

# A100 Seires ENSSC1

| **Material** | **Aluminum** | | |
|---|---|---|---|
| Vc | 150 ~ 250 m/min | | |
| Dia. (d) | RPM | Feed (mm/min) | fz (mm/tooth) |
| 4 | 15000 | 5000 | 0.33 |
| 6 | 10000 | 5000 | 0.50 |
| 8 | 8400 | 4000 | 0.48 |
| 10 | 6700 | 4000 | 0.60 |
| 12 | 5000 | 4000 | 0.80 |
| | ap = 0.5d<br>ae = 1d | | |

1.Use as highly rigid and accurate machine as possible.
2.If the rpm available is lower than the recommend condition, please reduce the feed rate to the same ratio.
3.Use long shank type please reduce the rpm and feed rate.
4.The Feed and RPM may be changed depending on the M/C conditions ,lubricating and cooling system.

## *Recommended Cutting Conditions* 建議切削參數

# A100 Seires ENSSS2, ENSSS3, ENSCS3, ENSSH3, ENSSF3, ENCSS3

| Material | Aluminum Alloy | | | |
|---|---|---|---|---|
| Vc | 55 ~ 225 m/min | | 45 ~ 185 m/min | |
| Dia. (d) | RPM | Feed (mm/min) | RPM | Feed (mm/min) |
| 1 | 17800 | 590 | 17800 | 470 |
| 2 | 17800 | 620 | 17800 | 500 |
| 3 | 15000 | 650 | 15000 | 520 |
| 4 | 13000 | 685 | 13000 | 550 |
| 5 | 12000 | 720 | 12000 | 580 |
| 6 | 10000 | 760 | 10000 | 610 |
| 8 | 8500 | 840 | 8500 | 670 |
| 10 | 7000 | 920 | 7000 | 740 |
| 12 | 6000 | 1010 | 6000 | 810 |
| | ap = 1 ~ 2d<br>ae = 0.05 ~ 0.15d | | ap = 0.2~0.5d<br>ae = 1d | |

# A100 Seires ENSSB3

| Material | Aluminum Alloy | | | |
|---|---|---|---|---|
| Vc | 200 ~ 400 m/min | | 150 ~ 300 m/min | |
| Dia. (d) | RPM | fz (mm/z) | RPM | fz (mm/z) |
| 4 | 23870 | 0.0200 | 17900 | 0.030 |
| 5 | 10900 | 0.0250 | 14320 | 0.040 |
| 6 | 15910 | 0.0350 | 11930 | 0.057 |
| 8 | 11930 | 0.0450 | 8950 | 0.075 |
| 10 | 9550 | 0.0570 | 7160 | 0.096 |
| 12 | 7960 | 0.0670 | 5970 | 0.110 |
| 16 | 5970 | 0.0880 | 4480 | 0.145 |
| 20 | 4770 | 0.1200 | 3580 | 0.180 |
| | ap ≤ 1.5d<br>ae ≤ 0.3d | | ap ≤ 1d<br>ae = 1d | |

1.Use as highly rigid and accurate machine as possible.
2.If the rpm available is lower than the recommend condition, please reduce the feed rate to the same ratio.
3.Use long shank type please reduce the rpm and feed rate.
4.The Feed and RPM may be changed depending on the M/C conditions ,lubricating and cooling system.

## *Recommended Cutting Conditions* 建議切削參數

# A100 Seires ENSSP3

| Material | Aluminum Alloy | | | |
|---|---|---|---|---|
| Vc | 150 ~ 350 m/min | | 120 ~ 300 m/min | |
| Dia. (d) | RPM | Feed (mm/min) | RPM | Feed (mm/min) |
| 6 | 16000 | 1280 | 13000 | 880 |
| 8 | 12000 | 1520 | 9500 | 960 |
| 10 | 9500 | 1520 | 7600 | 960 |
| 12 | 8000 | 1520 | 6400 | 960 |
| 16 | 6000 | 1520 | 4800 | 960 |
| | ap = 1 ~ 2d<br>ae = 0.05 ~ 0.15d | | ap = 0.2d<br>ae = 1d | |

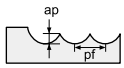
# A100 Seires ENSSV3

| Material | Aluminum alloy (AL5052 / 6061 / 7075) | | | |
|---|---|---|---|---|
| Vc | 200 ~ 400 m/min | | 150 ~ 300 m/min | |
| Dia. (d) | RPM | fz (mm/z) | RPM | fz (mm/z) |
| 3 | 31820 | 0.02 | 23870 | 0.01 |
| 4 | 23870 | 0.03 | 17900 | 0.02 |
| 5 | 19090 | 0.03 | 14320 | 0.02 |
| 6 | 15910 | 0.05 | 11930 | 0.03 |
| 8 | 11930 | 0.07 | 8950 | 0.04 |
| 10 | 9550 | 0.09 | 7160 | 0.06 |
| 12 | 7960 | 0.11 | 5970 | 0.08 |
| 16 | 5970 | 0.15 | 4480 | 0.10 |
| | ap = 1.5d<br>ae = 0.1 ~ 0.5d | | ap = 0.5 ~ 1d<br>ae = 1d | |
| ※When machining Aluminum alloy with Si ≥ 8% , reduce RPM 30% and Feed 30%. | | | | |

1.Use as highly rigid and accurate machine as possible.
2.If the rpm available is lower than the recommend condition, please reduce the feed rate to the same ratio.
3.Use long shank type please reduce the rpm and feed rate.
4.The Feed and RPM may be changed depending on the M/C conditions ,lubricating and cooling system.

## *Recommended Cutting Conditions* 建議切削參數

# A100 Seires ENBSA2

| WORKING MATERIAL | ALLUMINUM ALLOY | |
|---|---|---|
| CODE | A5052 | |
| Vc | 327 m/min | |
| Dia. (d) | RPM | Feed (mm/min) |
| 2mm | 50,700 | 2,000 |
| 3mm | 33,800 | 2,000 |
| 4mm | 26,000 | 2,000 |
| 5mm | 20,800 | 2,000 |
| 6mm | 16,900 | 2,000 |
| 8mm | 13,000 | 2,000 |
| 10mm | 10,400 | 2,000 |
| 12mm | 7,800 | 2,000 |
| 16mm | 6,500 | 2,000 |
|   | ap = 0.1d<br>pf = 0.1d | |

1.Use as highly rigid and accurate machine as possible.
2.If the rpm available is lower than the recommend condition, please reduce the feed rate to the same ratio.
3.Use long shank type please reduce the rpm and feed rate.
4.The Feed and RPM may be changed depending on the M/C conditions ,lubricating and cooling system.

## *Recommended Cutting Conditions* 建議切削參數

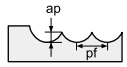
# A100 Seires ENSRC2

| Material | | Copper | | | | | | | Copper Tungsten (W70%-Cu30%) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Application | | Side Milling | | | | Slotting | | | Side Milling | | | | Slotting | | |
| Dia. (d) | EFF-L | RPM | Feed (mm/min) | ap (mm) | ae (mm) | RPM | Feed (mm/min) | ap (mm) | RPM | Feed (mm/min) | ap (mm) | ae (mm) | RPM | Feed (mm/min) | ap (mm) |
| 0.5 | 1.5 | 40000 | 900 | 0.5 | 0.025 | 40000 | 800 | 0.070 | 30000 | 650 | 0.3 | 0.02 | 30000 | 550 | 0.05 |
| | 2 | 38000 | 800 | 0.5 | 0.02 | 35000 | 700 | 0.055 | 28000 | 550 | 0.3 | 0.016 | 26000 | 450 | 0.04 |
| | 3 | 35000 | 700 | 0.5 | 0.015 | 32000 | 600 | 0.040 | 26000 | 500 | 0.3 | 0.012 | 25000 | 400 | 0.03 |
| | 4 | 28000 | 550 | 0.5 | 0.008 | 26000 | 500 | 0.030 | 24000 | 400 | 0.3 | 0.005 | 22000 | 300 | 0.02 |
| | 6 | 18000 | 350 | 0.5 | 0.005 | 18000 | 300 | 0.015 | 15000 | 220 | 0.3 | 0.003 | 15000 | 180 | 0.01 |
| 1 | 3 | 24000 | 2200 | 1 | 0.06 | 24000 | 2000 | 0.22 | 20000 | 1600 | 0.8 | 0.04 | 20000 | 1400 | 0.16 |
| | 4 | 24000 | 2000 | 1 | 0.05 | 22000 | 1800 | 0.20 | 20000 | 1400 | 0.8 | 0.035 | 18000 | 1100 | 0.14 |
| | 5 | 22000 | 1700 | 1 | 0.04 | 20000 | 1500 | 0.16 | 18000 | 1200 | 0.8 | 0.028 | 16000 | 950 | 0.12 |
| | 6 | 20000 | 1500 | 1 | 0.03 | 18000 | 1200 | 0.14 | 16000 | 1000 | 0.8 | 0.02 | 14000 | 800 | 0.10 |
| | 8 | 16000 | 1200 | 1 | 0.025 | 15000 | 1000 | 0.10 | 14000 | 800 | 0.8 | 0.018 | 12000 | 650 | 0.08 |
| | 10 | 14000 | 1000 | 1 | 0.02 | 12000 | 800 | 0.07 | 12000 | 650 | 0.8 | 0.014 | 11000 | 550 | 0.05 |
| | 12 | 10000 | 700 | 1 | 0.01 | 10000 | 650 | 0.05 | 9000 | 450 | 0.8 | 0.007 | 8000 | 400 | 0.035 |
| 2 | 6 | 18000 | 2500 | 2 | 0.10 | 16000 | 2200 | 0.45 | 14000 | 1800 | 1.5 | 0.08 | 12000 | 1500 | 0.30 |
| | 8 | 16000 | 2200 | 2 | 0.09 | 14000 | 1900 | 0.40 | 12000 | 1500 | 1.5 | 0.07 | 12000 | 1400 | 0.28 |
| | 10 | 14000 | 1900 | 2 | 0.08 | 12000 | 1600 | 0.35 | 10000 | 1200 | 1.5 | 0.06 | 10000 | 1000 | 0.24 |
| | 12 | 12000 | 1600 | 2 | 0.07 | 11000 | 1400 | 0.28 | 10000 | 1100 | 1.5 | 0.05 | 9000 | 900 | 0.20 |
| | 14 | 11000 | 1400 | 2 | 0.06 | 10000 | 1200 | 0.24 | 9000 | 950 | 1.5 | 0.04 | 8000 | 800 | 0.16 |
| | 16 | 10000 | 1200 | 2 | 0.045 | 9000 | 1000 | 0.18 | 8000 | 800 | 1.5 | 0.03 | 7000 | 650 | 0.12 |
| | 20 | 9000 | 1000 | 2 | 0.03 | 8000 | 850 | 0.12 | 7000 | 700 | 1.5 | 0.02 | 6000 | 550 | 0.08 |
| 3 | 10 | 16000 | 2400 | 3 | 0.12 | 14000 | 2000 | 0.7 | 12000 | 1800 | 2.4 | 0.08 | 11000 | 1500 | 0.5 |
| | 16 | 14000 | 2100 | 3 | 0.10 | 12000 | 1600 | 0.6 | 11000 | 1600 | 2.4 | 0.07 | 9000 | 1100 | 0.4 |
| | 20 | 11000 | 1500 | 3 | 0.07 | 10000 | 1200 | 0.4 | 9000 | 1100 | 2.4 | 0.05 | 8000 | 900 | 0.3 |
| | 25 | 10000 | 1300 | 3 | 0.05 | 9000 | 1000 | 0.2 | 8000 | 900 | 2.4 | 0.03 | 7000 | 700 | 0.15 |
| 4 | 16 | 12000 | 2400 | 4 | 0.20 | 10000 | 2000 | 0.9 | 9000 | 1600 | 3 | 0.15 | 8000 | 1400 | 0.7 |
| | 20 | 10000 | 2000 | 4 | 0.15 | 8000 | 1600 | 0.7 | 8000 | 1400 | 3 | 0.10 | 6000 | 1000 | 0.5 |
| | 25 | 9000 | 1700 | 4 | 0.10 | 8000 | 1500 | 0.5 | 7000 | 1200 | 3 | 0.07 | 6000 | 1000 | 0.3 |
| | | | | | | | | | | | | | | | |

## *Recommended Cutting Conditions* 建議切削參數

# A100 Seires ENBRC2

| Material | | Copper | | | | Copper Tungsten (W70%-Cu30%) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Radius (R) | EFF-L | RPM | Feed (mm/min) | ap (mm) | pf (mm) | RPM | Feed (mm/min) | ap (mm) | pf (mm) |
| 0.25R | 2 | 40000 | 800 | 0.08 | 0.15 | 30000 | 500 | 0.08 | 0.15 |
| | 3 | 35000 | 600 | 0.06 | 0.1 | 27000 | 400 | 0.06 | 0.08 |
| | 4 | 30000 | 400 | 0.04 | 0.08 | 22000 | 200 | 0.025 | 0.05 |
| | 5 | 25000 | 300 | 0.02 | 0.04 | 18000 | 150 | 0.01 | 0.02 |
| 0.5R | 3 | 40000 | 2800 | 0.25 | 0.4 | 30000 | 2000 | 0.25 | 0.4 |
| | 4 | 40000 | 2400 | 0.2 | 0.4 | 30000 | 1600 | 0.2 | 0.4 |
| | 5 | 35000 | 2000 | 0.16 | 0.3 | 27000 | 1400 | 0.12 | 0.25 |
| | 6 | 30000 | 1600 | 0.14 | 0.3 | 25000 | 1000 | 0.1 | 0.25 |
| | 8 | 25000 | 1000 | 0.12 | 0.2 | 18000 | 500 | 0.06 | 0.1 |
| | 10 | 20000 | 800 | 0.08 | 0.15 | 16000 | 300 | 0.03 | 0.05 |
| | 12 | 16000 | 600 | 0.06 | 0.1 | 12000 | 200 | 0.015 | 0.04 |
| 1.0R | 4 | 30000 | 4000 | 0.45 | 0.8 | 22000 | 2400 | 0.45 | 0.8 |
| | 6 | 27000 | 3000 | 0.45 | 0.8 | 20000 | 1800 | 0.45 | 0.8 |
| | 8 | 25000 | 2400 | 0.4 | 0.8 | 18000 | 1600 | 0.4 | 0.8 |
| | 10 | 22000 | 2000 | 0.3 | 0.6 | 16000 | 1400 | 0.25 | 0.5 |
| | 12 | 16000 | 1400 | 0.3 | 0.6 | 12000 | 900 | 0.25 | 0.5 |
| | 16 | 12000 | 1000 | 0.25 | 0.5 | 9000 | 500 | 0.12 | 0.25 |
| | 20 | 10000 | 800 | 0.15 | 0.3 | 8000 | 350 | 0.06 | 0.1 |
| | 25 | 8000 | 600 | 0.08 | 0.15 | 6000 | 200 | 0.03 | 0.05 |
| 1.5R | 8 | 22000 | 3800 | 0.8 | 1.95 | 18000 | 2800 | 0.7 | 1.3 |
| | 10 | 20000 | 3400 | 0.7 | 1.5 | 16000 | 2400 | 0.6 | 1.2 |
| | 16 | 18000 | 3000 | 0.6 | 1.0 | 14000 | 2000 | 0.6 | 1.2 |
| | 20 | 16000 | 2400 | 0.5 | 0.8 | 12000 | 1400 | 0.4 | 0.6 |
| | 25 | 12000 | 1800 | 0.4 | 0.6 | 10000 | 900 | 0.2 | 0.3 |
| | 30 | 8000 | 1200 | 0.2 | 0.4 | 6000 | 500 | 0.08 | 0.15 |
| 2.0R | 12 | 16000 | 4000 | 1.0 | 1.6 | 12000 | 2800 | 0.8 | 1.6 |
| | 16 | 16000 | 3400 | 0.8 | 1.6 | 12000 | 2400 | 0.8 | 1.6 |
| | 20 | 14000 | 3000 | 0.8 | 1.6 | 10000 | 2000 | 0.8 | 1.6 |
| | 25 | 14000 | 3000 | 0.6 | 1.2 | 10000 | 2000 | 0.5 | 1.0 |
| | 30 | 12000 | 2400 | 0.5 | 1.0 | 7000 | 1200 | 0.3 | 0.5 |
| | 40 | 8000 | 1200 | 0.4 | 0.8 | 5000 | 500 | 0.15 | 0.3 |



## *Recommended Cutting Conditions* 建議切削參數

# A100 Seires ENCRC2

| Material | | | Copper | | | | Copper Tungsten (W70%-Cu30%) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Dia. (d) | Radius (R) | EFF-L | RPM | Feed (mm/min) | ap (mm) | ae (mm) | RPM | Feed (mm/min) | ap (mm) | ae (mm) |
| 0.5 | 0.1R | 2 | 40000 | 800 | 0.06 | 0.25 | 36000 | 720 | 0.054 | 0.23 |
| | | 3 | 35000 | 640 | 0.05 | 0.25 | 32000 | 580 | 0.045 | 0.23 |
| | | 4 | 30000 | 480 | 0.036 | 0.25 | 27000 | 420 | 0.032 | 0.23 |
| | | 5 | 25000 | 400 | 0.024 | 0.25 | 23000 | 360 | 0.022 | 0.23 |
| 1 | 0.1R | 3 | 25000 | 2400 | 0.06 | 0.6 | 23000 | 2200 | 0.054 | 0.55 |
| | | 4 | 25000 | 2200 | 0.055 | 0.6 | 23000 | 2000 | 0.05 | 0.55 |
| | | 5 | 22000 | 2000 | 0.05 | 0.6 | 20000 | 1800 | 0.045 | 0.55 |
| | | 6 | 20000 | 1800 | 0.045 | 0.6 | 18000 | 1600 | 0.04 | 0.55 |
| | | 8 | 16000 | 1400 | 0.04 | 0.6 | 14000 | 1200 | 0.036 | 0.55 |
| | | 10 | 12000 | 1000 | 0.03 | 0.6 | 11000 | 900 | 0.027 | 0.55 |
| | 0.2R | 3 | 25000 | 2400 | 0.12 | 0.6 | 23000 | 2200 | 0.11 | 0.55 |
| | | 4 | 25000 | 2200 | 0.11 | 0.6 | 23000 | 2000 | 0.10 | 0.55 |
| | | 5 | 22000 | 2000 | 0.10 | 0.6 | 20000 | 1800 | 0.09 | 0.55 |
| | | 6 | 20000 | 1800 | 0.09 | 0.6 | 18000 | 1600 | 0.08 | 0.55 |
| | | 8 | 16000 | 1400 | 0.08 | 0.6 | 14000 | 1200 | 0.07 | 0.55 |
| | | 10 | 12000 | 1000 | 0.06 | 0.6 | 11000 | 900 | 0.054 | 0.55 |
| 2 | 0.1R | 5 | 16000 | 3000 | 0.06 | 1.2 | 14000 | 2700 | 0.054 | 1.1 |
| | | 8 | 14000 | 2600 | 0.06 | 1.2 | 13000 | 2400 | 0.054 | 1.1 |
| | | 10 | 12000 | 2000 | 0.06 | 1.2 | 11000 | 1800 | 0.054 | 1.1 |
| | | 15 | 10000 | 1600 | 0.05 | 1.2 | 9000 | 1400 | 0.045 | 1.1 |
| | | 20 | 8000 | 1200 | 0.04 | 1.2 | 7000 | 1100 | 0.036 | 1.1 |
| | 0.3R | 5 | 16000 | 3000 | 0.18 | 1.2 | 14000 | 2700 | 0.16 | 1.1 |
| | | 8 | 14000 | 2600 | 0.18 | 1.2 | 13000 | 2400 | 0.16 | 1.1 |
| | | 10 | 12000 | 2000 | 0.18 | 1.2 | 11000 | 1800 | 0.16 | 1.1 |
| | | 15 | 10000 | 1600 | 0.14 | 1.2 | 9000 | 1400 | 0.13 | 1.1 |
| | | 20 | 8000 | 1200 | 0.10 | 1.2 | 7000 | 1100 | 0.09 | 1.1 |
| 3 | 0.2R | 12 | 14000 | 3000 | 0.12 | 1.8 | 13000 | 2700 | 0.11 | 1.6 |
| | | 15 | 13000 | 2600 | 0.12 | 1.8 | 12000 | 2400 | 0.11 | 1.6 |
| | | 18 | 12000 | 2400 | 0.10 | 1.8 | 11000 | 2200 | 0.09 | 1.6 |
| | | 24 | 10000 | 1800 | 0.08 | 1.8 | 9000 | 1600 | 0.07 | 1.6 |
| | | 30 | 8000 | 1400 | 0.07 | 1.8 | 7000 | 1200 | 0.06 | 1.6 |
| | 0.5R | 12 | 14000 | 3000 | 0.30 | 1.8 | 13000 | 2700 | 0.27 | 1.6 |
| | | 15 | 13000 | 2600 | 0.30 | 1.8 | 12000 | 2400 | 0.27 | 1.6 |
| | | 18 | 12000 | 2400 | 0.25 | 1.8 | 11000 | 2200 | 0.23 | 1.6 |
| | | 24 | 10000 | 1800 | 0.20 | 1.8 | 9000 | 1600 | 0.18 | 1.6 |
| | | 30 | 8000 | 1400 | 0.16 | 1.8 | 7000 | 1200 | 0.14 | 1.6 |
| 4 | 0.2R | 16 | 10000 | 2800 | 0.14 | 2.8 | 9000 | 2500 | 0.13 | 2.5 |
| | | 24 | 8000 | 2200 | 0.12 | 2.8 | 7000 | 1900 | 0.11 | 2.5 |
| | | 32 | 6000 | 1600 | 0.10 | 2.8 | 5500 | 1400 | 0.09 | 2.5 |
| | 0.5R | 16 | 10000 | 2800 | 0.30 | 2.4 | 9000 | 2500 | 0.27 | 2.2 |
| | | 24 | 8000 | 2200 | 0.24 | 2.4 | 7000 | 1900 | 0.22 | 2.2 |
| | | 32 | 6000 | 1600 | 0.18 | 2.4 | 5500 | 1400 | 0.16 | 2.2 |