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# TOOLS NEWS

B054G

MSTAR END MILL SERIES

# MS2XL MS4LT

FULL ITEM

# 364 SIZE

## Newly developed long neck and taper end mills for rib processing.

Wide variation of neck length and taper angle.

## MSTAR End Mill Series

# MS2XL MS4LT

**2 flute Mstar long neck end mill**

**4 flute Mstar for rib processing taper neck end mill**

**364 SIZE** FULL ITEM

**Wide variation of neck length and taper angle.**

# Newly developed long neck and taper end mills for rib processing.

## Features

●**High performance and long tool life due to "MS Coating" which adapts MIRACLE coating technology**

### MS2XL

2 flute Mstar long neck end mill

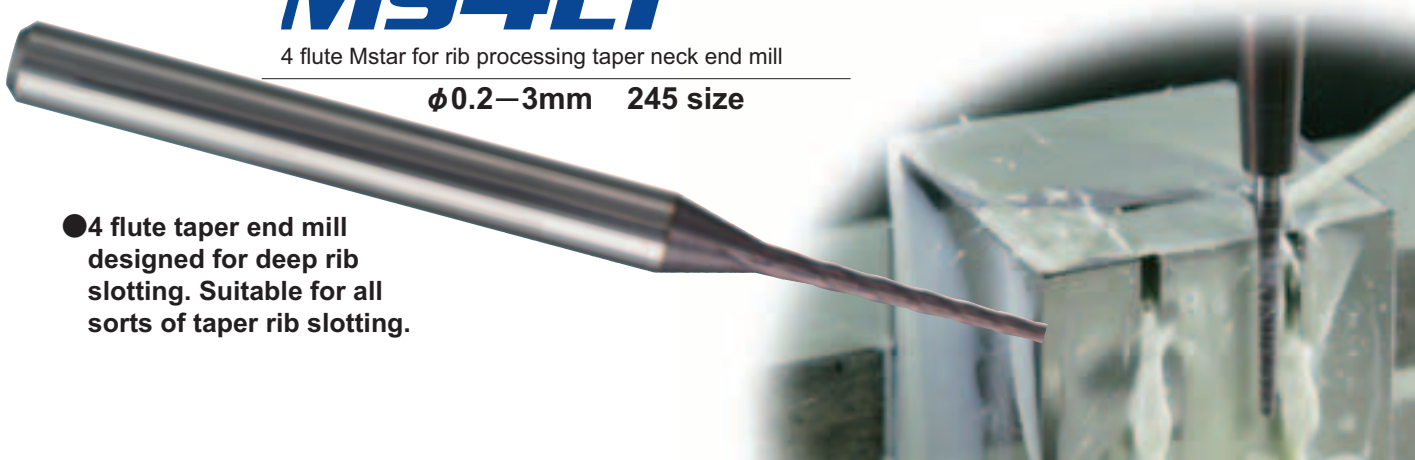
**ϕ0.2—6mm 119 size**

●**2 flute long neck end mill with neck relieved. Suitable for straight rib slotting, deep milling or milling near by vertical wall.**

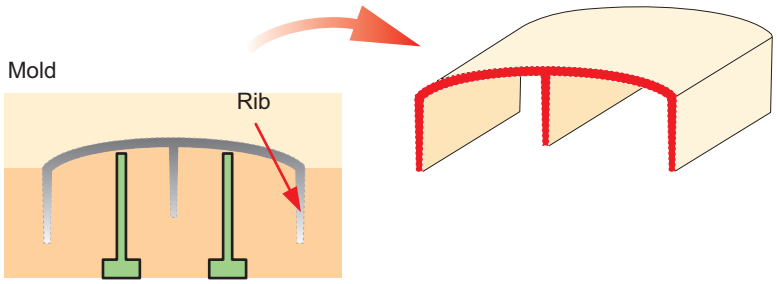
### MS4LT

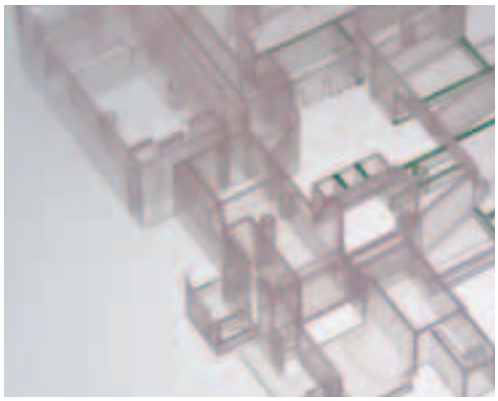
4 flute Mstar for rib processing taper neck end mill

**ϕ0.2—3mm 245 size**



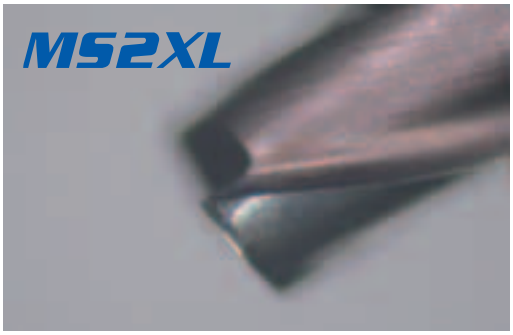
●**4 flute taper end mill designed for deep rib slotting. Suitable for all sorts of taper rib slotting.**

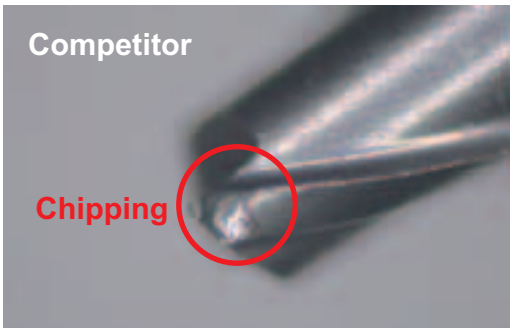


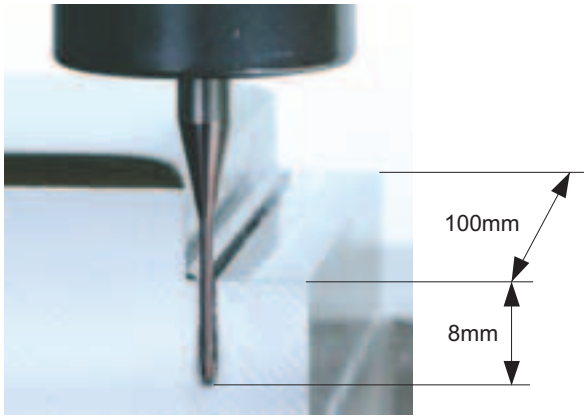



# Machining example

## Cutting Performance of MS2XL



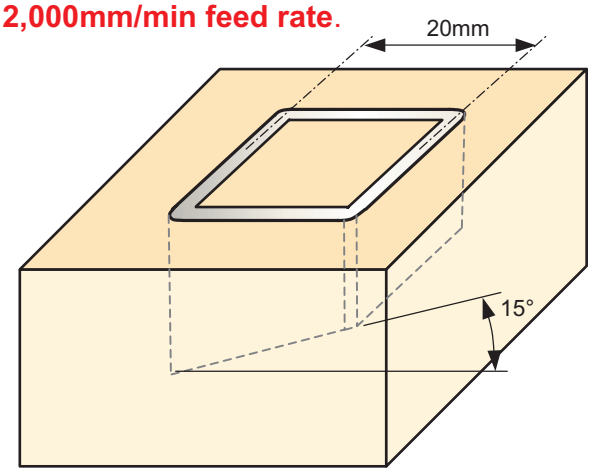




**■Cutting conditions**

| | |
|---|---|
| End mill | MS2XL $\phi$1×12 |
| Work material | NAK80 (38HRC) |
| Revolution | 20,000min$^{-1}$ (62m/min) |
| Feed rate | 500mm/min (0.01mm/tooth) |
| Depth of cut | 0.02mm×400 times (Slotting) |
| Cutting method | Oil |

## Cutting Performance of MS4LT

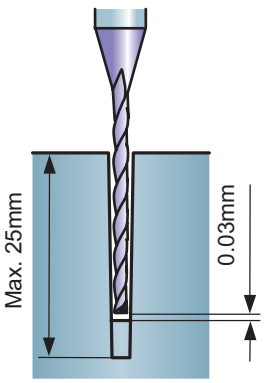
**[Results]**
**Competitor's end mill** could not process even 1pcs because of the fracture. ***MSTAR* end mill "*MS4LT*"** processes 1pcs and the damage of the cutting edge was much smaller. In addition, ***MS4LT*** could process this work piece at **2,000mm/min feed rate**.




**Slant & Blind Rib slot**

**■Cutting conditions**

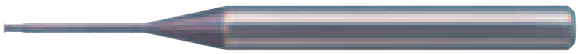
| | |
|---|---|
| End mill | MS4LT $\phi$2×1°×25 |
| Work material | NAK80 (38HRC) |
| Revolution | 10,000min$^{-1}$ (63m/min) |
| Feed rate | 1,000mm/min (0.1mm/rev.) |
| Depth of cut | Ad 0.03mm×Max. 830 times<br>(Slant rib slot · Max. depth 25mm) |
| Cutting method | Water-soluble oil |

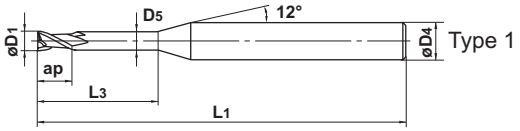


# MS2XL

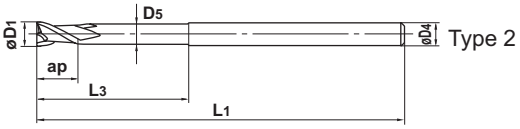
2 flute Mstar long neck end mill

D1 < 0.5 0 — -0.01
0.5 ≤ D1 0 — -0.02










● 2 flute long neck end mill for general purpose.

Unit : mm

| Order Number | Dia. D1 | Length of Cut ap | Neck Length L3 | Neck Dia. D5 | Overall Length L1 | Shank Dia. D4 | No. of Flute N | Stock | Type |
|---|---|---|---|---|---|---|---|---|---|
| MS2XL D0020N005 | 0.2 | 0.3 | 0.5 | 0.18 | 45 | 4 | 2 | ● | 1 |
| D0020N010 | 0.2 | 0.3 | 1 | 0.18 | 45 | 4 | 2 | ● | 1 |
| D0020N015 | 0.2 | 0.3 | 1.5 | 0.18 | 45 | 4 | 2 | ● | 1 |
| D0030N010 | 0.3 | 0.4 | 1 | 0.28 | 45 | 4 | 2 | ● | 1 |
| D0030N020 | 0.3 | 0.4 | 2 | 0.28 | 45 | 4 | 2 | ● | 1 |
| D0030N030 | 0.3 | 0.4 | 3 | 0.28 | 45 | 4 | 2 | ● | 1 |
| D0030N060 | 0.3 | 0.4 | 6 | 0.28 | 45 | 4 | 2 | ● | 1 |
| D0030N090 | 0.3 | 0.4 | 9 | 0.28 | 45 | 4 | 2 | ● | 1 |
| D0040N020 | 0.4 | 0.6 | 2 | 0.37 | 45 | 4 | 2 | ● | 1 |
| D0040N030 | 0.4 | 0.6 | 3 | 0.37 | 45 | 4 | 2 | ● | 1 |
| D0040N040 | 0.4 | 0.6 | 4 | 0.37 | 45 | 4 | 2 | ● | 1 |
| D0040N080 | 0.4 | 0.6 | 8 | 0.37 | 45 | 4 | 2 | ● | 1 |
| D0040N120 | 0.4 | 0.6 | 12 | 0.37 | 45 | 4 | 2 | ● | 1 |
| D0050N020 | 0.5 | 0.7 | 2 | 0.46 | 45 | 4 | 2 | ● | 1 |
| D0050N040 | 0.5 | 0.7 | 4 | 0.46 | 45 | 4 | 2 | ● | 1 |
| D0050N060 | 0.5 | 0.7 | 6 | 0.46 | 45 | 4 | 2 | ● | 1 |
| D0050N080 | 0.5 | 0.7 | 8 | 0.46 | 50 | 4 | 2 | ● | 1 |
| D0050N100 | 0.5 | 0.7 | 10 | 0.46 | 50 | 4 | 2 | ● | 1 |
| D0050N150 | 0.5 | 0.7 | 15 | 0.46 | 50 | 4 | 2 | ● | 1 |
| D0060N020 | 0.6 | 0.9 | 2 | 0.56 | 45 | 4 | 2 | ● | 1 |
| D0060N040 | 0.6 | 0.9 | 4 | 0.56 | 45 | 4 | 2 | ● | 1 |
| D0060N060 | 0.6 | 0.9 | 6 | 0.56 | 45 | 4 | 2 | ● | 1 |
| D0060N080 | 0.6 | 0.9 | 8 | 0.56 | 50 | 4 | 2 | ● | 1 |
| D0060N100 | 0.6 | 0.9 | 10 | 0.56 | 50 | 4 | 2 | ● | 1 |
| D0060N120 | 0.6 | 0.9 | 12 | 0.56 | 50 | 4 | 2 | ● | 1 |
| D0060N180 | 0.6 | 0.9 | 18 | 0.56 | 50 | 4 | 2 | ● | 1 |
| D0070N020 | 0.7 | 1 | 2 | 0.66 | 45 | 4 | 2 | ● | 1 |
| D0070N040 | 0.7 | 1 | 4 | 0.66 | 45 | 4 | 2 | ● | 1 |
| D0070N060 | 0.7 | 1 | 6 | 0.66 | 45 | 4 | 2 | ● | 1 |
| D0070N080 | 0.7 | 1 | 8 | 0.66 | 50 | 4 | 2 | ● | 1 |
| D0070N100 | 0.7 | 1 | 10 | 0.66 | 50 | 4 | 2 | ● | 1 |
| D0080N040 | 0.8 | 1.2 | 4 | 0.76 | 45 | 4 | 2 | ● | 1 |
| D0080N060 | 0.8 | 1.2 | 6 | 0.76 | 45 | 4 | 2 | ● | 1 |
| D0080N080 | 0.8 | 1.2 | 8 | 0.76 | 50 | 4 | 2 | ● | 1 |
| D0080N100 | 0.8 | 1.2 | 10 | 0.76 | 50 | 4 | 2 | ● | 1 |
| D0080N120 | 0.8 | 1.2 | 12 | 0.76 | 50 | 4 | 2 | ● | 1 |
| D0080N160 | 0.8 | 1.2 | 16 | 0.76 | 50 | 4 | 2 | ● | 1 |
| D0080N240 | 0.8 | 1.2 | 24 | 0.76 | 60 | 4 | 2 | ● | 1 |



● : Inventory maintained.

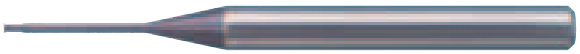
Unit : mm

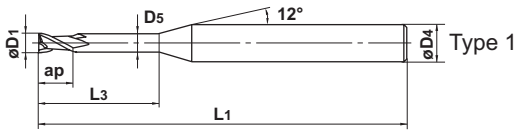
| Order Number | Dia. $D_1$ | Length of Cut ap | Neck Length $L_3$ | Neck Dia. $D_5$ | Overall Length $L_1$ | Shank Dia. $D_4$ | No. of Flute N | Stock | Type |
|---|---|---|---|---|---|---|---|---|---|
| MS2XLD0090N060 | 0.9 | 1.4 | 6 | 0.86 | 45 | 4 | 2 | ● | 1 |
| D0090N080 | 0.9 | 1.4 | 8 | 0.86 | 50 | 4 | 2 | ● | 1 |
| D0090N100 | 0.9 | 1.4 | 10 | 0.86 | 50 | 4 | 2 | ● | 1 |
| D0090N150 | 0.9 | 1.4 | 15 | 0.86 | 60 | 4 | 2 | ● | 1 |
| D0100N040 | 1 | 1.5 | 4 | 0.95 | 50 | 4 | 2 | ● | 1 |
| D0100N060 | 1 | 1.5 | 6 | 0.95 | 50 | 4 | 2 | ● | 1 |
| D0100N080 | 1 | 1.5 | 8 | 0.95 | 50 | 4 | 2 | ● | 1 |
| D0100N100 | 1 | 1.5 | 10 | 0.95 | 50 | 4 | 2 | ● | 1 |
| D0100N120 | 1 | 1.5 | 12 | 0.95 | 50 | 4 | 2 | ● | 1 |
| D0100N160 | 1 | 1.5 | 16 | 0.95 | 60 | 4 | 2 | ● | 1 |
| D0100N200 | 1 | 1.5 | 20 | 0.95 | 60 | 4 | 2 | ● | 1 |
| D0100N250 | 1 | 1.5 | 25 | 0.95 | 70 | 4 | 2 | ● | 1 |
| D0100N300 | 1 | 1.5 | 30 | 0.95 | 70 | 4 | 2 | ● | 1 |
| D0120N060 | 1.2 | 1.8 | 6 | 1.15 | 50 | 4 | 2 | ● | 1 |
| D0120N080 | 1.2 | 1.8 | 8 | 1.15 | 50 | 4 | 2 | ● | 1 |
| D0120N100 | 1.2 | 1.8 | 10 | 1.15 | 50 | 4 | 2 | ● | 1 |
| D0120N120 | 1.2 | 1.8 | 12 | 1.15 | 50 | 4 | 2 | ● | 1 |
| D0120N160 | 1.2 | 1.8 | 16 | 1.15 | 60 | 4 | 2 | ● | 1 |
| D0120N200 | 1.2 | 1.8 | 20 | 1.15 | 60 | 4 | 2 | ● | 1 |
| D0150N060 | 1.5 | 2.3 | 6 | 1.45 | 50 | 4 | 2 | ● | 1 |
| D0150N080 | 1.5 | 2.3 | 8 | 1.45 | 50 | 4 | 2 | ● | 1 |
| D0150N100 | 1.5 | 2.3 | 10 | 1.45 | 50 | 4 | 2 | ● | 1 |
| D0150N120 | 1.5 | 2.3 | 12 | 1.45 | 50 | 4 | 2 | ● | 1 |
| D0150N140 | 1.5 | 2.3 | 14 | 1.45 | 60 | 4 | 2 | ● | 1 |
| D0150N160 | 1.5 | 2.3 | 16 | 1.45 | 60 | 4 | 2 | ● | 1 |
| D0150N180 | 1.5 | 2.3 | 18 | 1.45 | 60 | 4 | 2 | ● | 1 |
| D0150N200 | 1.5 | 2.3 | 20 | 1.45 | 60 | 4 | 2 | ● | 1 |
| D0150N250 | 1.5 | 2.3 | 25 | 1.45 | 70 | 4 | 2 | ● | 1 |
| D0150N300 | 1.5 | 2.3 | 30 | 1.45 | 70 | 4 | 2 | ● | 1 |
| D0150N380 | 1.5 | 2.3 | 38 | 1.45 | 80 | 4 | 2 | ● | 1 |
| D0150N450 | 1.5 | 2.3 | 45 | 1.45 | 80 | 4 | 2 | ● | 1 |
| D0200N060 | 2 | 3 | 6 | 1.94 | 50 | 4 | 2 | ● | 1 |
| D0200N080 | 2 | 3 | 8 | 1.94 | 50 | 4 | 2 | ● | 1 |
| D0200N100 | 2 | 3 | 10 | 1.94 | 50 | 4 | 2 | ● | 1 |
| D0200N120 | 2 | 3 | 12 | 1.94 | 50 | 4 | 2 | ● | 1 |
| D0200N140 | 2 | 3 | 14 | 1.94 | 60 | 4 | 2 | ● | 1 |
| D0200N160 | 2 | 3 | 16 | 1.94 | 60 | 4 | 2 | ● | 1 |
| D0200N180 | 2 | 3 | 18 | 1.94 | 60 | 4 | 2 | ● | 1 |
| D0200N200 | 2 | 3 | 20 | 1.94 | 60 | 4 | 2 | ● | 1 |
| D0200N250 | 2 | 3 | 25 | 1.94 | 70 | 4 | 2 | ● | 1 |
| D0200N300 | 2 | 3 | 30 | 1.94 | 70 | 4 | 2 | ● | 1 |
| D0200N350 | 2 | 3 | 35 | 1.94 | 80 | 4 | 2 | ● | 1 |
| D0200N400 | 2 | 3 | 40 | 1.94 | 90 | 4 | 2 | ● | 1 |
| D0200N500 | 2 | 3 | 50 | 1.94 | 100 | 4 | 2 | ● | 1 |
| D0200N600 | 2 | 3 | 60 | 1.94 | 110 | 4 | 2 | ● | 1 |
| D0250N080 | 2.5 | 3.7 | 8 | 2.4 | 50 | 4 | 2 | ● | 1 |
| D0250N120 | 2.5 | 3.7 | 12 | 2.4 | 50 | 4 | 2 | ● | 1 |
| D0250N160 | 2.5 | 3.7 | 16 | 2.4 | 60 | 4 | 2 | ● | 1 |

# MS2XL

2 flute Mstar long neck end mill

D1< 0.5 0 — -0.01
0.5≤D1 0 — -0.02



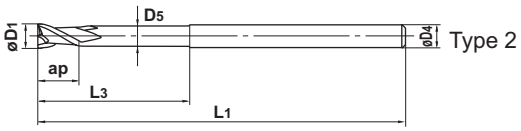







D1< 0.4


0.4≤D1




●2 flute long neck end mill for general purpose.

Unit : mm

| Order Number | Dia. D1 | Length of Cut ap | Neck Length L3 | Neck Dia. D5 | Overall Length L1 | Shank Dia. D4 | No. of Flute N | Stock | Type |
|---|---|---|---|---|---|---|---|---|---|
| MS2XLD0250N200 | 2.5 | 3.7 | 20 | 2.4 | 60 | 4 | 2 | ● | 1 |
| D0250N250 | 2.5 | 3.7 | 25 | 2.4 | 70 | 4 | 2 | ● | 1 |
| D0250N300 | 2.5 | 3.7 | 30 | 2.4 | 70 | 4 | 2 | ● | 1 |
| D0250N400 | 2.5 | 3.7 | 40 | 2.4 | 90 | 4 | 2 | ● | 1 |
| D0250N500 | 2.5 | 3.7 | 50 | 2.4 | 100 | 4 | 2 | ● | 1 |
| D0300N080 | 3 | 4.5 | 8 | 2.85 | 50 | 6 | 2 | ● | 1 |
| D0300N120 | 3 | 4.5 | 12 | 2.85 | 50 | 6 | 2 | ● | 1 |
| D0300N160 | 3 | 4.5 | 16 | 2.85 | 60 | 6 | 2 | ● | 1 |
| D0300N200 | 3 | 4.5 | 20 | 2.85 | 60 | 6 | 2 | ● | 1 |
| D0300N250 | 3 | 4.5 | 25 | 2.85 | 70 | 6 | 2 | ● | 1 |
| D0300N300 | 3 | 4.5 | 30 | 2.85 | 70 | 6 | 2 | ● | 1 |
| D0300N400 | 3 | 4.5 | 40 | 2.85 | 90 | 6 | 2 | ● | 1 |
| D0300N500 | 3 | 4.5 | 50 | 2.85 | 100 | 6 | 2 | ● | 1 |
| D0400N120 | 4 | 6 | 12 | 3.8 | 50 | 6 | 2 | ● | 1 |
| D0400N160 | 4 | 6 | 16 | 3.8 | 60 | 6 | 2 | ● | 1 |
| D0400N200 | 4 | 6 | 20 | 3.8 | 60 | 6 | 2 | ● | 1 |
| D0400N250 | 4 | 6 | 25 | 3.8 | 70 | 6 | 2 | ● | 1 |
| D0400N300 | 4 | 6 | 30 | 3.8 | 70 | 6 | 2 | ● | 1 |
| D0400N350 | 4 | 6 | 35 | 3.8 | 80 | 6 | 2 | ● | 1 |
| D0400N400 | 4 | 6 | 40 | 3.8 | 90 | 6 | 2 | ● | 1 |
| D0400N450 | 4 | 6 | 45 | 3.8 | 90 | 6 | 2 | ● | 1 |
| D0400N500 | 4 | 6 | 50 | 3.8 | 100 | 6 | 2 | ● | 1 |
| D0400N600 | 4 | 6 | 60 | 3.8 | 110 | 6 | 2 | ● | 1 |
| D0500N160 | 5 | 7.5 | 16 | 4.8 | 60 | 6 | 2 | ● | 1 |
| D0500N250 | 5 | 7.5 | 25 | 4.8 | 70 | 6 | 2 | ● | 1 |
| D0500N350 | 5 | 7.5 | 35 | 4.8 | 80 | 6 | 2 | ● | 1 |
| D0500N500 | 5 | 7.5 | 50 | 4.8 | 110 | 6 | 2 | ● | 1 |
| D0500N600 | 5 | 7.5 | 60 | 4.8 | 120 | 6 | 2 | ● | 1 |
| D0600N200 | 6 | 9 | 20 | 5.8 | 80 | 6 | 2 | ● | 2 |
| D0600N300 | 6 | 9 | 30 | 5.8 | 90 | 6 | 2 | ● | 2 |
| D0600N400 | 6 | 9 | 40 | 5.8 | 100 | 6 | 2 | ● | 2 |
| D0600N500 | 6 | 9 | 50 | 5.8 | 110 | 6 | 2 | ● | 2 |
| D0600N600 | 6 | 9 | 60 | 5.8 | 120 | 6 | 2 | ● | 2 |



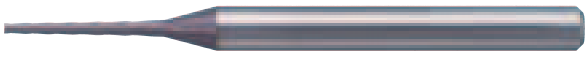
● : Inventory maintained.

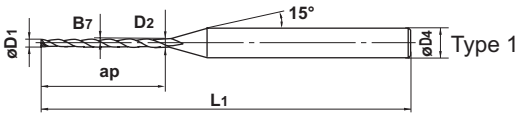
# MS4LT

4 flute Mstar for rib processing taper neck end mill

D1< 0.5 0 — -0.02
0.5≤D1 0 — -0.04

±5'






UWC MS 25°


D1<3


3≤D1

- 4 flute Mstar for rib processing taper neck end mill for general purpose.

Unit : mm

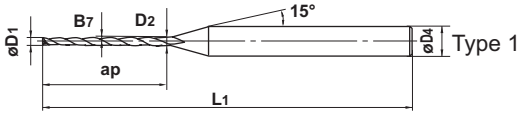
| Order Number | Small Mill Dia. D1 | Taper Angle on Side B7 | Large Mill Dia. D2 | Length of Cut ap | Overall Length L1 | Shank Dia. D4 | No. of Flute N | Stock | Type |
|---|---|---|---|---|---|---|---|---|---|
| MS4LTD0020T0030L02 | 0.2 | 30' | 0.23 | 2 | 40 | 3 | 4 | ● | 1 |
| D0020T0100L02 | 0.2 | 1° | 0.27 | 2 | 40 | 3 | 4 | ● | 1 |
| D0020T0130L02 | 0.2 | 1° 30' | 0.3 | 2 | 40 | 3 | 4 | ● | 1 |
| D0020T0200L02 | 0.2 | 2° | 0.34 | 2 | 40 | 3 | 4 | ● | 1 |
| D0030T0030L03 | 0.3 | 30' | 0.35 | 3 | 40 | 3 | 4 | ● | 1 |
| D0030T0100L03 | 0.3 | 1° | 0.4 | 3 | 40 | 3 | 4 | ● | 1 |
| D0030T0130L03 | 0.3 | 1° 30' | 0.46 | 3 | 40 | 3 | 4 | ● | 1 |
| D0030T0200L03 | 0.3 | 2° | 0.51 | 3 | 40 | 3 | 4 | ● | 1 |
| D0040T0030L04 | 0.4 | 30' | 0.47 | 4 | 40 | 3 | 4 | ● | 1 |
| D0040T0100L04 | 0.4 | 1° | 0.54 | 4 | 40 | 3 | 4 | ● | 1 |
| D0040T0130L04 | 0.4 | 1° 30' | 0.61 | 4 | 40 | 3 | 4 | ● | 1 |
| D0040T0200L04 | 0.4 | 2° | 0.68 | 4 | 40 | 3 | 4 | ● | 1 |
| D0050T0030L04 | 0.5 | 30' | 0.57 | 4 | 40 | 3 | 4 | ● | 1 |
| D0050T0030L06 | 0.5 | 30' | 0.6 | 6 | 40 | 3 | 4 | ● | 1 |
| D0050T0100L04 | 0.5 | 1° | 0.64 | 4 | 40 | 3 | 4 | ● | 1 |
| D0050T0100L06 | 0.5 | 1° | 0.71 | 6 | 40 | 3 | 4 | ● | 1 |
| D0050T0130L04 | 0.5 | 1° 30' | 0.71 | 4 | 40 | 3 | 4 | ● | 1 |
| D0050T0130L06 | 0.5 | 1° 30' | 0.81 | 6 | 40 | 3 | 4 | ● | 1 |
| D0050T0200L04 | 0.5 | 2° | 0.78 | 4 | 40 | 3 | 4 | ● | 1 |
| D0050T0200L06 | 0.5 | 2° | 0.92 | 6 | 40 | 3 | 4 | ● | 1 |
| D0060T0030L04 | 0.6 | 30' | 0.67 | 4 | 40 | 3 | 4 | ● | 1 |
| D0060T0030L06 | 0.6 | 30' | 0.7 | 6 | 40 | 3 | 4 | ● | 1 |
| D0060T0100L04 | 0.6 | 1° | 0.74 | 4 | 40 | 3 | 4 | ● | 1 |
| D0060T0100L06 | 0.6 | 1° | 0.81 | 6 | 40 | 3 | 4 | ● | 1 |
| D0060T0130L04 | 0.6 | 1° 30' | 0.81 | 4 | 40 | 3 | 4 | ● | 1 |
| D0060T0130L06 | 0.6 | 1° 30' | 0.91 | 6 | 40 | 3 | 4 | ● | 1 |
| D0060T0200L04 | 0.6 | 2° | 0.88 | 4 | 40 | 3 | 4 | ● | 1 |
| D0060T0200L06 | 0.6 | 2° | 1.02 | 6 | 40 | 3 | 4 | ● | 1 |
| D0070T0030L06 | 0.7 | 30' | 0.8 | 6 | 40 | 3 | 4 | ● | 1 |
| D0070T0030L08 | 0.7 | 30' | 0.84 | 8 | 45 | 3 | 4 | ● | 1 |
| D0070T0100L06 | 0.7 | 1° | 0.91 | 6 | 40 | 3 | 4 | ● | 1 |
| D0070T0100L08 | 0.7 | 1° | 0.98 | 8 | 45 | 3 | 4 | ● | 1 |
| D0070T0130L06 | 0.7 | 1° 30' | 1.01 | 6 | 40 | 3 | 4 | ● | 1 |
| D0070T0130L08 | 0.7 | 1° 30' | 1.12 | 8 | 45 | 3 | 4 | ● | 1 |
| D0070T0200L06 | 0.7 | 2° | 1.12 | 6 | 40 | 3 | 4 | ● | 1 |
| D0070T0200L08 | 0.7 | 2° | 1.26 | 8 | 45 | 3 | 4 | ● | 1 |
| D0080T0015L04 | 0.8 | 15' | 0.83 | 4 | 45 | 4 | 4 | ● | 1 |
| D0080T0015L06 | 0.8 | 15' | 0.85 | 6 | 45 | 4 | 4 | ● | 1 |

# MS4LT

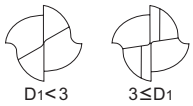
4 flute Mstar for rib processing taper neck end mill

D1< 0.5 0 — -0.02
0.5≤D1 0 — -0.04

±5'




UWC MS 25°




● 4 flute Mstar for rib processing taper neck end mill for general purpose.

Unit : mm

| Order Number | Small Mill Dia. D1 | Taper Angle on Side B7 | Large Mill Dia. D2 | Length of Cut ap | Overall Length L1 | Shank Dia. D4 | No. of Flute N | Stock | Type |
|---|---|---|---|---|---|---|---|---|---|
| MS4LTD0080T0015L08 | 0.8 | 15' | 0.87 | 8 | 45 | 4 | 4 | ● | 1 |
| D0080T0015L10 | 0.8 | 15' | 0.89 | 10 | 45 | 4 | 4 | ● | 1 |
| D0080T0030L04 | 0.8 | 30' | 0.87 | 4 | 45 | 4 | 4 | ● | 1 |
| D0080T0030L06 | 0.8 | 30' | 0.9 | 6 | 45 | 4 | 4 | ● | 1 |
| D0080T0030L08 | 0.8 | 30' | 0.94 | 8 | 45 | 4 | 4 | ● | 1 |
| D0080T0030L10 | 0.8 | 30' | 0.97 | 10 | 45 | 4 | 4 | ● | 1 |
| D0080T0030L12 | 0.8 | 30' | 1.01 | 12 | 50 | 4 | 4 | ● | 1 |
| D0080T0100L04 | 0.8 | 1° | 0.94 | 4 | 45 | 4 | 4 | ● | 1 |
| D0080T0100L06 | 0.8 | 1° | 1.01 | 6 | 45 | 4 | 4 | ● | 1 |
| D0080T0100L08 | 0.8 | 1° | 1.08 | 8 | 45 | 4 | 4 | ● | 1 |
| D0080T0100L10 | 0.8 | 1° | 1.15 | 10 | 45 | 4 | 4 | ● | 1 |
| D0080T0100L12 | 0.8 | 1° | 1.22 | 12 | 50 | 4 | 4 | ● | 1 |
| D0080T0130L04 | 0.8 | 1° 30' | 1.01 | 4 | 45 | 4 | 4 | ● | 1 |
| D0080T0130L06 | 0.8 | 1° 30' | 1.11 | 6 | 45 | 4 | 4 | ● | 1 |
| D0080T0130L08 | 0.8 | 1° 30' | 1.22 | 8 | 45 | 4 | 4 | ● | 1 |
| D0080T0130L10 | 0.8 | 1° 30' | 1.32 | 10 | 45 | 4 | 4 | ● | 1 |
| D0080T0130L12 | 0.8 | 1° 30' | 1.43 | 12 | 50 | 4 | 4 | ● | 1 |
| D0080T0200L04 | 0.8 | 2° | 1.08 | 4 | 45 | 4 | 4 | ● | 1 |
| D0080T0200L06 | 0.8 | 2° | 1.22 | 6 | 45 | 4 | 4 | ● | 1 |
| D0080T0200L08 | 0.8 | 2° | 1.36 | 8 | 45 | 4 | 4 | ● | 1 |
| D0080T0200L10 | 0.8 | 2° | 1.5 | 10 | 45 | 4 | 4 | ● | 1 |
| D0080T0200L12 | 0.8 | 2° | 1.64 | 12 | 50 | 4 | 4 | ● | 1 |
| D0100T0015L06 | 1 | 15' | 1.05 | 6 | 45 | 4 | 4 | ● | 1 |
| D0100T0015L08 | 1 | 15' | 1.07 | 8 | 45 | 4 | 4 | ● | 1 |
| D0100T0015L10 | 1 | 15' | 1.09 | 10 | 45 | 4 | 4 | ● | 1 |
| D0100T0015L12 | 1 | 15' | 1.1 | 12 | 50 | 4 | 4 | ● | 1 |
| D0100T0030L06 | 1 | 30' | 1.1 | 6 | 45 | 4 | 4 | ● | 1 |
| D0100T0030L08 | 1 | 30' | 1.14 | 8 | 45 | 4 | 4 | ● | 1 |
| D0100T0030L10 | 1 | 30' | 1.17 | 10 | 45 | 4 | 4 | ● | 1 |
| D0100T0030L12 | 1 | 30' | 1.21 | 12 | 50 | 4 | 4 | ● | 1 |
| D0100T0100L06 | 1 | 1° | 1.21 | 6 | 45 | 4 | 4 | ● | 1 |
| D0100T0100L08 | 1 | 1° | 1.28 | 8 | 45 | 4 | 4 | ● | 1 |
| D0100T0100L10 | 1 | 1° | 1.35 | 10 | 45 | 4 | 4 | ● | 1 |
| D0100T0100L12 | 1 | 1° | 1.42 | 12 | 50 | 4 | 4 | ● | 1 |
| D0100T0100L16 | 1 | 1° | 1.56 | 16 | 55 | 4 | 4 | ● | 1 |
| D0100T0130L06 | 1 | 1° 30' | 1.31 | 6 | 45 | 4 | 4 | ● | 1 |
| D0100T0130L08 | 1 | 1° 30' | 1.42 | 8 | 45 | 4 | 4 | ● | 1 |
| D0100T0130L10 | 1 | 1° 30' | 1.52 | 10 | 45 | 4 | 4 | ● | 1 |



● : Inventory maintained.

Unit : mm

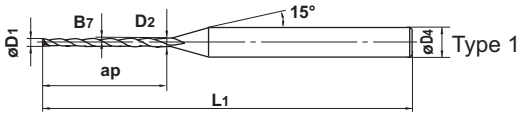
| Order Number | Small Mill Dia. $D_1$ | Taper Angle on Side $B_7$ | Large Mill Dia. $D_2$ | Length of Cut ap | Overall Length $L_1$ | Shank Dia. $D_4$ | No. of Flute N | Stock | Type |
|---|---|---|---|---|---|---|---|---|---|
| MS4LTD0100T0130L12 | 1 | 1° 30' | 1.63 | 12 | 50 | 4 | 4 | ● | 1 |
| D0100T0130L16 | 1 | 1° 30' | 1.84 | 16 | 55 | 4 | 4 | ● | 1 |
| D0100T0200L06 | 1 | 2° | 1.42 | 6 | 45 | 4 | 4 | ● | 1 |
| D0100T0200L08 | 1 | 2° | 1.56 | 8 | 45 | 4 | 4 | ● | 1 |
| D0100T0200L10 | 1 | 2° | 1.7 | 10 | 45 | 4 | 4 | ● | 1 |
| D0100T0200L12 | 1 | 2° | 1.84 | 12 | 50 | 4 | 4 | ● | 1 |
| D0100T0200L16 | 1 | 2° | 2.12 | 16 | 55 | 4 | 4 | ● | 1 |
| D0120T0015L06 | 1.2 | 15' | 1.25 | 6 | 45 | 4 | 4 | ● | 1 |
| D0120T0015L10 | 1.2 | 15' | 1.29 | 10 | 45 | 4 | 4 | ● | 1 |
| D0120T0015L12 | 1.2 | 15' | 1.3 | 12 | 50 | 4 | 4 | ● | 1 |
| D0120T0015L16 | 1.2 | 15' | 1.34 | 16 | 55 | 4 | 4 | ● | 1 |
| D0120T0030L06 | 1.2 | 30' | 1.3 | 6 | 45 | 4 | 4 | ● | 1 |
| D0120T0030L10 | 1.2 | 30' | 1.37 | 10 | 45 | 4 | 4 | ● | 1 |
| D0120T0030L12 | 1.2 | 30' | 1.41 | 12 | 50 | 4 | 4 | ● | 1 |
| D0120T0030L16 | 1.2 | 30' | 1.48 | 16 | 55 | 4 | 4 | ● | 1 |
| D0120T0100L06 | 1.2 | 1° | 1.41 | 6 | 45 | 4 | 4 | ● | 1 |
| D0120T0100L10 | 1.2 | 1° | 1.55 | 10 | 45 | 4 | 4 | ● | 1 |
| D0120T0100L12 | 1.2 | 1° | 1.62 | 12 | 50 | 4 | 4 | ● | 1 |
| D0120T0100L16 | 1.2 | 1° | 1.76 | 16 | 55 | 4 | 4 | ● | 1 |
| D0120T0100L20 | 1.2 | 1° | 1.9 | 20 | 55 | 4 | 4 | ● | 1 |
| D0120T0130L06 | 1.2 | 1° 30' | 1.51 | 6 | 45 | 4 | 4 | ● | 1 |
| D0120T0130L10 | 1.2 | 1° 30' | 1.72 | 10 | 45 | 4 | 4 | ● | 1 |
| D0120T0130L12 | 1.2 | 1° 30' | 1.83 | 12 | 50 | 4 | 4 | ● | 1 |
| D0120T0130L16 | 1.2 | 1° 30' | 2.04 | 16 | 55 | 4 | 4 | ● | 1 |
| D0120T0130L20 | 1.2 | 1° 30' | 2.25 | 20 | 55 | 4 | 4 | ● | 1 |
| D0120T0200L06 | 1.2 | 2° | 1.62 | 6 | 45 | 4 | 4 | ● | 1 |
| D0120T0200L10 | 1.2 | 2° | 1.9 | 10 | 45 | 4 | 4 | ● | 1 |
| D0120T0200L12 | 1.2 | 2° | 2.04 | 12 | 50 | 4 | 4 | ● | 1 |
| D0120T0200L16 | 1.2 | 2° | 2.32 | 16 | 55 | 4 | 4 | ● | 1 |
| D0120T0200L20 | 1.2 | 2° | 2.6 | 20 | 55 | 4 | 4 | ● | 1 |
| D0130T0030L12 | 1.3 | 30' | 1.51 | 12 | 50 | 4 | 4 | ● | 1 |
| D0130T0100L12 | 1.3 | 1° | 1.72 | 12 | 50 | 4 | 4 | ● | 1 |
| D0130T0130L12 | 1.3 | 1° 30' | 1.93 | 12 | 50 | 4 | 4 | ● | 1 |
| D0130T0200L12 | 1.3 | 2° | 2.14 | 12 | 50 | 4 | 4 | ● | 1 |
| D0140T0030L12 | 1.4 | 30' | 1.61 | 12 | 50 | 4 | 4 | ● | 1 |
| D0140T0100L12 | 1.4 | 1° | 1.82 | 12 | 50 | 4 | 4 | ● | 1 |
| D0140T0130L12 | 1.4 | 1° 30' | 2.03 | 12 | 50 | 4 | 4 | ● | 1 |
| D0140T0200L12 | 1.4 | 2° | 2.24 | 12 | 50 | 4 | 4 | ● | 1 |
| D0150T0015L06 | 1.5 | 15' | 1.55 | 6 | 45 | 4 | 4 | ● | 1 |
| D0150T0015L08 | 1.5 | 15' | 1.57 | 8 | 45 | 4 | 4 | ● | 1 |
| D0150T0015L10 | 1.5 | 15' | 1.59 | 10 | 45 | 4 | 4 | ● | 1 |
| D0150T0015L12 | 1.5 | 15' | 1.6 | 12 | 50 | 4 | 4 | ● | 1 |
| D0150T0015L16 | 1.5 | 15' | 1.64 | 16 | 55 | 4 | 4 | ● | 1 |
| D0150T0015L20 | 1.5 | 15' | 1.67 | 20 | 55 | 4 | 4 | ● | 1 |
| D0150T0030L06 | 1.5 | 30' | 1.6 | 6 | 45 | 4 | 4 | ● | 1 |
| D0150T0030L08 | 1.5 | 30' | 1.64 | 8 | 45 | 4 | 4 | ● | 1 |
| D0150T0030L10 | 1.5 | 30' | 1.67 | 10 | 45 | 4 | 4 | ● | 1 |
| D0150T0030L12 | 1.5 | 30' | 1.71 | 12 | 50 | 4 | 4 | ● | 1 |

# MS4LT

4 flute Mstar for rib processing taper neck end mill

D1< 0.5 0 — -0.02
0.5≤D1 0 — -0.04

±5'




UWC MS 25°



● 4 flute Mstar for rib processing taper neck end mill for general purpose.

Unit : mm

| Order Number | Small Mill Dia. D1 | Taper Angle on Side B7 | Large Mill Dia. D2 | Length of Cut ap | Overall Length L1 | Shank Dia. D4 | No. of Flute N | Stock | Type |
|---|---|---|---|---|---|---|---|---|---|
| MS4LTD0150T0030L16 | 1.5 | 30' | 1.78 | 16 | 55 | 4 | 4 | ● | 1 |
| D0150T0030L20 | 1.5 | 30' | 1.85 | 20 | 55 | 4 | 4 | ● | 1 |
| D0150T0100L06 | 1.5 | 1° | 1.71 | 6 | 45 | 4 | 4 | ● | 1 |
| D0150T0100L08 | 1.5 | 1° | 1.78 | 8 | 45 | 4 | 4 | ● | 1 |
| D0150T0100L10 | 1.5 | 1° | 1.85 | 10 | 45 | 4 | 4 | ● | 1 |
| D0150T0100L12 | 1.5 | 1° | 1.92 | 12 | 50 | 4 | 4 | ● | 1 |
| D0150T0100L16 | 1.5 | 1° | 2.06 | 16 | 55 | 4 | 4 | ● | 1 |
| D0150T0100L20 | 1.5 | 1° | 2.2 | 20 | 55 | 4 | 4 | ● | 1 |
| D0150T0100L25 | 1.5 | 1° | 2.37 | 25 | 60 | 4 | 4 | ● | 1 |
| D0150T0130L06 | 1.5 | 1° 30' | 1.81 | 6 | 45 | 4 | 4 | ● | 1 |
| D0150T0130L08 | 1.5 | 1° 30' | 1.92 | 8 | 45 | 4 | 4 | ● | 1 |
| D0150T0130L10 | 1.5 | 1° 30' | 2.02 | 10 | 45 | 4 | 4 | ● | 1 |
| D0150T0130L12 | 1.5 | 1° 30' | 2.13 | 12 | 50 | 4 | 4 | ● | 1 |
| D0150T0130L16 | 1.5 | 1° 30' | 2.34 | 16 | 55 | 4 | 4 | ● | 1 |
| D0150T0130L20 | 1.5 | 1° 30' | 2.55 | 20 | 55 | 4 | 4 | ● | 1 |
| D0150T0130L25 | 1.5 | 1° 30' | 2.81 | 25 | 60 | 4 | 4 | ● | 1 |
| D0150T0200L06 | 1.5 | 2° | 1.92 | 6 | 45 | 4 | 4 | ● | 1 |
| D0150T0200L08 | 1.5 | 2° | 2.06 | 8 | 45 | 4 | 4 | ● | 1 |
| D0150T0200L10 | 1.5 | 2° | 2.2 | 10 | 45 | 4 | 4 | ● | 1 |
| D0150T0200L12 | 1.5 | 2° | 2.34 | 12 | 50 | 4 | 4 | ● | 1 |
| D0150T0200L16 | 1.5 | 2° | 2.62 | 16 | 55 | 4 | 4 | ● | 1 |
| D0150T0200L20 | 1.5 | 2° | 2.9 | 20 | 55 | 4 | 4 | ● | 1 |
| D0150T0200L25 | 1.5 | 2° | 3.25 | 25 | 60 | 4 | 4 | ● | 1 |
| D0160T0030L08 | 1.6 | 30' | 1.74 | 8 | 45 | 4 | 4 | ● | 1 |
| D0160T0030L12 | 1.6 | 30' | 1.81 | 12 | 50 | 4 | 4 | ● | 1 |
| D0160T0030L16 | 1.6 | 30' | 1.88 | 16 | 55 | 4 | 4 | ● | 1 |
| D0160T0030L20 | 1.6 | 30' | 1.95 | 20 | 55 | 4 | 4 | ● | 1 |
| D0160T0100L08 | 1.6 | 1° | 1.88 | 8 | 45 | 4 | 4 | ● | 1 |
| D0160T0100L12 | 1.6 | 1° | 2.02 | 12 | 50 | 4 | 4 | ● | 1 |
| D0160T0100L16 | 1.6 | 1° | 2.16 | 16 | 55 | 4 | 4 | ● | 1 |
| D0160T0100L20 | 1.6 | 1° | 2.3 | 20 | 55 | 4 | 4 | ● | 1 |
| D0160T0130L08 | 1.6 | 1° 30' | 2.02 | 8 | 45 | 4 | 4 | ● | 1 |
| D0160T0130L12 | 1.6 | 1° 30' | 2.23 | 12 | 50 | 4 | 4 | ● | 1 |
| D0160T0130L16 | 1.6 | 1° 30' | 2.44 | 16 | 55 | 4 | 4 | ● | 1 |
| D0160T0130L20 | 1.6 | 1° 30' | 2.65 | 20 | 55 | 4 | 4 | ● | 1 |
| D0160T0200L08 | 1.6 | 2° | 2.16 | 8 | 45 | 4 | 4 | ● | 1 |
| D0160T0200L12 | 1.6 | 2° | 2.44 | 12 | 50 | 4 | 4 | ● | 1 |
| D0160T0200L16 | 1.6 | 2° | 2.72 | 16 | 55 | 4 | 4 | ● | 1 |



● : Inventory maintained.

Unit : mm

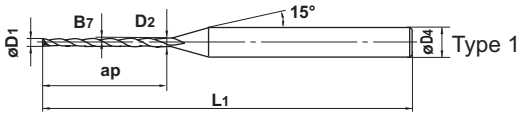
| Order Number | Small Mill Dia. $D_1$ | Taper Angle on Side $B_7$ | Large Mill Dia. $D_2$ | Length of Cut ap | Overall Length $L_1$ | Shank Dia. $D_4$ | No. of Flute N | Stock | Type |
|---|---|---|---|---|---|---|---|---|---|
| MS4LTD0160T0200L20 | 1.6 | 2° | 3 | 20 | 55 | 4 | 4 | ● | 1 |
| D0180T0015L08 | 1.8 | 15' | 1.87 | 8 | 45 | 4 | 4 | ● | 1 |
| D0180T0015L16 | 1.8 | 15' | 1.94 | 16 | 55 | 4 | 4 | ● | 1 |
| D0180T0015L24 | 1.8 | 15' | 2.01 | 24 | 60 | 4 | 4 | ● | 1 |
| D0180T0030L08 | 1.8 | 30' | 1.94 | 8 | 45 | 4 | 4 | ● | 1 |
| D0180T0030L16 | 1.8 | 30' | 2.08 | 16 | 55 | 4 | 4 | ● | 1 |
| D0180T0030L24 | 1.8 | 30' | 2.22 | 24 | 60 | 4 | 4 | ● | 1 |
| D0180T0100L08 | 1.8 | 1° | 2.08 | 8 | 45 | 4 | 4 | ● | 1 |
| D0180T0100L16 | 1.8 | 1° | 2.36 | 16 | 55 | 4 | 4 | ● | 1 |
| D0180T0100L24 | 1.8 | 1° | 2.64 | 24 | 60 | 4 | 4 | ● | 1 |
| D0180T0130L08 | 1.8 | 1° 30' | 2.22 | 8 | 45 | 4 | 4 | ● | 1 |
| D0180T0130L16 | 1.8 | 1° 30' | 2.64 | 16 | 55 | 4 | 4 | ● | 1 |
| D0180T0130L24 | 1.8 | 1° 30' | 3.06 | 24 | 60 | 4 | 4 | ● | 1 |
| D0180T0200L08 | 1.8 | 2° | 2.36 | 8 | 45 | 4 | 4 | ● | 1 |
| D0180T0200L16 | 1.8 | 2° | 2.92 | 16 | 55 | 4 | 4 | ● | 1 |
| D0180T0200L24 | 1.8 | 2° | 3.48 | 24 | 60 | 4 | 4 | ● | 1 |
| D0200T0015L08 | 2 | 15' | 2.07 | 8 | 45 | 4 | 4 | ● | 1 |
| D0200T0015L10 | 2 | 15' | 2.09 | 10 | 45 | 4 | 4 | ● | 1 |
| D0200T0015L12 | 2 | 15' | 2.1 | 12 | 50 | 4 | 4 | ● | 1 |
| D0200T0015L16 | 2 | 15' | 2.14 | 16 | 55 | 4 | 4 | ● | 1 |
| D0200T0015L20 | 2 | 15' | 2.17 | 20 | 55 | 4 | 4 | ● | 1 |
| D0200T0015L25 | 2 | 15' | 2.22 | 25 | 60 | 4 | 4 | ● | 1 |
| D0200T0030L08 | 2 | 30' | 2.14 | 8 | 45 | 4 | 4 | ● | 1 |
| D0200T0030L10 | 2 | 30' | 2.17 | 10 | 45 | 4 | 4 | ● | 1 |
| D0200T0030L12 | 2 | 30' | 2.21 | 12 | 50 | 4 | 4 | ● | 1 |
| D0200T0030L16 | 2 | 30' | 2.28 | 16 | 55 | 4 | 4 | ● | 1 |
| D0200T0030L20 | 2 | 30' | 2.35 | 20 | 55 | 4 | 4 | ● | 1 |
| D0200T0030L25 | 2 | 30' | 2.44 | 25 | 60 | 4 | 4 | ● | 1 |
| D0200T0030L30 | 2 | 30' | 2.52 | 30 | 65 | 4 | 4 | ● | 1 |
| D0200T0100L08 | 2 | 1° | 2.28 | 8 | 45 | 4 | 4 | ● | 1 |
| D0200T0100L10 | 2 | 1° | 2.35 | 10 | 45 | 4 | 4 | ● | 1 |
| D0200T0100L12 | 2 | 1° | 2.42 | 12 | 50 | 4 | 4 | ● | 1 |
| D0200T0100L16 | 2 | 1° | 2.56 | 16 | 55 | 4 | 4 | ● | 1 |
| D0200T0100L20 | 2 | 1° | 2.7 | 20 | 55 | 4 | 4 | ● | 1 |
| D0200T0100L25 | 2 | 1° | 2.87 | 25 | 60 | 4 | 4 | ● | 1 |
| D0200T0100L30 | 2 | 1° | 3.05 | 30 | 65 | 4 | 4 | ● | 1 |
| D0200T0130L08 | 2 | 1° 30' | 2.42 | 8 | 45 | 4 | 4 | ● | 1 |
| D0200T0130L10 | 2 | 1° 30' | 2.52 | 10 | 45 | 4 | 4 | ● | 1 |
| D0200T0130L12 | 2 | 1° 30' | 2.63 | 12 | 50 | 4 | 4 | ● | 1 |
| D0200T0130L16 | 2 | 1° 30' | 2.84 | 16 | 55 | 4 | 4 | ● | 1 |
| D0200T0130L20 | 2 | 1° 30' | 3.05 | 20 | 55 | 4 | 4 | ● | 1 |
| D0200T0130L25 | 2 | 1° 30' | 3.31 | 25 | 60 | 4 | 4 | ● | 1 |
| D0200T0130L30 | 2 | 1° 30' | 3.57 | 30 | 65 | 4 | 4 | ● | 1 |
| D0200T0200L08 | 2 | 2° | 2.56 | 8 | 45 | 4 | 4 | ● | 1 |
| D0200T0200L10 | 2 | 2° | 2.7 | 10 | 45 | 4 | 4 | ● | 1 |
| D0200T0200L12 | 2 | 2° | 2.84 | 12 | 50 | 4 | 4 | ● | 1 |
| D0200T0200L16 | 2 | 2° | 3.12 | 16 | 55 | 4 | 4 | ● | 1 |
| D0200T0200L20 | 2 | 2° | 3.4 | 20 | 55 | 4 | 4 | ● | 1 |

# MS4LT

4 flute Mstar for rib processing taper neck end mill

D1< 0.5 0 — -0.02
0.5≤D1 0 — -0.04

±5'




UWC MS 25°


D1<3


3≤D1

● 4 flute Mstar for rib processing taper neck end mill for general purpose.

Unit : mm

| Order Number | Small Mill Dia. D1 | Taper Angle on Side B7 | Large Mill Dia. D2 | Length of Cut ap | Overall Length L1 | Shank Dia. D4 | No. of Flute N | Stock | Type |
|---|---|---|---|---|---|---|---|---|---|
| MS4LTD0200T0200L25 | 2 | 2° | 3.75 | 25 | 60 | 4 | 4 | ● | 1 |
| D0200T0200L30 | 2 | 2° | 4.1 | 30 | 65 | 6 | 4 | ● | 1 |
| D0200T0300L12 | 2 | 3° | 3.26 | 12 | 50 | 4 | 4 | ● | 1 |
| D0200T0300L16 | 2 | 3° | 3.68 | 16 | 55 | 4 | 4 | ● | 1 |
| D0200T0300L20 | 2 | 3° | 4.1 | 20 | 55 | 6 | 4 | ● | 1 |
| D0200T0300L25 | 2 | 3° | 4.62 | 25 | 60 | 6 | 4 | ● | 1 |
| D0200T0300L30 | 2 | 3° | 5.14 | 30 | 65 | 6 | 4 | ● | 1 |
| D0250T0030L10 | 2.5 | 30' | 2.67 | 10 | 45 | 4 | 4 | ● | 1 |
| D0250T0030L16 | 2.5 | 30' | 2.78 | 16 | 50 | 4 | 4 | ● | 1 |
| D0250T0030L20 | 2.5 | 30' | 2.85 | 20 | 55 | 4 | 4 | ● | 1 |
| D0250T0030L25 | 2.5 | 30' | 2.94 | 25 | 60 | 4 | 4 | ● | 1 |
| D0250T0030L30 | 2.5 | 30' | 3.02 | 30 | 65 | 4 | 4 | ● | 1 |
| D0250T0100L10 | 2.5 | 1° | 2.85 | 10 | 45 | 4 | 4 | ● | 1 |
| D0250T0100L16 | 2.5 | 1° | 3.06 | 16 | 50 | 4 | 4 | ● | 1 |
| D0250T0100L20 | 2.5 | 1° | 3.2 | 20 | 55 | 4 | 4 | ● | 1 |
| D0250T0100L25 | 2.5 | 1° | 3.37 | 25 | 60 | 4 | 4 | ● | 1 |
| D0250T0100L30 | 2.5 | 1° | 3.55 | 30 | 65 | 4 | 4 | ● | 1 |
| D0250T0130L10 | 2.5 | 1° 30' | 3.02 | 10 | 45 | 4 | 4 | ● | 1 |
| D0250T0130L16 | 2.5 | 1° 30' | 3.34 | 16 | 50 | 4 | 4 | ● | 1 |
| D0250T0130L20 | 2.5 | 1° 30' | 3.55 | 20 | 55 | 4 | 4 | ● | 1 |
| D0250T0130L25 | 2.5 | 1° 30' | 3.81 | 25 | 60 | 4 | 4 | ● | 1 |
| D0250T0130L30 | 2.5 | 1° 30' | 4.07 | 30 | 65 | 6 | 4 | ● | 1 |
| D0250T0200L10 | 2.5 | 2° | 3.2 | 10 | 45 | 4 | 4 | ● | 1 |
| D0250T0200L16 | 2.5 | 2° | 3.62 | 16 | 50 | 4 | 4 | ● | 1 |
| D0250T0200L20 | 2.5 | 2° | 3.9 | 20 | 55 | 4 | 4 | ● | 1 |
| D0250T0200L25 | 2.5 | 2° | 4.25 | 25 | 60 | 6 | 4 | ● | 1 |
| D0250T0200L30 | 2.5 | 2° | 4.6 | 30 | 65 | 6 | 4 | ● | 1 |
| D0300T0030L25 | 3 | 30' | 3.44 | 25 | 65 | 6 | 4 | ● | 1 |
| D0300T0030L40 | 3 | 30' | 3.7 | 40 | 80 | 6 | 4 | ● | 1 |
| D0300T0100L25 | 3 | 1° | 3.87 | 25 | 65 | 6 | 4 | ● | 1 |
| D0300T0100L40 | 3 | 1° | 4.4 | 40 | 80 | 6 | 4 | ● | 1 |
| D0300T0130L25 | 3 | 1° 30' | 4.31 | 25 | 65 | 6 | 4 | ● | 1 |
| D0300T0130L40 | 3 | 1° 30' | 5.09 | 40 | 80 | 6 | 4 | ● | 1 |
| D0300T0200L25 | 3 | 2° | 4.75 | 25 | 65 | 6 | 4 | ● | 1 |
| D0300T0200L40 | 3 | 2° | 5.79 | 40 | 80 | 6 | 4 | ● | 1 |



● : Inventory maintained.

# MS2XL

2 flute Mstar long neck end mill

| Work material | | Structual steel, Carbon steel, AISI 1049, AISI 1055 Alloy steel SCM, Tool steel SK, Pre-hardened steel, NAK, HPM | | | Pre-hardened steel AISI H13, STAVAX, Martensitic SUS (40—45HRC) | | |
|---|---|---|---|---|---|---|---|
| Dia. (mm) | Neck length (mm) | Revolution ($min^{-1}$) | Feed rate (mm/min) | Cutting depth a time (ap) | Revolution ($min^{-1}$) | Feed rate (mm/min) | Cutting depth a time (ap) |
| **0.2** | **0.5** | 40,000 | 200—400 | 0.01 | 30,000 | 150—400 | 0.01 |
| | **1.5** | | | 0.002 | | | 0.002 |
| **0.3** | **1** | 32,000—40,000 | 200—600 | 0.01 | 22,000—30,000 | 150—500 | 0.01 |
| | **3** | | | 0.002 | | | 0.002 |
| | **9** | | | 0.001 | | | 0.001 |
| **0.4** | **2** | 25,000—40,000 | 200—800 | 0.01 | 17,000—30,000 | 150—600 | 0.01 |
| | **4** | | | 0.003 | | | 0.003 |
| | **12** | | | 0.001 | | | 0.001 |
| **0.5** | **2** | 20,000—40,000 | 250—1,000 | 0.015 | 14,000—30,000 | 150—800 | 0.015 |
| | **6** | | | 0.005 | | | 0.005 |
| | **10** | | | 0.002 | | | 0.002 |
| | **15** | | | 0.001 | | | 0.001 |
| **0.6** | **2** | 17,000—33,000 | 250—1,000 | 0.02 | 12,000—25,000 | 150—800 | 0.02 |
| | **6** | | | 0.01 | | | 0.01 |
| | **10** | | | 0.003 | | | 0.003 |
| | **18** | | | 0.001 | | | 0.001 |
| **0.7** | **2** | 15,000—29,000 | 250—1,000 | 0.02 | 11,000—22,000 | 150—800 | 0.02 |
| | **6** | | | 0.01 | | | 0.01 |
| | **10** | | | 0.005 | | | 0.005 |
| **0.8** | **4** | 13,000—25,000 | 250—1,000 | 0.03 | 10,000—20,000 | 150—800 | 0.03 |
| | **8** | | | 0.02 | | | 0.02 |
| | **12** | | | 0.003 | | | 0.003 |
| | **24** | | | 0.001 | | | 0.001 |
| **0.9** | **6** | 11,000—22,000 | 250—1,000 | 0.04 | 9,000—18,000 | 150—800 | 0.04 |
| | **10** | | | 0.03 | | | 0.03 |
| | **15** | | | 0.003 | | | 0.003 |
| **1** | **4** | 10,000—20,000 | 250—1,000 | 0.06 | 8,000—16,000 | 150—800 | 0.06 |
| | **8** | | | 0.04 | | | 0.04 |
| | **12** | | | 0.02 | | | 0.02 |
| | **20** | | | 0.003 | | | 0.003 |
| | **30** | | | 0.001 | | | 0.001 |
| **1.2** | **6** | 8,000—16,000 | 250—1,000 | 0.08 | 6,500—13,000 | 150—800 | 0.08 |
| | **12** | | | 0.03 | | | 0.03 |
| | **20** | | | 0.005 | | | 0.005 |
| **1.5** | **6** | 6,500—13,000 | 250—1,000 | 0.12 | 5,000—10,000 | 150—800 | 0.12 |
| | **12** | | | 0.07 | | | 0.07 |
| | **20** | | | 0.01 | | | 0.01 |
| | **30** | | | 0.002 | | | 0.002 |
| | **45** | | | 0.001 | | | 0.001 |
| **2** | **6** | 5,000—10,000 | 250—1,000 | 0.18 | 4,200—8,500 | 150—800 | 0.18 |
| | **12** | | | 0.12 | | | 0.12 |
| | **20** | | | 0.05 | | | 0.05 |
| | **30** | | | 0.01 | | | 0.01 |
| | **40** | | | 0.003 | | | 0.003 |
| | **60** | | | 0.001 | | | 0.001 |
| **2.5** | **8** | 4,500—9,000 | 250—1,000 | 0.25 | 4,000—8,000 | 150—800 | 0.25 |
| | **16** | | | 0.15 | | | 0.15 |
| | **25** | | | 0.04 | | | 0.04 |
| | **40** | | | 0.01 | | | 0.01 |
| | **50** | | | 0.005 | | | 0.005 |
| **3** | **8** | 4,300—8,500 | 250—1,000 | 0.3 | 3,700—7,500 | 150—800 | 0.3 |
| | **16** | | | 0.2 | | | 0.2 |
| | **25** | | | 0.1 | | | 0.1 |
| | **40** | | | 0.02 | | | 0.02 |
| | **50** | | | 0.012 | | | 0.012 |
| **4** | **12** | 3,200—6,400 | 200—750 | 0.8 | 2,800—5,600 | 150—600 | 0.8 |
| | **20** | | | 0.25 | | | 0.25 |
| | **30** | | | 0.15 | | | 0.15 |
| | **45** | | | 0.05 | | | 0.05 |
| | **60** | | | 0.018 | | | 0.018 |
| **5** | **16** | 2,600—5,100 | 200—600 | 1 | 2,200—4,500 | 150—500 | 1 |
| | **35** | | | 0.2 | | | 0.2 |
| | **60** | | | 0.05 | | | 0.05 |
| **6** | **20** | 2,100—4,200 | 200—500 | 1.2 | 1,900—3,700 | 150—400 | 1.2 |
| | **40** | | | 0.25 | | | 0.25 |
| | **60** | | | 0.1 | | | 0.1 |

1) The above table shows the revolution and feed rate for each neck length. Please reduce the revolution and feed rate when using end mills with longer neck length.
2) If the rigidity of the machine or the work material installation is very low, or chattering is generated, please reduce the revolution and the feed rate proportionately. Please reduce the feed rate when precision of the material surface is important.

# MS4LT

4 flute Mstar for rib processing taper neck end mill

| Work material | | Carbon steel, Alloy steel, Tool steel, Pre-hardened steel AISI 1049, SCM, SK, AISI H13, STAVAX, Martensitic SUS, NAK, HPM (—45HRC) | | | Hardened steel AISI H13 (45—52HRC) | | |
|---|---|---|---|---|---|---|---|
| Small mill dia. (mm) | Length of cut (mm) | Revolution ($min^{-1}$) | Feed rate (mm/min) | Cutting depth a time (ap) | Revolution ($min^{-1}$) | Feed rate (mm/min) | Cutting depth a time (ap) |
| **0.2** | **2** | 20,000—40,000 | 200—500 | 0.001 | 20,000—40,000 | 150—300 | 0.001 |
| **0.3** | **3** | 20,000—40,000 | 200—500 | 0.002 | 20,000—40,000 | 150—300 | 0.001 |
| **0.4** | **4** | 20,000—40,000 | 200—500 | 0.003 | 20,000—36,000 | 150—300 | 0.002 |
| **0.5** | **4** | 20,000—38,000 | 200—500 | 0.01 | 16,000—29,000 | 200—400 | 0.005 |
| | **6** | | | 0.005 | | | 0.003 |
| **0.6** | **4** | 18,000—32,000 | 250—600 | 0.01 | 13,000—24,000 | 200—400 | 0.005 |
| | **6** | | | 0.007 | | | 0.004 |
| **0.7** | **6** | 16,000—27,000 | 250—600 | 0.015 | 11,000—20,000 | 200—400 | 0.008 |
| | **8** | | | 0.01 | | | 0.005 |
| **0.8** | **4** | 14,000—24,000 | 250—600 | 0.03 | 10,000—18,000 | 200—400 | 0.015 |
| | **8** | | | 0.02 | | | 0.01 |
| | **12** | | | 0.013 | | | 0.007 |
| **1.0** | **6** | 11,000—19,000 | 300—800 | 0.03 | 8,000—14,000 | 200—500 | 0.015 |
| | **10** | | | 0.02 | | | 0.01 |
| | **16** | | | 0.015 | | | 0.008 |
| **1.2** | **6** | 9,200—16,000 | 300—800 | 0.04 | 6,600—12,000 | 200—500 | 0.02 |
| | **10** | | | 0.03 | | | 0.015 |
| | **16** | | | 0.02 | | | 0.01 |
| **1.3** | **12** | 8,500—15,000 | 300—800 | 0.03 | 6,100—11,000 | 200—500 | 0.015 |
| **1.4** | **12** | 8,000—14,000 | 300—800 | 0.035 | 5,700—10,000 | 200—500 | 0.018 |
| **1.5** | **6** | 7,500—13,000 | 300—800 | 0.06 | 5,300—9,500 | 200—500 | 0.03 |
| | **10** | | | 0.04 | | | 0.02 |
| | **16** | | | 0.03 | | | 0.015 |
| | **25** | | | 0.015 | | | 0.008 |
| **1.6** | **8** | 7,000—12,000 | 300—800 | 0.06 | 5,000—9,000 | 200—500 | 0.03 |
| | **12** | | | 0.045 | | | 0.025 |
| | **16** | | | 0.035 | | | 0.02 |
| | **20** | | | 0.025 | | | 0.015 |
| **1.8** | **8** | 6,200—11,000 | 300—800 | 0.08 | 4,400—8,000 | 200—500 | 0.04 |
| | **16** | | | 0.05 | | | 0.03 |
| | **24** | | | 0.03 | | | 0.015 |
| **2.0** | **8** | 5,500—9,500 | 300—800 | 0.1 | 4,000—7,200 | 200—500 | 0.05 |
| | **12** | | | 0.07 | | | 0.04 |
| | **20** | | | 0.04 | | | 0.02 |
| | **30** | | | 0.02 | | | 0.01 |
| **2.5** | **10** | 4,400—7,600 | 300—800 | 0.1 | 3,200—5,700 | 200—500 | 0.05 |
| | **20** | | | 0.06 | | | 0.03 |
| | **30** | | | 0.03 | | | 0.015 |
| **3.0** | **25** | 3,700—6,400 | 300—800 | 0.08 | 2,700—4,800 | 200—500 | 0.04 |
| | **40** | | | 0.04 | | | 0.02 |

1) The above table shows the revolution and feed rate for each neck length. Please reduce the feed rate when using end mills with longer neck length.
2) If the rigidity of the machine or the work material installation is very low, or chattering is generated, please reduce the revolution and the feed rate proportionately. Please reduce the feed rate when precision of the material surface is important.

# SUGGESTIONS ON HOW TO USE CUTTING TOOLS

| Products | Hazard | Countermeasure |
|---|---|---|
| All Cutting Tools | ◎Cutting tools have sharp cutting edges Handling them with bare hands may cause injuries. | *Take precautions such as wearing gloves especially when handling tools and during installation. |
| | ◎Improper use of tools and application of inappropriate cutting conditions may cause the tool to break and be expelled from the machine providing risk of injury. | *Ensure safety guards and goggles are used. Refer to handling explanatory notes and catalogues. Use tools under recommended cutting conditions. |
| | ◎Impact load and rapid increase of cutting resistance due to excessive wear may cause the tool to break and be expelled from the machine providing risk of injury. | *Ensure safety guards and goggles are used. Exchange tools before excessive wear occurs. |
| | ◎Cutting tools and workpieces become extremely hot during cutting. Touching them with bare hands may cause burns. | *Take precautions such as wearing gloves. |
| | ◎Expelled hot chips produced in cutting produces risk of injuries and burns. | *Ensure safety guards and goggles are used.<br>*During swarf removal and machine cleaning ensure the machine is stopped and wear gloves.Use tools, such as cutting nippers and cutting clippers. |
| | ◎In cutting, sparks, hot chips and heat generation caused by tool breakage provides a risk of igniting a fire. | *Avoid using cutting tools in places where there is a possibility of igniting a fire. In case of using non-water soluble oil, make sure to have a fire prevention countermeasure. |
| | ◎Using machines, chucks, and tools with poor balance at high revolutions may cause tools to break providing risk of injuries. | *Ensure safety guards and goggles are used. Check the machine for vibration, chattering, and abnormal noise. |
| | ◎Handling machined parts with burrs using bare hands may cause injuries. | *Wear gloves. |
| Indexable Inserts | ◎If inserts and spare parts are not held securely, they may become loose and be expelled producing risk of injuries. | *Clean insert locating seat and spare parts before setting inserts.<br>*Use the tool provided for setting inserts, and ensure the inserts and spare parts are clamped securely. Do not use the tool provided for things other than prescribed inserts and spare parts. |
| | ◎Clamping inserts and spare parts too tightly by using tools such as extension pipes may cause them to break and be expelled. | *Do not use extra tools for more leverage. Only use the tool provided. |
| | ◎When applying high cutting speed, spare parts and inserts may be expelled due to centrifugal force. Pay special attention on each safty guidline. | *Refer to the handling explanatory notes and catalogues. Use tools under recommended cutting conditions. |
| Cutters and Other Rotating Tools | ◎Milling cutters have sharp edges. Handling them with bare hands may cause injuries. | *Take precautions such as wearing gloves. |
| | ◎Poor balance or off centre revolving of tools may cause vibration and chattering which could cause the tool to break and be expelled. | *Apply cutting speed within the range of recommended cutting conditions.<br>*Adjust accuracy and balance of spindles and bearings periodically to prevent off centre revolving and chattering caused by wear on these parts. |
| Drills | ◎Through cutting in cases when the workpiece revolves may produce a disk shaped peice with sharp edges when the cutting tool breaks through. | *Ensure safety guards and goggles are used. Also install a cover on the chuck. |
| | ◎Drills with an extremely small diameter have a very sharp point which may puncture the skin if not handled carefully. If the drill breaks during cutting, the broken pieces may be expelled. | *Handle with care. Take precautions such as wearing gloves and goggles. |
| Brazed Tools | ◎When brazing is carried out time and again, the strength of carbide tip is deteriorated and is easily broken during operation. | *Before using them, ensure they are brazed securely.<br>*Do not use them under conditions which produce very high temperature. |
| Others | ◎Machine and tools may be damaged if they are used for purposes other than the prescribed application. | *Use them strictly for the prescribed application. |

## INFORMATION

This catalog completes the basic precautions for safety use of our company's products. For further information, please refer to the guidline, catalogs or contact us. We are not responsible for any accidents causing by modifying tools without our permission.

ISO 9001
ISO 14001
JQA-2522
JQA-EM0941

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