

**MITSUBISHI**

MITSUBISHI CARBIDE

**TOOL NEWS**

B074A

MSTAR END MILL SERIES

**MSTAR End Mill  
for Swiss type machine tools**



**Excellent for Swiss  
type automatic  
machine  
applications!**

- Overall length suitable for small automatic lathe machining. (35mm and 45mm)
- Wide product range, 2, 3 and 4 flutes types available.

# MSTAR

## End mills for Swiss type machine tools.

Features

### 1 Optimal design for small automatic lathes.

Short edge length

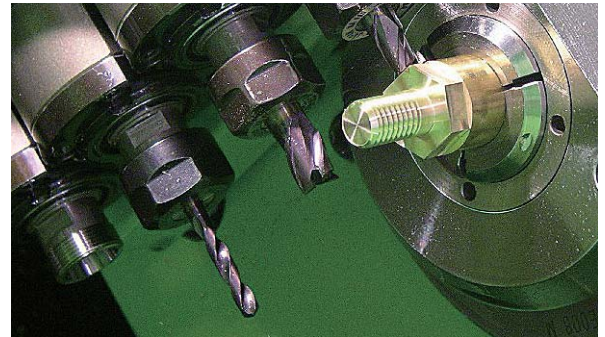
High deflection resistance with the short edge length.

Overall length

Same overall length of 35mm and 45mm for all diameters.

Variety of shank sizes

Additional shank sizes available, suitable for standard collets for CNC automatic lathes. ( $\varnothing 5$ ,  $\varnothing 7$ ,  $\varnothing 10$ )



Features

### 2 Wide variety of sizes and types.

- Wide variety of 2,3 and 4 flute types available.
- Optimal sizes for various machines, small work spaces and varied cutting conditions.

Features

### 3 Mitsubishi Carbide's original 3 flute design.

Original 3 flute type is included to complete the series of 2 and 4 flute types



Wide variety of products available.

A total of 6 series in 73 different sizes

**MS2ES**

2 flute MSTAR end mill



**MS3ES**

3 flute MSTAR end mill



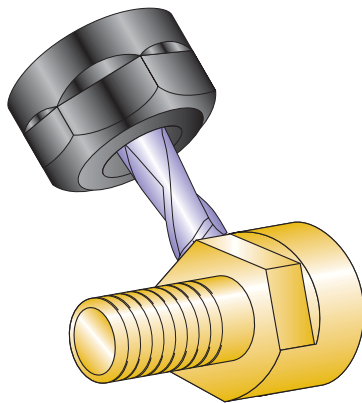
**MS4EC**

4 flute MSTAR end mill

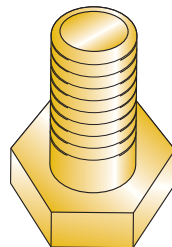


Machining Example

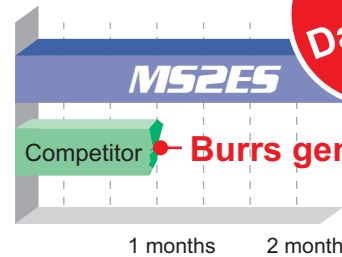
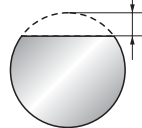
1215 carbon steel



Long tool life without burrs



Depth of cut 1.2mm



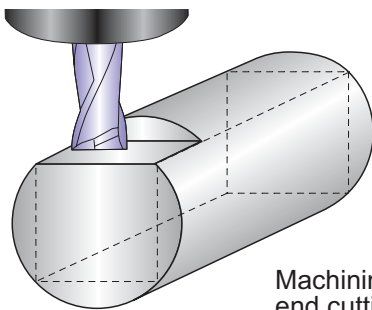
No Damage

Burrs generated

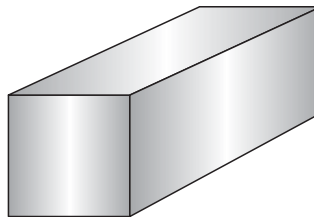
Cutting conditions

End mill	MS2ES ø6
Work material	1215 carbon steel
Revolution	1,500min <sup>-1</sup> (28m/min)
Feed rate	120mm/min (0.04mm/tooth)
Cutting method	Coolant

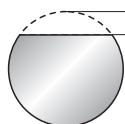
Carbon steel



Machining with the end cutting edge.



Depth of cut 1.0mm



Ensures stable machining and good chip clearance by using a 3 flute end mill.

Cutting conditions

End mill	MS3ES ø8
Work material	AISI 1045
Revolution	2,000min <sup>-1</sup> (50m/min)
Feed rate	150mm/min (0.025mm/tooth)
Cutting method	Coolant

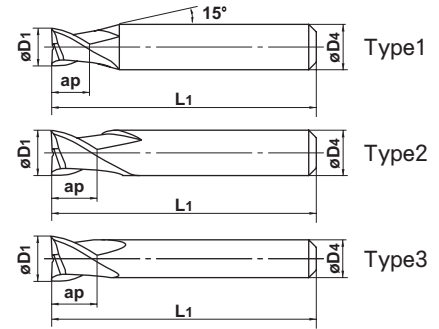
# MSTAR END MILL FOR SWISS TYPE MACHINES

## MS2ES

End mill, 2 flute, For Swiss type machines



● 2 flute square corner type



Overall length 35mm

Unit : mm

Order Number	Dia. D1	Length of Cut ap	Overall Length L1	Shank Dia. D4	No. of Flutes N	Stock	Type
MS2ESD0300L35S04	3	3	35	4	2	●	1
D0350L35S04	3.5	3.5	35	4	2	●	1
D0400L35S04	4	4	35	4	2	●	2
D0500L35S05	5	5	35	5	2	●	2
D0500L35S06	5	5	35	6	2	●	1
D0600L35S05	6	6	35	5	2	●	3
D0600L35S06	6	6	35	6	2	●	2
D0700L35S07	7	6	35	7	2	●	2
D0800L35S07	8	6	35	7	2	●	3
D0800L35S08	8	6	35	8	2	●	2
D1000L35S07	10	6	35	7	2	●	3
D1000L35S10	10	6	35	10	2	●	2
D1200L35S10	12	6	35	10	2	●	3

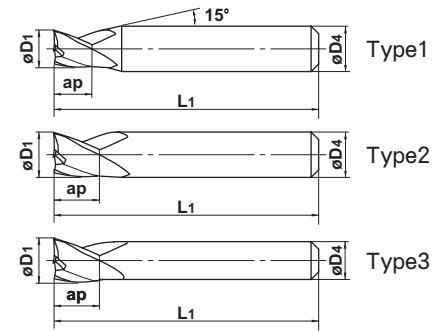
Overall length 45mm

Unit : mm

Order Number	Dia. D1	Length of Cut ap	Overall Length L1	Shank Dia. D4	No. of Flutes N	Stock	Type
MS2ESD0300L45S04	3	3	45	4	2	●	1
D0350L45S04	3.5	3.5	45	4	2	●	1
D0400L45S04	4	4	45	4	2	●	2
D0500L45S06	5	5	45	6	2	●	1
D0600L45S06	6	6	45	6	2	●	2
D0700L45S07	7	7	45	7	2	●	2
D0800L45S07	8	8	45	7	2	●	3
D0800L45S08	8	8	45	8	2	●	2
D1000L45S07	10	10	45	7	2	●	3
D1000L45S10	10	10	45	10	2	●	2
D1200L45S10	12	12	45	10	2	●	3



● 3 flute square corner type



Unit : mm

**Overall length 35mm**

Order Number	Dia. D1	Length of Cut ap	Overall Length L1	Shank Dia. D4	No. of Flutes N	Stock	Type
MS3ESD0300L35S04	3	3	35	4	3	●	1
D0350L35S04	3.5	3.5	35	4	3	●	1
D0400L35S04	4	4	35	4	3	●	2
D0500L35S05	5	5	35	5	3	●	2
D0500L35S06	5	5	35	6	3	●	1
D0600L35S05	6	6	35	5	3	●	3
D0600L35S06	6	6	35	6	3	●	2
D0700L35S07	7	6	35	7	3	●	2
D0800L35S07	8	6	35	7	3	●	3
D0800L35S08	8	6	35	8	3	●	2
D1000L35S07	10	6	35	7	3	●	3
D1000L35S10	10	6	35	10	3	●	2
D1200L35S10	12	6	35	10	3	●	3

**Overall length 45mm**

Unit : mm

Order Number	Dia. D1	Length of Cut ap	Overall Length L1	Shank Dia. D4	No. of Flutes N	Stock	Type
MS3ESD0300L45S04	3	3	45	4	3	●	1
D0350L45S04	3.5	3.5	45	4	3	●	1
D0400L45S04	4	4	45	4	3	●	2
D0500L45S06	5	5	45	6	3	●	1
D0600L45S06	6	6	45	6	3	●	2
D0700L45S07	7	7	45	7	3	●	2
D0800L45S07	8	8	45	7	3	●	3
D0800L45S08	8	8	45	8	3	●	2
D1000L45S07	10	10	45	7	3	●	3
D1000L45S10	10	10	45	10	3	●	2
D1200L45S10	12	12	45	10	3	●	3

# MSTAR END MILL FOR SWISS TYPE MACHINES

## MS4EC

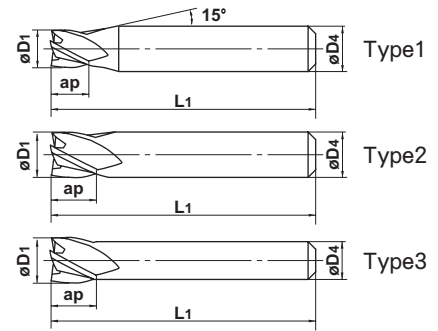
End mill, 4 flute, For Swiss type machines



D1 ≤ 12 0 - -0.02  
12 < D1 0 - -0.03



● 4 flute square corner type



### Overall length 35mm

Unit : mm

Order Number	Dia. D1	Length of Cut ap	Overall Length L1	Shank Dia. D4	No. of Flute N	Stock	Type
MS4ECD0300L35S04	3	3	35	4	4	●	1
D0350L35S04	3.5	3.5	35	4	4	●	1
D0400L35S04	4	4	35	4	4	●	2
D0500L35S05	5	5	35	5	4	●	2
D0500L35S06	5	5	35	6	4	●	1
D0600L35S05	6	6	35	5	4	●	3
D0600L35S06	6	6	35	6	4	●	2
D0700L35S07	7	6	35	7	4	●	2
D0800L35S07	8	6	35	7	4	●	3
D0800L35S08	8	6	35	8	4	●	2
D1000L35S07	10	6	35	7	4	●	3
D1000L35S10	10	6	35	10	4	●	2
D1200L35S10	12	6	35	10	4	●	3

### Overall length 45mm

Unit : mm

Order Number	Dia. D1	Length of Cut ap	Overall Length L1	Shank Dia. D4	No. of Flute N	Stock	Type
MS4ECD0300L45S04	3	3	45	4	4	●	1
D0350L45S04	3.5	3.5	45	4	4	●	1
D0400L45S04	4	4	45	4	4	●	2
D0500L45S06	5	5	45	6	4	●	1
D0600L45S06	6	6	45	6	4	●	2
D0700L45S07	7	7	45	7	4	●	2
D0800L45S07	8	8	45	7	4	●	3
D0800L45S08	8	8	45	8	4	●	2
D1000L45S07	10	10	45	7	4	●	3
D1000L45S10	10	10	45	10	4	●	2
D1200L45S10	12	12	45	10	4	●	3
D1400L45S10	14	14	45	10	4	●	3

# MS2ES

End mill, 2 flute, For Swiss type machines

# MS3ES

End mill, 3 flute, For Swiss type machines

Work material	Carbon steel (-30HRC) AISI 1049, SCM, Cast iron FC250, Brass		Alloy steel, Tool steel Pre-hardened steel (30-45HRC) SCM, AISI H13		Austenitic stainless steel AISI 304, AISI316		Hardened steel (45-55HRC) AISI H13		
	Dia. (mm)	Revolution (min <sup>-1</sup> )	Feed rate (mm/min)	Revolution (min <sup>-1</sup> )	Feed rate (mm/min)	Revolution (min <sup>-1</sup> )	Feed rate (mm/min)	Revolution (min <sup>-1</sup> )	Feed rate (mm/min)
<b>3</b>		10,000	600	7,000	400	6,000	300	5,000	120
<b>4</b>		7,500	600	5,200	400	4,500	300	4,000	120
<b>5</b>		6,000	600	4,200	400	3,600	300	3,200	120
<b>6</b>		5,000	600	3,500	400	3,000	300	2,700	120
<b>7</b>		4,500	560	3,000	360	2,700	280	2,300	110
<b>8</b>		4,000	520	2,800	350	2,400	260	2,000	110
<b>10</b>		3,200	450	2,200	300	1,900	230	1,600	100
<b>12</b>		2,700	410	1,900	270	1,600	210	1,300	100

Depth of cut	D: Dia.		D: Dia.	
	Drilling	Turning	Drilling	Turning

D: Dia.

- 1) If the rigidity of the machine or the workpiece installation is very low, or chattering is generated, please reduce the revolution and the feed rate proportionately.
- 2) When drilling, reduce the feed rate by 70%.

# MS4EC

End mill, 4 flute, For Swiss type machines

Work material	Carbon steel (-30HRC) AISI 1049, SCM, Cast iron FC250, Brass		Alloy steel, Tool steel Pre-hardened steel (30-45HRC) SCM, AISI H13		Austenitic stainless steel AISI 304, AISI316		Hardened steel (45-55HRC) AISI H13		
	Dia. (mm)	Revolution (min <sup>-1</sup> )	Feed rate (mm/min)	Revolution (min <sup>-1</sup> )	Feed rate (mm/min)	Revolution (min <sup>-1</sup> )	Feed rate (mm/min)	Revolution (min <sup>-1</sup> )	Feed rate (mm/min)
<b>3</b>		10,000	900	7,000	600	6,000	450	5,000	180
<b>4</b>		7,500	900	5,200	600	4,500	450	4,000	180
<b>5</b>		6,000	900	4,200	600	3,600	450	3,200	180
<b>6</b>		5,000	900	3,500	600	3,000	450	2,700	180
<b>7</b>		4,500	840	3,000	540	2,700	420	2,300	160
<b>8</b>		4,000	780	2,800	520	2,400	390	2,000	160
<b>10</b>		3,200	680	2,200	450	1,900	340	1,600	140
<b>12</b>		2,700	620	1,900	410	1,600	310	1,300	120
<b>14</b>		2,300	550	1,600	350	1,400	280	1,200	120

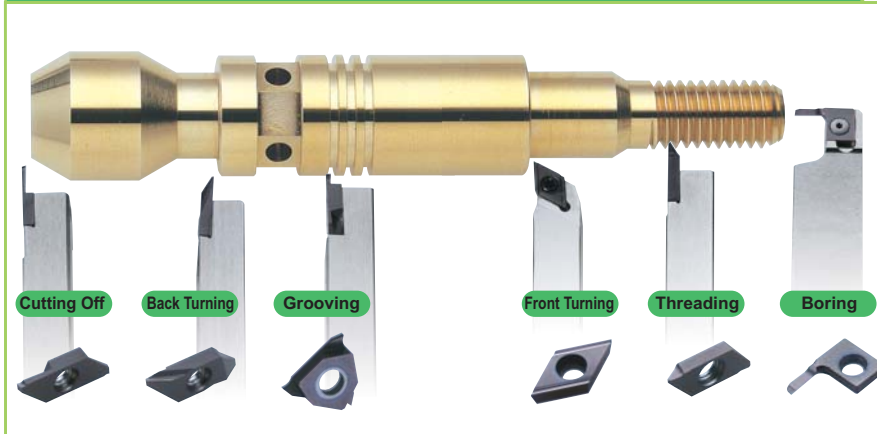
Depth of cut	D: Dia.		D: Dia.	
	Drilling	Turning	Drilling	Turning

D: Dia.

- 1) If the rigidity of the machine or the workpiece installation is very low, or chattering is generated, please reduce the revolution and the feed rate proportionately.
- 2) When drilling, reduce the feed rate by 70%.

**Please refer to the MITSUBISHI General Catalog for tools for small parts machining.**

**TOOLS FOR GANG TYPE AUTOMATIC LATHES (FOR EXTERNAL TURNING AND BORING)**



**INTERNAL TURNING TOOLS**

**MICRO-MINI TWIN Boring Bars**

Minimum cutting diameter  $\phi 2.2$ -

Boring  
Grooving  
Threading

Round  
Shank

Square  
Shank

**MICRO-DEX Boring Bars**

Minimum cutting diameter  $\phi 5.0$ -



**DIMPLE BAR**

Minimum cutting diameter  $\phi 10.0$ -

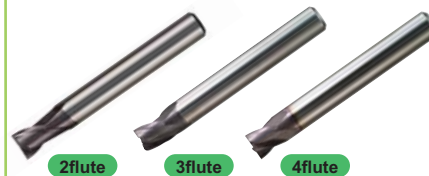
**TOOLS FOR AUTOMATIC LATHES WITH RADIAL TOOL POSTS**



Front Turning Back Turning Grooving Threading Cutting Off

**END MILLS**

●MSTAR End Mill For Small Automatic Lathes **NEW**



●Solid Carbide End Mills



**DRILLS**

●Solid Carbide Drills



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**MITSUBISHI MATERIALS U.S.A. CORPORATION**

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Detroit Branch Office: 39303 Country Club Drive, Suite A-1, Farmington Hills, Michigan 48331, U.S.A.  
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**MMC METAL DE MEXICO S.A. DE C.V.**

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JQA-2522  
JQA-EM0941

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(Tools specifications subject to change without notice.)