

# アルミ用エンドミル

*End Mill for Aluminum*

**AL2D-2**

**AL2D-2DLC**

**AL3D-2**

**AL3D-2DLC**

**AL4D-2**

**AL4D-2DLC**

**AL5D-2**

**AL5D-2DLC**

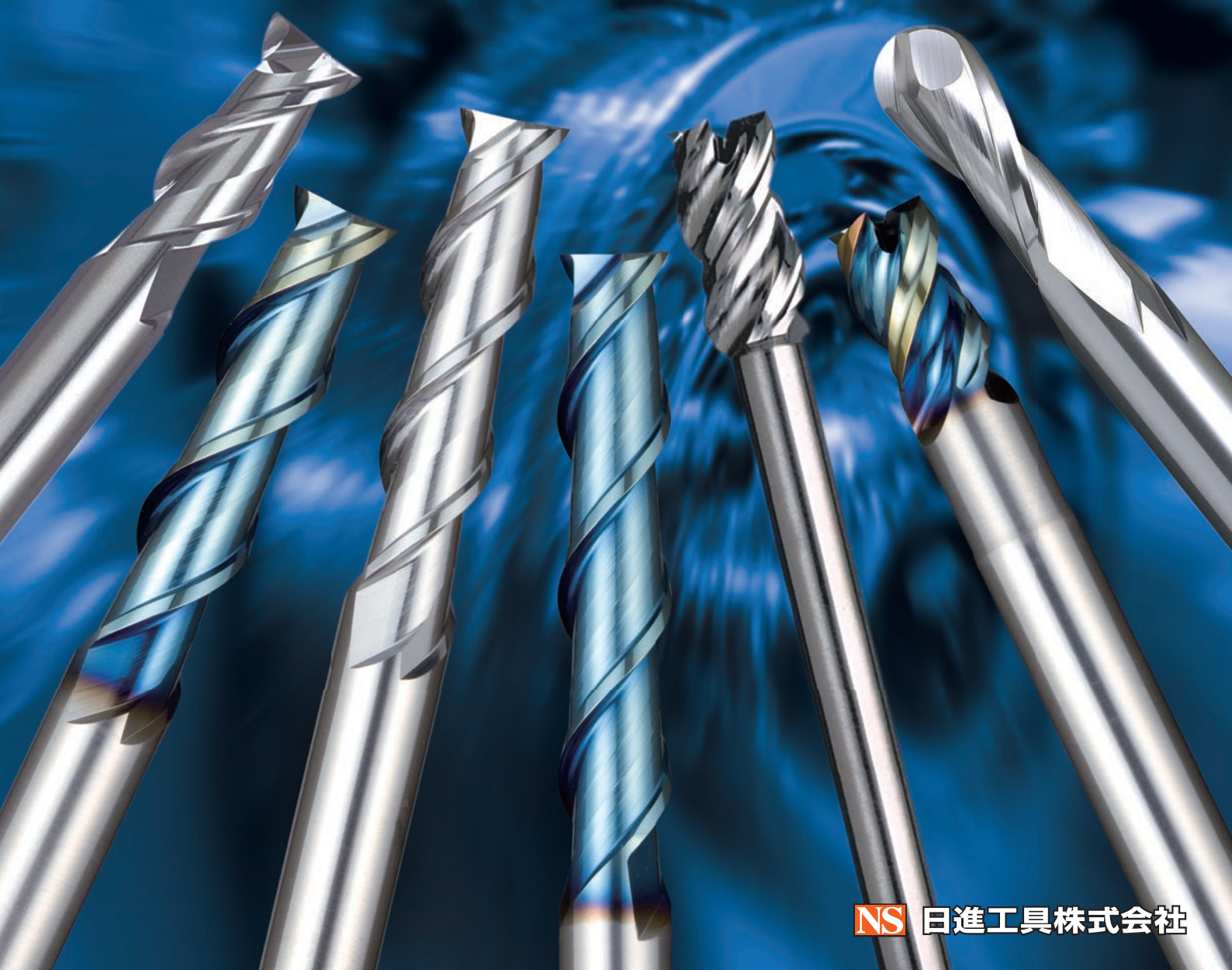
**ALZ345**

**ALZ345-DLC**

**AL-3LS**

**ALB225-DLC**

**ALB225**





# 大幅規格拡大!

## 充実したラインナップで加工の幅が大きく変わります。

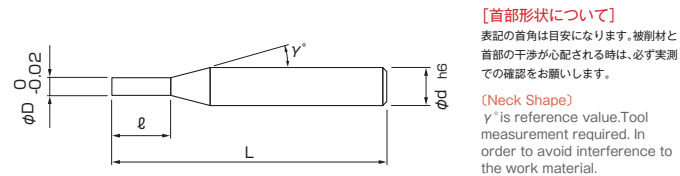
Significant Expansion of Standard Products!!  
Realized Wide Variations in Cutting by Substantial Lineup!

全329サイズ

### アルミ専用エンドミル（2倍刃長タイプ）

2-Flute End Mill for Aluminum

## AL2D-2



- NSのALシリーズは、あらゆる条件で安定した高能率加工を実現。
- コストパフォーマンスに優れた高剛性。2倍刃長タイプ。

- AL-series realized a stable and high efficient machining.
- L/D=2 to increase rigidity and realize best cost performance.



単位 [寸法 : mm / 価格 : 円]  
Unit [size : mm / Retail Price : JPY]

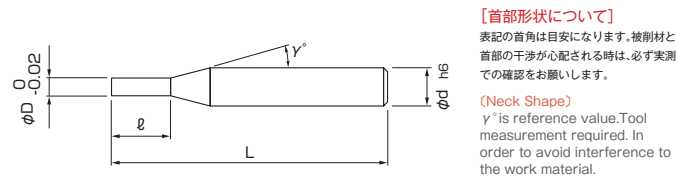
| コードNo.<br>Code No. | (D)刃径<br>Dia. | (ℓ)刃長<br>Length of Cut | (γ)首角<br>Neck Taper Angle | (d)シャンク径<br>Shank Dia. | (L)全長<br>Overall Length | 標準価格<br>Retail Price |
|--------------------|---------------|------------------------|---------------------------|------------------------|-------------------------|----------------------|
| 01-00631-00050     | 0.5           | 1                      | 9°                        | 4                      | 45                      | 3,800                |
| 01-00631-00060     | 0.6           | 1.2                    | 9°                        | 4                      | 45                      | 4,600                |
| 01-00631-00070     | 0.7           | 1.4                    | 9°                        | 4                      | 45                      | 4,600                |
| 01-00631-00080     | 0.8           | 1.6                    | 9°                        | 4                      | 45                      | 4,600                |
| 01-00631-00090     | 0.9           | 1.8                    | 9°                        | 4                      | 45                      | 4,600                |
| 01-00631-00100     | 1             | 2                      | 9°                        | 4                      | 45                      | 2,900                |
| 01-00631-00110     | 1.1           | 2.2                    | 9°                        | 4                      | 45                      | 4,600                |
| 01-00631-00120     | 1.2           | 2.4                    | 9°                        | 4                      | 45                      | 4,600                |
| 01-00631-00130     | 1.3           | 2.6                    | 9°                        | 4                      | 45                      | 4,600                |
| 01-00631-00140     | 1.4           | 2.8                    | 9°                        | 4                      | 45                      | 4,600                |
| 01-00631-00150     | 1.5           | 3                      | 9°                        | 4                      | 45                      | 2,900                |
| 01-00631-00160     | 1.6           | 3.2                    | 9°                        | 4                      | 45                      | 4,600                |
| 01-00631-00170     | 1.7           | 3.4                    | 9°                        | 4                      | 45                      | 4,600                |
| 01-00631-00180     | 1.8           | 3.6                    | 9°                        | 4                      | 45                      | 4,600                |
| 01-00631-00190     | 1.9           | 3.8                    | 9°                        | 4                      | 45                      | 4,600                |
| 01-00631-00200     | 2             | 4                      | 9°                        | 4                      | 45                      | 2,900                |
| 01-00631-00210     | 2.1           | 4.2                    | 9°                        | 4                      | 45                      | 5,300                |
| 01-00631-00220     | 2.2           | 4.4                    | 9°                        | 4                      | 45                      | 5,300                |
| 01-00631-00230     | 2.3           | 4.6                    | 9°                        | 4                      | 45                      | 5,300                |
| 01-00631-00240     | 2.4           | 4.8                    | 9°                        | 4                      | 45                      | 5,300                |
| 01-00631-00250     | 2.5           | 5                      | 9°                        | 4                      | 45                      | 3,800                |
| 01-00631-00260     | 2.6           | 5.2                    | 9°                        | 4                      | 45                      | 5,300                |
| 01-00631-00270     | 2.7           | 5.4                    | 9°                        | 4                      | 45                      | 5,300                |
| 01-00631-00280     | 2.8           | 5.6                    | 9°                        | 4                      | 45                      | 5,300                |
| 01-00631-00290     | 2.9           | 5.8                    | 9°                        | 6                      | 50                      | 5,300                |
| 01-00631-00300     | 3             | 6                      | 9°                        | 6                      | 50                      | 3,800                |
| 01-00631-00350     | 3.5           | 7                      | 9°                        | 6                      | 50                      | 4,600                |
| 01-00631-00400     | 4             | 8                      | 9°                        | 6                      | 50                      | 3,900                |
| 01-00631-00450     | 4.5           | 9                      | 9°                        | 6                      | 55                      | 5,100                |
| 01-00631-00500     | 5             | 10                     | 9°                        | 6                      | 55                      | 4,300                |
| 01-00631-00550     | 5.5           | 11                     | 9°                        | 6                      | 55                      | 5,300                |
| 01-00631-00600     | 6             | 12                     | —                         | 6                      | 55                      | 4,500                |
| 01-00631-00700     | 7             | 14                     | 9°                        | 8                      | 70                      | 7,600                |
| 01-00631-00800     | 8             | 16                     | —                         | 8                      | 70                      | 7,600                |
| 01-00631-00900     | 9             | 18                     | 9°                        | 10                     | 75                      | 9,900                |
| 01-00631-01000     | 10            | 20                     | —                         | 10                     | 75                      | 9,900                |
| 01-00631-01100     | 11            | 22                     | 9°                        | 12                     | 80                      | 14,400               |
| 01-00631-01200     | 12            | 24                     | —                         | 12                     | 80                      | 14,400               |

オーダー方法 ■AL2D-2 刃径(D)を指示して下さい。  
■When you order, indicate AL2D-2 (D).

### アルミ専用エンドミル（3倍刃長タイプ）

2-Flute Medium End Mill for Aluminum

## AL3D-2



- NSのALシリーズは、あらゆる条件で安定した高能率加工を実現。
- 幅広い領域で安定した加工面精度が得られ、高速加工でもビビりを抑制。

- AL-series realized a stable and high efficient machining.
- It exhibits stable excellent surface on a wide area and no chattering occurs even during high speed cutting.



単位 [寸法 : mm / 価格 : 円]  
Unit [size : mm / Retail Price : JPY]

| コードNo.<br>Code No. | (D)刃径<br>Dia. | (ℓ)刃長<br>Length of Cut | (γ)首角<br>Neck Taper Angle | (d)シャンク径<br>Shank Dia. | (L)全長<br>Overall Length | 標準価格<br>Retail Price |
|--------------------|---------------|------------------------|---------------------------|------------------------|-------------------------|----------------------|
| 01-00632-00100     | 1             | 3                      | 9°                        | 4                      | 45                      | 4,600                |
| 01-00632-00150     | 1.5           | 4.5                    | 9°                        | 4                      | 45                      | 4,600                |
| 01-00632-00200     | 2             | 6                      | 9°                        | 4                      | 45                      | 4,600                |
| 01-00632-00250     | 2.5           | 7.5                    | 9°                        | 4                      | 45                      | 4,600                |
| 01-00632-00300     | 3             | 9                      | 9°                        | 6                      | 50                      | 5,600                |
| 01-00632-00400     | 4             | 12                     | 9°                        | 6                      | 50                      | 5,800                |
| 01-00632-00500     | 5             | 15                     | 9°                        | 6                      | 55                      | 6,200                |
| 01-00632-00600     | 6             | 18                     | —                         | 6                      | 60                      | 6,500                |
| 01-00632-00700     | 7             | 21                     | 9°                        | 8                      | 70                      | 9,500                |
| 01-00632-00800     | 8             | 24                     | —                         | 8                      | 70                      | 9,500                |
| 01-00632-00900     | 9             | 27                     | 9°                        | 10                     | 75                      | 12,000               |
| 01-00632-01000     | 10            | 30                     | —                         | 10                     | 75                      | 12,000               |
| 01-00632-01100     | 11            | 33                     | 9°                        | 12                     | 90                      | 16,500               |
| 01-00632-01200     | 12            | 36                     | —                         | 12                     | 90                      | 16,500               |

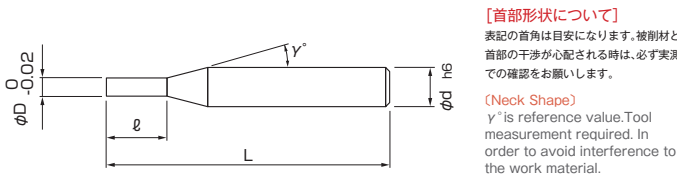
オーダー方法 ■AL3D-2 刃径(D)を指示して下さい。  
■When you order, indicate AL3D-2 (D).

新製品

### アルミ専用エンドミル（4倍刃長タイプ）

2-Flute Medium End Mill for Aluminum

## AL4D-2



- 幅広い領域で安定した加工面精度が得られ、高速加工でもビビりを抑制。

- It exhibits stable excellent surface on a wide area and no chattering occurs even during high speed cutting.



単位 [寸法 : mm / 価格 : 円]  
Unit [size : mm / Retail Price : JPY]

● NEWサイズ

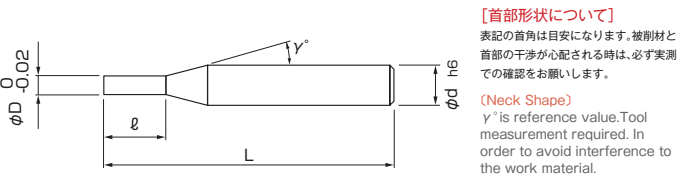
| コードNo.<br>Code No. | (D)刃径<br>Dia. | (ℓ)刃長<br>Length of Cut | (γ)首角<br>Neck Taper Angle | (d)シャンク径<br>Shank Dia. | (L)全長<br>Overall Length | 標準価格<br>Retail Price |
|--------------------|---------------|------------------------|---------------------------|------------------------|-------------------------|----------------------|
| 01-00633-00100     | 1             | 4                      | 9°                        | 4                      | 50                      | 6,000                |
| 01-00633-00150     | 1.5           | 6                      | 9°                        | 4                      | 50                      | 6,000                |
| 01-00633-00200     | 2             | 8                      | 9°                        | 4                      | 50                      | 6,000                |
| 01-00633-00250     | 2.5           | 10                     | 9°                        | 4                      | 50                      | 6,000                |
| 01-00633-00300     | 3             | 12                     | 9°                        | 6                      | 55                      | 7,000                |
| 01-00633-00400     | 4             | 16                     | 9°                        | 6                      | 60                      | 7,300                |
| 01-00633-00500     | 5             | 20                     | 9°                        | 6                      | 65                      | 7,800                |
| 01-00633-00600     | 6             | 24                     | —                         | 6                      | 75                      | 8,700                |
| 01-00633-00700     | 7             | 28                     | 9°                        | 8                      | 90                      | 12,000               |
| 01-00633-00800     | 8             | 32                     | —                         | 8                      | 90                      | 12,000               |
| 01-00633-00900     | 9             | 36                     | 9°                        | 10                     | 100                     | 16,300               |
| 01-00633-01000     | 10            | 40                     | —                         | 10                     | 100                     | 16,300               |
| 01-00633-01100     | 11            | 44                     | 9°                        | 12                     | 110                     | 20,700               |
| 01-00633-01200     | 12            | 48                     | —                         | 12                     | 110                     | 20,700               |

オーダー方法 ■AL4D-2刃径(D)を指示して下さい。  
■When you order, indicate AL4D-2(D).

### アルミ専用エンドミル（5倍刃長タイプ）

2-Flute Long End Mill for Aluminum

## AL5D-2



- NSのALシリーズは、あらゆる条件で安定した高能率加工を実現。
- 幅広い領域で安定した加工面精度が得られ、高速加工でもビビりを抑制。

- AL-series realized a stable and high efficient machining.
- It exhibits stable excellent surface on a wide area and no chattering occurs even during high speed cutting.



単位 [寸法 : mm / 価格 : 円]  
Unit [size : mm / Retail Price : JPY]

| コードNo.<br>Code No. | (D)刃径<br>Dia. | (ℓ)刃長<br>Length of Cut | (γ)首角<br>Neck Taper Angle | (d)シャンク径<br>Shank Dia. | (L)全長<br>Overall Length | 標準価格<br>Retail Price |
|--------------------|---------------|------------------------|---------------------------|------------------------|-------------------------|----------------------|
| 01-00634-00100     | 1             | 5                      | 9°                        | 4                      | 50                      | 7,400                |
| 01-00634-00150     | 1.5           | 7.5                    | 9°                        | 4                      | 50                      | 7,400                |
| 01-00634-00200     | 2             | 10                     | 9°                        | 4                      | 50                      | 7,400                |
| 01-00634-00250     | 2.5           | 12.5                   | 9°                        | 4                      | 50                      | 7,400                |
| 01-00634-00300     | 3             | 15                     | 9°                        | 6                      | 55                      | 8,300                |
| 01-00634-00400     | 4             | 20                     | 9°                        | 6                      | 60                      | 8,700                |
| 01-00634-00500     | 5             | 25                     | 9°                        | 6                      | 65                      | 9,200                |
| 01-00634-00600     | 6             | 30                     | —                         | 6                      | 75                      | 10,800               |
| 01-00634-00700     | 7             | 35                     | 9°                        | 8                      | 90                      | 14,500               |
| 01-00634-00800     | 8             | 40                     | —                         | 8                      | 90                      | 14,500               |
| 01-00634-00900     | 9             | 45                     | 9°                        | 10                     | 100                     | 20,500               |
| 01-00634-01000     | 10            | 50                     | —                         | 10                     | 100                     | 20,500               |
| 01-00634-01100     | 11            | 55                     | 9°                        | 12                     | 110                     | 24,800               |
| 01-00634-01200     | 12            | 60                     | —                         | 12                     | 110                     | 24,800               |

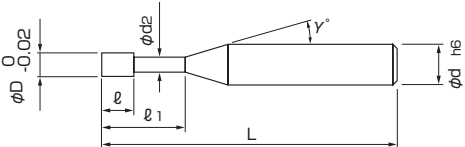
オーダー方法 ■AL5D-2 刃径(D)を指示して下さい。  
■When you order, indicate AL5D-2(D).



アルミ高能率加工用エンドミル

3-Flute Power “Z” End Mill for Aluminum

ALZ345



【首部形状について】  
表記の首角は目安になります。被削材と  
首部の干渉が心配される時は、必ず実測  
での確認をお願いします。  
  
(Neck Shape)  
γ° is reference value.Tool  
measurement required. In  
order to avoid interference to  
the work material.

- NS の AL シリーズは、あらゆる条件で安定した高能率加工を実現。
- 突っ込み性能が大幅アップ！
- 切屑排出性を高めた高能率重切削タイプ。



\* 特定商社在庫商品。詳しくはお問い合わせ下さい。  
\* Semi-standard item, Please inquire for price and delivery.

| コードNo.<br>Code No. | (D)刃径<br>Dia. | (ℓ)刃長<br>Length of Cut | (ℓ1)有効長<br>Effective Length | (d2)首下径<br>Neck Dia. | (γ)首角<br>Neck Taper Angle | (d)シャンク径<br>Shank Dia. | (L)全長<br>Overall Length | 標準価格<br>Retail Price |
|--------------------|---------------|------------------------|-----------------------------|----------------------|---------------------------|------------------------|-------------------------|----------------------|
| 01-00636-00100     | 1             | 1.5                    | 3                           | 0.95                 | 12°                       | 4                      | 45                      | 4,900                |
| 01-00636-00110     | 1.1           | 1.7                    | 3.3                         | 1.05                 | 12°                       | 4                      | 45                      | *                    |
| 01-00636-00120     | 1.2           | 1.8                    | 3.6                         | 1.15                 | 12°                       | 4                      | 45                      | *                    |
| 01-00636-00130     | 1.3           | 2                      | 3.9                         | 1.25                 | 12°                       | 4                      | 45                      | *                    |
| 01-00636-00140     | 1.4           | 2.1                    | 4.2                         | 1.35                 | 12°                       | 4                      | 45                      | *                    |
| 01-00636-00150     | 1.5           | 2.3                    | 4.5                         | 1.45                 | 12°                       | 4                      | 45                      | 4,900                |
| 01-00636-00160     | 1.6           | 2.4                    | 4.8                         | 1.55                 | 12°                       | 4                      | 45                      | *                    |
| 01-00636-00170     | 1.7           | 2.6                    | 5.1                         | 1.65                 | 12°                       | 4                      | 45                      | *                    |
| 01-00636-00180     | 1.8           | 2.7                    | 5.4                         | 1.74                 | 12°                       | 4                      | 45                      | *                    |
| 01-00636-00190     | 1.9           | 2.9                    | 5.7                         | 1.84                 | 12°                       | 4                      | 45                      | *                    |
| 01-00636-00200     | 2             | 3                      | 6                           | 1.94                 | 12°                       | 4                      | 45                      | 4,900                |
| 01-00636-00210     | 2.1           | 3.2                    | 6.3                         | 2                    | 12°                       | 4                      | 45                      | *                    |
| 01-00636-00220     | 2.2           | 3.3                    | 6.6                         | 2.1                  | 12°                       | 4                      | 45                      | *                    |
| 01-00636-00230     | 2.3           | 3.5                    | 6.9                         | 2.2                  | 12°                       | 4                      | 45                      | *                    |
| 01-00636-00240     | 2.4           | 3.6                    | 7.2                         | 2.3                  | 12°                       | 4                      | 45                      | *                    |
| 01-00636-00250     | 2.5           | 3.8                    | 7.5                         | 2.4                  | 12°                       | 4                      | 45                      | 4,900                |
| 01-00636-00260     | 2.6           | 3.9                    | 7.8                         | 2.45                 | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00270     | 2.7           | 4.1                    | 8.1                         | 2.55                 | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00280     | 2.8           | 4.2                    | 8.4                         | 2.65                 | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00290     | 2.9           | 4.4                    | 8.7                         | 2.75                 | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00300     | 3             | 4.5                    | 9                           | 2.85                 | 12°                       | 6                      | 55                      | 5,900                |
| 01-00636-00310     | 3.1           | 4.7                    | 9.3                         | 2.95                 | 12°                       | 6                      | 55                      | *                    |

オーダー方法 ■ALZ345 刃径(D) を指示して下さい。 ■When you order, indicate ALZ345(D).

| コードNo.<br>Code No. | (D)刃径<br>Dia. | (ℓ)刃長<br>Length of Cut | (ℓ1)有効長<br>Effective Length | (d2)首下径<br>Neck Dia. | (γ)首角<br>Neck Taper Angle | (d)シャンク径<br>Shank Dia. | (L)全長<br>Overall Length | 標準価格<br>Retail Price |
|--------------------|---------------|------------------------|-----------------------------|----------------------|---------------------------|------------------------|-------------------------|----------------------|
| 01-00636-00320     | 3.2           | 4.8                    | 9.6                         | 3.05                 | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00330     | 3.3           | 5                      | 9.9                         | 3.15                 | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00340     | 3.4           | 5.1                    | 10.2                        | 3.25                 | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00350     | 3.5           | 5.3                    | 10.5                        | 3.35                 | 12°                       | 6                      | 55                      | 7,200                |
| 01-00636-00360     | 3.6           | 5.4                    | 10.8                        | 3.45                 | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00370     | 3.7           | 5.6                    | 11.1                        | 3.55                 | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00380     | 3.8           | 5.7                    | 11.4                        | 3.65                 | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00390     | 3.9           | 5.9                    | 11.7                        | 3.75                 | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00400     | 4             | 6                      | 12                          | 3.8                  | 12°                       | 6                      | 55                      | 6,100                |
| 01-00636-00410     | 4.1           | 6.2                    | 12.3                        | 3.9                  | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00420     | 4.2           | 6.3                    | 12.6                        | 4                    | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00430     | 4.3           | 6.5                    | 12.9                        | 4.1                  | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00440     | 4.4           | 6.6                    | 13.2                        | 4.2                  | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00450     | 4.5           | 6.8                    | 13.5                        | 4.3                  | 12°                       | 6                      | 55                      | 7,600                |
| 01-00636-00460     | 4.6           | 6.9                    | 13.8                        | 4.4                  | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00470     | 4.7           | 7.1                    | 14.1                        | 4.5                  | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00480     | 4.8           | 7.2                    | 14.4                        | 4.6                  | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00490     | 4.9           | 7.4                    | 14.7                        | 4.7                  | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00500     | 5             | 7.5                    | 15                          | 4.8                  | 12°                       | 6                      | 55                      | 6,600                |
| 01-00636-00510     | 5.1           | 7.7                    | 15.3                        | 4.9                  | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00520     | 5.2           | 7.8                    | 15.6                        | 5                    | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00530     | 5.3           | 8                      | 15.9                        | 5.1                  | 12°                       | 6                      | 55                      | *                    |

| コードNo.<br>Code No. | (D)刃径<br>Dia. | (ℓ)刃長<br>Length of Cut | (ℓ1)有効長<br>Effective Length | (d2)首下径<br>Neck Dia. | (γ)首角<br>Neck Taper Angle | (d)シャンク径<br>Shank Dia. | (L)全長<br>Overall Length | 標準価格<br>Retail Price |
|--------------------|---------------|------------------------|-----------------------------|----------------------|---------------------------|------------------------|-------------------------|----------------------|
| 01-00636-00540     | 5.4           | 8.1                    | 16.2                        | 5.2                  | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00550     | 5.5           | 8.3                    | 16.5                        | 5.3                  | 12°                       | 6                      | 55                      | 8,300                |
| 01-00636-00560     | 5.6           | 8.4                    | 16.8                        | 5.4                  | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00570     | 5.7           | 8.6                    | 17.1                        | 5.5                  | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00580     | 5.8           | 8.7                    | 17.4                        | 5.6                  | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00590     | 5.9           | 8.9                    | 17.7                        | 5.7                  | 12°                       | 6                      | 55                      | *                    |
| 01-00636-00600     | 6             | 9                      | 18                          | 5.8                  | —                         | 6                      | 60                      | 6,900                |
| 01-00636-00610     | 6.1           | 9.2                    | 18.3                        | 5.9                  | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00620     | 6.2           | 9.3                    | 18.6                        | 6                    | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00630     | 6.3           | 9.5                    | 18.9                        | 6.1                  | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00640     | 6.4           | 9.6                    | 19.2                        | 6.2                  | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00650     | 6.5           | 9.8                    | 19.5                        | 6.3                  | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00660     | 6.6           | 9.9                    | 19.8                        | 6.4                  | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00670     | 6.7           | 10.1                   | 20.1                        | 6.5                  | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00680     | 6.8           | 10.2                   | 20.4                        | 6.6                  | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00690     | 6.9           | 10.4                   | 20.7                        | 6.7                  | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00700     | 7             | 10.5                   | 21                          | 6.8                  | 12°                       | 8                      | 70                      | 9,200                |
| 01-00636-00710     | 7.1           | 10.7                   | 21.3                        | 6.9                  | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00720     | 7.2           | 10.8                   | 21.6                        | 7                    | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00730     | 7.3           | 11                     | 21.9                        | 7.1                  | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00740     | 7.4           | 11.1                   | 22.2                        | 7.2                  | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00750     | 7.5           | 11.3                   | 22.5                        | 7.3                  | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00760     | 7.6           | 11.4                   | 22.8                        | 7.4                  | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00770     | 7.7           | 11.6                   | 23.1                        | 7.5                  | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00780     | 7.8           | 11.7                   | 23.4                        | 7.6                  | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00790     | 7.9           | 11.9                   | 23.7                        | 7.7                  | 12°                       | 8                      | 70                      | *                    |
| 01-00636-00800     | 8             | 12                     | 24                          | 7.8                  | —                         | 8                      | 70                      | 9,200                |
| 01-00636-00810     | 8.1           | 12.2                   | 24.3                        | 7.9                  | 12°                       | 10                     | 75                      | *                    |
| 01-00636-00820     | 8.2           | 12.3                   | 24.6                        | 8                    | 12°                       | 10                     | 75                      | *                    |
| 01-00636-00830     | 8.3           | 12.5                   | 24.9                        | 8.1                  | 12°                       | 10                     | 75                      | *                    |
| 01-00636-00840     | 8.4           | 12.6                   | 25.2                        | 8.2                  | 12°                       | 10                     | 75                      | *                    |
| 01-00636-00850     | 8.5           | 12.8                   | 25.5                        | 8.3                  | 12°                       | 10                     | 75                      | *                    |
| 01-00636-00860     | 8.6           | 12.9                   | 25.8                        | 8.4                  | 12°                       | 10                     | 75                      | *                    |
| 01-00636-00870     | 8.7           | 13.1                   | 26.1                        | 8.5                  | 12°                       | 10                     | 75                      | *                    |

| コードNo.<br>Code No. | (D)刃径<br>Dia. | (ℓ)刃長<br>Length of Cut | (ℓ1)有効長<br>Effective Length | (d2)首下径<br>Neck Dia. | (γ)首角<br>Neck Taper Angle | (d)シャンク径<br>Shank Dia. | (L)全長<br>Overall Length | 標準価格<br>Retail Price |
|--------------------|---------------|------------------------|-----------------------------|----------------------|---------------------------|------------------------|-------------------------|----------------------|
| 01-00636-00880     | 8.8           | 13.2                   | 26.4                        | 8.6                  | 12°                       | 10                     | 75                      | *                    |
| 01-00636-00890     | 8.9           | 13.4                   | 26.7                        | 8.7                  | 12°                       | 10                     | 75                      | *                    |
| 01-00636-00900     | 9             | 13.5                   | 27                          | 8.8                  | 12°                       | 10                     | 75                      | 11,600               |
| 01-00636-00910     | 9.1           | 13.7                   | 27.3                        | 8.9                  | 12°                       | 10                     | 75                      | *                    |
| 01-00636-00920     | 9.2           | 13.8                   | 27.6                        | 9                    | 12°                       | 10                     | 75                      | *                    |
| 01-00636-00930     | 9.3           | 14                     | 27.9                        | 9.1                  | 12°                       | 10                     | 75                      | *                    |
| 01-00636-00940     | 9.4           | 14.1                   | 28.2                        | 9.2                  | 12°                       | 10                     | 75                      | *                    |
| 01-00636-00950     | 9.5           | 14.3                   | 28.5                        | 9.3                  | 12°                       | 10                     | 75                      | *                    |
| 01-00636-00960     | 9.6           | 14.4                   | 28.8                        | 9.4                  | 12°                       | 10                     | 75                      | *                    |
| 01-00636-00970     | 9.7           | 14.6                   | 29.1                        | 9.5                  | 12°                       | 10                     | 75                      | *                    |
| 01-00636-00980     | 9.8           | 14.7                   | 29.4                        | 9.6                  | 12°                       | 10                     | 75                      | *                    |
| 01-00636-00990     | 9.9           | 14.9                   | 29.7                        | 9.7                  | 12°                       | 10                     | 75                      | *                    |
| 01-00636-01000     | 10            | 15                     | 30                          | 9.8                  | —                         | 10                     | 75                      | 11,600               |
| 01-00636-01010     | 10.1          | 15.2                   | 30.3                        | 9.9                  | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01020     | 10.2          | 15.3                   | 30.6                        | 10                   | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01030     | 10.3          | 15.5                   | 30.9                        | 10.1                 | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01040     | 10.4          | 15.6                   | 31.2                        | 10.2                 | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01050     | 10.5          | 15.8                   | 31.5                        | 10.3                 | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01060     | 10.6          | 15.9                   | 31.8                        | 10.4                 | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01070     | 10.7          | 16.1                   | 32.1                        | 10.5                 | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01080     | 10.8          | 16.2                   | 32.4                        | 10.6                 | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01090     | 10.9          | 16.4                   | 32.7                        | 10.7                 | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01100     | 11            | 16.5                   | 33                          | 10.8                 | 12°                       | 12                     | 80                      | 16,300               |
| 01-00636-01110     | 11.1          | 16.7                   | 33.3                        | 10.9                 | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01120     | 11.2          | 16.8                   | 33.6                        | 11                   | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01130     | 11.3          | 17                     | 33.9                        | 11.1                 | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01140     | 11.4          | 17.1                   | 34.2                        | 11.2                 | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01150     | 11.5          | 17.3                   | 34.5                        | 11.3                 | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01160     | 11.6          | 17.4                   | 34.8                        | 11.4                 | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01170     | 11.7          | 17.6                   | 35.1                        | 11.5                 | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01180     | 11.8          | 17.7                   | 35.4                        | 11.6                 | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01190     | 11.9          | 17.9                   | 35.7                        | 11.7                 | 12°                       | 12                     | 80                      | *                    |
| 01-00636-01200     | 12            | 18                     | 36                          | 11.8                 | —                         | 12                     | 80                      | 16,300               |



アルミ用ロングシャンクエンドミル（アンダーシャンク）

3-Flute Long Shank End Mill for Aluminum

AL-3LS



- 刃径よりシャンク部が細いスリムタイプで、立ち壁加工に対応。
- 刃部後端に C 面付けを施し、ステップ加工時の段差が最小になる設計。
- Slimmed shank suits side milling.
- Corner-C at flute end effects an accurate side step milling.

超硬  
WC

3

45°  
ネジレ角

単位 [寸法：mm / 価格：円]  
Unit [size：mm / Retail Price：JPY]

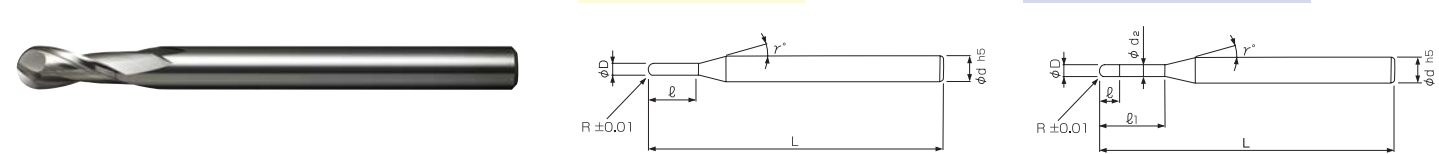
| コードNo.<br>Code No. | (D)刃径<br>Dia. | (ℓ)刃長<br>Length of Cut | (d)シャンク径<br>Shank Dia. | (L)全長<br>Overall Length | 標準価格<br>Retail Price |
|--------------------|---------------|------------------------|------------------------|-------------------------|----------------------|
| 01-00637-00500     | 5             | 7.5                    | 4                      | 80                      | 8,500                |
| 01-00637-00600     | 6             | 9                      | 4                      | 80                      | 8,500                |
| 01-00637-00800     | 8             | 12                     | 6                      | 110                     | 16,000               |
| 01-00637-01000     | 10            | 15                     | 8                      | 130                     | 19,500               |
| 01-00637-01200     | 12            | 18                     | 10                     | 150                     | 29,000               |

オーダー方法 ■AL-3LS 刃径(D)を指示して下さい。  
■When you order, indicate AL-3LS (D).

アルミ用ボールエンドミル

Ball End Mill for Aluminum

ALB225



- NS 独自の刃形状により、コーナー部や側面加工時のビビリを抑制。
- NS unique flute design reduces chattering at corner and side milling.

【首部形状について】  
表記の首角は目安になります。被削材と首部の干渉が心配される時は、必ず実測での確認をお願いします。  
(Neck Shape)  
γ° is reference value.Tool measurement required. In order to avoid interference to the work material.

超硬  
WC

2

25°  
ネジレ角

単位 [寸法：mm / 価格：円]  
Unit [size：mm / Retail Price：JPY]

| コードNo.<br>Code No. | (R)ボール半径<br>Radius | (ℓ)刃長<br>Length of Cut | (ℓ1)有効長<br>Effective Length | 形状<br>Type | (D)刃径<br>Dia. | (d2)首下径<br>Under Neck Dia. | (γ)首角<br>Neck Taper Angle | (d)シャンク径<br>Shank Dia. | (L)全長<br>Overall Length | 標準価格<br>Retail Price |
|--------------------|--------------------|------------------------|-----------------------------|------------|---------------|----------------------------|---------------------------|------------------------|-------------------------|----------------------|
| 01-00638-03001     | R0.3               | 0.45                   | 3                           | Ⅱ          | 0.6           | 0.56                       | 12°                       | 4                      | 60                      | 4,700                |
| 01-00638-04001     | R0.4               | 0.6                    | 4                           | Ⅱ          | 0.8           | 0.76                       | 12°                       | 4                      | 60                      | 5,100                |
| 01-00638-05001     | R0.5               | 2                      | —                           | I          | 1             | —                          | 12°                       | 4                      | 60                      | 3,500                |
| 01-00638-05011     |                    | 0.75                   | 5                           | Ⅱ          | 1             | 0.95                       | 12°                       | 4                      | 60                      | 4,500                |
| 01-00638-05013     |                    | 0.75                   | 10                          | Ⅱ          | 1             | 0.95                       | 12°                       | 4                      | 60                      | 4,800                |
| 01-00638-07501     | R0.75              | 3                      | —                           | I          | 1.5           | —                          | 12°                       | 4                      | 60                      | 4,200                |
| 01-00638-07511     |                    | 1.1                    | 7.5                         | Ⅱ          | 1.5           | 1.45                       | 12°                       | 4                      | 60                      | 4,600                |
| 01-00638-07513     |                    | 1.1                    | 15                          | Ⅱ          | 1.5           | 1.45                       | 12°                       | 4                      | 60                      | 5,700                |
| 01-00638-10001     | R1                 | 4                      | —                           | I          | 2             | —                          | 12°                       | 4                      | 60                      | 3,400                |
| 01-00638-10011     |                    | 1.5                    | 10                          | Ⅱ          | 2             | 1.94                       | 12°                       | 4                      | 60                      | 4,200                |
| 01-00638-10013     |                    | 1.5                    | 20                          | Ⅱ          | 2             | 1.94                       | 12°                       | 4                      | 60                      | 4,600                |
| 01-00638-15001     | R1.5               | 6                      | —                           | I          | 3             | —                          | 12°                       | 6                      | 60                      | 4,200                |
| 01-00638-15011     |                    | 2.5                    | 15                          | Ⅱ          | 3             | 2.85                       | 12°                       | 6                      | 60                      | 5,400                |
| 01-00638-15013     |                    | 2.5                    | 30                          | Ⅱ          | 3             | 2.85                       | 12°                       | 6                      | 70                      | 6,300                |
| 01-00638-20001     | R2                 | 8                      | —                           | I          | 4             | —                          | 12°                       | 6                      | 70                      | 4,700                |
| 01-00638-20011     |                    | 3                      | 20                          | Ⅱ          | 4             | 3.8                        | 12°                       | 6                      | 80                      | 6,000                |
| 01-00638-20013     |                    | 3                      | 40                          | Ⅱ          | 4             | 3.8                        | 12°                       | 6                      | 90                      | 7,500                |
| 01-00638-25001     | R2.5               | 10                     | —                           | I          | 5             | —                          | 12°                       | 6                      | 80                      | 5,200                |
| 01-00638-25011     |                    | 3.5                    | 25                          | Ⅱ          | 5             | 4.8                        | 12°                       | 6                      | 80                      | 6,800                |
| 01-00638-25013     |                    | 3.5                    | 50                          | Ⅱ          | 5             | 4.8                        | 12°                       | 6                      | 100                     | 8,800                |
| 01-00638-30001     | R3                 | 12                     | —                           | I          | 6             | —                          | —                         | 6                      | 90                      | 5,800                |
| 01-00638-30011     |                    | 6                      | 30                          | Ⅱ          | 6             | 5.8                        | —                         | 6                      | 90                      | 7,500                |
| 01-00638-30013     |                    | 6                      | 60                          | Ⅱ          | 6             | 5.8                        | —                         | 6                      | 120                     | 9,600                |
| 01-00638-40001     | R4                 | 16                     | —                           | I          | 8             | —                          | —                         | 8                      | 90                      | 9,900                |
| 01-00638-50001     | R5                 | 20                     | —                           | I          | 10            | —                          | —                         | 10                     | 100                     | 12,600               |
| 01-00638-60001     | R6                 | 24                     | —                           | I          | 12            | —                          | —                         | 12                     | 110                     | 18,000               |

オーダー方法 ■ALB225 ボール半径寸法 (R)×刃長(ℓ)[×有効長(ℓ 1)]を指示して下さい。 ■When you order, indicate ALB225 (R)×(ℓ) [×(ℓ 1)].

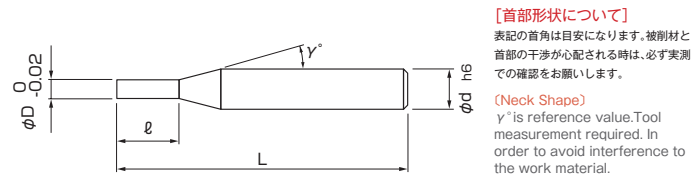


新製品

アルミ専用エンドミル (DLC コーティング) 2 倍刃長タイプ

2-Flute End Mill for Aluminum

AL2D-2DLC



- NS 独自の密着性が高い DLC コーティングを採用し、長時間加工に適しています。
- Our original DLC coating are adopted, it is suitable for cutting for long time.



単位 [寸法 : mm / 価格 : 円]  
Unit [size : mm / Retail Price : JPY]

| コードNo.<br>Code No. | (D)刃径<br>Dia. | (ℓ)刃長<br>Length of Cut | (γ)首角<br>Neck Taper Angle | (d)シャンク径<br>Shank Dia. | (L)全長<br>Overall Length | 標準価格<br>Retail Price |
|--------------------|---------------|------------------------|---------------------------|------------------------|-------------------------|----------------------|
| ● 01-00661-00050   | 0.5           | 1                      | 9°                        | 4                      | 45                      | 4,600                |
| ● 01-00661-00060   | 0.6           | 1.2                    | 9°                        | 4                      | 45                      | 5,600                |
| ● 01-00661-00070   | 0.7           | 1.4                    | 9°                        | 4                      | 45                      | 5,600                |
| ● 01-00661-00080   | 0.8           | 1.6                    | 9°                        | 4                      | 45                      | 5,600                |
| ● 01-00661-00090   | 0.9           | 1.8                    | 9°                        | 4                      | 45                      | 5,600                |
| ● 01-00661-00100   | 1             | 2                      | 9°                        | 4                      | 45                      | 3,500                |
| ● 01-00661-00150   | 1.5           | 3                      | 9°                        | 4                      | 45                      | 3,500                |
| ● 01-00661-00200   | 2             | 4                      | 9°                        | 4                      | 45                      | 3,500                |
| ● 01-00661-00250   | 2.5           | 5                      | 9°                        | 4                      | 45                      | 4,600                |
| ● 01-00661-00300   | 3             | 6                      | 9°                        | 6                      | 50                      | 4,600                |
| ● 01-00661-00350   | 3.5           | 7                      | 9°                        | 6                      | 50                      | 5,600                |
| ● 01-00661-00400   | 4             | 8                      | 9°                        | 6                      | 50                      | 4,700                |
| ● 01-00661-00450   | 4.5           | 9                      | 9°                        | 6                      | 55                      | 6,200                |
| ● 01-00661-00500   | 5             | 10                     | 9°                        | 6                      | 55                      | 5,200                |
| ● 01-00661-00550   | 5.5           | 11                     | 9°                        | 6                      | 55                      | 6,400                |
| ● 01-00661-00600   | 6             | 12                     | —                         | 6                      | 55                      | 5,400                |
| ● 01-00661-00700   | 7             | 14                     | 9°                        | 8                      | 70                      | 9,200                |
| ● 01-00661-00800   | 8             | 16                     | —                         | 8                      | 70                      | 9,200                |
| ● 01-00661-00900   | 9             | 18                     | 9°                        | 10                     | 75                      | 11,900               |
| ● 01-00661-01000   | 10            | 20                     | —                         | 10                     | 75                      | 11,900               |
| ● 01-00661-01100   | 11            | 22                     | 9°                        | 12                     | 80                      | 17,300               |
| ● 01-00661-01200   | 12            | 24                     | —                         | 12                     | 80                      | 17,300               |

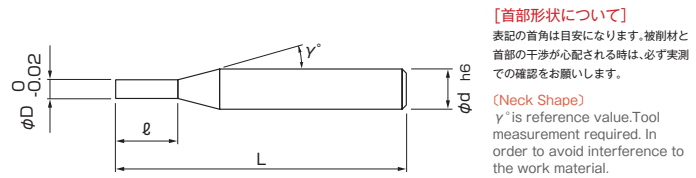
オーダー方法 ■AL2D-2DLC刃径(D)を指示して下さい。  
■When you order, indicate AL2D-2DLC(D).

新製品

アルミ専用エンドミル (DLC コーティング) 3 倍刃長タイプ

2-Flute Medium End Mill for Aluminum

AL3D-2DLC



- NS 独自の密着性が高い DLC コーティングを採用し、長時間加工に適しています。
- Our original DLC coating are adopted, it is suitable for cutting for long time.



単位 [寸法 : mm / 価格 : 円]  
Unit [size : mm / Retail Price : JPY]

| コードNo.<br>Code No. | (D)刃径<br>Dia. | (ℓ)刃長<br>Length of Cut | (γ)首角<br>Neck Taper Angle | (d)シャンク径<br>Shank Dia. | (L)全長<br>Overall Length | 標準価格<br>Retail Price |
|--------------------|---------------|------------------------|---------------------------|------------------------|-------------------------|----------------------|
| 01-00635-00100     | 1             | 3                      | 9°                        | 4                      | 45                      | 5,600                |
| 01-00635-00150     | 1.5           | 4.5                    | 9°                        | 4                      | 45                      | 5,600                |
| 01-00635-00200     | 2             | 6                      | 9°                        | 4                      | 45                      | 5,600                |
| 01-00635-00250     | 2.5           | 7.5                    | 9°                        | 4                      | 45                      | 5,600                |
| 01-00635-00300     | 3             | 9                      | 9°                        | 6                      | 50                      | 6,800                |
| 01-00635-00400     | 4             | 12                     | 9°                        | 6                      | 50                      | 7,000                |
| 01-00635-00500     | 5             | 15                     | 9°                        | 6                      | 55                      | 7,500                |
| 01-00635-00600     | 6             | 18                     | —                         | 6                      | 60                      | 7,800                |
| 01-00635-00700     | 7             | 21                     | 9°                        | 8                      | 70                      | 11,400               |
| 01-00635-00800     | 8             | 24                     | —                         | 8                      | 70                      | 11,400               |
| 01-00635-00900     | 9             | 27                     | 9°                        | 10                     | 75                      | 14,400               |
| 01-00635-01000     | 10            | 30                     | —                         | 10                     | 75                      | 14,400               |
| 01-00635-01100     | 11            | 33                     | 9°                        | 12                     | 90                      | 19,800               |
| 01-00635-01200     | 12            | 36                     | —                         | 12                     | 90                      | 19,800               |

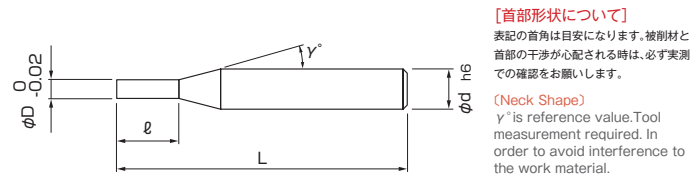
オーダー方法 ■AL3D-2DLC刃径(D)を指示して下さい。  
■When you order, indicate AL3D-2DLC(D).

新製品

アルミ専用エンドミル (DLC コーティング) 4 倍刃長タイプ

2-Flute Medium End Mill for Aluminum

AL4D-2DLC



- NS 独自の密着性が高い DLC コーティングを採用し、長時間加工に適しています。
- Our original DLC coating are adopted, it is suitable for cutting for long time.



単位 [寸法 : mm / 価格 : 円]  
Unit [size : mm / Retail Price : JPY]

| コードNo.<br>Code No. | (D)刃径<br>Dia. | (ℓ)刃長<br>Length of Cut | (γ)首角<br>Neck Taper Angle | (d)シャンク径<br>Shank Dia. | (L)全長<br>Overall Length | 標準価格<br>Retail Price |
|--------------------|---------------|------------------------|---------------------------|------------------------|-------------------------|----------------------|
| ● 01-00663-00100   | 1             | 4                      | 9°                        | 4                      | 50                      | 7,200                |
| ● 01-00663-00150   | 1.5           | 6                      | 9°                        | 4                      | 50                      | 7,200                |
| ● 01-00663-00200   | 2             | 8                      | 9°                        | 4                      | 50                      | 7,200                |
| ● 01-00663-00250   | 2.5           | 10                     | 9°                        | 4                      | 50                      | 7,200                |
| ● 01-00663-00300   | 3             | 12                     | 9°                        | 6                      | 55                      | 8,400                |
| ● 01-00663-00400   | 4             | 16                     | 9°                        | 6                      | 60                      | 8,800                |
| ● 01-00663-00500   | 5             | 20                     | 9°                        | 6                      | 65                      | 9,400                |
| ● 01-00663-00600   | 6             | 24                     | —                         | 6                      | 75                      | 10,500               |
| ● 01-00663-00700   | 7             | 28                     | 9°                        | 8                      | 90                      | 14,400               |
| ● 01-00663-00800   | 8             | 32                     | —                         | 8                      | 90                      | 14,400               |
| ● 01-00663-00900   | 9             | 36                     | 9°                        | 10                     | 100                     | 19,600               |
| ● 01-00663-01000   | 10            | 40                     | —                         | 10                     | 100                     | 19,600               |
| ● 01-00663-01100   | 11            | 44                     | 9°                        | 12                     | 110                     | 24,900               |
| ● 01-00663-01200   | 12            | 48                     | —                         | 12                     | 110                     | 24,900               |

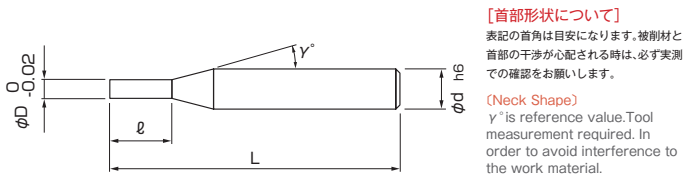
オーダー方法 ■AL4D-2DLC刃径(D)を指示して下さい。  
■When you order, indicate AL4D-2DLC(D).

新製品

アルミ専用エンドミル (DLC コーティング) 5 倍刃長タイプ

2-Flute Long End Mill for Aluminum

AL5D-2DLC



- NS 独自の密着性が高い DLC コーティングを採用し、長時間加工に適しています。
- Our original DLC coating are adopted, it is suitable for cutting for long time.



単位 [寸法 : mm / 価格 : 円]  
Unit [size : mm / Retail Price : JPY]

| コードNo.<br>Code No. | (D)刃径<br>Dia. | (ℓ)刃長<br>Length of Cut | (γ)首角<br>Neck Taper Angle | (d)シャンク径<br>Shank Dia. | (L)全長<br>Overall Length | 標準価格<br>Retail Price |
|--------------------|---------------|------------------------|---------------------------|------------------------|-------------------------|----------------------|
| ● 01-00664-00100   | 1             | 5                      | 9°                        | 4                      | 50                      | 8,900                |
| ● 01-00664-00150   | 1.5           | 7.5                    | 9°                        | 4                      | 50                      | 8,900                |
| ● 01-00664-00200   | 2             | 10                     | 9°                        | 4                      | 50                      | 8,900                |
| ● 01-00664-00250   | 2.5           | 12.5                   | 9°                        | 4                      | 50                      | 8,900                |
| ● 01-00664-00300   | 3             | 15                     | 9°                        | 6                      | 55                      | 10,000               |
| ● 01-00664-00400   | 4             | 20                     | 9°                        | 6                      | 60                      | 10,500               |
| ● 01-00664-00500   | 5             | 25                     | 9°                        | 6                      | 65                      | 11,100               |
| ● 01-00664-00600   | 6             | 30                     | —                         | 6                      | 75                      | 13,000               |
| ● 01-00664-00700   | 7             | 35                     | 9°                        | 8                      | 90                      | 17,400               |
| ● 01-00664-00800   | 8             | 40                     | —                         | 8                      | 90                      | 17,400               |
| ● 01-00664-00900   | 9             | 45                     | 9°                        | 10                     | 100                     | 24,600               |
| ● 01-00664-01000   | 10            | 50                     | —                         | 10                     | 100                     | 24,600               |
| ● 01-00664-01100   | 11            | 55                     | 9°                        | 12                     | 110                     | 29,800               |
| ● 01-00664-01200   | 12            | 60                     | —                         | 12                     | 110                     | 29,800               |

オーダー方法 ■AL5D-2DLC刃径(D)を指示して下さい。  
■When you order, indicate AL5D-2DLC(D).

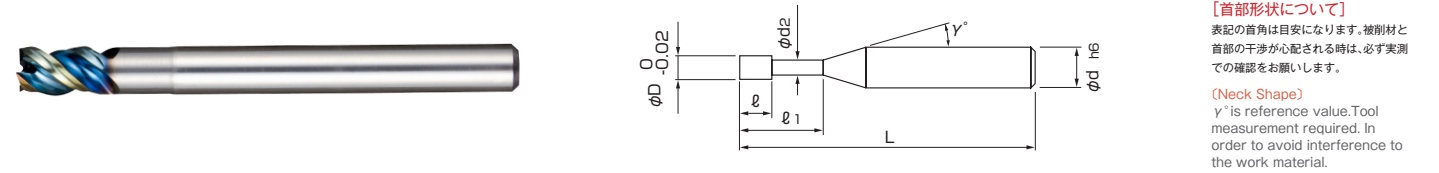


新製品

アルミ高能率加工用エンドミル（DLC コーティング）

3-Flute Power “Z” End Mill for Aluminum

ALZ345-DLC



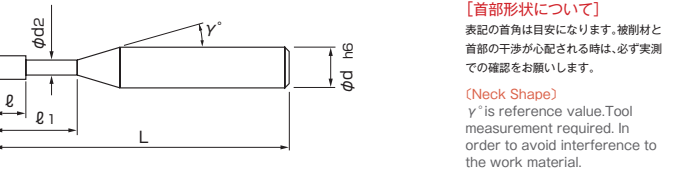
- NS 独自の密着性が高い DLC コーティングを採用し、長時間加工に適しています。
- Our original DLC coating are adopted, it is suitable for cutting for long



●NEWサイズ

| コードNo.<br>Code No. | (D)刃径<br>Dia. | (ℓ)刃長<br>Length of Cut | (ℓ1)有効長<br>Effective Length | (d2)首下径<br>Neck Dia. | (γ)首角<br>Neck Taper Angle | (d)シャンク径<br>Shank Dia. | (L)全長<br>Overall Length | 標準価格<br>Retail Price |
|--------------------|---------------|------------------------|-----------------------------|----------------------|---------------------------|------------------------|-------------------------|----------------------|
| ● 01-00666-00100   | 1             | 1.5                    | 3                           | 0.95                 | 12°                       | 4                      | 45                      | 5,900                |
| ● 01-00666-00150   | 1.5           | 2.3                    | 4.5                         | 1.45                 | 12°                       | 4                      | 45                      | 5,900                |
| ● 01-00666-00200   | 2             | 3                      | 6                           | 1.94                 | 12°                       | 4                      | 45                      | 5,900                |
| ● 01-00666-00250   | 2.5           | 3.8                    | 7.5                         | 2.4                  | 12°                       | 4                      | 45                      | 5,900                |
| ● 01-00666-00300   | 3             | 4.5                    | 9                           | 2.85                 | 12°                       | 6                      | 55                      | 7,100                |
| ● 01-00666-00350   | 3.5           | 5.3                    | 10.5                        | 3.35                 | 12°                       | 6                      | 55                      | 8,700                |
| ● 01-00666-00400   | 4             | 6                      | 12                          | 3.8                  | 12°                       | 6                      | 55                      | 7,400                |
| ● 01-00666-00450   | 4.5           | 6.8                    | 13.5                        | 4.3                  | 12°                       | 6                      | 55                      | 9,200                |
| ● 01-00666-00500   | 5             | 7.5                    | 15                          | 4.8                  | 12°                       | 6                      | 55                      | 8,000                |

オーダー方法 ■ALZ345-DLC刃径(D)を指示して下さい。 ■When you order, indicate ALZ345-DLC(D).

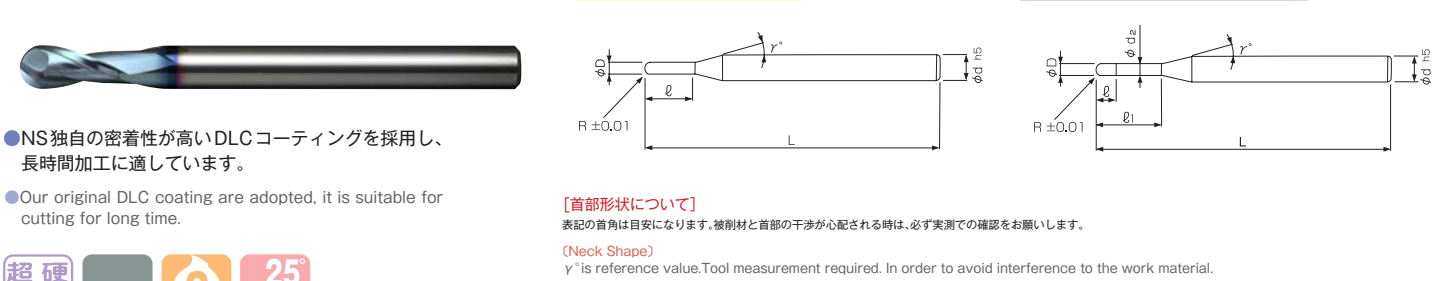


新製品

アルミ用ボールエンドミル（DLC コーティング）

Ball End Mill for Aluminum

ALB225-DLC



- NS 独自の密着性が高い DLC コーティングを採用し、長時間加工に適しています。
- Our original DLC coating are adopted, it is suitable for cutting for long time.



●NEWサイズ

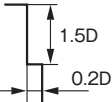
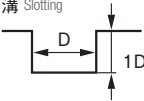
| コードNo.<br>Code No. | (R)ボール半径<br>Radius | (ℓ)刃長<br>Length of Cut | (ℓ1)有効長<br>Effective Length | 形状<br>Type | (D)刃径<br>Dia. | (d2)首下径<br>Under Neck Dia. | (γ)首角<br>Neck Taper Angle | (d)シャンク径<br>Shank Dia. | (L)全長<br>Overall Length | 標準価格<br>Retail Price |
|--------------------|--------------------|------------------------|-----------------------------|------------|---------------|----------------------------|---------------------------|------------------------|-------------------------|----------------------|
| ● 01-00668-03001   | R0.3               | 0.45                   | 3                           | Ⅱ          | 0.6           | 0.56                       | 12°                       | 4                      | 60                      | 6,800                |
| ● 01-00668-04001   | R0.4               | 0.6                    | 4                           | Ⅱ          | 0.8           | 0.76                       | 12°                       | 4                      | 60                      | 7,200                |
| ● 01-00668-05001   | R0.5               | 2                      | —                           | I          | 1             | —                          | 12°                       | 4                      | 60                      | 5,600                |
| ● 01-00668-05011   |                    | 0.75                   | 5                           | Ⅱ          | 1             | 0.95                       | 12°                       | 4                      | 60                      | 6,600                |
| ● 01-00668-05013   |                    | 0.75                   | 10                          | Ⅱ          | 1             | 0.95                       | 12°                       | 4                      | 60                      | 6,900                |
| ● 01-00668-07501   | R0.75              | 3                      | —                           | I          | 1.5           | —                          | 12°                       | 4                      | 60                      | 6,300                |
| ● 01-00668-07511   |                    | 1.1                    | 7.5                         | Ⅱ          | 1.5           | 1.45                       | 12°                       | 4                      | 60                      | 6,700                |
| ● 01-00668-07513   |                    | 1.1                    | 15                          | Ⅱ          | 1.5           | 1.45                       | 12°                       | 4                      | 60                      | 7,800                |
| ● 01-00668-10001   | R1                 | 4                      | —                           | I          | 2             | —                          | 12°                       | 4                      | 60                      | 5,500                |
| ● 01-00668-10011   |                    | 1.5                    | 10                          | Ⅱ          | 2             | 1.94                       | 12°                       | 4                      | 60                      | 6,300                |
| ● 01-00668-10013   |                    | 1.5                    | 20                          | Ⅱ          | 2             | 1.94                       | 12°                       | 4                      | 60                      | 6,700                |
| ● 01-00668-15001   | R1.5               | 6                      | —                           | I          | 3             | —                          | 12°                       | 6                      | 60                      | 6,300                |
| ● 01-00668-15011   |                    | 2.5                    | 15                          | Ⅱ          | 3             | 2.85                       | 12°                       | 6                      | 60                      | 7,500                |
| ● 01-00668-15013   |                    | 2.5                    | 30                          | Ⅱ          | 3             | 2.85                       | 12°                       | 6                      | 70                      | 8,700                |
| ● 01-00668-20001   | R2                 | 8                      | —                           | I          | 4             | —                          | 12°                       | 6                      | 70                      | 7,100                |
| ● 01-00668-20011   |                    | 3                      | 20                          | Ⅱ          | 4             | 3.8                        | 12°                       | 6                      | 80                      | 8,400                |
| ● 01-00668-20013   |                    | 3                      | 40                          | Ⅱ          | 4             | 3.8                        | 12°                       | 6                      | 90                      | 9,900                |
| ● 01-00668-25001   | R2.5               | 10                     | —                           | I          | 5             | —                          | 12°                       | 6                      | 80                      | 7,600                |
| ● 01-00668-25011   |                    | 3.5                    | 25                          | Ⅱ          | 5             | 4.8                        | 12°                       | 6                      | 80                      | 9,200                |
| ● 01-00668-25013   |                    | 3.5                    | 50                          | Ⅱ          | 5             | 4.8                        | 12°                       | 6                      | 100                     | 11,600               |
| ● 01-00668-30001   | R3                 | 12                     | —                           | I          | 6             | —                          | —                         | 6                      | 90                      | 8,600                |
| ● 01-00668-30011   |                    | 6                      | 30                          | Ⅱ          | 6             | 5.8                        | —                         | 6                      | 90                      | 10,300               |
| ● 01-00668-30013   |                    | 6                      | 60                          | Ⅱ          | 6             | 5.8                        | —                         | 6                      | 120                     | 12,600               |
| ● 01-00668-40001   | R4                 | 16                     | —                           | I          | 8             | —                          | —                         | 8                      | 90                      | 12,900               |
| ● 01-00668-50001   | R5                 | 20                     | —                           | I          | 10            | —                          | —                         | 10                     | 100                     | 15,800               |
| ● 01-00668-60001   | R6                 | 24                     | —                           | I          | 12            | —                          | —                         | 12                     | 110                     | 21,500               |

オーダー方法 ■ALB225-DLC ボール半径寸法 (R)×刃長(ℓ)[×有効長(ℓ1)]を指示して下さい。 ■When you order, indicate ALB225-DLC (R)×(ℓ) [×(ℓ1)].

AL2D-2・AL2D-2DLC

切削条件参考表

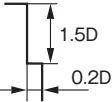
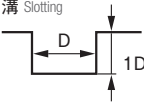
Recommended Milling Conditions

| 被削材<br>Work Material                     | アルミニウム<br>Aluminum<br>1070                                                                                                                                                                                                                                      |              |                      |              | アルミニウム合金<br>Aluminum Alloy<br>2017・5052・7075 |              |                      |              | 鋳造アルミニウム<br>Aluminum Cast<br>AC8C |              |                      |              |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------|--------------|----------------------------------------------|--------------|----------------------|--------------|-----------------------------------|--------------|----------------------|--------------|
| 切削速度<br>Cutting Speed                    | 340m/min                                                                                                                                                                                                                                                        |              | 270m/min             |              | 380m/min                                     |              | 300m/min             |              | 280m/min                          |              | 200m/min             |              |
| 刃 径<br>Dia.                              | 側面<br>Side Milling                                                                                                                                                                                                                                              |              | 溝<br>Slotting        |              | 側面<br>Side Milling                           |              | 溝<br>Slotting        |              | 側面<br>Side Milling                |              | 溝<br>Slotting        |              |
|                                          | 回転数<br>Spindle Speed                                                                                                                                                                                                                                            | 送り速度<br>Feed | 回転数<br>Spindle Speed | 送り速度<br>Feed | 回転数<br>Spindle Speed                         | 送り速度<br>Feed | 回転数<br>Spindle Speed | 送り速度<br>Feed | 回転数<br>Spindle Speed              | 送り速度<br>Feed | 回転数<br>Spindle Speed | 送り速度<br>Feed |
|                                          | min <sup>-1</sup>                                                                                                                                                                                                                                               | mm/min       | min <sup>-1</sup>    | mm/min       | min <sup>-1</sup>                            | mm/min       | min <sup>-1</sup>    | mm/min       | min <sup>-1</sup>                 | mm/min       | min <sup>-1</sup>    | mm/min       |
| 0.5                                      | 20,000                                                                                                                                                                                                                                                          | 400          | 20,000               | 200          | 20,000                                       | 400          | 20,000               | 300          | 20,000                            | 400          | 20,000               | 300          |
| 1                                        | 20,000                                                                                                                                                                                                                                                          | 700          | 20,000               | 400          | 20,000                                       | 700          | 20,000               | 400          | 20,000                            | 700          | 20,000               | 400          |
| 1.5                                      | 20,000                                                                                                                                                                                                                                                          | 800          | 20,000               | 500          | 20,000                                       | 800          | 20,000               | 500          | 20,000                            | 800          | 20,000               | 500          |
| 2                                        | 20,000                                                                                                                                                                                                                                                          | 1,000        | 20,000               | 600          | 20,000                                       | 1,000        | 20,000               | 600          | 20,000                            | 1,000        | 20,000               | 600          |
| 2.5                                      | 20,000                                                                                                                                                                                                                                                          | 1,200        | 20,000               | 700          | 20,000                                       | 1,200        | 20,000               | 700          | 20,000                            | 1,200        | 20,000               | 700          |
| 3                                        | 20,000                                                                                                                                                                                                                                                          | 1,300        | 20,000               | 800          | 20,000                                       | 1,500        | 20,000               | 900          | 20,000                            | 1,500        | 20,000               | 800          |
| 4                                        | 20,000                                                                                                                                                                                                                                                          | 1,500        | 20,000               | 900          | 20,000                                       | 1,700        | 20,000               | 1,100        | 20,000                            | 1,700        | 15,900               | 800          |
| 5                                        | 20,000                                                                                                                                                                                                                                                          | 1,700        | 17,200               | 900          | 20,000                                       | 2,000        | 19,100               | 1,300        | 17,800                            | 1,700        | 12,700               | 800          |
| 6                                        | 18,000                                                                                                                                                                                                                                                          | 1,800        | 14,300               | 900          | 20,000                                       | 2,200        | 15,900               | 1,300        | 14,900                            | 1,700        | 10,600               | 800          |
| 7                                        | 15,500                                                                                                                                                                                                                                                          | 1,800        | 12,300               | 900          | 17,300                                       | 2,300        | 13,600               | 1,300        | 12,700                            | 1,700        | 9,100                | 800          |
| 8                                        | 13,500                                                                                                                                                                                                                                                          | 1,800        | 10,700               | 1,000        | 15,100                                       | 2,400        | 11,900               | 1,300        | 11,100                            | 1,800        | 8,000                | 800          |
| 9                                        | 12,000                                                                                                                                                                                                                                                          | 1,800        | 9,600                | 1,000        | 13,400                                       | 2,400        | 10,600               | 1,300        | 9,900                             | 1,800        | 7,100                | 800          |
| 10                                       | 10,800                                                                                                                                                                                                                                                          | 1,800        | 8,600                | 1,000        | 12,100                                       | 2,400        | 9,600                | 1,300        | 8,900                             | 1,800        | 6,400                | 800          |
| 11                                       | 9,800                                                                                                                                                                                                                                                           | 1,900        | 7,800                | 1,000        | 11,000                                       | 2,500        | 8,700                | 1,300        | 8,100                             | 1,800        | 5,800                | 800          |
| 12                                       | 9,000                                                                                                                                                                                                                                                           | 2,000        | 7,200                | 1,100        | 10,100                                       | 2,500        | 8,000                | 1,400        | 7,400                             | 1,800        | 5,300                | 900          |
| 切り込み量<br>Depth of Cut<br><br>(D:刃径 Dia.) | <div><div>側面 Side Milling</div><div></div></div> <div><div>溝 Slotting</div><div></div></div> |              |                      |              |                                              |              |                      |              |                                   |              |                      |              |

AL3D-2・AL3D-2DLC

切削条件参考表

Recommended Milling Conditions

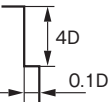
| 被削材<br>Work Material                     | アルミニウム<br>Aluminum<br>1070                                                                                                                                                                                                                                          |              |                      |              | アルミニウム合金<br>Aluminum Alloy<br>2017・5052・7075 |              |                      |              | 鋳造アルミニウム<br>Aluminum Cast<br>AC8C |              |                      |              |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------|--------------|----------------------------------------------|--------------|----------------------|--------------|-----------------------------------|--------------|----------------------|--------------|
| 切削速度<br>Cutting Speed                    | 300m/min                                                                                                                                                                                                                                                            |              | 220m/min             |              | 330m/min                                     |              | 240m/min             |              | 250m/min                          |              | 160m/min             |              |
| 刃 径<br>Dia.                              | 側面<br>Side Milling                                                                                                                                                                                                                                                  |              | 溝<br>Slotting        |              | 側面<br>Side Milling                           |              | 溝<br>Slotting        |              | 側面<br>Side Milling                |              | 溝<br>Slotting        |              |
|                                          | 回転数<br>Spindle Speed                                                                                                                                                                                                                                                | 送り速度<br>Feed | 回転数<br>Spindle Speed | 送り速度<br>Feed | 回転数<br>Spindle Speed                         | 送り速度<br>Feed | 回転数<br>Spindle Speed | 送り速度<br>Feed | 回転数<br>Spindle Speed              | 送り速度<br>Feed | 回転数<br>Spindle Speed | 送り速度<br>Feed |
|                                          | min <sup>-1</sup>                                                                                                                                                                                                                                                   | mm/min       | min <sup>-1</sup>    | mm/min       | min <sup>-1</sup>                            | mm/min       | min <sup>-1</sup>    | mm/min       | min <sup>-1</sup>                 | mm/min       | min <sup>-1</sup>    | mm/min       |
| 1                                        | 20,000                                                                                                                                                                                                                                                              | 400          | 20,000               | 300          | 20,000                                       | 400          | 20,000               | 300          | 20,000                            | 400          | 20,000               | 300          |
| 1.5                                      | 20,000                                                                                                                                                                                                                                                              | 500          | 20,000               | 400          | 20,000                                       | 500          | 20,000               | 400          | 20,000                            | 500          | 20,000               | 400          |
| 2                                        | 20,000                                                                                                                                                                                                                                                              | 600          | 20,000               | 400          | 20,000                                       | 600          | 20,000               | 400          | 20,000                            | 600          | 20,000               | 400          |
| 2.5                                      | 20,000                                                                                                                                                                                                                                                              | 700          | 20,000               | 500          | 20,000                                       | 700          | 20,000               | 500          | 20,000                            | 700          | 20,000               | 500          |
| 3                                        | 20,000                                                                                                                                                                                                                                                              | 900          | 20,000               | 600          | 20,000                                       | 900          | 20,000               | 600          | 20,000                            | 900          | 17,000               | 500          |
| 4                                        | 20,000                                                                                                                                                                                                                                                              | 1,000        | 17,500               | 700          | 20,000                                       | 1,000        | 19,000               | 750          | 20,000                            | 1,000        | 13,000               | 500          |
| 5                                        | 19,000                                                                                                                                                                                                                                                              | 1,000        | 14,000               | 700          | 20,000                                       | 1,200        | 15,500               | 750          | 16,000                            | 1,000        | 10,000               | 500          |
| 6                                        | 16,000                                                                                                                                                                                                                                                              | 1,100        | 11,500               | 700          | 17,500                                       | 1,400        | 12,500               | 750          | 13,500                            | 1,000        | 8,500                | 500          |
| 7                                        | 13,500                                                                                                                                                                                                                                                              | 1,100        | 10,000               | 750          | 15,000                                       | 1,500        | 11,000               | 800          | 11,500                            | 1,100        | 7,300                | 500          |
| 8                                        | 12,000                                                                                                                                                                                                                                                              | 1,100        | 8,800                | 750          | 13,000                                       | 1,600        | 9,600                | 800          | 9,900                             | 1,200        | 6,400                | 500          |
| 9                                        | 11,000                                                                                                                                                                                                                                                              | 1,100        | 7,800                | 750          | 11,700                                       | 1,600        | 8,500                | 800          | 8,800                             | 1,200        | 5,700                | 500          |
| 10                                       | 9,600                                                                                                                                                                                                                                                               | 1,100        | 7,000                | 800          | 10,500                                       | 1,700        | 7,600                | 850          | 8,000                             | 1,300        | 5,100                | 550          |
| 11                                       | 8,700                                                                                                                                                                                                                                                               | 1,100        | 6,400                | 800          | 9,600                                        | 1,700        | 6,900                | 850          | 7,200                             | 1,300        | 4,600                | 550          |
| 12                                       | 8,000                                                                                                                                                                                                                                                               | 1,200        | 5,800                | 800          | 8,800                                        | 1,700        | 6,400                | 900          | 6,600                             | 1,300        | 4,200                | 600          |
| 切り込み量<br>Depth of Cut<br><br>(D:刃径 Dia.) | <div><div>側面 Side Milling</div><div></div></div> <div><div>溝 Slotting</div><div></div></div> |              |                      |              |                                              |              |                      |              |                                   |              |                      |              |

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 備 考<br>Notes | ※回転数と送り速度は、同じ割合で調整して下さい。<br>(主軸回転数を 20,000 回転以上で使用する場合も同様に調整して下さい。)<br>※機械、チャックは剛性のある精度の高い物を使用して下さい。<br>※ワークや機械、ミーリングチャックにより振動、または異音が発生する場合は切削条件を変更して下さい。<br>※水溶性切削油のご使用を推奨します。<br>※ Adjust both spindle speed and feed at the same rate.<br>(When using spindle speed 20,000 or more, the same adjustment is required.)<br>※ Use a rigid and precise machine and chuck holder.<br>※ Adjust milling conditions when vibration and abnormal sounds occur by the conditions of the machine, chuck holder and work clamping.<br>※ Water soluble cutting fluid is recommended. |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

AL4D-2・AL4D-2DLC

切削条件参考表

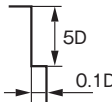
Recommended Milling Conditions

| 被削材<br>Work Material                     | アルミニウム<br>Aluminum<br>1070                                                                                                          |              | アルミニウム合金<br>Aluminum Alloy<br>2017・5052・7075 |              | 鋳造アルミニウム<br>Aluminum Cast<br>AC8C |              |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------|--------------|-----------------------------------|--------------|
| 切削速度<br>Cutting Speed                    | 190m/min                                                                                                                            |              | 280m/min                                     |              | 150m/min                          |              |
| 刃 径<br>Dia.                              | 側面<br>Side Milling                                                                                                                  |              | 側面<br>Side Milling                           |              | 側面<br>Side Milling                |              |
|                                          | 回転数<br>Spindle Speed                                                                                                                | 送り速度<br>Feed | 回転数<br>Spindle Speed                         | 送り速度<br>Feed | 回転数<br>Spindle Speed              | 送り速度<br>Feed |
|                                          | min <sup>-1</sup>                                                                                                                   | mm/min       | min <sup>-1</sup>                            | mm/min       | min <sup>-1</sup>                 | mm/min       |
| 1                                        | 20,000                                                                                                                              | 220          | 20,000                                       | 220          | 20,000                            | 220          |
| 1.5                                      | 20,000                                                                                                                              | 270          | 20,000                                       | 270          | 20,000                            | 320          |
| 2                                        | 20,000                                                                                                                              | 320          | 20,000                                       | 320          | 20,000                            | 340          |
| 2.5                                      | 20,000                                                                                                                              | 430          | 20,000                                       | 430          | 18,500                            | 400          |
| 3                                        | 20,000                                                                                                                              | 570          | 20,000                                       | 570          | 15,000                            | 520          |
| 4                                        | 15,500                                                                                                                              | 650          | 20,000                                       | 840          | 11,500                            | 520          |
| 5                                        | 12,000                                                                                                                              | 840          | 17,500                                       | 900          | 9,100                             | 520          |
| 6                                        | 10,200                                                                                                                              | 840          | 14,500                                       | 1,050        | 7,700                             | 520          |
| 7                                        | 8,800                                                                                                                               | 840          | 12,600                                       | 1,150        | 6,600                             | 580          |
| 8                                        | 7,700                                                                                                                               | 840          | 11,000                                       | 1,150        | 5,800                             | 650          |
| 9                                        | 6,800                                                                                                                               | 900          | 9,700                                        | 1,300        | 5,200                             | 720          |
| 10                                       | 6,100                                                                                                                               | 900          | 8,800                                        | 1,300        | 4,600                             | 720          |
| 11                                       | 5,500                                                                                                                               | 980          | 8,000                                        | 1,450        | 4,200                             | 720          |
| 12                                       | 5,200                                                                                                                               | 1,050        | 7,300                                        | 1,450        | 3,800                             | 780          |
| 切り込み量<br>Depth of Cut<br><br>(D:刃径 Dia.) | <div><div>側面 Side Milling</div><div></div></div> |              |                                              |              |                                   |              |

AL5D-2・AL5D-2DLC

切削条件参考表

Recommended Milling Conditions

| 被削材<br>Work Material                     | アルミニウム<br>Aluminum<br>1070                                                                                                            |              | アルミニウム合金<br>Aluminum Alloy<br>2017・5052・7075 |              | 鋳造アルミニウム<br>Aluminum Cast<br>AC8C |              |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------|--------------|-----------------------------------|--------------|
| 切削速度<br>Cutting Speed                    | 160m/min                                                                                                                              |              | 230m/min                                     |              | 120m/min                          |              |
| 刃 径<br>Dia.                              | 側面<br>Side Milling                                                                                                                    |              | 側面<br>Side Milling                           |              | 側面<br>Side Milling                |              |
|                                          | 回転数<br>Spindle Speed                                                                                                                  | 送り速度<br>Feed | 回転数<br>Spindle Speed                         | 送り速度<br>Feed | 回転数<br>Spindle Speed              | 送り速度<br>Feed |
|                                          | min <sup>-1</sup>                                                                                                                     | mm/min       | min <sup>-1</sup>                            | mm/min       | min <sup>-1</sup>                 | mm/min       |
| 1                                        | 20,000                                                                                                                                | 200          | 20,000                                       | 200          | 20,000                            | 200          |
| 1.5                                      | 20,000                                                                                                                                | 250          | 20,000                                       | 250          | 20,000                            | 300          |
| 2                                        | 20,000                                                                                                                                | 300          | 20,000                                       | 300          | 19,000                            | 300          |
| 2.5                                      | 20,000                                                                                                                                | 400          | 20,000                                       | 400          | 15,300                            | 300          |
| 3                                        | 17,000                                                                                                                                | 450          | 20,000                                       | 450          | 12,700                            | 400          |
| 4                                        | 12,700                                                                                                                                | 500          | 18,000                                       | 700          | 9,600                             | 400          |
| 5                                        | 10,000                                                                                                                                | 650          | 14,600                                       | 700          | 7,600                             | 400          |
| 6                                        | 8,500                                                                                                                                 | 650          | 12,000                                       | 800          | 6,400                             | 400          |
| 7                                        | 7,300                                                                                                                                 | 650          | 10,500                                       | 900          | 5,500                             | 450          |
| 8                                        | 6,400                                                                                                                                 | 650          | 9,100                                        | 900          | 4,800                             | 500          |
| 9                                        | 5,700                                                                                                                                 | 700          | 8,100                                        | 1,000        | 4,300                             | 550          |
| 10                                       | 5,100                                                                                                                                 | 700          | 7,300                                        | 1,000        | 3,800                             | 550          |
| 11                                       | 4,600                                                                                                                                 | 750          | 6,700                                        | 1,100        | 3,500                             | 550          |
| 12                                       | 4,300                                                                                                                                 | 800          | 6,100                                        | 1,100        | 3,200                             | 600          |
| 切り込み量<br>Depth of Cut<br><br>(D:刃径 Dia.) | <div><div>側面 Side Milling</div><div></div></div> |              |                                              |              |                                   |              |

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 備 考<br>Notes | ※回転数と送り速度は、同じ割合で調整して下さい。<br>(主軸回転数を 20,000 回転以上で使用する場合も同様に調整して下さい。)<br>※機械、チャックは剛性のある精度の高い物を使用して下さい。<br>※ワークや機械、ミーリングチャックにより振動、または異音が発生する場合は切削条件を変更して下さい。<br>※水溶性切削油のご使用を推奨します。<br>※ Adjust both spindle speed and feed at the same rate.<br>(When using spindle speed 20,000 or more, the same adjustment is required.)<br>※ Use a rigid and precise machine and chuck holder.<br>※ Adjust milling conditions when vibration and abnormal sounds occur by the conditions of the machine, chuck holder and work clamping.<br>※ Water soluble cutting fluid is recommended. |
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### 警告 CAUTION 安全上の注意 Attention on Safety

- 1) 工具をケースから取り出す際は、工具の飛び出しや、刃先が素手に直接触れない様に、充分に注意して下さい。
- 2) 切れ刃を直接素手で触れない様にして下さい。
- 3) 工具を使用する際は、破損する危険がありますので、必ずカバー・保護メガネ等を使用して下さい。
- 4) ホルダ等は、工具や加工内容に見合った物を使用して下さい。  
工具はホルダにしっかりと固定し、振れを抑えるようにして下さい。
- 5) 被削材は、しっかりと固定して下さい。
- 6) 工具及び被削材の寸法は、あらかじめ確認しておいて下さい。
- 7) 切削条件は、加工物や使用機械に合せて、調整する必要があります。
- 8) 用途に応じて切削油を選定して下さい。不水溶性切削油を使用する場合は、加工時に発生する火花や破損で引火、火災の危険があります。防火対策を必ず行って下さい。
- 9) 使用中に異常（切削音・煙）が発生した場合は、直ちに機械を止めて下さい。
- 10) 工具の改造はしないで下さい。

- 1) When removing tools from cases, be careful of getting-out of tools and don't touch directly the cutting edges.
- 2) Never touch the cutting edges directly with bare hand.
- 3) Use safety covers and eye protection, as tools may be broken.
- 4) Use holders, etc. that match the tools and nature of the processing operations.  
The tool should be firmly attached to the holder to prevent shaking.
- 5) The work materials clamp firmly.
- 6) Make sure of dimensions of tools and work pieces before starting operation.
- 7) It is necessary to adjust conditions according to the dimensions of work materials and the machine.
- 8) Select a cutting fluid appropriate to the particular usage. Using a non-water cutting fluid could lead to fires due to sparks generated during processing or heat caused by breakage. Ensure that you take proper fire-prevention measures.
- 9) If abnormal sound, etc. occurs during processing, stop the machine immediately.
- 10) Don't modify tools.

