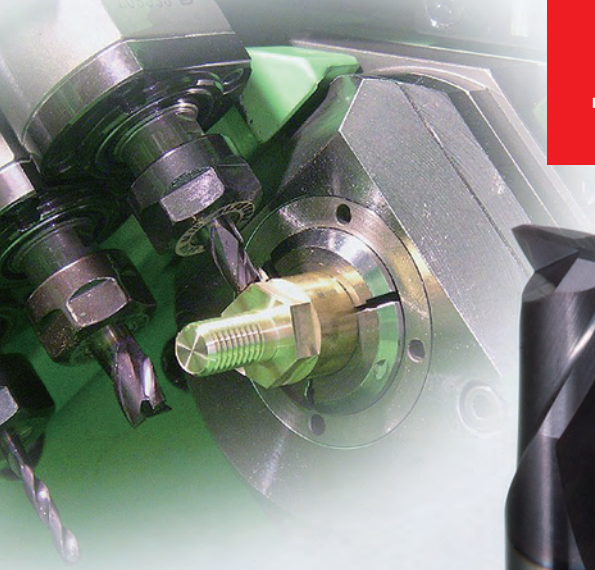


MSTAR END MILL SERIES

## MSTAR End Mill for small automatic lathe



**Great for small automatic lathe processing!**

- Overall length correspond to small automatic lathe processing. (35mm, 45mm)
- Abundant lineup of 2, 3 and 4 flutes square type.



# MSTAR End Mill for small automatic lathe.

Great for small automatic  
lathe processing.

## **Features** ..... **1** Optimal design for small automatic lathe.

**Short edge  
length**

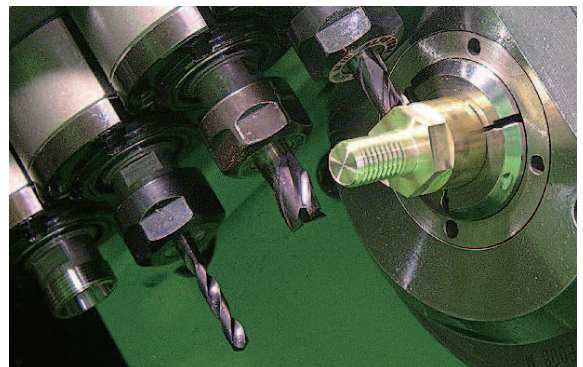
High deflection resistance  
by adopting short edge length.

**Overall length**

Same overall length of 35,45mm  
even for various diameter.

**Variety size  
of shank**

Added the shank sizes  
respond to standard coret for  
CNC automatic lathes.  
( $\varnothing 5$ ,  $\varnothing 7$ ,  $\varnothing 10$ )



## **Features** ..... **2** Wide varieties of sizes and series.

- Abundant lineup of 2, 3 and 4 flute square type.
- Unified overall length. (35mm, 45mm)
- Optimal sizes to various machines, work materials, and cutting conditions.

## **Features** ..... **3** The original 3 flute type of our company.

Our original series of 3 flute square type  
is included between 2 and 4 flute type.

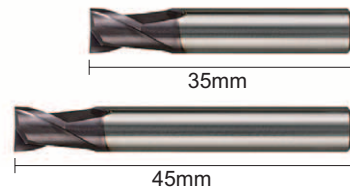


Abundant lineup with overall length and number of flute.

Total sizes of **73** in **6** series.

**MS2ES**

2 flute MSTAR end mill for small automatic lathe



**MS3ES**

3 flute MSTAR end mill for small automatic lathe



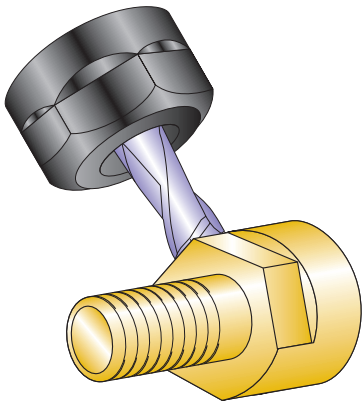
**MS4EC**

4 flute MSTAR end mill for small automatic lathe

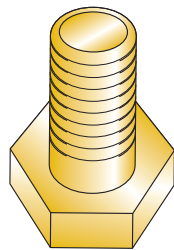


**Machining Example**

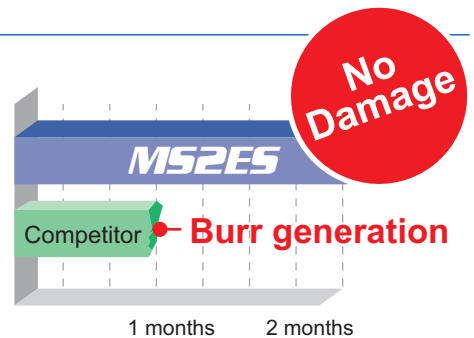
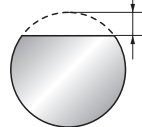
SUM 23



Long tool life without burr



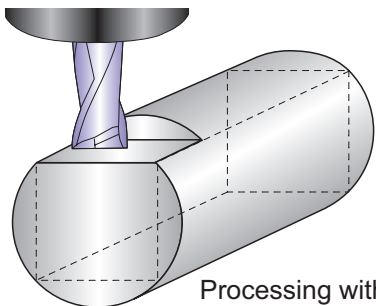
Depth of cut 1.2mm



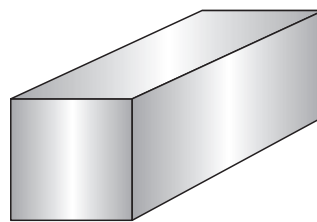
■ Cutting conditions

End mill	MS2ES $\phi 6$
Work material	SUM23
Revolution	1,500min <sup>-1</sup> (28m/min)
Feed rate	120mm/min (0.04mm/tooth)
Cutting method	Coolant

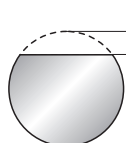
Carbon steel



Processing with using end cutting edge.



Depth of cut 1.0mm



Realize stable processing by adopting special feature of 3 flute end mill.

4 flute : Deflection processing stop

■ Cutting conditions

End mill	MS3ES $\phi 8$
Work material	S45C
Revolution	2,000min <sup>-1</sup> (50m/min)
Feed rate	150mm/min (0.025mm/tooth)
Cutting method	Coolant

# MSTAR END MILL FOR SMALL AUTOMATIC LATHE

## MS2ES

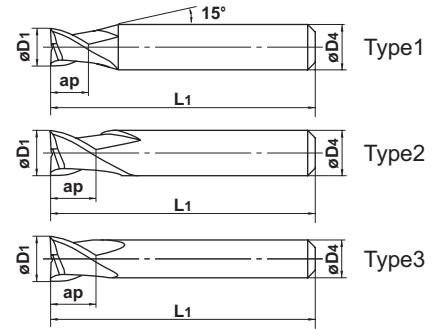
End mill, 2 flute, For small automatic lathe



0 - -0.02



● 2 flute square end mill



Overall length 35mm

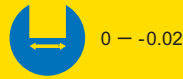
Unit : mm

Order Number	Dia. D1	Length of Cut ap	Overall Length L1	Shank Dia. D4	No. of Flute N	Stock	Type
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

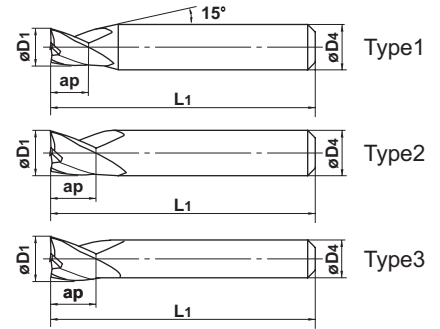
Overall length 45mm

Unit : mm

Order Number	Dia. D1	Length of Cut ap	Overall Length L1	Shank Dia. D4	No. of Flute 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 end mill



**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
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 Flute 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 SMALL AUTOMATIC LATHE

## MS4EC

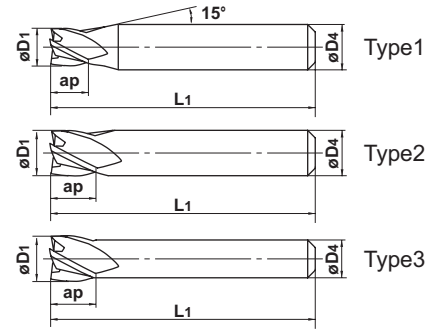
End mill, 4 flute, For small automatic lathe



D1 ≤ 12 0 - -0.02  
12 < D1 0 - -0.03



● 4 flute square end mill



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 small automatic lathe

# MS3ES

End mill, 3 flute, For small automatic lathe

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	Carbon steel, Alloy steel, Austenitic stainless steel, Hardened steel			
	Diagram 1	Diagram 2	Diagram 3	Diagram 4

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, please set the feed rate at 1/3 or below the values above.

# MS4EC

End mill, 4 flute, For small automatic lathe

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

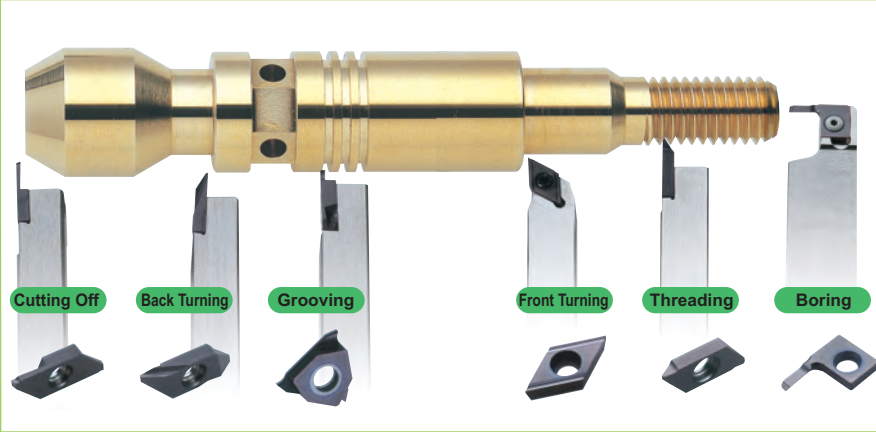
Depth of cut	Carbon steel, Alloy steel, Austenitic stainless steel, Hardened steel			
	Diagram 1	Diagram 2	Diagram 3	Diagram 4

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, please set the feed rate at 1/3 or below the values above.

Please refer to [MITSUBISHI General Catalog] about small parts machining tools.

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



## INTERNAL TURNING TOOLS

### MICRO-MINI TWIN Boring Bars

Minimum cutting diameter  $\phi 2.2$ -



## TOOLS FOR AUTOMATIC LATHES WITH RADIAL TOOL POSTS



## END MILLING TOOLS



## DRILLING TOOLS



# MITSUBISHI MATERIALS KOBE TOOLS



ISO 9001  
ISO 14001  
JQA-2522  
JQA-EM0941

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**Cutting Tools**  
KFC bldg., 8F, 1-6-1, Yokoami, Sumida-ku, Tokyo 130-0015, Japan  
TEL 81-3-5819-8771 FAX 81-3-5819-8774

**MMC HARTMETALL GmbH**  
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**MITSUBISHI MATERIALS U.S.A. CORPORATION**  
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**MMC METAL SINGAPORE PTE LTD.**  
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