KEMMER PRÄZISION
A CTC COMPANY

Solid Carbide

Endmills

WHERE PRECISION
MEETS PERFECTION

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Kemmer Präzision GmbH has been a leader in manufacture of high-precision carbide tools for more than 65 years. The name Kemmer Präzision stands for high quality, customer-oriented action, best price / performance ratio and production according to customer requirements.

Not only do we manufacture the rotary tools in Schwäbisch Gmünd, Germany since 1954, but also in our facility in Jamshedpur, India since its modest start of manufacturing 10 thousand cutting tools in 1983. It now has capability to manufacture over 20 million tools per year and is under further expansion of capacity specially for manufacturing of industrial rotary cutting tools.

We manufacture tools for wide range of applications in Automobile, Aerospace, PCB, Medical, Dental, Wood, 3C and many other precision engineering industries ranging in sizes from 0.03mm to 20mm in diameter with various shank configurations, special high-performance geometry and wide range of coatings to serve customers across industries including the OEM market globally.

Our mission is to achieve a substantial share in the International Market with excellent quality at optimum cost, we are striving towards Zero defects through continuous improvement and system approach. We are continually seeking innovations and markets to build upon its successes and to provide our associates with ever new challenges.

We clearly recognize that we gain ground only when the pace of change inside the company is greater than the pace of change outside the company. Thus, we look towards serving our customers with innovative high performance tools to not only meet their needs but exceed it.

High Performance Endmills

Description	Article No.	No. of Flutes	Dia Range	Flute	Helix	Shank	Geometry	Coating Type	Material	Page No.
3 Flute Square Endmill	E27	3	0.50-20.00	3 Flute	35°	Shank Dia h6	**DP**	AlTiN	P M S H	08
4 Flute Square Endmill Standard, Long and Extra Long	E51	4	0.50-20.00	4 Flute	35°- 37°	Shank Dia h6	**DP & DH**	AlTiN	P M S H	09
4 Flute Endmill with Corner radius	E49	4	1.00-20.00	4 Flute	35°- 37°	Shank Dia h6	**DP & DH**	AlCrN	P M S H	10
4 Flute Endmill with Corner Chamfer	E50	4	1.00-20.00	4 Flute	35°- 37°	Shank Dia h6	**DP & DH**	AlTiN	P M S H	11
4 Flute Ball Nose Endmill Standard, Long and Extra Long	B33	4	0.50-20.00	4 Flute	35°- 37°	Shank Dia h6	**DP & DH**	TiSiN/AlTiN	P M S H	12
5 Flute Square Endmill	E45	5	3.00-20.00	5 Flute	44°	Shank Dia h6	**DP**	TiSiN/AlTiN	P M S H	13
5 Flute Endmill with Corner radius	E48	5	3.00-20.00	5 Flute	44°	Shank Dia h6	**DP**	TiSiN/AlTiN	P M S H	14
5 Flute Endmill with Corner Chamfer	E52	5	3.00-20.00	5 Flute	44°	Shank Dia h6	**DP**	TiSiN/AlTiN	P M S H	15
5 Flute Endmill with Chip Breaker	E70	5	6.00-20.00	5 Flute	44°	Shank Dia h6	**DP**	TiSiN/AlTiN	P M S H	16
6 Flute Square Endmill	E61	6	3.00-20.00	6 Flute	40°	Shank Dia h6	**DP**	AlCrN	P M S H	17
6 Flute Endmill with Corner radius	E63	6	3.00-20.00	6 Flute	40°	Shank Dia h6	**DP**	AlCrN	P M S H	18
7 Flute Endmill with Corner radius	E72	7	3.00-20.00	7 Flute	50°	Shank Dia h6	**DP**	TiSiN	P M S H	19
Rougher Endmill	E44	4	3.00-20.00	4 Flute	38°- 40°	Shank Dia h6	**DP & DH**	TiAlN	P M S H	20
Cutting Parameters										21

Note:
DP - Differential Pitch
DH - Differential Helix
CP - Constant Pitch
CH - Constant Helix

General Purpose Endmills

Description	Article No.	No. of Flutes	Dia Range	Flute	Helix	Shank	Geometry	Coating Type	Material	Page No.
2 Flute Ball Nose Endmill Standard, Long and Extra Long	B00	2	0.50-20.00	2 Flute	30°	Shank Dia h6	CH & CP	TiAlN	P M K N S H	24
4 Flute Ball Nose Endmill Standard, Long and Extra Long	B30	4	0.50-20.00	4 Flute	30°	Shank Dia h6	CH & CP	TiAlN	P M K N S H	25
4 Flute Square Endmill	E33	4	0.50-20.00	4 Flute	35°- 37°	Shank Dia h6	DP & DH	AlTiN	P M K N S H	26
4 Flute Square Endmill ECO Series	E35	4	0.50-20.00	4 Flute	35°	Shank Dia h6	DP	AlTiN	P M K N S H	27
4 Flute Endmill with Corner radius	E34	4	1.00-20.00	4 Flute	35°	Shank Dia h6	DP	TiAlN	P M K N S H	28
4 Flute Square Endmill Long and Extra Long	E73	4	0.50-20.00	4 Flute	30°	Shank Dia h6	CH & CP	TiAlN	P M K N S H	29
4 Flute Endmill with Corner Chamfer	E74	4	1.00-20.00	4 Flute	30°	Shank Dia h6	CH & CP	TiAlN	P M K N S H	30
Cutting Parameters										31

Die & Mould Endmills

Description	Article No.	No. of Flutes	Dia Range	Flute	Helix	Shank	Geometry	Coating Type	Material	Page No.
2 Flute Taper Ball Nose Endmill	B12	2	0.50-20.00	2 Flute	30°	Shank Dia h6	CH & CP	TiSiN/AlTiN	P H	34-35
2 Flute Ball Nose Endmill Standard, Long and Extra Long	B02	2	0.50-20.00	2 Flute	30°	Shank Dia h6	CH & CP	TiSiN/AlTiN	P H	36
4 Flute Square Endmill Standard, Long and Extra Long	E37	4	0.50-20.00	4 Flute	40°	Shank Dia h6	CH & CP	TiSiN/AlTiN	P H	37
4 Flute Square Endmill Standard, Long and Extra Long	E79	4	0.50-20.00	4 Flute	42°- 45°	Shank Dia h6	DP & DH	TiSiN/AlTiN	P H	38
4 Flute Endmill with Corner radius	E80	4	1.00-20.00	4 Flute	40°	Shank Dia h6	CH & CP	TiSiN/AlTiN	P H	39
4 Flute Ball Nose Endmill Standard, Long and Extra Long	B16	4	0.50-20.00	4 Flute	30°	Shank Dia h6	CH & CP	TiSiN/AlTiN	P H	40
Cutting Parameters										41

Note:
DP - Differential Pitch
DH - Differential Helix
CP - Constant Pitch
CH - Constant Helix

Alu / Non Ferrous Endmills

Description	Article No.	No. of Flutes	Dia Range	Flute	Helix	Shank	Geometry	Coating Type	Material	Page No.
Single Fl. Square Endmill Standard, Long and Extra Long	E00	1	0.10-12.00	Single Flute	25°	Shank Dia h6	CH & CP	-	N	44-45
Single Fl. Square Endmill with Multi Relief & Lapped Finish	E01	1	0.10-10.00	Single Flute	25°	Shank Dia h6	CH & CP	-	N	46-47
2 Flute Square Endmill Standard, Long and Extra Long	E16	2	0.10-20.00	2 Flute	45°	Shank Dia h6	CH & CP	DLC	N	48
3 Flute Square Endmill Standard, Long and Extra Long	E81	3	1.00-20.00	3 Flute	37°	Shank Dia h6	CH & CP	Hardcarbon	N	49
3 Flute Endmill with Corner radius	E82	3	1.00-20.00	3 Flute	37°	Shank Dia h6	CH & CP	-	N	50
2 Flute Ball Nose Endmill Standard, Long and Extra Long	B03	2	0.50-20.00	2 Flute	39°	Shank Dia h6	CH & CP	-	N	51
3 Flute Ball Nose Endmill Standard, Long and Extra Long	B15	3	1.00-20.00	3 Flute	37°	Shank Dia h6	CH & CP	-	N	52
2-3 Fl. Rougher Endmill Standard, Long and Extra Long	E83	2-3	6.00-20.00	2-3 Flute	42°	Shank Dia h6	CH & CP	Hardcarbon	N	53
3-4 Flute Long Reach Endmill	E84	3-4	2.00-20.00	3-4 Flute	37°	Shank Dia h6	CH & CP	Hardcarbon	N	54
Cutting Parameters										55
Technical Data										56-61

Note:
DP - Differential Pitch
DH - Differential Helix
CP - Constant Pitch
CH - Constant Helix

High Performance Endmills

E27

3 Flute Square Endmill 08

E51

4 Flute Square Endmill 09
Standard, Long and Extra Long

E49

4 Flute Endmill 10
with Corner radius

E50

4 Flute Endmill 11
with Corner Chamfer

B33

4 Flute Ball Nose Endmill 12
Standard, Long and Extra Long

E45

5 Flute Square Endmill 13

E48

5 Flute Endmill 14
with Corner radius

E52

5 Flute Endmill 15
with Corner Chamfer

E70

5 Flute Endmill 16
with Chip Breaker

E61

6 Flute Square Endmill 17

E63

6 Flute Endmill 18
with Corner Radius

E72

7 Flute Endmill 19
with Corner radius

E44

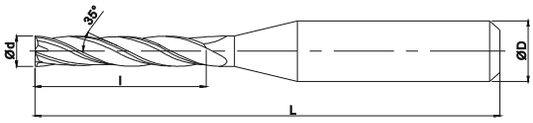
Rougher Endmill 20

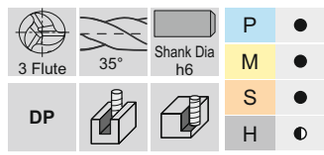
Cutting Parameter 21

3 Flute Square Endmill

E27

CUTTING DIA	TOLERANCES (mm)
<Ø3.00	+0.000 / -0.025
Ø3.00 - Ø6.00	+0.000 / -0.030
>Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050





DESCRIPTION				PART NUMBER		Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	AlTiN Coated	
0.50	1.50	38.00	3.00	E27-M00500-0015V0	E27AM00500-0015V0	*
1.00	3.00	50.00	3.00	E27-M01000-0030V0	E27AM01000-0030V0	*
1.50	4.50	50.00	3.00	E27-M01500-0045V0	E27AM01500-0045V0	*
2.00	6.00	50.00	3.00	E27-M02000-0060V0	E27AM02000-0060V0	*
2.50	7.00	50.00	3.00	E27-M02500-0070V0	E27AM02500-0070V0	*
3.00	8.00	57.00	6.00	E27-M03000-0080V0	E27AM03000-0080V0	*
4.00	11.00	57.00	6.00	E27-M04000-0110V0	E27AM04000-0110V0	*
5.00	13.00	57.00	6.00	E27-M05000-0130V0	E27AM05000-0130V0	*
6.00	13.00	57.00	6.00	E27-M06000-0130V0	E27AM06000-0130V0	*
8.00	19.00	63.00	8.00	E27-M08000-0190V0	E27AM08000-0190V0	*
10.00	22.00	72.00	10.00	E27-M10000-0220V0	E27AM10000-0220V0	*
12.00	26.00	83.00	12.00	E27-M12000-0260V0	E27AM12000-0260V0	*
14.00	30.00	87.00	14.00	E27-M14000-0260V0	E27AM14000-0260V0	*
16.00	32.00	92.00	16.00	E27-M16000-0320V0	E27AM16000-0320V0	*
20.00	38.00	104.00	20.00	E27-M20000-0380V0	E27AM20000-0380V0	*

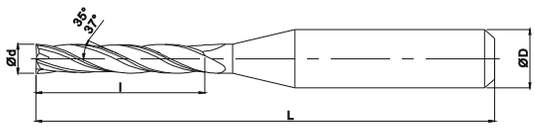
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

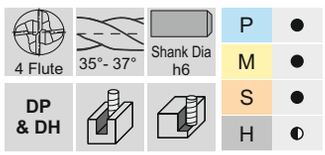
4 Flute Square Endmill

E51

Standard, Long and Extra Long

CUTTING DIA	TOLERANCES (mm)
<Ø3.00	+0.000 / -0.025
Ø3.00 - Ø6.00	+0.000 / -0.030
>Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050





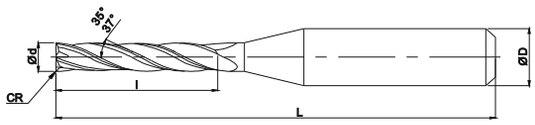
DESCRIPTION				PART NUMBER		Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	AlTiN Coated	
0.50	1.50	38.00	3.00	E51-M00500-0015V0	E51AM00500-0015V0	*
1.00	3.00	50.00	3.00	E51-M01000-0030V0	E51AM01000-0030V0	*
1.50	4.50	50.00	3.00	E51-M01500-0045V0	E51AM01500-0045V0	*
2.00	6.00	50.00	3.00	E51-M02000-0060V0	E51AM02000-0060V0	*
2.50	7.00	50.00	3.00	E51-M02500-0070V0	E51AM02500-0070V0	*
3.00	8.00	57.00	6.00	E51-M03000-0080V0	E51AM03000-0080V0	*
3.00	25.00	64.00	6.00	E51-M03000-0250V0	E51AM03000-0250V0	*
3.00	35.00	80.00	6.00	E51-M03000-0350V0	E51AM03000-0350V0	*
4.00	9.00	57.00	6.00	E51-M04000-0090V0	E51AM04000-0090V0	*
4.00	25.00	64.00	6.00	E51-M04000-0250V0	E51AM04000-0250V0	*
4.00	35.00	80.00	6.00	E51-M04000-0350V0	E51AM04000-0350V0	*
5.00	11.00	57.00	6.00	E51-M05000-0110V0	E51AM05000-0110V0	*
5.00	25.00	64.00	6.00	E51-M05000-0250V0	E51AM05000-0250V0	*
5.00	40.00	100.00	6.00	E51-M05000-0400V0	E51AM05000-0400V0	*
6.00	13.00	57.00	6.00	E51-M06000-0130V0	E51AM06000-0130V0	*
6.00	30.00	76.00	6.00	E51-M06000-0300V0	E51AM06000-0300V0	*
6.00	40.00	100.00	6.00	E51-M06000-0400V0	E51AM06000-0400V0	*
8.00	19.00	63.00	8.00	E51-M08000-0190V0	E51AM08000-0190V0	*
8.00	35.00	83.00	8.00	E51-M08000-0350V0	E51AM08000-0350V0	*
8.00	50.00	100.00	8.00	E51-M08000-0500V0	E51AM08000-0500V0	*
10.00	22.00	72.00	10.00	E51-M10000-0220V0	E51AM10000-0220V0	*
10.00	40.00	89.00	10.00	E51-M10000-0400V0	E51AM10000-0400V0	*
10.00	60.00	130.00	10.00	E51-M10000-0600V0	E51AM10000-0600V0	*
12.00	26.00	83.00	12.00	E51-M12000-0260V0	E51AM12000-0260V0	*
12.00	50.00	102.00	12.00	E51-M12000-0500V0	E51AM12000-0500V0	*
12.00	75.00	152.00	12.00	E51-M12000-0750V0	E51AM12000-0750V0	*
14.00	30.00	87.00	14.00	E51-M14000-0300V0	E51AM14000-0300V0	*
16.00	32.00	92.00	16.00	E51-M16000-0320V0	E51AM16000-0320V0	*
16.00	65.00	117.00	16.00	E51-M16000-0650V0	E51AM16000-0650V0	*
16.00	75.00	152.00	16.00	E51-M16000-0750V0	E51AM16000-0750V0	*
20.00	38.00	104.00	20.00	E51-M20000-0380V0	E51AM20000-0380V0	*
20.00	80.00	133.00	20.00	E51-M20000-0800V0	E51AM20000-0800V0	*
20.00	95.00	152.00	20.00	E51-M20000-0950V0	E51AM20000-0950V0	*

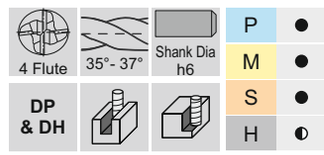
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

4 Flute Endmill with Corner radius

E49

CUTTING DIA	TOLERANCES (mm)
<Ø3.00	+0.000 / -0.025
Ø3.00 - Ø6.00	+0.000 / -0.030
>Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050



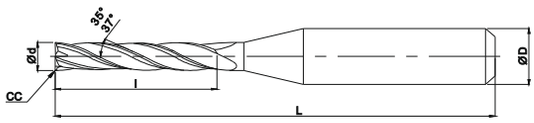


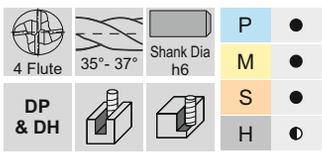
DESCRIPTION					PART NUMBER		Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Radius CR	Uncoated	AlCrN Coated	
1.00	3.00	57.00	6.00	0.10	E49-M01000-0030V0	E49NM01000-0030V0	*
1.50	4.50	57.00	6.00	0.10	E49-M01500-0045V0	E49NM01500-0045V0	*
2.00	6.00	57.00	6.00	0.20	E49-M02000-0060V0	E49NM02000-0060V0	*
2.50	7.00	57.00	6.00	0.20	E49-M02500-0070V0	E49NM02500-0070V0	*
3.00	8.00	57.00	6.00	0.30	E49-M03000-0080V0	E49NM03000-0080V0	*
3.00	8.00	57.00	6.00	0.50	E49-M03000-0080VA	E49NM03000-0080VA	*
4.00	11.00	57.00	6.00	0.30	E49-M04000-0110V0	E49NM04000-0110V0	*
4.00	11.00	57.00	6.00	0.50	E49-M04000-0110VA	E49NM04000-0110VA	*
5.00	13.00	57.00	6.00	0.30	E49-M05000-0130V0	E49NM05000-0130V0	*
6.00	13.00	57.00	6.00	0.25	E49-M06000-0130V0	E49NM06000-0130V0	*
6.00	13.00	57.00	6.00	0.50	E49-M06000-0130VA	E49NM06000-0130VA	*
6.00	13.00	57.00	6.00	1.00	E49-M06000-0130VB	E49NM06000-0130VB	*
6.00	13.00	57.00	6.00	1.50	E49-M06000-0130VC	E49NM06000-0130VC	*
8.00	19.00	63.00	8.00	0.50	E49-M08000-0190V0	E49NM08000-0190V0	*
8.00	19.00	63.00	8.00	1.00	E49-M08000-0190VA	E49NM08000-0190VA	*
8.00	19.00	63.00	8.00	1.50	E49-M08000-0190VB	E49NM08000-0190VB	*
8.00	19.00	63.00	8.00	2.00	E49-M08000-0190VC	E49NM08000-0190VC	*
10.00	22.00	72.00	10.00	0.50	E49-M10000-0220V0	E49NM10000-0220V0	*
10.00	22.00	72.00	10.00	1.00	E49-M10000-0220VA	E49NM10000-0220VA	*
10.00	22.00	72.00	10.00	1.50	E49-M10000-0220VB	E49NM10000-0220VB	*
10.00	22.00	72.00	10.00	2.00	E49-M10000-0220VC	E49NM10000-0220VC	*
10.00	22.00	72.00	10.00	2.50	E49-M10000-0220VD	E49NM10000-0220VD	*
12.00	26.00	83.00	12.00	0.50	E49-M12000-0260V0	E49NM12000-0260V0	*
12.00	26.00	83.00	12.00	0.75	E49-M12000-0260VA	E49NM12000-0260VA	*
12.00	26.00	83.00	12.00	1.00	E49-M12000-0260VB	E49NM12000-0260VB	*
12.00	26.00	83.00	12.00	1.50	E49-M12000-0260VC	E49NM12000-0260VC	*
12.00	26.00	83.00	12.00	2.00	E49-M12000-0260VD	E49NM12000-0260VD	*
12.00	26.00	83.00	12.00	2.50	E49-M12000-0260VE	E49NM12000-0260VE	*
12.00	26.00	83.00	12.00	3.00	E49-M12000-0260VF	E49NM12000-0260VF	*
14.00	26.00	83.00	14.00	1.00	E49-M14000-0260V0	E49NM14000-0260V0	*
16.00	32.00	92.00	16.00	1.00	E49-M16000-0320V0	E49NM16000-0320V0	*
16.00	32.00	92.00	16.00	1.50	E49-M16000-0320VA	E49NM16000-0320VA	*
16.00	32.00	92.00	16.00	2.00	E49-M16000-0320VB	E49NM16000-0320VB	*
16.00	32.00	92.00	16.00	2.50	E49-M16000-0320VC	E49NM16000-0320VC	*
16.00	32.00	92.00	16.00	3.00	E49-M16000-0320VD	E49NM16000-0320VD	*
20.00	38.00	104.00	20.00	1.00	E49-M20000-0380V0	E49NM20000-0380V0	*
20.00	38.00	104.00	20.00	1.50	E49-M20000-0380VA	E49NM20000-0380VA	*
20.00	38.00	104.00	20.00	2.00	E49-M20000-0380VB	E49NM20000-0380VB	*
20.00	38.00	104.00	20.00	2.50	E49-M20000-0380VC	E49NM20000-0380VC	*
20.00	38.00	104.00	20.00	3.00	E49-M20000-0380VD	E49NM20000-0380VD	*

Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

4 Flute Endmill with Corner Chamfer E50

CUTTING DIA	TOLERANCES (mm)
<Ø3.00	+0.000 / -0.025
Ø3.00 - Ø6.00	+0.000 / -0.030
>Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050





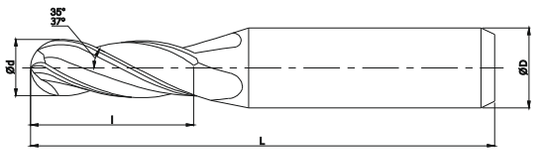
DESCRIPTION					PART NUMBER		Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Chamfer CCx45°	Uncoated	AlTiN Coated	
1.00	3.00	57.00	6.00	0.020	E50-M01000-0030V0	E50AM01000-0030V0	*
1.50	4.50	57.00	6.00	0.020	E50-M01500-0045V0	E50AM01500-0045V0	*
2.00	6.00	57.00	6.00	0.020	E50-M02000-0060V0	E50AM02000-0060V0	*
2.50	7.00	57.00	6.00	0.020	E50-M02500-0070V0	E50AM02500-0070V0	*
3.00	8.00	57.00	6.00	0.020	E50-M03000-0080V0	E50AM03000-0080V0	*
4.00	11.00	57.00	6.00	0.030	E50-M04000-0110V0	E50AM04000-0110V0	*
5.00	13.00	57.00	6.00	0.030	E50-M05000-0130V0	E50AM05000-0130V0	*
6.00	13.00	57.00	6.00	0.040	E50-M06000-0130V0	E50AM06000-0130V0	*
8.00	19.00	63.00	8.00	0.040	E50-M08000-0190V0	E50AM08000-0190V0	*
10.00	22.00	72.00	10.00	0.040	E50-M10000-0220V0	E50AM10000-0220V0	*
12.00	26.00	83.00	12.00	0.050	E50-M12000-0260V0	E50AM12000-0260V0	*
14.00	26.00	83.00	14.00	0.050	E50-M14000-0260V0	E50AM14000-0260V0	*
16.00	32.00	92.00	16.00	0.060	E50-M16000-0320V0	E50AM16000-0320V0	*
20.00	38.00	104.00	20.00	0.060	E50-M20000-0380V0	E50AM20000-0380V0	*

Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

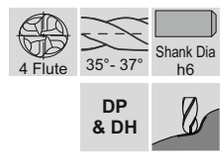
4 Flute Ball Nose Endmill

B33

Standard, Long and Extra Long



CUTTING DIA	TOLERANCES (mm)
≤Ø2.50	+0.000 / -0.025
>Ø2.50 - Ø6.00	+0.000 / -0.030
>Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050



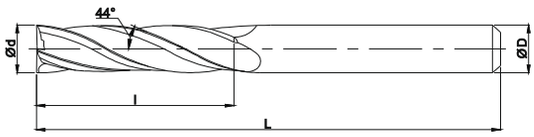
DESCRIPTION				PART NUMBER			Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	TiSiN Coated	AlTiN Coated	
0.50	1.50	38.00	3.00	B33-M00500-0015V0	B33SM00500-0015V0	B33AM00500-0015V0	*
1.00	3.00	50.00	3.00	B33-M01000-0030V0	B33SM01000-0030V0	B33AM01000-0030V0	*
1.50	4.50	50.00	3.00	B33-M01500-0045V0	B33SM01500-0045V0	B33AM01500-0045V0	*
2.00	6.00	50.00	3.00	B33-M02000-0060V0	B33SM02000-0060V0	B33AM02000-0060V0	*
2.50	7.00	50.00	3.00	B33-M02500-0070V0	B33SM02500-0070V0	B33AM02500-0070V0	*
3.00	8.00	57.00	6.00	B33-M03000-0080V0	B33SM03000-0080V0	B33AM03000-0080V0	*
3.00	25.00	64.00	6.00	B33-M03000-0250V0	B33SM03000-0250V0	B33AM03000-0250V0	*
3.00	35.00	80.00	6.00	B33-M03000-0350V0	B33SM03000-0350V0	B33AM03000-0350V0	*
4.00	9.00	57.00	6.00	B33-M04000-0090V0	B33SM04000-0090V0	B33AM04000-0090V0	*
4.00	25.00	64.00	6.00	B33-M04000-0250V0	B33SM04000-0250V0	B33AM04000-0250V0	*
4.00	35.00	80.00	6.00	B33-M04000-0350V0	B33SM04000-0350V0	B33AM04000-0350V0	*
5.00	11.00	57.00	6.00	B33-M05000-0110V0	B33SM05000-0110V0	B33AM05000-0110V0	*
5.00	25.00	64.00	6.00	B33-M05000-0250V0	B33SM05000-0250V0	B33AM05000-0250V0	*
5.00	40.00	100.00	6.00	B33-M05000-0400V0	B33SM05000-0400V0	B33AM05000-0400V0	*
6.00	13.00	57.00	6.00	B33-M06000-0130V0	B33SM06000-0130V0	B33AM06000-0130V0	*
6.00	30.00	76.00	6.00	B33-M06000-0300V0	B33SM06000-0300V0	B33AM06000-0300V0	*
6.00	40.00	100.00	6.00	B33-M06000-0400V0	B33SM06000-0400V0	B33AM06000-0400V0	*
8.00	19.00	63.00	8.00	B33-M08000-0190V0	B33SM08000-0190V0	B33AM08000-0190V0	*
8.00	35.00	83.00	8.00	B33-M08000-0350V0	B33SM08000-0350V0	B33AM08000-0350V0	*
8.00	50.00	100.00	8.00	B33-M08000-0500V0	B33SM08000-0500V0	B33AM08000-0500V0	*
10.00	22.00	72.00	10.00	B33-M10000-0220V0	B33SM10000-0220V0	B33AM10000-0220V0	*
10.00	40.00	89.00	10.00	B33-M10000-0400V0	B33SM10000-0400V0	B33AM10000-0400V0	*
10.00	60.00	130.00	10.00	B33-M10000-0600V0	B33SM10000-0600V0	B33AM10000-0600V0	*
12.00	26.00	83.00	12.00	B33-M12000-0260V0	B33SM12000-0260V0	B33AM12000-0260V0	*
12.00	50.00	102.00	12.00	B33-M12000-0500V0	B33SM12000-0500V0	B33AM12000-0500V0	*
12.00	75.00	152.00	12.00	B33-M12000-0750V0	B33SM12000-0750V0	B33AM12000-0750V0	*
14.00	30.00	87.00	14.00	B33-M14000-0300V0	B33SM14000-0300V0	B33AM14000-0300V0	*
16.00	32.00	92.00	16.00	B33-M16000-0320V0	B33SM16000-0320V0	B33AM16000-0320V0	*
16.00	65.00	117.00	16.00	B33-M16000-0650V0	B33SM16000-0650V0	B33AM16000-0650V0	*
16.00	75.00	152.00	16.00	B33-M16000-0750V0	B33SM16000-0750V0	B33AM16000-0750V0	*
20.00	38.00	104.00	20.00	B33-M20000-0380V0	B33SM20000-0380V0	B33AM20000-0380V0	*
20.00	80.00	133.00	20.00	B33-M20000-0800V0	B33SM20000-0800V0	B33AM20000-0800V0	*
20.00	95.00	152.00	20.00	B33-M20000-0950V0	B33SM20000-0950V0	B33AM20000-0950V0	*

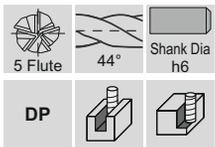
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

5 Flute Square Endmill

E45

CUTTING DIA	TOLERANCES (mm)
Ø3.00 - Ø6.00	+0.000 / -0.030
>Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050





P	●
M	●
S	●
H	◐

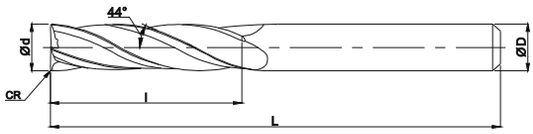
DESCRIPTION				PART NUMBER			Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	TiSiN Coated	AlTiN Coated	
3.00	8.00	57.00	6.00	E45-M03000-0080V0	E45SM03000-0080V0	E45AM03000-0080V0	*
4.00	11.00	57.00	6.00	E45-M04000-0110V0	E45SM04000-0110V0	E45AM04000-0110V0	*
5.00	13.00	57.00	6.00	E45-M05000-0130V0	E45SM05000-0130V0	E45AM05000-0130V0	*
6.00	13.00	57.00	6.00	E45-M06000-0130V0	E45SM06000-0130V0	E45AM06000-0130V0	*
8.00	19.00	63.00	8.00	E45-M08000-0190V0	E45SM08000-0190V0	E45AM08000-0190V0	*
10.00	22.00	72.00	10.00	E45-M10000-0220V0	E45SM10000-0220V0	E45AM10000-0220V0	*
12.00	26.00	83.00	12.00	E45-M12000-0260V0	E45SM12000-0260V0	E45AM12000-0260V0	*
14.00	30.00	87.00	14.00	E45-M14000-0260V0	E45SM14000-0260V0	E45AM14000-0260V0	*
16.00	32.00	92.00	16.00	E45-M16000-0320V0	E45SM16000-0320V0	E45AM16000-0320V0	*
20.00	38.00	104.00	20.00	E45-M20000-0380V0	E45SM20000-0380V0	E45AM20000-0380V0	*

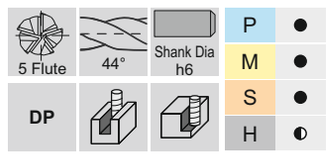
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

5 Flute Endmill with Corner radius

E48

CUTTING DIA	TOLERANCES (mm)
Ø3.00 - Ø6.00	+0.000 / -0.030
>Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050





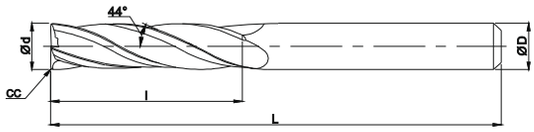
DESCRIPTION					PART NUMBER			Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Radius CR	Uncoated	TiSiN Coated	AlTiN Coated	
3.00	8.00	57.00	6.00	0.30	E48-M03000-0080V0	E48SM03000-0080V0	E48AM03000-0080V0	*
3.00	8.00	57.00	6.00	0.50	E48-M03000-0080VA	E48SM03000-0080VA	E48AM03000-0080VA	*
4.00	11.00	57.00	6.00	0.30	E48-M04000-0110V0	E48SM04000-0110V0	E48AM04000-0110V0	*
4.00	11.00	57.00	6.00	0.50	E48-M04000-0110VA	E48SM04000-0110VA	E48AM04000-0110VA	*
5.00	13.00	57.00	6.00	0.30	E48-M05000-0130V0	E48SM05000-0130V0	E48AM05000-0130V0	*
6.00	13.00	57.00	6.00	0.25	E48-M06000-0130V0	E48SM06000-0130V0	E48AM06000-0130V0	*
6.00	13.00	57.00	6.00	0.50	E48-M06000-0130VA	E48SM06000-0130VA	E48AM06000-0130VA	*
6.00	13.00	57.00	6.00	1.00	E48-M06000-0130VB	E48SM06000-0130VB	E48AM06000-0130VB	*
6.00	13.00	57.00	6.00	1.50	E48-M06000-0130VC	E48SM06000-0130VC	E48AM06000-0130VC	*
8.00	19.00	63.00	8.00	0.50	E48-M08000-0190V0	E48SM08000-0190V0	E48AM08000-0190V0	*
8.00	19.00	63.00	8.00	1.00	E48-M08000-0190VA	E48SM08000-0190VA	E48AM08000-0190VA	*
8.00	19.00	63.00	8.00	1.50	E48-M08000-0190VB	E48SM08000-0190VB	E48AM08000-0190VB	*
8.00	19.00	63.00	8.00	2.00	E48-M08000-0190VC	E48SM08000-0190VC	E48AM08000-0190VC	*
10.00	22.00	72.00	10.00	0.50	E48-M10000-0220V0	E48SM10000-0220V0	E48AM10000-0220V0	*
10.00	22.00	72.00	10.00	1.00	E48-M10000-0220VA	E48SM10000-0220VA	E48AM10000-0220VA	*
10.00	22.00	72.00	10.00	1.50	E48-M10000-0220VB	E48SM10000-0220VB	E48AM10000-0220VB	*
10.00	22.00	72.00	10.00	2.00	E48-M10000-0220VC	E48SM10000-0220VC	E48AM10000-0220VC	*
10.00	22.00	72.00	10.00	2.50	E48-M10000-0220VD	E48SM10000-0220VD	E48AM10000-0220VD	*
12.00	26.00	83.00	12.00	0.50	E48-M12000-0260V0	E48SM12000-0260V0	E48AM12000-0260V0	*
12.00	26.00	83.00	12.00	0.75	E48-M12000-0260VA	E48SM12000-0260VA	E48AM12000-0260VA	*
12.00	26.00	83.00	12.00	1.00	E48-M12000-0260VB	E48SM12000-0260VB	E48AM12000-0260VB	*
12.00	26.00	83.00	12.00	1.50	E48-M12000-0260VC	E48SM12000-0260VC	E48AM12000-0260VC	*
12.00	26.00	83.00	12.00	2.00	E48-M12000-0260VD	E48SM12000-0260VD	E48AM12000-0260VD	*
12.00	26.00	83.00	12.00	2.50	E48-M12000-0260VE	E48SM12000-0260VE	E48AM12000-0260VE	*
12.00	26.00	83.00	12.00	3.00	E48-M12000-0260VF	E48SM12000-0260VF	E48AM12000-0260VF	*
14.00	26.00	83.00	14.00	1.00	E48-M14000-0260V0	E48SM14000-0260V0	E48AM14000-0260V0	*
16.00	32.00	92.00	16.00	1.00	E48-M16000-0320V0	E48SM16000-0320V0	E48AM16000-0320V0	*
16.00	32.00	92.00	16.00	1.50	E48-M16000-0320VA	E48SM16000-0320VA	E48AM16000-0320VA	*
16.00	32.00	92.00	16.00	2.00	E48-M16000-0320VB	E48SM16000-0320VB	E48AM16000-0320VB	*
16.00	32.00	92.00	16.00	2.50	E48-M16000-0320VC	E48SM16000-0320VC	E48AM16000-0320VC	*
16.00	32.00	92.00	16.00	3.00	E48-M16000-0320VD	E48SM16000-0320VD	E48AM16000-0320VD	*
20.00	38.00	104.00	20.00	1.00	E48-M20000-0380V0	E48SM20000-0380V0	E48AM20000-0380V0	*
20.00	38.00	104.00	20.00	1.50	E48-M20000-0380VA	E48SM20000-0380VA	E48AM20000-0380VA	*
20.00	38.00	104.00	20.00	2.00	E48-M20000-0380VB	E48SM20000-0380VB	E48AM20000-0380VB	*
20.00	38.00	104.00	20.00	2.50	E48-M20000-0380VC	E48SM20000-0380VC	E48AM20000-0380VC	*
20.00	38.00	104.00	20.00	3.00	E48-M20000-0380VD	E48SM20000-0380VD	E48AM20000-0380VD	*

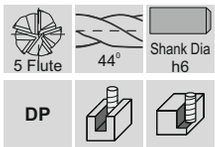
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

5 Flute Endmill with Corner Chamfer

E52

CUTTING DIA	TOLERANCES (mm)
Ø3.00 - Ø6.00	+0.000 / -0.030
>Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050





P	●
M	●
S	●
H	◐

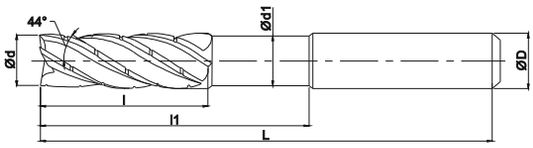
DESCRIPTION					PART NUMBER			Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Chamfer CCx45°	Uncoated	TiSiN Coated	AlTiN Coated	
3.00	8.00	57.00	6.00	0.020	E52-M03000-0080V0	E52SM03000-0080V0	E52AM03000-0080V0	*
4.00	11.00	57.00	6.00	0.030	E52-M04000-0110V0	E52SM04000-0110V0	E52AM04000-0110V0	*
5.00	13.00	57.00	6.00	0.030	E52-M05000-0130V0	E52SM05000-0130V0	E52AM05000-0130V0	*
6.00	13.00	57.00	6.00	0.040	E52-M06000-0130V0	E52SM06000-0130V0	E52AM06000-0130V0	*
8.00	19.00	63.00	8.00	0.040	E52-M08000-0190V0	E52SM08000-0190V0	E52AM08000-0190V0	*
10.00	22.00	72.00	10.00	0.040	E52-M10000-0220V0	E52SM10000-0220V0	E52AM10000-0220V0	*
12.00	26.00	83.00	12.00	0.050	E52-M12000-0260V0	E52SM12000-0260V0	E52AM12000-0260V0	*
14.00	26.00	83.00	14.00	0.050	E52-M14000-0260V0	E52SM14000-0260V0	E52AM14000-0260V0	*
16.00	32.00	92.00	16.00	0.060	E52-M16000-0320V0	E52SM16000-0320V0	E52AM16000-0320V0	*
20.00	38.00	104.00	20.00	0.060	E52-M20000-0380V0	E52SM20000-0380V0	E52AM20000-0380V0	*

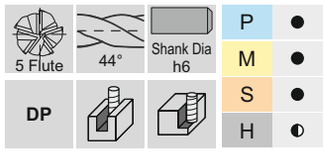
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

5 Flute Endmill with Chip Breaker

E70

CUTTING DIA	TOLERANCES (mm)
Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050





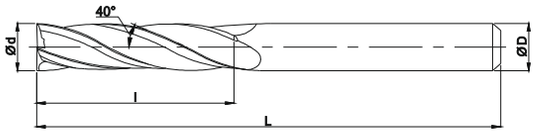
DESCRIPTION						PART NUMBER			Stock
Diameter Ød	Cutting Length l	Step Length l1	U-Cut Dia Ød1	Overall Length L	Shank Dia. ØD	Uncoated	TiSiN Coated	AlTiN Coated	
6.00	18.00	25.00	5.80	63.00	6.00	E70-M06000-0180V0	E70SM06000-0180V0	E70AM06000-0180V0	*
8.00	24.00	30.00	7.80	72.00	8.00	E70-M08000-0240V0	E70SM08000-0240V0	E70AM08000-0240V0	*
10.00	30.00	35.00	9.80	83.00	10.00	E70-M10000-0300V0	E70SM10000-0300V0	E70AM10000-0300V0	*
12.00	36.00	45.00	11.80	93.00	12.00	E70-M12000-0360V0	E70SM12000-0360V0	E70AM12000-0360V0	*
16.00	48.00	55.00	15.80	104.00	16.00	E70-M16000-0480V0	E70SM16000-0480V0	E70AM16000-0480V0	*
20.00	60.00	70.00	19.80	125.00	20.00	E70-M20000-0600V0	E70SM20000-0600V0	E70AM20000-0600V0	*

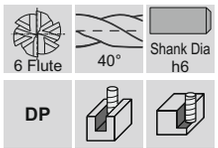
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

6 Flute Square Endmill

E61

CUTTING DIA	TOLERANCES (mm)
Ø3.00 - Ø6.00	+0.000 / -0.030
>Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050





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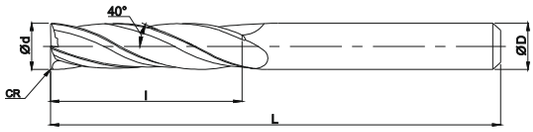
DESCRIPTION				PART NUMBER		Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	AlTiN Coated	
3.00	8.00	57.00	6.00	E61-M03000-0080V0	E61NM03000-0080V0	*
4.00	11.00	57.00	6.00	E61-M04000-0110V0	E61NM04000-0110V0	*
5.00	13.00	57.00	6.00	E61-M05000-0130V0	E61NM05000-0130V0	*
6.00	13.00	57.00	6.00	E61-M06000-0130V0	E61NM06000-0130V0	*
8.00	19.00	63.00	8.00	E61-M08000-0190V0	E61NM08000-0190V0	*
10.00	22.00	72.00	10.00	E61-M10000-0220V0	E61NM10000-0220V0	*
12.00	26.00	83.00	12.00	E61-M12000-0260V0	E61NM12000-0260V0	*
14.00	30.00	87.00	14.00	E61-M14000-0260V0	E61NM14000-0260V0	*
16.00	32.00	92.00	16.00	E61-M16000-0320V0	E61NM16000-0320V0	*
20.00	38.00	104.00	20.00	E61-M20000-0380V0	E61NM20000-0380V0	*

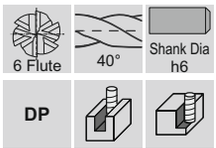
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

6 Flute Endmill with Corner Radius

E63

CUTTING DIA	TOLERANCES (mm)
Ø3.00 - Ø6.00	+0.000 / -0.030
>Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050





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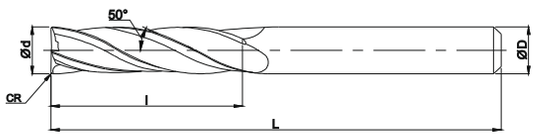
DESCRIPTION					PART NUMBER		Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Radius CR	Uncoated	AlCrN Coated	
3.00	8.00	57.00	6.00	0.30	E63-M03000-0080V0	E63NM03000-0080V0	*
3.00	8.00	57.00	6.00	0.50	E63-M03000-0080VA	E63NM03000-0080VA	*
4.00	11.00	57.00	6.00	0.30	E63-M04000-0110V0	E63NM04000-0110V0	*
4.00	11.00	57.00	6.00	0.50	E63-M04000-0110VA	E63NM04000-0110VA	*
5.00	13.00	57.00	6.00	0.30	E63-M05000-0130V0	E63NM05000-0130V0	*
6.00	13.00	57.00	6.00	0.25	E63-M06000-0130V0	E63NM06000-0130V0	*
6.00	13.00	57.00	6.00	0.50	E63-M06000-0130VA	E63NM06000-0130VA	*
6.00	13.00	57.00	6.00	1.00	E63-M06000-0130VB	E63NM06000-0130VB	*
6.00	13.00	57.00	6.00	1.50	E63-M06000-0130VC	E63NM06000-0130VC	*
8.00	19.00	63.00	8.00	0.50	E63-M08000-0190V0	E63NM08000-0190V0	*
8.00	19.00	63.00	8.00	1.00	E63-M08000-0190VA	E63NM08000-0190VA	*
8.00	19.00	63.00	8.00	1.50	E63-M08000-0190VB	E63NM08000-0190VB	*
8.00	19.00	63.00	8.00	2.00	E63-M08000-0190VC	E63NM08000-0190VC	*
10.00	22.00	72.00	10.00	0.50	E63-M10000-0220V0	E63NM10000-0220V0	*
10.00	22.00	72.00	10.00	1.00	E63-M10000-0220VA	E63NM10000-0220VA	*
10.00	22.00	72.00	10.00	1.50	E63-M10000-0220VB	E63NM10000-0220VB	*
10.00	22.00	72.00	10.00	2.00	E63-M10000-0220VC	E63NM10000-0220VC	*
10.00	22.00	72.00	10.00	2.50	E63-M10000-0220VD	E63NM10000-0220VD	*
12.00	26.00	83.00	12.00	0.50	E63-M12000-0260V0	E63NM12000-0260V0	*
12.00	26.00	83.00	12.00	0.75	E63-M12000-0260VA	E63NM12000-0260VA	*
12.00	26.00	83.00	12.00	1.00	E63-M12000-0260VB	E63NM12000-0260VB	*
12.00	26.00	83.00	12.00	1.50	E63-M12000-0260VC	E63NM12000-0260VC	*
12.00	26.00	83.00	12.00	2.00	E63-M12000-0260VD	E63NM12000-0260VD	*
12.00	26.00	83.00	12.00	2.50	E63-M12000-0260VE	E63NM12000-0260VE	*
12.00	26.00	83.00	12.00	3.00	E63-M12000-0260VF	E63NM12000-0260VF	*
14.00	26.00	83.00	14.00	1.00	E63-M14000-0260V0	E63NM14000-0260V0	*
16.00	32.00	92.00	16.00	1.00	E63-M16000-0320V0	E63NM16000-0320V0	*
16.00	32.00	92.00	16.00	1.50	E63-M16000-0320VA	E63NM16000-0320VA	*
16.00	32.00	92.00	16.00	2.00	E63-M16000-0320VB	E63NM16000-0320VB	*
16.00	32.00	92.00	16.00	2.50	E63-M16000-0320VC	E63NM16000-0320VC	*
16.00	32.00	92.00	16.00	3.00	E63-M16000-0320VD	E63NM16000-0320VD	*
20.00	38.00	104.00	20.00	1.00	E63-M20000-0380V0	E63NM20000-0380V0	*
20.00	38.00	104.00	20.00	1.50	E63-M20000-0380VA	E63NM20000-0380VA	*
20.00	38.00	104.00	20.00	2.00	E63-M20000-0380VB	E63NM20000-0380VB	*
20.00	38.00	104.00	20.00	2.50	E63-M20000-0380VC	E63NM20000-0380VC	*
20.00	38.00	104.00	20.00	3.00	E63-M20000-0380VD	E63NM20000-0380VD	*

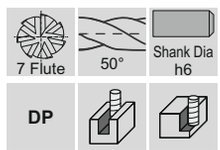
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

7 Flute Endmill with Corner radius

E72

CUTTING DIA	TOLERANCES (mm)
Ø3.00 - Ø6.00	+0.000 / -0.030
>Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050





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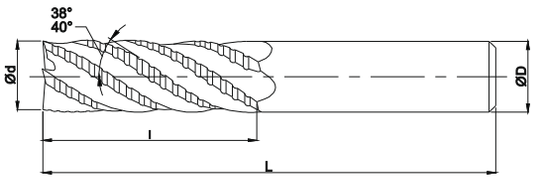
DESCRIPTION					PART NUMBER		Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Radius CR	Uncoated	TiSiN Coated	
3.00	8.00	57.00	6.00	0.30	E72-M03000-0080V0	E72SM03000-0080V0	*
3.00	8.00	57.00	6.00	0.50	E72-M03000-0080VA	E72SM03000-0080VA	*
4.00	11.00	57.00	6.00	0.30	E72-M04000-0110V0	E72SM04000-0110V0	*
4.00	11.00	57.00	6.00	0.50	E72-M04000-0110VA	E72SM04000-0110VA	*
5.00	13.00	57.00	6.00	0.30	E72-M05000-0130V0	E72SM05000-0130V0	*
6.00	13.00	57.00	6.00	0.25	E72-M06000-0130V0	E72SM06000-0130V0	*
6.00	13.00	57.00	6.00	0.50	E72-M06000-0130VA	E72SM06000-0130VA	*
6.00	13.00	57.00	6.00	1.00	E72-M06000-0130VB	E72SM06000-0130VB	*
6.00	13.00	57.00	6.00	1.50	E72-M06000-0130VC	E72SM06000-0130VC	*
8.00	19.00	63.00	8.00	0.50	E72-M08000-0190V0	E72SM08000-0190V0	*
8.00	19.00	63.00	8.00	1.00	E72-M08000-0190VA	E72SM08000-0190VA	*
8.00	19.00	63.00	8.00	1.50	E72-M08000-0190VB	E72SM08000-0190VB	*
8.00	19.00	63.00	8.00	2.00	E72-M08000-0190VC	E72SM08000-0190VC	*
10.00	22.00	72.00	10.00	0.50	E72-M10000-0220V0	E72SM10000-0220V0	*
10.00	22.00	72.00	10.00	1.00	E72-M10000-0220VA	E72SM10000-0220VA	*
10.00	22.00	72.00	10.00	1.50	E72-M10000-0220VB	E72SM10000-0220VB	*
10.00	22.00	72.00	10.00	2.00	E72-M10000-0220VC	E72SM10000-0220VC	*
10.00	22.00	72.00	10.00	2.50	E72-M10000-0220VD	E72SM10000-0220VD	*
12.00	26.00	83.00	12.00	0.50	E72-M12000-0260V0	E72SM12000-0260V0	*
12.00	26.00	83.00	12.00	0.75	E72-M12000-0260VA	E72SM12000-0260VA	*
12.00	26.00	83.00	12.00	1.00	E72-M12000-0260VB	E72SM12000-0260VB	*
12.00	26.00	83.00	12.00	1.50	E72-M12000-0260VC	E72SM12000-0260VC	*
12.00	26.00	83.00	12.00	2.00	E72-M12000-0260VD	E72SM12000-0260VD	*
12.00	26.00	83.00	12.00	2.50	E72-M12000-0260VE	E72SM12000-0260VE	*
12.00	26.00	83.00	12.00	3.00	E72-M12000-0260VF	E72SM12000-0260VF	*
14.00	26.00	83.00	14.00	1.00	E72-M14000-0260V0	E72SM14000-0260V0	*
16.00	32.00	92.00	16.00	1.00	E72-M16000-0320V0	E72SM16000-0320V0	*
16.00	32.00	92.00	16.00	1.50	E72-M16000-0320VA	E72SM16000-0320VA	*
16.00	32.00	92.00	16.00	2.00	E72-M16000-0320VB	E72SM16000-0320VB	*
16.00	32.00	92.00	16.00	2.50	E72-M16000-0320VC	E72SM16000-0320VC	*
16.00	32.00	92.00	16.00	3.00	E72-M16000-0320VD	E72SM16000-0320VD	*
20.00	38.00	104.00	20.00	1.00	E72-M20000-0380V0	E72SM20000-0380V0	*
20.00	38.00	104.00	20.00	1.50	E72-M20000-0380VA	E72SM20000-0380VA	*
20.00	38.00	104.00	20.00	2.00	E72-M20000-0380VB	E72SM20000-0380VB	*
20.00	38.00	104.00	20.00	2.50	E72-M20000-0380VC	E72SM20000-0380VC	*
20.00	38.00	104.00	20.00	3.00	E72-M20000-0380VD	E72SM20000-0380VD	*

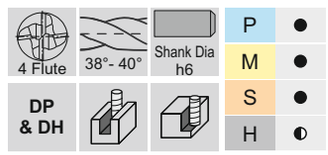
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

Rougher Endmill

E44



CUTTING DIA	TOLERANCES (mm)
Ø3.00 - Ø6.00	+0.000 / -0.030
>Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050



DESCRIPTION				PART NUMBER		Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	TiAlN Coated	
3.00	8.00	57.00	6.00	E44-M03000-0080V0	E44TM03000-0080V0	*
4.00	11.00	57.00	6.00	E44-M04000-0110V0	E44TM04000-0110V0	*
5.00	13.00	57.00	6.00	E44-M05000-0130V0	E44TM05000-0130V0	*
6.00	13.00	57.00	6.00	E44-M06000-0130V0	E44TM06000-0130V0	*
8.00	19.00	63.00	8.00	E44-M08000-0190V0	E44TM08000-0190V0	*
10.00	22.00	72.00	10.00	E44-M10000-0220V0	E44TM10000-0220V0	*
12.00	26.00	83.00	12.00	E44-M12000-0260V0	E44TM12000-0260V0	*
14.00	30.00	87.00	14.00	E44-M14000-0260V0	E44TM14000-0260V0	*
16.00	32.00	92.00	16.00	E44-M16000-0320V0	E44TM16000-0320V0	*
20.00	38.00	104.00	20.00	E44-M20000-0380V0	E44TM20000-0380V0	*

Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

Cutting Parameter

E27, E51, E49, E50, B33, E45, E48, E52, E70, E61, E63, E72, E44

Application	v_c factor	f_z factor	Feed width (a_e)	Feed depth (a_p)
Slotting	**1**	**1** (0.7 for a_p = 2xd)	1xd	0.5 up to 1xd
Roughing	**1**	**1** (0.7 for a_p = 2xd)	0.4 up to 0.9xd	0.5 up to 1xd
Finishing	**1**	**1**	0.01 up to 0.1xd	1 up to 2xd
HPC-roughing	**1.3**	**1.5**	0.15 up to 0.4xd	1 up to 2xd
HSC-roughing	**1.5**	**2**	0.05 up to 0.15xd	1 up to 2xd

Material	Hardness	Type of application	cut v_c	fz (mm/z) with nom. Ø							
				3	6	8	10	12	16	20	25
Structural + free-cutting steels. unalloyed heat-treatable + case hardened steels 1.0035 S185. 1.0486 P275N. 1.0345 P235GH. 1.0050. 1.0070. 1.8937 1.0718 11SMnPb30. 1.0736 11SMn37 1.0402 C22. 1.1178 C30E 1.0503 C45. 1.1191 C30E 1.0301 C10. 1.1121 C10E 1.1750 C75W. 1.2076 102Cr6. 1.2307 29CrMoV9	up to 850 N/mm²	Slotting	180	0.018	0.035	0.045	0.06	0.07	0.09	0.1	0.15
		Roughing	200	0.02	0.04	0.055	0.07	0.085	0.1	0.12	0.17
		Finishing	280	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
Free-cutting steels. unalloyed case hard. steels. nitr. steels 1.0727 46 S20. 1.0728 60 S20. 1.0757 46SPb20 1.0601 C60. 1.1221 C60E 1.7043 38Cr4 1.5752 15NiCr13. 1.7131 16MnCr5. 1.7264 20CrMo5 1.8504 34CrAl6 1.8519 31CrMoV9. 1.8550 34CrAlNi7	850-1.200 N/mm²	Slotting	160	0.018	0.035	0.045	0.06	0.07	0.09	0.1	0.15
		Roughing	180	0.02	0.04	0.055	0.07	0.085	0.1	0.12	0.17
		Finishing	220	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
Alloyed heat-treatable. tool and high speed steels 1.5131 50MnSi4. 1.7003 38Cr2. 1.7030 28Cr4 1.5710 36NiCr6. 1.7035 41Cr4. 1.7225 42CrMo4 1.2080 X210Cr12. 1.2083 X42Cr13. 1.2419 105WCr6. 1.2379 X155CrVMo12-1 1.3243 S 6-5-2-5. 1.3343 S 6-5-2. 1.3344 S 6-5-3 Spring steel = 1.5026 55Si7. 1.7176 55Cr3. 1.8159 51CrV4	850-1.400 N/mm²	Slotting	135	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
		Roughing	160	0.02	0.04	0.05	0.065	0.08	0.095	0.11	0.16
		Finishing	200	0.015	0.03	0.04	0.05	0.06	0.07	0.09	0.13
Hardened steel Tool steel. heat-treatable steel. spring steel. high-speed steel. case hardened steel. etc. Z.B.: 1.2344 X40CrMoV5-1; 1.2767 X45NiCrMo4; 1.2379 X155CrVMo12-1 ;1.2080 X210Cr12 1.3343 S 6-5-2	up to 54 HRC	Slotting	70	0.012	0.025	0.03	0.04	0.045	0.06	0.07	0.1
		Roughing	110	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
		Finishing	150	0.015	0.03	0.04	0.05	0.06	0.07	0.09	0.13
	54-60 HRC	Slotting									
		Roughing									
		Finishing	110	0.01	0.015	0.025	0.035	0.042	0.05	0.08	0.09
Stainless steel 1.4104 X14CrMoS17. 1.4105 X6CrMoS17. 1.4305 X10CrNiS18-9 USA = 303. 410. 420F. 430. 430F	up to 750 N/mm²	Slotting	120	0.015	0.03	0.04	0.05	0.06	0.07	0.09	0.13
		Roughing	140	0.018	0.035	0.045	0.06	0.07	0.09	0.1	0.15
		Finishing	180	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
Stainless steel 1.4301 X5CrNi18-10. 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304. 304L. 420	750-850 N/mm²	Slotting	80	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
		Roughing	120	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
		Finishing	140	0.015	0.03	0.04	0.05	0.06	0.07	0.09	0.13
Stainless steel 1.4438 X2CrNiMo18-15-4. 1.4404 X2CrNiMo17-12-2. 1.4571 X6CrNiTi18-10 USA = 310. 316. 316B. 316L. 317	over 850 N/mm²	Slotting	70	0.012	0.025	0.03	0.04	0.045	0.06	0.07	0.1
		Roughing	100	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
		Finishing	120	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
Special alloys (nickel based "Ni") Nimonic. Inconel. Monel. Hastelloy	up to 1.300 N/mm²	Slotting	30	0.01	0.015	0.02	0.025	0.03	0.04	0.05	0.06
		Roughing	35	0.01	0.02	0.03	0.035	0.04	0.055	0.065	0.08
		Finishing	45	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
Titanium alloys ("Ti") 3.7024 Ti99.5. 3.7114 TiAl5Sn2.5. 3.7124 TiCu2 3.7154 TiAl6Zr5. 3.7164 TiAl6V4. 3.7184 TiAl4Mo4Sn2.5	up to 1.300 N/mm²	Slotting	60	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
		Roughing	90	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
		Finishing	130	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
Cast iron. grey cast iron. spher. graphite/malleable cast iron 0.6010 EN-GL100 (GG10). 0.6020 EN-GJL-200 (GG20). 0.7050 EN-GJS-500-7 (GGG50). 0.8535 EN-GJMW-350-4 (GTW35)	up to 240 HB 30	Slotting	160	0.02	0.04	0.05	0.065	0.08	0.095	0.11	0.16
		Roughing	180	0.02	0.04	0.055	0.07	0.085	0.1	0.12	0.17
		Finishing	220	0.018	0.035	0.045	0.06	0.07	0.09	0.1	0.15
Cast iron. grey cast iron. spher. graphite/malleable cast iron 0.6025 EN-GL250 (GG25). 0.6035 EN-GJL-350 (GG35). 0.7070 EN-GJS-700-2 (GGG70). 0.8170 EN-GJMB-700-2 (GTS70)	up to 240 HB 30	Slotting	140	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
		Roughing	160	0.02	0.04	0.05	0.065	0.08	0.095	0.11	0.16
		Finishing	200	0.018	0.035	0.045	0.06	0.07	0.09	0.1	0.15
Aluminium. Al-wrought alloys. Al-alloys 3.0255 Al99.5. 3.2315 AlMgSi1. 3.3515 AlMg1 3.0615 AlMgSiPb. 3.1325 AlCuMg1. 3.3245 AlMg3Si. 3.4365 AlZnMgCu1.5	up to 3% Si	Slotting	500	0.02	0.04	0.05	0.065	0.08	0.095	0.11	0.16
		Roughing	600	0.02	0.04	0.055	0.07	0.085	0.1	0.12	0.17
		Finishing	1000	0.018	0.035	0.045	0.06	0.07	0.09	0.1	0.15
Aluminium-cast alloys 3.2131 G-AlSi5Cu1. 3.2153 G-AlSi7Cu3. 3.2573 G-AlSi9 3.2581 G-AlSi12. 3.2583 G-AlSi12Cu. - G-AlSi12CuNiMg	over 3% Si	Slotting	230	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
		Roughing	280	0.02	0.04	0.05	0.065	0.08	0.095	0.11	0.16
		Finishing	350	0.018	0.035	0.045	0.06	0.07	0.09	0.1	0.15
Magnesium-alloys MgMn2. G-MgAl8Zn1. G-MgAl6Zn3	-	Slotting	180	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
		Roughing	220	0.02	0.04	0.05	0.065	0.08	0.095	0.11	0.16
		Finishing	280	0.018	0.035	0.045	0.06	0.07	0.09	0.1	0.15
Non-ferrous metals (copper. short- or long-chipping brass or bronze) 2.0070 SE-Cu. 2.1020 CuSn6. 2.1096 G-CuSn5ZnPb 2.0380 CuZn39Pb2. 2.0401 CuZn39Pb3. 2.0410 CuZn43Pb2 2.0250 CuZn20. 2.0280 CuZn33. 2.0332 CuZn37Pb0.5 2.1090 CuSn7ZnPb. 2.1170 CuPb5Sn5. 2.1176 CuPb10Sn 2.0916 CuAl5. 2.0960 CuAl9Mn. 2.1050 CuSn10	up to 850 N/mm²	Slotting	250	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
		Roughing	300	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
		Finishing	400	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14

Notes

General Purpose Endmills

B00

2 Flute Ball Nose Endmill 24
Standard, Long and Extra Long

B30

4 Flute Ball Nose Endmill 25
Standard, Long and Extra Long

E33

4 Flute Square Endmill 26

E35

4 Flute Square Endmill 27
ECO Series

E34

4 Flute Endmill 28
with Corner radius

E73

4 Flute Square Endmill 29
Long and Extra Long

E74

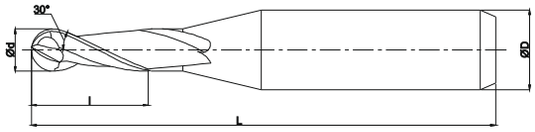
4 Flute Endmill 30
with Corner Chamfer

Cutting Parameter 31

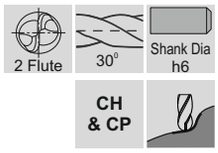
2 Flute Ball Nose Endmill

B00

Standard, Long and Extra Long



CUTTING DIA	TOLERANCES (mm)
Ød	+0.000 / -0.050



P	●
M	●
K	●
N	●
S	◐
H	◐

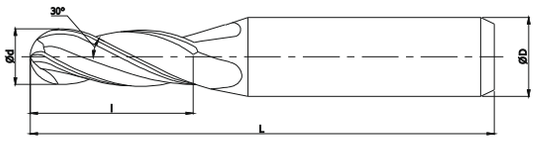
DESCRIPTION				PART NUMBER		Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	TiAlN Coated	
0.50	1.50	38.00	3.00	B00-M00500-0015V0	B00TM00500-0015V0	*
1.00	3.00	50.00	3.00	B00-M01000-0030V0	B00TM01000-0030V0	*
1.50	4.50	50.00	3.00	B00-M01500-0045V0	B00TM01500-0045V0	*
2.00	6.00	50.00	3.00	B00-M02000-0060V0	B00TM02000-0060V0	*
2.50	7.00	50.00	3.00	B00-M02500-0070V0	B00TM02500-0070V0	*
3.00	8.00	57.00	6.00	B00-M03000-0080V0	B00TM03000-0080V0	*
3.00	25.00	64.00	6.00	B00-M03000-0250V0	B00TM03000-0250V0	*
3.00	35.00	80.00	6.00	B00-M03000-0350V0	B00TM03000-0350V0	*
4.00	9.00	57.00	6.00	B00-M04000-0090V0	B00TM04000-0090V0	*
4.00	25.00	64.00	6.00	B00-M04000-0250V0	B00TM04000-0250V0	*
4.00	35.00	80.00	6.00	B00-M04000-0350V0	B00TM04000-0350V0	*
5.00	11.00	57.00	6.00	B00-M05000-0110V0	B00TM05000-0110V0	*
5.00	25.00	64.00	6.00	B00-M05000-0250V0	B00TM05000-0250V0	*
5.00	40.00	100.00	6.00	B00-M05000-0400V0	B00TM05000-0400V0	*
6.00	13.00	57.00	6.00	B00-M06000-0130V0	B00TM06000-0130V0	*
6.00	30.00	76.00	6.00	B00-M06000-0300V0	B00TM06000-0300V0	*
6.00	40.00	100.00	6.00	B00-M06000-0400V0	B00TM06000-0400V0	*
8.00	19.00	63.00	8.00	B00-M08000-0190V0	B00TM08000-0190V0	*
8.00	35.00	83.00	8.00	B00-M08000-0350V0	B00TM08000-0350V0	*
8.00	50.00	100.00	8.00	B00-M08000-0500V0	B00TM08000-0500V0	*
10.00	22.00	72.00	10.00	B00-M10000-0220V0	B00TM10000-0220V0	*
10.00	40.00	89.00	10.00	B00-M10000-0400V0	B00TM10000-0400V0	*
10.00	60.00	130.00	10.00	B00-M10000-0600V0	B00TM10000-0600V0	*
12.00	26.00	83.00	12.00	B00-M12000-0260V0	B00TM12000-0260V0	*
12.00	50.00	102.00	12.00	B00-M12000-0500V0	B00TM12000-0500V0	*
12.00	75.00	152.00	12.00	B00-M12000-0750V0	B00TM12000-0750V0	*
14.00	30.00	87.00	14.00	B00-M14000-0300V0	B00TM14000-0300V0	*
16.00	32.00	92.00	16.00	B00-M16000-0320V0	B00TM16000-0320V0	*
16.00	65.00	117.00	16.00	B00-M16000-0650V0	B00TM16000-0650V0	*
16.00	75.00	152.00	16.00	B00-M16000-0750V0	B00TM16000-0750V0	*
20.00	38.00	104.00	20.00	B00-M20000-0380V0	B00TM20000-0380V0	*
20.00	80.00	133.00	20.00	B00-M20000-0800V0	B00TM20000-0800V0	*
20.00	95.00	152.00	20.00	B00-M20000-0950V0	B00TM20000-0950V0	*

Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

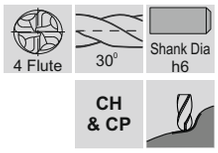
4 Flute Ball Nose Endmill

B30

Standard, Long and Extra Long



CUTTING DIA	TOLERANCES (mm)
Ød	+0.000 / -0.050



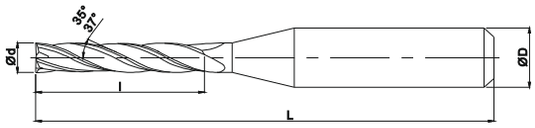
P	●
M	●
K	●
N	●
S	◐
H	◐

DESCRIPTION				PART NUMBER		Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	TiAlN Coated	
0.50	1.50	38.00	3.00	B30-M00500-0015V0	B30TM00500-0015V0	*
1.00	3.00	50.00	3.00	B30-M01000-0030V0	B30TM01000-0030V0	*
1.50	4.50	50.00	3.00	B30-M01500-0045V0	B30TM01500-0045V0	*
2.00	6.00	50.00	3.00	B30-M02000-0060V0	B30TM02000-0060V0	*
2.50	7.00	50.00	3.00	B30-M02500-0070V0	B30TM02500-0070V0	*
3.00	8.00	57.00	6.00	B30-M03000-0080V0	B30TM03000-0080V0	*
3.00	25.00	64.00	6.00	B30-M03000-0250V0	B30TM03000-0250V0	*
3.00	35.00	80.00	6.00	B30-M03000-0350V0	B30TM03000-0350V0	*
4.00	9.00	57.00	6.00	B30-M04000-0090V0	B30TM04000-0090V0	*
4.00	25.00	64.00	6.00	B30-M04000-0250V0	B30TM04000-0250V0	*
4.00	35.00	80.00	6.00	B30-M04000-0350V0	B30TM04000-0350V0	*
5.00	11.00	57.00	6.00	B30-M05000-0110V0	B30TM05000-0110V0	*
5.00	25.00	64.00	6.00	B30-M05000-0250V0	B30TM05000-0250V0	*
5.00	40.00	100.00	6.00	B30-M05000-0400V0	B30TM05000-0400V0	*
6.00	13.00	57.00	6.00	B30-M06000-0130V0	B30TM06000-0130V0	*
6.00	30.00	76.00	6.00	B30-M06000-0300V0	B30TM06000-0300V0	*
6.00	40.00	100.00	6.00	B30-M06000-0400V0	B30TM06000-0400V0	*
8.00	19.00	63.00	8.00	B30-M08000-0190V0	B30TM08000-0190V0	*
8.00	35.00	83.00	8.00	B30-M08000-0350V0	B30TM08000-0350V0	*
8.00	50.00	100.00	8.00	B30-M08000-0500V0	B30TM08000-0500V0	*
10.00	22.00	72.00	10.00	B30-M10000-0220V0	B30TM10000-0220V0	*
10.00	40.00	89.00	10.00	B30-M10000-0400V0	B30TM10000-0400V0	*
10.00	60.00	130.00	10.00	B30-M10000-0600V0	B30TM10000-0600V0	*
12.00	26.00	83.00	12.00	B30-M12000-0260V0	B30TM12000-0260V0	*
12.00	50.00	102.00	12.00	B30-M12000-0500V0	B30TM12000-0500V0	*
12.00	75.00	152.00	12.00	B30-M12000-0750V0	B30TM12000-0750V0	*
14.00	30.00	87.00	14.00	B30-M14000-0300V0	B30TM14000-0300V0	*
16.00	32.00	92.00	16.00	B30-M16000-0320V0	B30TM16000-0320V0	*
16.00	65.00	117.00	16.00	B30-M16000-0650V0	B30TM16000-0650V0	*
16.00	75.00	152.00	16.00	B30-M16000-0750V0	B30TM16000-0750V0	*
20.00	38.00	104.00	20.00	B30-M20000-0380V0	B30TM20000-0380V0	*
20.00	80.00	133.00	20.00	B30-M20000-0800V0	B30TM20000-0800V0	*
20.00	95.00	152.00	20.00	B30-M20000-0950V0	B30TM20000-0950V0	*

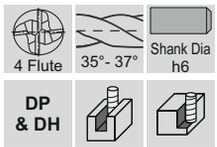
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

4 Flute Square Endmill

E33



CUTTING DIA	TOLERANCES (mm)
Ød	+0.000 / -0.050



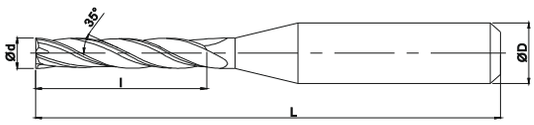
P	●
M	●
K	●
N	●
S	◐
H	◐

DESCRIPTION				PART NUMBER	Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	AlTiN Coated	
0.50	1.50	38.00	3.00	E33HM00500-0015V0	*
0.60	1.80	38.00	3.00	E33HM00600-0018V0	*
0.70	2.10	38.00	3.00	E33HM00700-0021V0	*
0.80	2.40	38.00	3.00	E33HM00800-0024V0	*
0.90	2.70	38.00	3.00	E33HM00900-0027V0	*
1.00	3.00	50.00	3.00	E33HM01000-0030V0	*
1.00	3.00	50.00	4.00	E33HM01000-0030VA	*
1.50	4.50	50.00	3.00	E33HM01500-0045V0	*
1.50	4.50	50.00	4.00	E33HM01500-0045VA	*
2.00	6.50	50.00	3.00	E33HM02000-0065V0	*
2.00	6.50	50.00	4.00	E33HM02000-0065VA	*
2.50	6.50	50.00	3.00	E33HM02500-0065V0	*
2.50	6.50	50.00	4.00	E33HM02500-0065VA	*
3.00	9.00	50.00	3.00	E33HM03000-0090V0	*
3.00	9.00	50.00	4.00	E33HM03000-0090VA	*
3.00	9.00	50.00	6.00	E33HM03000-0090VB	*
4.00	12.00	50.00	4.00	E33HM04000-0120V0	*
4.00	12.00	50.00	6.00	E33HM04000-0120VA	*
5.00	15.00	50.00	5.00	E33HM05000-0150V0	*
5.00	15.00	50.00	6.00	E33HM05000-0150VA	*
6.00	16.00	50.00	6.00	E33HM06000-0160V0	*
6.00	20.00	60.00	6.00	E33HM06000-0200V0	*
8.00	22.00	64.00	8.00	E33HM08000-0220V0	*
10.00	27.00	70.00	10.00	E33HM10000-0270V0	*
10.00	22.00	75.00	10.00	E33HM10000-0220V0	*
12.00	32.00	75.00	12.00	E33HM12000-0320V0	*
12.00	36.00	90.00	12.00	E33HM12000-0360V0	*
14.00	28.00	100.00	14.00	E33HM14000-0280V0	*
14.00	42.00	100.00	14.00	E33HM10000-0420V0	*
16.00	32.00	100.00	16.00	E33HM16000-0320V0	*
16.00	48.00	100.00	16.00	E33HM16000-0480V0	*
16.00	48.00	100.00	16.00	E33HM16000-0480V0	*
18.00	36.00	105.00	18.00	E33HM18000-0360V0	*
18.00	54.00	105.00	18.00	E33HM18000-0540V0	*
20.00	40.00	105.00	20.00	E33HM20000-0400V0	*
20.00	60.00	105.00	20.00	E33HM20000-0600V0	*

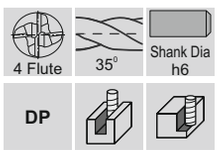
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

4 Flute Square Endmill - ECO Series

E35



CUTTING DIA	TOLERANCES (mm)
Ød	+0.000 / -0.050



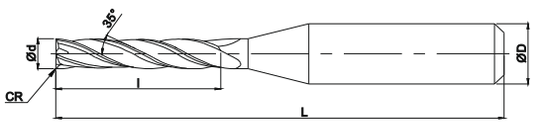
P	●
M	●
K	●
N	●
S	◐
H	◐

DESCRIPTION				PART NUMBER		Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	AlTiN Coated	
0.50	1.50	38.00	3.00	E35-M00500-0015V0	E35HM00500-0015V0	*
0.60	1.80	38.00	3.00	E35-M00600-0018V0	E35HM00600-0018V0	*
0.70	2.10	38.00	3.00	E35-M00700-0021V0	E35HM00700-0021V0	*
0.80	2.40	38.00	3.00	E35-M00800-0024V0	E35HM00800-0024V0	*
0.90	2.70	38.00	3.00	E35-M00900-0027V0	E35HM00900-0027V0	*
1.00	3.00	40.00	3.00	E35-M01000-0030V0	E35HM01000-0030V0	*
1.00	3.00	40.00	4.00	E35-M01000-0030VA	E35HM01000-0030VA	*
1.50	4.50	40.00	3.00	E35-M01500-0045V0	E35HM01500-0045V0	*
1.50	4.50	40.00	4.00	E35-M01500-0045VA	E35HM01500-0045VA	*
2.00	6.50	40.00	3.00	E35-M02000-0065V0	E35HM02000-0065V0	*
2.00	6.50	40.00	4.00	E35-M02000-0065VA	E35HM02000-0065VA	*
2.50	6.50	40.00	3.00	E35-M02500-0065V0	E35HM02500-0065V0	*
2.50	6.50	40.00	4.00	E35-M02500-0065VA	E35HM02500-0065VA	*
3.00	9.00	40.00	3.00	E35-M03000-0090V0	E35HM03000-0090V0	*
3.00	9.00	50.00	6.00	E35-M03000-0090VA	E35HM03000-0090VA	*
4.00	12.00	50.00	4.00	E35-M04000-0120V0	E35HM04000-0120V0	*
4.00	12.00	50.00	6.00	E35-M04000-0120VA	E35HM04000-0120VA	*
5.00	15.00	50.00	5.00	E35-M05000-0150V0	E35HM05000-0150V0	*
5.00	15.00	50.00	6.00	E35-M05000-0150VA	E35HM05000-0150VA	*
6.00	16.00	50.00	6.00	E35-M06000-0160V0	E35HM06000-0160V0	*
6.00	20.00	60.00	6.00	E35-M06000-0200V0	E35HM06000-0200V0	*
8.00	22.00	64.00	8.00	E35-M08000-0200V0	E35HM08000-0200V0	*
10.00	22.00	70.00	10.00	E35-M10000-0220V0	E35HM10000-0220V0	*
10.00	22.00	75.00	10.00	E35-M10000-0220VA	E35HM10000-0220VA	*
12.00	32.00	75.00	12.00	E35-M12000-0320V0	E35HM12000-0320V0	*
12.00	36.00	90.00	12.00	E35-M12000-0360V0	E35HM12000-0360V0	*
14.00	28.00	100.00	14.00	E35-M14000-0280V0	E35HM14000-0280V0	*
14.00	42.00	100.00	14.00	E35-M10000-0420V0	E35HM10000-0420V0	*
16.00	32.00	100.00	16.00	E35-M16000-0320V0	E35HM16000-0320V0	*
16.00	48.00	100.00	16.00	E35-M16000-0480V0	E35HM16000-0480V0	*
18.00	36.00	105.00	18.00	E35-M18000-0360V0	E35HM18000-0360V0	*
18.00	54.00	105.00	18.00	E35-M18000-0540V0	E35HM18000-0540V0	*
20.00	40.00	105.00	20.00	E35-M20000-0400V0	E35HM20000-0400V0	*
20.00	60.00	105.00	20.00	E35-M20000-0600V0	E35HM20000-0600V0	*

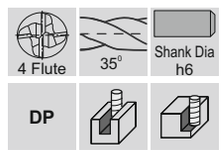
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

4 Flute Endmill with Corner radius

E34



CUTTING DIA	TOLERANCES (mm)
Ød	+0.000 / -0.050



P	●
M	●
K	●
N	●
S	◐
H	◐

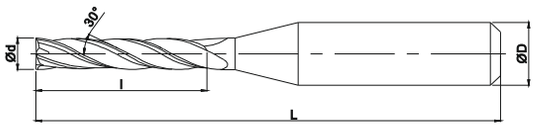
DESCRIPTION					PART NUMBER		Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Radius CR	Uncoated	TiAlN Coated	
1.00	3.00	57.00	6.00	0.10	E34-M01000-0030V0	E34TM01000-0030V0	*
1.50	4.50	57.00	6.00	0.10	E34-M01500-0045V0	E34TM01500-0045V0	*
2.00	6.00	57.00	6.00	0.20	E34-M02000-0060V0	E34TM02000-0060V0	*
2.50	7.00	57.00	6.00	0.20	E34-M02500-0070V0	E34TM02500-0070V0	*
3.00	8.00	57.00	6.00	0.30	E34-M03000-0080V0	E34TM03000-0080V0	*
3.00	8.00	57.00	6.00	0.50	E34-M03000-0080VA	E34TM03000-0080VA	*
4.00	11.00	57.00	6.00	0.30	E34-M04000-0110V0	E34TM04000-0110V0	*
4.00	11.00	57.00	6.00	0.50	E34-M04000-0110VA	E34TM04000-0110VA	*
5.00	13.00	57.00	6.00	0.30	E34-M05000-0130V0	E34TM05000-0130V0	*
6.00	13.00	57.00	6.00	0.25	E34-M06000-0130V0	E34TM06000-0130V0	*
6.00	13.00	57.00	6.00	0.50	E34-M06000-0130VA	E34TM06000-0130VA	*
6.00	13.00	57.00	6.00	1.00	E34-M06000-0130VB	E34TM06000-0130VB	*
6.00	13.00	57.00	6.00	1.50	E34-M06000-0130VC	E34TM06000-0130VC	*
8.00	19.00	63.00	8.00	0.50	E34-M08000-0190V0	E34TM08000-0190V0	*
8.00	19.00	63.00	8.00	1.00	E34-M08000-0190VA	E34TM08000-0190VA	*
8.00	19.00	63.00	8.00	1.50	E34-M08000-0190VB	E34TM08000-0190VB	*
8.00	19.00	63.00	8.00	2.00	E34-M08000-0190VC	E34TM08000-0190VC	*
10.00	22.00	72.00	10.00	0.50	E34-M10000-0220V0	E34TM10000-0220V0	*
10.00	22.00	72.00	10.00	1.00	E34-M10000-0220VA	E34TM10000-0220VA	*
10.00	22.00	72.00	10.00	1.50	E34-M10000-0220VB	E34TM10000-0220VB	*
10.00	22.00	72.00	10.00	2.00	E34-M10000-0220VC	E34TM10000-0220VC	*
10.00	22.00	72.00	10.00	2.50	E34-M10000-0220VD	E34TM10000-0220VD	*
12.00	26.00	83.00	12.00	0.50	E34-M12000-0260V0	E34TM12000-0260V0	*
12.00	26.00	83.00	12.00	0.75	E34-M12000-0260VA	E34TM12000-0260VA	*
12.00	26.00	83.00	12.00	1.00	E34-M12000-0260VB	E34TM12000-0260VB	*
12.00	26.00	83.00	12.00	1.50	E34-M12000-0260VC	E34TM12000-0260VC	*
12.00	26.00	83.00	12.00	2.00	E34-M12000-0260VD	E34TM12000-0260VD	*
12.00	26.00	83.00	12.00	2.50	E34-M12000-0260VE	E34TM12000-0260VE	*
12.00	26.00	83.00	12.00	3.00	E34-M12000-0260VF	E34TM12000-0260VF	*
14.00	26.00	83.00	14.00	1.00	E34-M14000-0260V0	E34TM14000-0260V0	*
16.00	32.00	92.00	16.00	1.00	E34-M16000-0320V0	E34TM16000-0320V0	*
16.00	32.00	92.00	16.00	1.50	E34-M16000-0320VA	E34TM16000-0320VA	*
16.00	32.00	92.00	16.00	2.00	E34-M16000-0320VB	E34TM16000-0320VB	*
16.00	32.00	92.00	16.00	2.50	E34-M16000-0320VC	E34TM16000-0320VC	*
16.00	32.00	92.00	16.00	3.00	E34-M16000-0320VD	E34TM16000-0320VD	*
20.00	38.00	104.00	20.00	1.00	E34-M20000-0380V0	E34TM20000-0380V0	*
20.00	38.00	104.00	20.00	1.50	E34-M20000-0380VA	E34TM20000-0380VA	*
20.00	38.00	104.00	20.00	2.00	E34-M20000-0380VB	E34TM20000-0380VB	*
20.00	38.00	104.00	20.00	2.50	E34-M20000-0380VC	E34TM20000-0380VC	*
20.00	38.00	104.00	20.00	3.00	E34-M20000-0380VD	E34TM20000-0380VD	*

Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

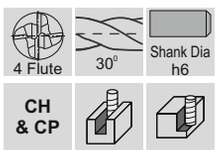
4 Flute Square Endmill

E73

Long and Extra Long



CUTTING DIA	TOLERANCES (mm)
Ød	+0.000 / -0.050



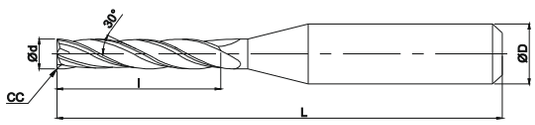
P	●
M	●
K	●
N	●
S	◐
H	◐

DESCRIPTION				PART NUMBER		Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	TiAlN Coated	
0.50	1.50	38.00	3.00	E73-M00500-0015V0	E73TM00500-0015V0	*
1.00	3.00	50.00	3.00	E73-M01000-0030V0	E73TM01000-0030V0	*
1.50	4.50	50.00	3.00	E73-M01500-0045V0	E73TM01500-0045V0	*
2.00	6.00	50.00	3.00	E73-M02000-0060V0	E73TM02000-0060V0	*
2.50	7.00	50.00	3.00	E73-M02500-0070V0	E73TM02500-0070V0	*
3.00	25.00	64.00	6.00	E73-M03000-0250V0	E73TM03000-0250V0	*
3.00	35.00	80.00	6.00	E73-M03000-0350V0	E73TM03000-0350V0	*
4.00	25.00	64.00	6.00	E73-M04000-0250V0	E73TM04000-0250V0	*
4.00	35.00	80.00	6.00	E73-M04000-0350V0	E73TM04000-0350V0	*
5.00	25.00	64.00	6.00	E73-M05000-0250V0	E73TM05000-0250V0	*
5.00	40.00	100.00	6.00	E73-M05000-0400V0	E73TM05000-0400V0	*
6.00	30.00	76.00	6.00	E73-M06000-0300V0	E73TM06000-0300V0	*
6.00	40.00	100.00	6.00	E73-M06000-0400V0	E73TM06000-0400V0	*
8.00	35.00	83.00	8.00	E73-M08000-0350V0	E73TM08000-0350V0	*
8.00	50.00	100.00	8.00	E73-M08000-0500V0	E73TM08000-0500V0	*
10.00	40.00	89.00	10.00	E73-M10000-0400V0	E73TM10000-0400V0	*
10.00	60.00	130.00	10.00	E73-M10000-0600V0	E73TM10000-0600V0	*
12.00	50.00	102.00	12.00	E73-M12000-0500V0	E73TM12000-0500V0	*
12.00	75.00	152.00	12.00	E73-M12000-0750V0	E73TM12000-0750V0	*
16.00	65.00	117.00	16.00	E73-M16000-0650V0	E73TM16000-0650V0	*
16.00	75.00	152.00	16.00	E73-M16000-0750V0	E73TM16000-0750V0	*
20.00	80.00	133.00	20.00	E73-M20000-0800V0	E73TM20000-0800V0	*
20.00	95.00	152.00	20.00	E73-M20000-0950V0	E73TM20000-0950V0	*

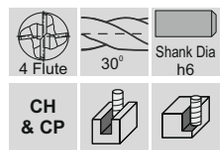
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

4 Flute Endmill with Corner Chamfer

E74



CUTTING DIA	TOLERANCES (mm)
Ød	+0.000 / -0.050



P	●
M	●
K	●
N	●
S	◐
H	◐

DESCRIPTION					PART NUMBER		Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Chamfer CCx45°	Uncoated	TiAlN Coated	
1.00	3.00	57.00	6.00	0.020	E74-M01000-0030V0	E74TM01000-0030V0	*
1.50	4.50	57.00	6.00	0.020	E74-M01500-0045V0	E74TM01500-0045V0	*
2.00	6.00	57.00	6.00	0.020	E74-M02000-0060V0	E74TM02000-0060V0	*
2.50	7.00	57.00	6.00	0.020	E74-M02500-0070V0	E74TM02500-0070V0	*
3.00	8.00	57.00	6.00	0.020	E74-M03000-0080V0	E74TM03000-0080V0	*
4.00	11.00	57.00	6.00	0.030	E74-M04000-0110V0	E74TM04000-0110V0	*
5.00	13.00	57.00	6.00	0.030	E74-M05000-0130V0	E74TM05000-0130V0	*
6.00	13.00	57.00	6.00	0.040	E74-M06000-0130V0	E74TM06000-0130V0	*
8.00	19.00	63.00	8.00	0.040	E74-M08000-0190V0	E74TM08000-0190V0	*
10.00	22.00	72.00	10.00	0.040	E74-M10000-0220V0	E74TM10000-0220V0	*
12.00	26.00	83.00	12.00	0.050	E74-M12000-0260V0	E74TM12000-0260V0	*
14.00	26.00	83.00	14.00	0.050	E74-M14000-0260V0	E74TM14000-0260V0	*
16.00	32.00	92.00	16.00	0.060	E74-M16000-0320V0	E74TM16000-0320V0	*
20.00	38.00	104.00	20.00	0.060	E74-M20000-0380V0	E74TM20000-0380V0	*

Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

Cutting Parameter

B00, B30, E33, E35, E34, E73, E74

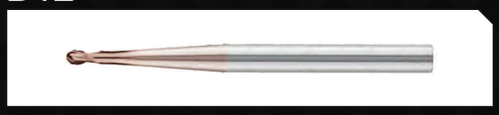
Application	v_c factor	f_z factor	Feed width (a_e)	Feed depth (a_p)
Slotting	**1**	**1** (0.7 for a_p = 2xd)	1xd	0.5 up to 1xd
Roughing	**1**	**1** (0.7 for a_p = 2xd)	0.4 up to 0.9xd	0.5 up to 1xd
Finishing	**1**	**1**	0.01 up to 0.1xd	1 up to 2xd
HPC-Roughing	**1.3**	**1.5**	0.15 up to 0.4xd	1 up to 2xd
HSC-Roughing	**1.5**	**2**	0.05 up to 0.15xd	1 up to 2xd

Material	Hardness	recommended Type	Type of application	cut v_c	fz (mm/z) with nom. Ø							
					3	6	8	10	12	16	20	25
Structural + free-cutting steels. unalloyed heat-treatable + case hardened steels 1.0035 S185. 1.0486 P275N. 1.0345 P235GH. 1.0050. 1.0070. 1.8937 1.0718 11SMnPb30. 1.0736 11SMn37 1.0402 C22. 1.1178 C30E 1.0503 C45. 1.1191 C30E 1.0301 C10. 1.1121 C10E 1.1750 C75W. 1.2076 102Cr6. 1.2307 29CrMoV9	up to 850 N/mm²	2-fluted	Slotting	125	0.013	0.025	0.032	0.042	0.049	0.063	0.070	0.105
		2-/3-fluted	Roughing	140	0.014	0.028	0.039	0.049	0.060	0.070	0.084	0.119
		4-fluted	Finishing	190	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
Free-cutting steels. unalloyed case hard. steels. nitr. steels 1.0727 46 S20. 1.0728 60 S20. 1.0757 46SPb20 1.0601 C60. 1.1221 C60E 1.7043 38Cr4 1.5752 15NiCr13. 1.7131 16MnCr5. 1.7264 20CrMo5 1.8504 34CrAl6 1.8519 31CrMoV9. 1.8550 34CrAlNi7	850-1.200 N/mm²	2-fluted	Slotting	110	0.013	0.025	0.032	0.042	0.049	0.063	0.070	0.105
		2-/3-fluted	Roughing	130	0.014	0.028	0.039	0.049	0.060	0.070	0.084	0.119
		4-fluted	Finishing	150	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
Alloyed heat-treatable. tool and high speed steels 1.5131 50MnSi4. 1.7003 38Cr2. 1.7030 28Cr4 1.5710 36NiCr6. 1.7035 41Cr4. 1.7225 42CrMo4 1.2080 X210Cr12. 1.2083 X42Cr13. 1.2419 105WCr6. 1.2379 X155CrVMo12-1 1.3243 S 6-5-2-5. 1.3343 S 6-5-2. 1.3344 S 6-5-3 spring steel = 1.5026 55Si7. 1.7176 55Cr3. 1.8159 51CrV4	850-1.400 N/mm²	2-fluted	Slotting	95	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
		2-/3-fluted	Roughing	115	0.014	0.028	0.035	0.046	0.056	0.067	0.077	0.112
		4-fluted	Finishing	140	0.011	0.021	0.028	0.035	0.042	0.049	0.063	0.091
Hardened steel Tool steel. heat-treatable steel. spring steel. high-speed steel. case hardened steel. etc. Z.B.: 1.2344 X40CrMoV5-1; 1.2767 X45NiCrMo4; 1.2379 X155CrVMo12-1 ;1.2080 X210Cr12 1.3343 S 6-5-2	up to 54 HRC	2-fluted	Slotting	50	0.007	0.015	0.018	0.024	0.027	0.036	0.042	0.060
		2-/3-fluted	Roughing	75	0.009	0.015	0.021	0.027	0.030	0.039	0.048	0.072
		4-fluted	Finishing	105	0.009	0.018	0.024	0.030	0.036	0.042	0.054	0.078
	54-60 HRC	2-fluted	Slotting									
		2-/3-fluted	Roughing									
		4-fluted	Finishing									
Stainless steel 1.4104 X14CrMoS17. 1.4105 X6CrMoS17. 1.4305 X10CrNiS18-9 USA = 303. 410. 420F. 430. 430F	up to 750 N/mm²	2-fluted	Slotting	85	0.009	0.018	0.024	0.030	0.036	0.042	0.054	0.078
		2-/3-fluted	Roughing	100	0.011	0.021	0.027	0.036	0.042	0.054	0.060	0.090
		4-fluted	Finishing	125	0.010	0.018	0.024	0.033	0.039	0.048	0.057	0.084
Stainless steel 1.4301 X5CrNi18-10. 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304. 304L. 420	750-850 N/mm²	2-fluted	Slotting	55	0.009	0.015	0.021	0.027	0.030	0.039	0.048	0.072
		2-/3-fluted	Roughing	85	0.010	0.018	0.024	0.033	0.039	0.048	0.057	0.084
		4-fluted	Finishing	100	0.009	0.018	0.024	0.030	0.036	0.042	0.054	0.078
Stainless steel 1.4438 X2CrNiMo18-15-4. 1.4404 X2CrNiMo17-12-2. 1.4571 X6CrNiTi18-10 USA = 310. 316. 316B. 316L. 317	over 850 N/mm²	2-fluted	Slotting	50	0.007	0.015	0.018	0.024	0.027	0.036	0.042	0.060
		2-/3-fluted	Roughing	70	0.009	0.015	0.021	0.027	0.030	0.039	0.048	0.072
		4-fluted	Finishing	85	0.009	0.015	0.021	0.027	0.030	0.039	0.048	0.072
Special alloys (nickel based "Ni") Nimonic. Inconel. Monel. Hastelloy	up to 1.300 N/mm²	2-fluted	Slotting	20	0.006	0.009	0.012	0.015	0.018	0.024	0.030	0.036
		2-/3-fluted	Roughing	25	0.006	0.012	0.018	0.021	0.024	0.033	0.039	0.048
		4-fluted	Finishing	30	0.009	0.015	0.021	0.027	0.030	0.039	0.048	0.072
Titanium alloys ("Ti") 3.7024 Ti99.5. 3.7114 TiAl5Sn2.5. 3.7124 TiCu2 3.7154 TiAl6Zr5. 3.7164 TiAl6V4. 3.7184 TiAl4Mo4Sn2.5	up to 1.300 N/mm²	2-fluted	Slotting	40	0.009	0.015	0.021	0.027	0.030	0.039	0.048	0.072
		2-/3-fluted	Roughing	60	0.010	0.018	0.024	0.033	0.039	0.048	0.057	0.084
		4-fluted	Finishing	90	0.010	0.018	0.024	0.033	0.039	0.048	0.057	0.084
Cast iron. grey cast iron. spher. graphite/malleable cast iron 0.6010 EN-GL100 (GG10). 0.6020 EN-GJL-200 (GG20). 0.7050 EN-GJS-500-7 (GGG50). 0.8535 EN-GJMW-350-4 (GTW35)	up to 240 HB 30	2-fluted	Slotting	115	0.012	0.024	0.030	0.039	0.048	0.057	0.066	0.096
		2-/3-fluted	Roughing	125	0.012	0.024	0.033	0.042	0.051	0.060	0.072	0.102
		4-fluted	Finishing	155	0.011	0.021	0.027	0.036	0.042	0.054	0.060	0.090
Cast iron. grey cast iron. spher. graphite/malleable cast iron 0.6025 EN-GL250 (GG25). 0.6035 EN-GJL-350 (GG35). 0.7070 EN-GJS-700-2 (GGG70). 0.8170 EN-GJMB-700-2 (GTS70)	over 240 HB 30	2-fluted	Slotting	100	0.010	0.018	0.024	0.033	0.039	0.048	0.057	0.084
		2-/3-fluted	Roughing	115	0.012	0.024	0.030	0.039	0.048	0.057	0.066	0.096
		4-fluted	Finishing	140	0.011	0.021	0.027	0.036	0.042	0.054	0.060	0.090
Aluminium. Al-wrought alloys. Al-alloys 3.0255 Al99.5. 3.2315 AlMgSi1. 3.3515 AlMg1 3.0615 AlMgSiPb. 3.1325 AlCuMg1. 3.3245 AlMg3Si. 3.4365 AlZnMgCu1.5	up to 3% Si	2-fluted	Slotting	350	0.014	0.028	0.035	0.046	0.056	0.067	0.077	0.112
		2-/3-fluted	Roughing	420	0.014	0.028	0.039	0.049	0.060	0.070	0.084	0.119
		4-fluted	Finishing	700	0.013	0.025	0.032	0.042	0.049	0.063	0.070	0.105
Aluminium-cast alloys 3.2131 G-AlSi5Cu1. 3.2153 G-AlSi7Cu3. 3.2573 G-AlSi9 3.2581 G-AlSi12. 3.2583 G-AlSi12Cu. - G-AlSi12CuNiMg	over 3% Si	2-fluted	Slotting	160	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
		2-/3-fluted	Roughing	200	0.014	0.028	0.035	0.046	0.056	0.067	0.077	0.112
		4-fluted	Finishing	245	0.013	0.025	0.032	0.042	0.049	0.063	0.070	0.105
Magnesium-alloys MgMn2. G-MgAl8Zn1. G-MgAl6Zn3	-	2-fluted	Slotting	125	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
		2-/3-fluted	Roughing	150	0.014	0.028	0.035	0.046	0.056	0.067	0.077	0.112
		4-fluted	Finishing	200	0.013	0.025	0.032	0.042	0.049	0.063	0.070	0.105
Non-ferrous metals (copper. short- or long-chipping brass or bronze) 2.0070 SE-Cu. 2.1020 CuSn6. 2.1096 G-CuSn5ZnPb 2.0380 CuZn39Pb2. 2.0401 CuZn39Pb3. 2.0410 CuZn43Pb2 2.0250 CuZn20. 2.0280 CuZn33. 2.0332 CuZn37Pb0.5 2.1090 CuSn7ZnPb. 2.1170 CuPb5Sn5. 2.1176 CuPb10Sn 2.0916 CuAl5. 2.0960 CuAl9Mn. 2.1050 CuSn10	up to 850 N/mm²	2-fluted	Slotting	175	0.011	0.018	0.025	0.032	0.035	0.046	0.056	0.084
		2-/3-fluted	Roughing	210	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
		4-fluted	Finishing	280	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098

Notes

Die & Mould Endmills

B12



2 Flute Taper Ball Nose Endmill 34-35

B02

2 Flute Ball Nose Endmill 36
Standard, Long and Extra Long

E37

4 Flute Square Endmill 37
Standard, Long and Extra Long-40° Helix

E79

4 Flute Square Endmill 38
Standard, Long and Extra Long-42°/45° Helix

E80

4 Flute Endmill 39
with Corner radius
Standard, Long and Extra Long

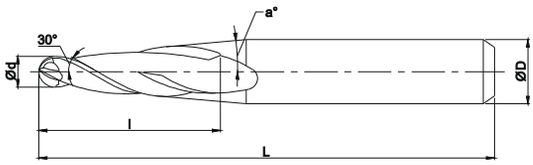
B16

4 Flute Ball Nose Endmill 40
Standard, Long and Extra Long

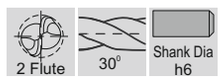
Cutting Parameter 41

2 Flute Taper Ball Nose Endmill

B12



CUTTING DIA	TOLERANCES (mm)
≤Ø2.50	+0.000 / -0.025
>Ø2.50 - Ø4.00	+0.000 / -0.030



P	●
H	●

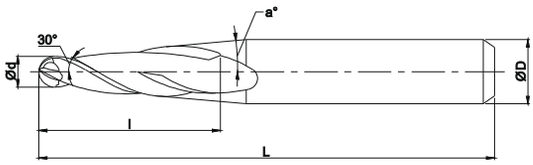
DESCRIPTION					PART NUMBER			Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Taper Angle a°	Uncoated	TiSiN Coated	AlTiN Coated	
0.50	4.00	38.00	3.00	30'	B12-M00500-0040V0	B12SM00500-0040V0	B12AM00500-0040V0	*
0.50	4.00	38.00	3.00	1°	B12-M00500-0040VA	B12SM00500-0040VA	B12AM00500-0040VA	*
0.50	4.00	38.00	3.00	1°30'	B12-M00500-0040VB	B12SM00500-0040VB	B12AM00500-0040VB	*
0.50	4.00	38.00	3.00	2°	B12-M00500-0040VC	B12SM00500-0040VC	B12AM00500-0040VC	*
0.50	6.00	38.00	3.00	30'	B12-M00500-0060V0	B12SM00500-0060V0	B12AM00500-0060V0	*
0.50	6.00	38.00	3.00	1°	B12-M00500-0060VA	B12SM00500-0060VA	B12AM00500-0060VA	*
0.50	6.00	38.00	3.00	1°30'	B12-M00500-0060VB	B12SM00500-0060VB	B12AM00500-0060VB	*
0.50	6.00	38.00	3.00	2°	B12-M00500-0060VC	B12SM00500-0060VC	B12AM00500-0060VC	*
1.00	8.00	38.00	3.00	30'	B12-M01000-0080V0	B12SM01000-0080V0	B12AM01000-0080V0	*
1.00	8.00	38.00	3.00	1°	B12-M01000-0080VA	B12SM01000-0080VA	B12AM01000-0080VA	*
1.00	8.00	38.00	3.00	1°30'	B12-M01000-0080VB	B12SM01000-0080VB	B12AM01000-0080VB	*
1.00	8.00	38.00	3.00	2°	B12-M01000-0080VC	B12SM01000-0080VC	B12AM01000-0080VC	*
1.00	12.00	38.00	3.00	30'	B12-M01000-0120V0	B12SM01000-0120V0	B12AM01000-0120V0	*
1.00	12.00	38.00	3.00	1°	B12-M01000-0120VA	B12SM01000-0120VA	B12AM01000-0120VA	*
1.00	12.00	38.00	3.00	1°30'	B12-M01000-0120VB	B12SM01000-0120VB	B12AM01000-0120VB	*
1.00	12.00	38.00	3.00	2°	B12-M01000-0120VC	B12SM01000-0120VC	B12AM01000-0120VC	*
1.50	8.00	45.00	4.00	30'	B12-M01500-0080V0	B12SM01500-0080V0	B12AM01500-0080V0	*
1.50	8.00	45.00	4.00	1°	B12-M01500-0080VA	B12SM01500-0080VA	B12AM01500-0080VA	*
1.50	8.00	45.00	4.00	1°30'	B12-M01500-0080VB	B12SM01500-0080VB	B12AM01500-0080VB	*
1.50	8.00	45.00	4.00	2°	B12-M01500-0080VC	B12SM01500-0080VC	B12AM01500-0080VC	*
1.50	12.00	45.00	4.00	30'	B12-M01500-0120V0	B12SM01500-0120V0	B12AM01500-0120V0	*
1.50	12.00	45.00	4.00	1°	B12-M01500-0120VA	B12SM01500-0120VA	B12AM01500-0120VA	*
1.50	12.00	45.00	4.00	1°30'	B12-M01500-0120VB	B12SM01500-0120VB	B12AM01500-0120VB	*
1.50	12.00	45.00	4.00	2°	B12-M01500-0120VC	B12SM01500-0120VC	B12AM01500-0120VC	*
2.00	15.00	60.00	4.00	30'	B12-M02000-0150V0	B12SM02000-0150V0	B12AM02000-0150V0	*
2.00	15.00	60.00	4.00	1°	B12-M02000-0150VA	B12SM02000-0150VA	B12AM02000-0150VA	*
2.00	15.00	60.00	4.00	1°30'	B12-M02000-0150VB	B12SM02000-0150VB	B12AM02000-0150VB	*
2.00	15.00	60.00	4.00	2°	B12-M02000-0150VC	B12SM02000-0150VC	B12AM02000-0150VC	*
2.00	20.00	60.00	4.00	30'	B12-M02000-0200V0	B12SM02000-0200V0	B12AM02000-0200V0	*
2.00	20.00	60.00	4.00	1°	B12-M02000-0200VA	B12SM02000-0200VA	B12AM02000-0200VA	*
2.00	20.00	60.00	4.00	1°30'	B12-M02000-0200VB	B12SM02000-0200VB	B12AM02000-0200VB	*
2.00	20.00	60.00	4.00	2°	B12-M02000-0200VC	B12SM02000-0200VC	B12AM02000-0200VC	*

Continued...

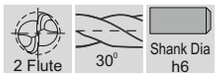
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

2 Flute Taper Ball Nose Endmill

B12



CUTTING DIA	TOLERANCES (mm)
≤Ø2.50	+0.000 / -0.025
>Ø2.50 - Ø4.00	+0.000 / -0.030



P	●
H	●

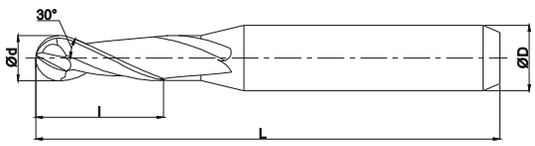
DESCRIPTION					PART NUMBER			Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Taper Angle a°	Uncoated	TiSiN Coated	AlTiN Coated	
2.50	15.00	60.00	6.00	30'	B12-M02500-0150V0	B12SM02500-0150V0	B12AM02500-0150V0	*
2.50	15.00	60.00	6.00	1°	B12-M02500-0150VA	B12SM02500-0150VA	B12AM02500-0150VA	*
2.50	15.00	60.00	6.00	1°30'	B12-M02500-0150VB	B12SM02500-0150VB	B12AM02500-0150VB	*
2.50	15.00	60.00	6.00	2°	B12-M02500-0150VC	B12SM02500-0150VC	B12AM02500-0150VC	*
2.50	20.00	60.00	6.00	30'	B12-M02500-0200V0	B12SM02500-0200V0	B12AM02500-0200V0	*
2.50	20.00	60.00	6.00	1°	B12-M02500-0200VA	B12SM02500-0200VA	B12AM02500-0200VA	*
2.50	20.00	60.00	6.00	1°30'	B12-M02500-0200VB	B12SM02500-0200VB	B12AM02500-0200VB	*
2.50	20.00	60.00	6.00	2°	B12-M02500-0200VC	B12SM02500-0200VC	B12AM02500-0200VC	*
3.00	15.00	60.00	6.00	30'	B12-M03000-0150V0	B12SM03000-0150V0	B12AM03000-0150V0	*
3.00	15.00	60.00	6.00	1°	B12-M03000-0150VA	B12SM03000-0150VA	B12AM03000-0150VA	*
3.00	15.00	60.00	6.00	1°30'	B12-M03000-0150VB	B12SM03000-0150VB	B12AM03000-0150VB	*
3.00	15.00	60.00	6.00	2°	B12-M03000-0150VC	B12SM03000-0150VC	B12AM03000-0150VC	*
3.00	20.00	60.00	6.00	30'	B12-M03000-0200V0	B12SM03000-0200V0	B12AM03000-0200V0	*
3.00	20.00	60.00	6.00	1°	B12-M03000-0200VA	B12SM03000-0200VA	B12AM03000-0200VA	*
3.00	20.00	60.00	6.00	1°30'	B12-M03000-0200VB	B12SM03000-0200VB	B12AM03000-0200VB	*
3.00	20.00	60.00	6.00	2°	B12-M03000-0200VC	B12SM03000-0200VC	B12AM03000-0200VC	*
4.00	25.00	70.00	6.00	30'	B12-M04000-0250V0	B12SM04000-0250V0	B12AM04000-0250V0	*
4.00	25.00	70.00	6.00	1°	B12-M04000-0250VA	B12SM04000-0250VA	B12AM04000-0250VA	*
4.00	25.00	70.00	6.00	1°30'	B12-M04000-0250VB	B12SM04000-0250VB	B12AM04000-0250VB	*
4.00	25.00	70.00	6.00	2°	B12-M04000-0250VC	B12SM04000-0250VC	B12AM04000-0250VC	*
4.00	30.00	70.00	6.00	30'	B12-M04000-0300V0	B12SM04000-0300V0	B12AM04000-0300V0	*
4.00	30.00	70.00	6.00	1°	B12-M04000-0300VA	B12SM04000-0300VA	B12AM04000-0300VA	*
4.00	30.00	70.00	6.00	1°30'	B12-M04000-0300VB	B12SM04000-0300VB	B12AM04000-0300VB	*
4.00	30.00	70.00	6.00	2°	B12-M04000-0300VC	B12SM04000-0300VC	B12AM04000-0300VC	*

Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

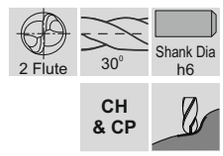
2 Flute Ball Nose Endmill

B02

Standard, Long and Extra Long



CUTTING DIA	TOLERANCES (mm)
≤Ø2.50	+0.000 / -0.025
>Ø2.50 - Ø6.00	+0.000 / -0.030
>Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050



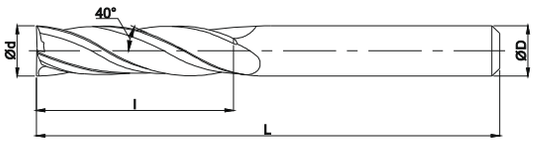
DESCRIPTION				PART NUMBER			Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	TiSiN Coated	AlTiN Coated	
0.50	1.50	38.00	3.00	B02-M00500-0015V0	B02SM00500-0015V0	B02AM00500-0015V0	*
1.00	3.00	50.00	3.00	B02-M01000-0030V0	B02SM01000-0030V0	B02AM01000-0030V0	*
1.50	4.50	50.00	3.00	B02-M01500-0045V0	B02SM01500-0045V0	B02AM01500-0045V0	*
2.00	6.00	50.00	3.00	B02-M02000-0060V0	B02SM02000-0060V0	B02AM02000-0060V0	*
2.50	7.00	50.00	3.00	B02-M02500-0070V0	B02SM02500-0070V0	B02AM02500-0070V0	*
3.00	8.00	57.00	6.00	B02-M03000-0080V0	B02SM03000-0080V0	B02AM03000-0080V0	*
3.00	25.00	64.00	6.00	B02-M03000-0250V0	B02SM03000-0250V0	B02AM03000-0250V0	*
3.00	35.00	80.00	6.00	B02-M03000-0350V0	B02SM03000-0350V0	B02AM03000-0350V0	*
4.00	9.00	57.00	6.00	B02-M04000-0090V0	B02SM04000-0090V0	B02AM04000-0090V0	*
4.00	25.00	64.00	6.00	B02-M04000-0250V0	B02SM04000-0250V0	B02AM04000-0250V0	*
4.00	35.00	80.00	6.00	B02-M04000-0350V0	B02SM04000-0350V0	B02AM04000-0350V0	*
5.00	11.00	57.00	6.00	B02-M05000-0110V0	B02SM05000-0110V0	B02AM05000-0110V0	*
5.00	25.00	64.00	6.00	B02-M05000-0250V0	B02SM05000-0250V0	B02AM05000-0250V0	*
5.00	40.00	100.00	6.00	B02-M05000-0400V0	B02SM05000-0400V0	B02AM05000-0400V0	*
6.00	13.00	57.00	6.00	B02-M06000-0130V0	B02SM06000-0130V0	B02AM06000-0130V0	*
6.00	30.00	76.00	6.00	B02-M06000-0300V0	B02SM06000-0300V0	B02AM06000-0300V0	*
6.00	40.00	100.00	6.00	B02-M06000-0400V0	B02SM06000-0400V0	B02AM06000-0400V0	*
8.00	19.00	63.00	8.00	B02-M08000-0190V0	B02SM08000-0190V0	B02AM08000-0190V0	*
8.00	35.00	83.00	8.00	B02-M08000-0350V0	B02SM08000-0350V0	B02AM08000-0350V0	*
8.00	50.00	100.00	8.00	B02-M08000-0500V0	B02SM08000-0500V0	B02AM08000-0500V0	*
10.00	22.00	72.00	10.00	B02-M10000-0220V0	B02SM10000-0220V0	B02AM10000-0220V0	*
10.00	40.00	89.00	10.00	B02-M10000-0400V0	B02SM10000-0400V0	B02AM10000-0400V0	*
10.00	60.00	130.00	10.00	B02-M10000-0600V0	B02SM10000-0600V0	B02AM10000-0600V0	*
12.00	26.00	83.00	12.00	B02-M12000-0260V0	B02SM12000-0260V0	B02AM12000-0260V0	*
12.00	50.00	102.00	12.00	B02-M12000-0500V0	B02SM12000-0500V0	B02AM12000-0500V0	*
12.00	75.00	152.00	12.00	B02-M12000-0750V0	B02SM12000-0750V0	B02AM12000-0750V0	*
14.00	30.00	87.00	14.00	B02-M14000-0300V0	B02SM14000-0300V0	B02AM14000-0300V0	*
16.00	32.00	92.00	16.00	B02-M16000-0320V0	B02SM16000-0320V0	B02AM16000-0320V0	*
16.00	65.00	117.00	16.00	B02-M16000-0650V0	B02SM16000-0650V0	B02AM16000-0650V0	*
16.00	75.00	152.00	16.00	B02-M16000-0750V0	B02SM16000-0750V0	B02AM16000-0750V0	*
20.00	38.00	104.00	20.00	B02-M20000-0380V0	B02SM20000-0380V0	B02AM20000-0380V0	*
20.00	80.00	133.00	20.00	B02-M20000-0800V0	B02SM20000-0800V0	B02AM20000-0800V0	*
20.00	95.00	152.00	20.00	B02-M20000-0950V0	B02SM20000-0950V0	B02AM20000-0950V0	*

Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

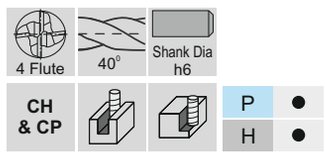
4 Flute Square Endmill

E37

Standard, Long and Extra Long



CUTTING DIA	TOLERANCES (mm)
<Ø3.00	+0.000 / -0.025
Ø3.00 - Ø6.00	+0.000 / -0.030
>Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050



DESCRIPTION				PART NUMBER			Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	TiSiN Coated	AlTiN Coated	
0.50	1.50	38.00	3.00	E37-M00500-0015V0	E37SM00500-0015V0	E37AM00500-0015V0	*
1.00	3.00	50.00	3.00	E37-M01000-0030V0	E37SM01000-0030V0	E37AM01000-0030V0	*
1.50	4.50	50.00	3.00	E37-M01500-0045V0	E37SM01500-0045V0	E37AM01500-0045V0	*
2.00	6.00	50.00	3.00	E37-M02000-0060V0	E37SM02000-0060V0	E37AM02000-0060V0	*
2.50	7.00	50.00	3.00	E37-M02500-0070V0	E37SM02500-0070V0	E37AM02500-0070V0	*
3.00	8.00	57.00	6.00	E37-M03000-0080V0	E37SM03000-0080V0	E37AM03000-0080V0	*
3.00	25.00	64.00	6.00	E37-M03000-0250V0	E37SM03000-0250V0	E37AM03000-0250V0	*
3.00	35.00	80.00	6.00	E37-M03000-0350V0	E37SM03000-0350V0	E37AM03000-0350V0	*
4.00	9.00	57.00	6.00	E37-M04000-0090V0	E37SM04000-0090V0	E37AM04000-0090V0	*
4.00	25.00	64.00	6.00	E37-M04000-0250V0	E37SM04000-0250V0	E37AM04000-0250V0	*
4.00	35.00	80.00	6.00	E37-M04000-0350V0	E37SM04000-0350V0	E37AM04000-0350V0	*
5.00	11.00	57.00	6.00	E37-M05000-0110V0	E37SM05000-0110V0	E37AM05000-0110V0	*
5.00	25.00	64.00	6.00	E37-M05000-0250V0	E37SM05000-0250V0	E37AM05000-0250V0	*
5.00	40.00	100.00	6.00	E37-M05000-0400V0	E37SM05000-0400V0	E37AM05000-0400V0	*
6.00	13.00	57.00	6.00	E37-M06000-0130V0	E37SM06000-0130V0	E37AM06000-0130V0	*
6.00	30.00	76.00	6.00	E37-M06000-0300V0	E37SM06000-0300V0	E37AM06000-0300V0	*
6.00	40.00	100.00	6.00	E37-M06000-0400V0	E37SM06000-0400V0	E37AM06000-0400V0	*
8.00	19.00	63.00	8.00	E37-M08000-0190V0	E37SM08000-0190V0	E37AM08000-0190V0	*
8.00	35.00	83.00	8.00	E37-M08000-0350V0	E37SM08000-0350V0	E37AM08000-0350V0	*
8.00	50.00	100.00	8.00	E37-M08000-0500V0	E37SM08000-0500V0	E37AM08000-0500V0	*
10.00	22.00	72.00	10.00	E37-M10000-0220V0	E37SM10000-0220V0	E37AM10000-0220V0	*
10.00	40.00	89.00	10.00	E37-M10000-0400V0	E37SM10000-0400V0	E37AM10000-0400V0	*
10.00	60.00	130.00	10.00	E37-M10000-0600V0	E37SM10000-0600V0	E37AM10000-0600V0	*
12.00	26.00	83.00	12.00	E37-M12000-0260V0	E37SM12000-0260V0	E37AM12000-0260V0	*
12.00	50.00	102.00	12.00	E37-M12000-0500V0	E37SM12000-0500V0	E37AM12000-0500V0	*
12.00	75.00	152.00	12.00	E37-M12000-0750V0	E37SM12000-0750V0	E37AM12000-0750V0	*
14.00	30.00	87.00	14.00	E37-M14000-0300V0	E37SM14000-0300V0	E37AM14000-0300V0	*
16.00	32.00	92.00	16.00	E37-M16000-0320V0	E37SM16000-0320V0	E37AM16000-0320V0	*
16.00	65.00	117.00	16.00	E37-M16000-0650V0	E37SM16000-0650V0	E37AM16000-0650V0	*
16.00	75.00	152.00	16.00	E37-M16000-0750V0	E37SM16000-0750V0	E37AM16000-0750V0	*
20.00	38.00	104.00	20.00	E37-M20000-0380V0	E37SM20000-0380V0	E37AM20000-0380V0	*
20.00	80.00	133.00	20.00	E37-M20000-0800V0	E37SM20000-0800V0	E37AM20000-0800V0	*
20.00	95.00	152.00	20.00	E37-M20000-0950V0	E37SM20000-0950V0	E37AM20000-0950V0	*

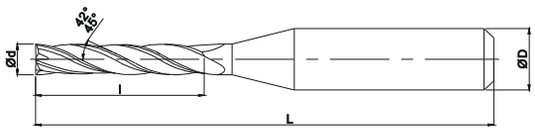
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

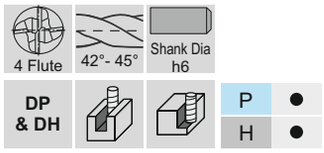
4 Flute Square Endmill

E79

Standard, Long and Extra Long

CUTTING DIA	TOLERANCES (mm)
<Ø3.00	+0.000 / -0.025
Ø3.00 - Ø6.00	+0.000 / -0.030
>Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050





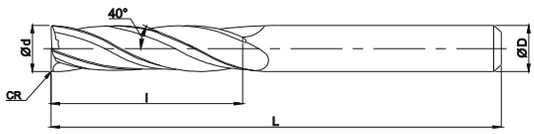
P	●
H	●

DESCRIPTION				PART NUMBER			Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	TiSiN Coated	AlTiN Coated	
0.50	1.50	38.00	3.00	E79-M00500-0015V0	E79SM00500-0015V0	E79AM00500-0015V0	*
1.00	3.00	50.00	3.00	E79-M01000-0030V0	E79SM01000-0030V0	E79AM01000-0030V0	*
1.50	4.50	50.00	3.00	E79-M01500-0045V0	E79SM01500-0045V0	E79AM01500-0045V0	*
2.00	6.00	50.00	3.00	E79-M02000-0060V0	E79SM02000-0060V0	E79AM02000-0060V0	*
2.50	7.00	50.00	3.00	E79-M02500-0070V0	E79SM02500-0070V0	E79AM02500-0070V0	*
3.00	8.00	57.00	6.00	E79-M03000-0080V0	E79SM03000-0080V0	E79AM03000-0080V0	*
3.00	25.00	64.00	6.00	E79-M03000-0250V0	E79SM03000-0250V0	E79AM03000-0250V0	*
3.00	35.00	80.00	6.00	E79-M03000-0350V0	E79SM03000-0350V0	E79AM03000-0350V0	*
4.00	9.00	57.00	6.00	E79-M04000-0090V0	E79SM04000-0090V0	E79AM04000-0090V0	*
4.00	25.00	64.00	6.00	E79-M04000-0250V0	E79SM04000-0250V0	E79AM04000-0250V0	*
4.00	35.00	80.00	6.00	E79-M04000-0350V0	E79SM04000-0350V0	E79AM04000-0350V0	*
5.00	11.00	57.00	6.00	E79-M05000-0110V0	E79SM05000-0110V0	E79AM05000-0110V0	*
5.00	25.00	64.00	6.00	E79-M05000-0250V0	E79SM05000-0250V0	E79AM05000-0250V0	*
5.00	40.00	100.00	6.00	E79-M05000-0400V0	E79SM05000-0400V0	E79AM05000-0400V0	*
6.00	13.00	57.00	6.00	E79-M06000-0130V0	E79SM06000-0130V0	E79AM06000-0130V0	*
6.00	30.00	76.00	6.00	E79-M06000-0300V0	E79SM06000-0300V0	E79AM06000-0300V0	*
6.00	40.00	100.00	6.00	E79-M06000-0400V0	E79SM06000-0400V0	E79AM06000-0400V0	*
8.00	19.00	63.00	8.00	E79-M08000-0190V0	E79SM08000-0190V0	E79AM08000-0190V0	*
8.00	35.00	83.00	8.00	E79-M08000-0350V0	E79SM08000-0350V0	E79AM08000-0350V0	*
8.00	50.00	100.00	8.00	E79-M08000-0500V0	E79SM08000-0500V0	E79AM08000-0500V0	*
10.00	22.00	72.00	10.00	E79-M10000-0220V0	E79SM10000-0220V0	E79AM10000-0220V0	*
10.00	40.00	89.00	10.00	E79-M10000-0400V0	E79SM10000-0400V0	E79AM10000-0400V0	*
10.00	60.00	130.00	10.00	E79-M10000-0600V0	E79SM10000-0600V0	E79AM10000-0600V0	*
12.00	26.00	83.00	12.00	E79-M12000-0260V0	E79SM12000-0260V0	E79AM12000-0260V0	*
12.00	50.00	102.00	12.00	E79-M12000-0500V0	E79SM12000-0500V0	E79AM12000-0500V0	*
12.00	75.00	152.00	12.00	E79-M12000-0750V0	E79SM12000-0750V0	E79AM12000-0750V0	*
14.00	30.00	87.00	14.00	E79-M14000-0300V0	E79SM14000-0300V0	E79AM14000-0300V0	*
16.00	32.00	92.00	16.00	E79-M16000-0320V0	E79SM16000-0320V0	E79AM16000-0320V0	*
16.00	65.00	117.00	16.00	E79-M16000-0650V0	E79SM16000-0650V0	E79AM16000-0650V0	*
16.00	75.00	152.00	16.00	E79-M16000-0750V0	E79SM16000-0750V0	E79AM16000-0750V0	*
20.00	38.00	104.00	20.00	E79-M20000-0380V0	E79SM20000-0380V0	E79AM20000-0380V0	*
20.00	80.00	133.00	20.00	E79-M20000-0800V0	E79SM20000-0800V0	E79AM20000-0800V0	*
20.00	95.00	152.00	20.00	E79-M20000-0950V0	E79SM20000-0950V0	E79AM20000-0950V0	*

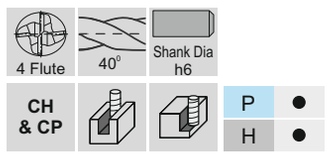
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

4 Flute Endmill with Corner radius

E80



CUTTING DIA	TOLERANCES (mm)
<Ø3.00	+0.000 / -0.025
Ø3.00 - Ø6.00	+0.000 / -0.030
>Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050



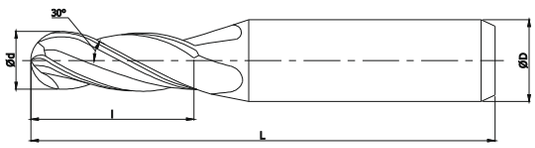
DESCRIPTION					PART NUMBER			Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Radius CR	Uncoated	TiSiN Coated	AlTiN Coated	
1.00	3.00	50.00	3.00	0.10	E80-M01000-0030V0	E80SM01000-0030V0	E80AM01000-0030V0	*
1.50	4.50	50.00	3.00	0.10	E80-M01500-0045V0	E80SM01500-0045V0	E80AM01500-0045V0	*
2.00	6.00	50.00	3.00	0.20	E80-M02000-0060V0	E80SM02000-0060V0	E80AM02000-0060V0	*
2.50	7.00	50.00	3.00	0.20	E80-M02500-0070V0	E80SM02500-0070V0	E80AM02500-0070V0	*
3.00	8.00	57.00	6.00	0.30	E80-M03000-0080V0	E80SM03000-0080V0	E80AM03000-0080V0	*
3.00	25.00	64.00	6.00	0.30	E80-M03000-0250V0	E80SM03000-0250V0	E80AM03000-0250V0	*
4.00	9.00	57.00	6.00	0.50	E80-M04000-0090V0	E80SM04000-0090V0	E80AM04000-0090V0	*
4.00	25.00	64.00	6.00	0.50	E80-M04000-0250V0	E80SM04000-0250V0	E80AM04000-0250V0	*
4.00	35.00	80.00	6.00	0.50	E80-M04000-0350V0	E80SM04000-0350V0	E80AM04000-0350V0	*
5.00	11.00	57.00	6.00	1.00	E80-M05000-0110V0	E80SM05000-0110V0	E80AM05000-0110V0	*
5.00	25.00	64.00	6.00	1.00	E80-M05000-0250V0	E80SM05000-0250V0	E80AM05000-0250V0	*
5.00	40.00	100.00	6.00	1.00	E80-M05000-0400V0	E80SM05000-0400V0	E80AM05000-0400V0	*
6.00	13.00	57.00	6.00	1.00	E80-M06000-0130V0	E80SM06000-0130V0	E80AM06000-0130V0	*
6.00	30.00	76.00	6.00	1.00	E80-M06000-0300V0	E80SM06000-0300V0	E80AM06000-0300V0	*
6.00	40.00	100.00	6.00	1.00	E80-M06000-0400V0	E80SM06000-0400V0	E80AM06000-0400V0	*
8.00	19.00	63.00	8.00	1.00	E80-M08000-0190V0	E80SM08000-0190V0	E80AM08000-0190V0	*
8.00	35.00	83.00	8.00	1.00	E80-M08000-0350V0	E80SM08000-0350V0	E80AM08000-0350V0	*
8.00	50.00	100.00	8.00	1.00	E80-M08000-0500V0	E80SM08000-0500V0	E80AM08000-0500V0	*
10.00	22.00	72.00	10.00	1.50	E80-M10000-0220V0	E80SM10000-0220V0	E80AM10000-0220V0	*
10.00	40.00	89.00	10.00	1.50	E80-M10000-0400V0	E80SM10000-0400V0	E80AM10000-0400V0	*
10.00	60.00	130.00	10.00	1.50	E80-M10000-0600V0	E80SM10000-0600V0	E80AM10000-0600V0	*
12.00	26.00	83.00	12.00	1.50	E80-M12000-0260V0	E80SM12000-0260V0	E80AM12000-0260V0	*
12.00	50.00	102.00	12.00	1.50	E80-M12000-0500V0	E80SM12000-0500V0	E80AM12000-0500V0	*
12.00	75.00	152.00	12.00	1.50	E80-M12000-0750V0	E80SM12000-0750V0	E80AM12000-0750V0	*
14.00	30.00	87.00	14.00	2.00	E80-M14000-0300V0	E80SM14000-0300V0	E80AM14000-0300V0	*
16.00	32.00	92.00	16.00	2.00	E80-M16000-0320V0	E80SM16000-0320V0	E80AM16000-0320V0	*
16.00	65.00	117.00	16.00	2.00	E80-M16000-0650V0	E80SM16000-0650V0	E80AM16000-0650V0	*
16.00	75.00	152.00	16.00	2.00	E80-M16000-0750V0	E80SM16000-0750V0	E80AM16000-0750V0	*
20.00	38.00	104.00	20.00	2.00	E80-M20000-0380V0	E80SM20000-0380V0	E80AM20000-0380V0	*
20.00	80.00	133.00	20.00	2.00	E80-M20000-0800V0	E80SM20000-0800V0	E80AM20000-0800V0	*
20.00	95.00	152.00	20.00	2.00	E80-M20000-0950V0	E80SM20000-0950V0	E80AM20000-0950V0	*

Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

4 Flute Ball Nose Endmill

B16

Standard, Long and Extra Long



CUTTING DIA	TOLERANCES (mm)
≤Ø2.50	+0.000 / -0.025
>Ø2.50 - Ø6.00	+0.000 / -0.030
>Ø6.00 - Ø10.00	+0.000 / -0.040
>Ø10.00 - Ø20.00	+0.000 / -0.050

4 Flute | 30° | Shank Dia h6

CH & CP

P	●
H	●

DESCRIPTION				PART NUMBER			Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	TiSiN Coated	AlTiN Coated	
0.50	1.50	38.00	3.00	B16-M00500-0015V0	B16SM00500-0015V0	B16AM00500-0015V0	*
1.00	3.00	50.00	3.00	B16-M01000-0030V0	B16SM01000-0030V0	B16AM01000-0030V0	*
1.50	4.50	50.00	3.00	B16-M01500-0045V0	B16SM01500-0045V0	B16AM01500-0045V0	*
2.00	6.00	50.00	3.00	B16-M02000-0060V0	B16SM02000-0060V0	B16AM02000-0060V0	*
2.50	7.00	50.00	3.00	B16-M02500-0070V0	B16SM02500-0070V0	B16AM02500-0070V0	*
3.00	8.00	57.00	6.00	B16-M03000-0080V0	B16SM03000-0080V0	B16AM03000-0080V0	*
3.00	25.00	64.00	6.00	B16-M03000-0250V0	B16SM03000-0250V0	B16AM03000-0250V0	*
3.00	35.00	80.00	6.00	B16-M03000-0350V0	B16SM03000-0350V0	B16AM03000-0350V0	*
4.00	9.00	57.00	6.00	B16-M04000-0090V0	B16SM04000-0090V0	B16AM04000-0090V0	*
4.00	25.00	64.00	6.00	B16-M04000-0250V0	B16SM04000-0250V0	B16AM04000-0250V0	*
4.00	35.00	80.00	6.00	B16-M04000-0350V0	B16SM04000-0350V0	B16AM04000-0350V0	*
5.00	11.00	57.00	6.00	B16-M05000-0110V0	B16SM05000-0110V0	B16AM05000-0110V0	*
5.00	25.00	64.00	6.00	B16-M05000-0250V0	B16SM05000-0250V0	B16AM05000-0250V0	*
5.00	40.00	100.00	6.00	B16-M05000-0400V0	B16SM05000-0400V0	B16AM05000-0400V0	*
6.00	13.00	57.00	6.00	B16-M06000-0130V0	B16SM06000-0130V0	B16AM06000-0130V0	*
6.00	30.00	76.00	6.00	B16-M06000-0300V0	B16SM06000-0300V0	B16AM06000-0300V0	*
6.00	40.00	100.00	6.00	B16-M06000-0400V0	B16SM06000-0400V0	B16AM06000-0400V0	*
8.00	19.00	63.00	8.00	B16-M08000-0190V0	B16SM08000-0190V0	B16AM08000-0190V0	*
8.00	35.00	83.00	8.00	B16-M08000-0350V0	B16SM08000-0350V0	B16AM08000-0350V0	*
8.00	50.00	100.00	8.00	B16-M08000-0500V0	B16SM08000-0500V0	B16AM08000-0500V0	*
10.00	22.00	72.00	10.00	B16-M10000-0220V0	B16SM10000-0220V0	B16AM10000-0220V0	*
10.00	40.00	89.00	10.00	B16-M10000-0400V0	B16SM10000-0400V0	B16AM10000-0400V0	*
10.00	60.00	130.00	10.00	B16-M10000-0600V0	B16SM10000-0600V0	B16AM10000-0600V0	*
12.00	26.00	83.00	12.00	B16-M12000-0260V0	B16SM12000-0260V0	B16AM12000-0260V0	*
12.00	50.00	102.00	12.00	B16-M12000-0500V0	B16SM12000-0500V0	B16AM12000-0500V0	*
12.00	75.00	152.00	12.00	B16-M12000-0750V0	B16SM12000-0750V0	B16AM12000-0750V0	*
14.00	30.00	87.00	14.00	B16-M14000-0300V0	B16SM14000-0300V0	B16AM14000-0300V0	*
16.00	32.00	92.00	16.00	B16-M16000-0320V0	B16SM16000-0320V0	B16AM16000-0320V0	*
16.00	65.00	117.00	16.00	B16-M16000-0650V0	B16SM16000-0650V0	B16AM16000-0650V0	*
16.00	75.00	152.00	16.00	B16-M16000-0750V0	B16SM16000-0750V0	B16AM16000-0750V0	*
20.00	38.00	104.00	20.00	B16-M20000-0380V0	B16SM20000-0380V0	B16AM20000-0380V0	*
20.00	80.00	133.00	20.00	B16-M20000-0800V0	B16SM20000-0800V0	B16AM20000-0800V0	*
20.00	95.00	152.00	20.00	B16-M20000-0950V0	B16SM20000-0950V0	B16AM20000-0950V0	*

Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

Cutting Parameter

B12, B02, E37, E28, E79, E80, B16

Application	Width/depth		Nom. diameter (mm) 2	3	4	6	8	10	12	16
Roughing	ae	(mm)	0.1	0.15	0.2	0.4	0.6	0.75	1	1.2
	ap	(mm)	0.15	0.15	0.3	0.5	0.75	1	1.5	1.5
Finishing	ae	(mm)	0.05	0.07	0.1	0.14	0.16	0.18	0.2	0.3
	ap	(mm)	0.05	0.05	0.07	0.1	0.15	0.2	0.25	0.3

Tool length/reach up to 3xD	vc and fz 100%
Tool length/reach 3-5xD	vc and fz 80%
Tool length/reach > 5-10xD	vc and fz 60%

Material	Hardness	recommended Typ	Type of application	cut v_c	fz (mm/z) with nom. Ø 3	6	8	10	12	16	20	25
Structural + free-cutting steels. unalloyed heat-treatable + case hardened steels 1.0035 S185. 1.0486 P275N. 1.0345 P235GH. 1.0050. 1.0070. 1.8937 1.0718 11SMnPb30. 1.0736 11SMn37 1.0402 C22. 1.1178 C30E 1.0503 C45. 1.1191 C30E 1.0301 C10. 1.1121 C10E 1.1750 C75W. 1.2076 102Cr6. 1.2307 29CrMoV9	up to 850 N/mm²	2-/4-fluted	Roughing	200	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		2-/4-fluted	Finishing	300	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
Free-cutting steels. unalloyed case hard. steels. nitr. steels 1.0727 46 S20. 1.0728 60 S20. 1.0757 46SPb20 1.0601 C60. 1.1221 C60E 1.7043 38Cr4 1.5752 15NiCr13. 1.7131 16MnCr5. 1.7264 20CrMo5 1.8504 34CrAl6 1.8519 31CrMoV9. 1.8550 34CrAlNi7	850-1.200 N/mm²	2-/4-fluted	Roughing	200	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		2-/4-fluted	Finishing	300	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
Alloyed heat-treatable. tool and high speed steels 1.5131 50MnSi4. 1.7003 38Cr2. 1.7030 28Cr4 1.5710 36NiCr6. 1.7035 41Cr4. 1.7225 42CrMo4 1.2080 X210Cr12. 1.2083 X42Cr13. 1.2419 105WCr6. 1.2379 X155CrVMo12-1 1.3243 S 6-5-2-5. 1.3343 S 6-5-2. 1.3344 S 6-5-3 spring steel = 1.5026 55Si7. 1.7176 55Cr3. 1.8159 51CrV4	850-1.400 N/mm²	2-/4-fluted	Roughing	180	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		2-/4-fluted	Finishing	280	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
Hardened steel Tool steel. heat-treatable steel. spring steel. high-speed steel. case hardened steel. etc. Z.B.: 1.2344 X40CrMoV5-1; 1.2767 X45NiCrMo4; 1.2379 X155CrVMo12-1 ;1.2080 X210Cr12 1.3343 S 6-5-2	up to 54 HRC	2-/4-fluted	Roughing	140	0.02	0.03	0.035	0.04	0.05	0.07	0.08	0.1
		2-/4-fluted	Finishing	200	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
	54-60 HRC	2-/4-fluted	Roughing	80	0.02	0.03	0.035	0.04	0.05	0.07	0.08	0.1
		2-/4-fluted	Finishing	130	0.025	0.03	0.04	0.045	0.05	0.07	0.1	0.12
Stainless steel 1.4104 X14CrMoS17. 1.4105 X6CrMoS17. 1.4305 X10CrNiS18-9 USA = 303. 410. 420F. 430. 430F	up to 750 N/mm²	2-/4-fluted	Roughing	180	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		2-/4-fluted	Finishing	280	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
Stainless steel 1.4301 X5CrNi18-10. 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304. 304L. 420	750-850 N/mm²	2-/4-fluted	Roughing	120	0.02	0.03	0.035	0.04	0.05	0.07	0.08	0.1
		2-/4-fluted	Finishing	180	0.025	0.03	0.04	0.045	0.05	0.07	0.1	0.12
Stainless steel 1.4438 X2CrNiMo18-15-4. 1.4404 X2CrNiMo17-12-2. 1.4571 X6CrNiTi18-10 USA = 310. 316. 316B. 316L. 317	over 850 N/mm²	2-/4-fluted	Roughing	80	0.02	0.03	0.035	0.04	0.05	0.07	0.08	0.1
		2-/4-fluted	Finishing	130	0.025	0.03	0.04	0.045	0.05	0.07	0.1	0.12
Special alloys (nickel based "Ni") Nimonic. Inconel. Monel. Hastelloy	up to 1.300 N/mm²	2-/4-fluted	Roughing	40	0.01	0.02	0.03	0.035	0.04	0.05	0.07	0.08
		2-/4-fluted	Finishing	60	0.02	0.025	0.03	0.04	0.045	0.06	0.08	0.09
Titanium alloys ("Ti") 3.7024 Ti99.5. 3.7114 TiAl5Sn2.5. 3.7124 TiCu2 3.7154 TiAl6Zr5. 3.7164 TiAl6V4. 3.7184 TiAl4Mo4Sn2.5	up to 1.300 N/mm²	2-/4-fluted	Roughing	90	0.02	0.03	0.035	0.04	0.05	0.07	0.08	0.1
		2-/4-fluted	Finishing	150	0.025	0.03	0.04	0.045	0.05	0.07	0.1	0.12
Cast iron. grey cast iron. spher. graphite/malleable cast iron 0.6010 EN-GL100 (GG10). 0.6020 EN-GJL-200 (GG20). 0.7050 EN-GJS-500-7 (GGG50). 0.8535 EN-GJMW-350-4 (GTW35)	up to 240 HB 30	2-/4-fluted	Roughing	200	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		2-/4-fluted	Finishing	300	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
Cast iron. grey cast iron. spher. graphite/malleable cast iron 0.6025 EN-GL250 (GG25). 0.6035 EN-GJL-350 (GG35). 0.7070 EN-GJS-700-2 (GGG70). 0.8170 EN-GJMB-700-2 (GTS70)	over 240 HB 30	2-/4-fluted	Roughing	150	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		2-/4-fluted	Finishing	230	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
Aluminium. Al-wrought alloys. Al-alloys 3.0255 Al99.5. 3.2315 AlMgSi1. 3.3515 AlMg1 3.0615 AlMgSiPb. 3.1325 AlCuMg1. 3.3245 AlMg3Si. 3.4365 AlZnMgCu1.5	up to 3% Si											
Aluminium-cast alloys 3.2131 G-AlSi5Cu1. 3.2153 G-AlSi7Cu3. 3.2573 G-AlSi9 3.2581 G-AlSi12. 3.2583 G-AlSi12Cu. - G-AlSi12CuNiMg	over 3% Si	2-/4-fluted	Roughing	280	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		2-/4-fluted	Finishing	350	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
Magnesium-alloys MgMn2. G-MgAl8Zn1. G-MgAl6Zn3	-											
Non-ferrous metals (copper. short- or long-chipping brass or bronze) 2.0070 SE-Cu. 2.1020 CuSn6. 2.1096 G-CuSn5ZnPb 2.0380 CuZn39Pb2. 2.0401 CuZn39Pb3. 2.0410 CuZn43Pb2 2.0250 CuZn20. 2.0280 CuZn33. 2.0332 CuZn37Pb0.5 2.1090 CuSn7ZnPb. 2.1170 CuPb5Sn5. 2.1176 CuPb10Sn 2.0916 CuAl5. 2.0960 CuAl9Mn. 2.1050 CuSn10	up to 850 N/mm²	2-/4-fluted	Roughing	250	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		2-/4-fluted	Finishing	400	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15

Notes

Alu / Non Ferrous Endmills

E00

Single Flute Square Endmill 44-45
Standard, Long and Extra Long

E01

Single Flute Square Endmill 46-47
with Multi Relief & Lapped Finish

E16

2 Flute Square Endmill 48
Standard, Long and Extra Long

E81

3 Flute Square Endmill 49
Standard, Long and Extra Long

E82

3 Flute Endmill 50
with Corner radius

B03

2 Flute Ball Nose Endmill 51
Standard, Long and Extra Long

B15

3 Flute Ball Nose Endmill 52
Standard, Long and Extra Long

E83

2-3 Flute Rougher Endmill 53

E84

3-4 Flute Long Reach Endmill 54

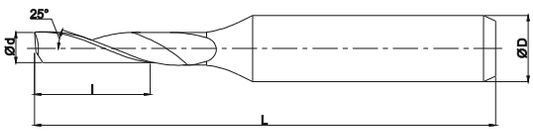
Cutting Parameter 55

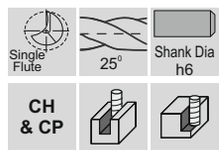
Single Flute Square Endmill

E00

Standard, Long and Extra Long

CUTTING DIA	TOLERANCES (mm)
≤ Ø3.00	-0,000 / -0,040
Ø4.00 - Ø6.00	-0,000 / -0,048
Ø8.00 - Ø10.00	-0,000 / -0,058
Ø12.00	-0,000 / -0,070





N ●

DESCRIPTION				PART NUMBER	Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	
0.10	0.30	38.00	3.00	E00-M00100-0003V0	*
0.20	0.60	38.00	3.00	E00-M00200-0006V0	*
0.30	1.00	38.00	3.00	E00-M00300-0010V0	*
0.40	1.00	38.00	3.00	E00-M00400-0010V0	*
0.50	1.50	38.00	3.00	E00-M00500-0015V0	*
0.60	2.50	38.00	3.00	E00-M00600-0025V0	*
0.60	3.00	38.00	3.00	E00-M00600-0030V0	*
0.80	5.00	38.00	3.00	E00-M00800-0050V0	*
1.00	5.00	40.00	6.00	E00-M01000-0050V0	*
1.20	5.00	38.00	3.00	E00-M01200-0050V0	*
1.50	5.00	38.00	3.00	E00-M01500-0050V0	*
1.50	5.00	40.00	6.00	E00-M01500-0050VA	*
1.60	6.00	38.00	3.00	E00-M01600-0060V0	*
1.80	7.00	38.00	3.00	E00-M01800-0070V0	*
2.00	5.00	40.00	6.00	E00-M02000-0050V0	*
2.00	5.00	50.00	6.00	E00-M02000-0050VA	*
2.00	7.00	40.00	4.00	E00-M02000-0070V0	*
2.00	8.00	40.00	3.00	E00-M02000-0080V0	*
2.00	10.00	38.00	3.00	E00-M02000-0100V0	*
3.00	5.00	40.00	3.00	E00-M03000-0050V0	*
3.00	5.00	50.00	3.00	E00-M03000-0050VA	*
3.00	5.00	40.00	6.00	E00-M03000-0050VB	*
3.00	5.00	50.00	6.00	E00-M03000-0050VC	*
3.00	8.00	40.00	6.00	E00-M03000-0080V0	*
3.00	10.00	38.00	3.00	E00-M03000-0100V0	*
3.00	10.00	40.00	4.00	E00-M03000-0100VA	*
3.00	10.00	50.00	6.00	E00-M03000-0100VB	*
3.00	12.00	50.00	6.00	E00-M03000-0120V0	*
4.00	6.00	40.00	4.00	E00-M04000-0060V0	*
4.00	6.00	40.00	6.00	E00-M04000-0060VA	*
4.00	8.00	50.00	4.00	E00-M04000-0080V0	*
4.00	8.00	50.00	6.00	E00-M04000-0080VA	*
4.00	10.00	40.00	4.00	E00-M04000-0100V0	*
4.00	12.00	60.00	6.00	E00-M04000-0120V0	*
4.00	14.00	50.00	4.00	E00-M04000-0140V0	*

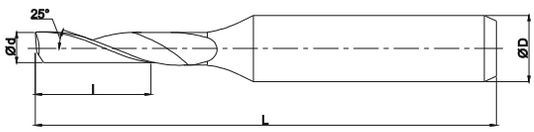
Continued...

Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

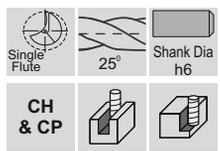
Single Flute Square Endmill

E00

Standard, Long and Extra Long



CUTTING DIA	TOLERANCES (mm)
≤ Ø3.00	-0,000 / -0,040
Ø4.00 - Ø6.00	-0,000 / -0,048
Ø8.00 - Ø10.00	-0,000 / -0,058
Ø12.00	-0,000 / -0,070



N ●

DESCRIPTION				PART NUMBER	Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	
5.00	7.00	40.00	6.00	E00-M05000-0070V0	*
5.00	14.00	50.00	6.00	E00-M05000-0140V0	*
5.00	14.00	60.00	6.00	E00-M05000-0140VA	*
5.00	16.00	60.00	5.00	E00-M05000-0160V0	*
6.00	8.00	40.00	6.00	E00-M06000-0080V0	*
6.00	14.00	50.00	6.00	E00-M06000-0140V0	*
6.00	14.00	60.00	6.00	E00-M06000-0140VA	*
6.00	14.00	70.00	6.00	E00-M06000-0140VB	*
6.00	16.00	60.00	6.00	E00-M06000-0160V0	*
6.00	20.00	60.00	6.00	E00-M06000-0200V0	*
6.00	25.00	60.00	6.00	E00-M06000-0250V0	*
8.00	14.00	75.00	8.00	E00-M08000-0140V0	*
8.00	14.00	60.00	8.00	E00-M08000-0140V0	*
8.00	20.00	75.00	8.00	E00-M08000-0200V0	*
8.00	25.00	75.00	8.00	E00-M08000-0250V0	*
8.00	30.00	75.00	8.00	E00-M08000-0300V0	*
10.00	25.00	75.00	10.00	E00-M10000-0250V0	*
12.00	25.00	75.00	12.00	E00-M12000-0250V0	*

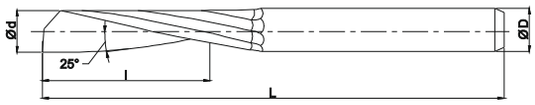
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

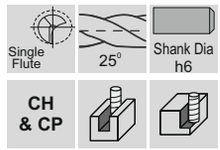
Single Flute Square Endmill

E01

with Multi Relief & Lapped Finish

CUTTING DIA	TOLERANCES (mm)
≤ Ø3.00	-0,000 / -0,040
Ø4.00 - Ø6.00	-0,000 / -0,048
Ø8.00 - Ø10.00	-0,000 / -0,058





N ●

DESCRIPTION				PART NUMBER	Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	
0.10	0.30	30.00	3.00	E01-M00100-0003V0	*
0.20	0.60	30.00	3.00	E01-M00200-0006V0	*
0.30	1.00	30.00	3.00	E01-M00300-0010V0	*
0.40	1.00	30.00	3.00	E01-M00400-0010V0	*
0.50	1.50	30.00	3.00	E01-M00500-0015V0	*
0.60	3.00	30.00	3.00	E01-M00600-0030V0	*
0.80	5.00	30.00	3.00	E01-M00800-0050V0	*
1.00	4.00	30.00	3.00	E01-M01000-0040V0	*
1.50	6.00	30.00	3.00	E01-M01500-0060V0	*
2.00	6.00	30.00	3.00	E01-M02000-0060V0	*
2.00	6.00	50.00	4.00	E01-M02000-0060VA	*
2.00	6.00	50.00	6.00	E01-M02000-0060VB	*
2.00	8.00	30.00	3.00	E01-M02000-0080V0	*
2.00	11.00	38.00	3.00	E01-M02000-0110V0	*
3.00	6.00	30.00	3.00	E01-M03000-0060V0	*
3.00	6.00	50.00	6.00	E01-M03000-0060VA	*
3.00	11.00	38.00	3.00	E01-M03000-0110V0	*
3.00	11.00	50.00	4.00	E01-M03000-0110VA	*
3.00	11.00	50.00	6.00	E01-M03000-0110VB	*
3.00	22.00	50.00	3.00	E01-M03000-0220V0	*
3.00	22.00	60.00	6.00	E01-M03000-0220VA	*
4.00	8.00	50.00	4.00	E01-M04000-0080V0	*
4.00	8.00	50.00	6.00	E01-M04000-0080VA	*
4.00	12.00	50.00	4.00	E01-M04000-0120V0	*
4.00	12.00	50.00	6.00	E01-M04000-0120VA	*
4.00	14.00	50.00	4.00	E01-M04000-0140V0	*
4.00	14.00	50.00	6.00	E01-M04000-0140V0	*
4.00	22.00	50.00	4.00	E01-M04000-0220V0	*
4.00	22.00	50.00	6.00	E01-M04000-0220VA	*
4.00	32.00	64.00	4.00	E01-M04000-0320V0	*
5.00	12.00	50.00	6.00	E01-M05000-0120V0	*
5.00	16.00	50.00	6.00	E01-M05000-0160V0	*
5.00	22.00	50.00	6.00	E01-M05000-0220V0	*

Continued...

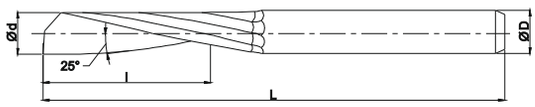
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

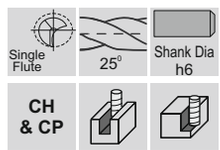
Single Flute Square Endmill

E01

with Multi Relief & Lapped Finish

CUTTING DIA	TOLERANCES (mm)
≤ Ø3.00	-0,000 / -0,040
Ø4.00 - Ø6.00	-0,000 / -0,048
Ø8.00 - Ø10.00	-0,000 / -0,058





N ●

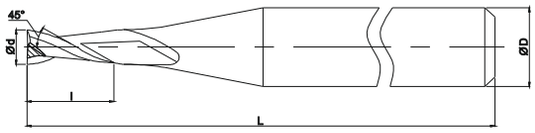
DESCRIPTION				PART NUMBER	Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	
6.00	12.00	50.00	6.00	E01-M06000-0120V0	*
6.00	22.00	50.00	6.00	E01-M06000-0220V0	*
6.00	22.00	58.00	6.00	E01-M06000-0220VA	*
6.00	32.00	64.00	6.00	E01-M06000-0320V0	*
6.00	42.00	75.00	6.00	E01-M06000-0420V0	*
6.00	32.00	100.00	6.00	E01-M06000-0320VA	*
8.00	22.00	64.00	8.00	E01-M08000-0220V0	*
8.00	32.00	64.00	8.00	E01-M08000-0320V0	*
8.00	42.00	75.00	8.00	E01-M08000-0420V0	*
8.00	42.00	100.00	8.00	E01-M08000-0420VA	*
8.00	55.00	100.00	8.00	E01-M08000-0550V0	*
10.00	22.00	64.00	10.00	E01-M10000-0220V0	*
10.00	32.00	75.00	10.00	E01-M10000-0320V0	*
10.00	55.00	100.00	10.00	E01-M10000-0550V0	*
10.00	75.00	120.00	10.00	E01-M10000-0750V0	*

Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

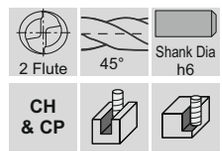
2 Flute Square Endmill

E16

Standard, Long and Extra Long



CUTTING DIA	TOLERANCES (mm)
≤Ø3.00	+0.000 / -0.006
>Ø3.00 - Ø6.00	+0.000 / -0.008
>Ø6.00 - Ø10.00	+0.000 / -0.009
>Ø10.00 - Ø18.00	+0.000 / -0.012
>Ø18.00 - Ø20.00	+0.000 / -0.013



N ●

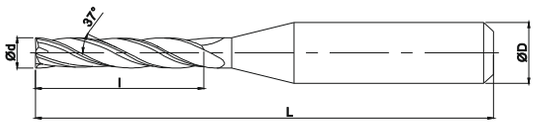
DESCRIPTION				PART NUMBER		Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	DLC Coated	
0.10	0.20	38.00	3.00	E16-M00100-0002V0	-	*
0.10	0.30	38.00	3.00	E16-M00100-0003V0	-	*
0.20	0.40	38.00	3.00	E16-M00200-0004V0	-	*
0.20	0.60	38.00	3.00	E16-M00200-0006V0	-	*
0.30	0.60	38.00	3.00	E16-M00300-0006V0	-	*
0.30	0.90	38.00	3.00	E16-M00300-0009V0	-	*
0.40	0.80	38.00	3.00	E16-M00400-0008V0	-	*
0.40	1.20	38.00	3.00	E16-M00400-0012V0	-	*
0.50	1.50	38.00	3.00	E16-M00500-0015V0	-	*
1.00	3.00	50.00	3.00	E16-M01000-0030V0	E16CM01000-0030V0	*
1.50	4.50	50.00	3.00	E16-M01500-0045V0	E16CM01500-0045V0	*
2.00	6.00	50.00	3.00	E16-M02000-0060V0	E16CM02000-0060V0	*
2.50	7.00	50.00	3.00	E16-M02500-0070V0	E16CM02500-0070V0	*
3.00	8.00	57.00	6.00	E16-M03000-0080V0	E16CM03000-0080V0	*
3.00	25.00	64.00	6.00	E16-M03000-0250V0	E16CM03000-0250V0	*
3.00	35.00	80.00	6.00	E16-M03000-0350V0	E16CM03000-0350V0	*
4.00	9.00	57.00	6.00	E16-M04000-0090V0	E16CM04000-0090V0	*
4.00	25.00	64.00	6.00	E16-M04000-0250V0	E16CM04000-0250V0	*
4.00	35.00	80.00	6.00	E16-M04000-0350V0	E16CM04000-0350V0	*
5.00	11.00	57.00	6.00	E16-M05000-0110V0	E16CM05000-0110V0	*
5.00	25.00	64.00	6.00	E16-M05000-0250V0	E16CM05000-0250V0	*
5.00	40.00	100.00	6.00	E16-M05000-0400V0	E16CM05000-0400V0	*
6.00	13.00	57.00	6.00	E16-M06000-0130V0	E16CM06000-0130V0	*
6.00	30.00	76.00	6.00	E16-M06000-0300V0	E16CM06000-0300V0	*
6.00	40.00	100.00	6.00	E16-M06000-0400V0	E16CM06000-0400V0	*
8.00	19.00	63.00	8.00	E16-M08000-0190V0	E16CM08000-0190V0	*
8.00	35.00	83.00	8.00	E16-M08000-0350V0	E16CM08000-0350V0	*
8.00	50.00	100.00	8.00	E16-M08000-0500V0	E16CM08000-0500V0	*
10.00	22.00	72.00	10.00	E16-M10000-0220V0	E16CM10000-0220V0	*
10.00	40.00	89.00	10.00	E16-M10000-0400V0	E16CM10000-0400V0	*
10.00	60.00	130.00	10.00	E16-M10000-0600V0	E16CM10000-0600V0	*
12.00	26.00	83.00	12.00	E16-M12000-0260V0	E16CM12000-0260V0	*
12.00	50.00	102.00	12.00	E16-M12000-0500V0	E16CM12000-0500V0	*
12.00	75.00	152.00	12.00	E16-M12000-0750V0	E16CM12000-0750V0	*
14.00	30.00	87.00	14.00	E16-M14000-0300V0	E16CM14000-0300V0	*
16.00	32.00	92.00	16.00	E16-M16000-0320V0	E16CM16000-0320V0	*
16.00	65.00	117.00	16.00	E16-M16000-0650V0	E16CM16000-0650V0	*
16.00	75.00	152.00	16.00	E16-M16000-0750V0	E16CM16000-0750V0	*
20.00	38.00	104.00	20.00	E16-M20000-0380V0	E16CM20000-0380V0	*
20.00	80.00	133.00	20.00	E16-M20000-0800V0	E16CM20000-0800V0	*
20.00	95.00	152.00	20.00	E16-M20000-0950V0	E16CM20000-0950V0	*

Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

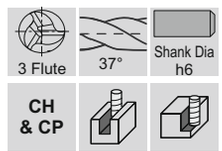
3 Flute Square Endmill

E81

Standard, Long and Extra Long



CUTTING DIA	TOLERANCES (mm)
≤Ø3.00	+0.000 / -0.006
>Ø3.00 - Ø6.00	+0.000 / -0.008
>Ø6.00 - Ø10.00	+0.000 / -0.009
>Ø10.00 - Ø18.00	+0.000 / -0.012
>Ø18.00 - Ø20.00	+0.000 / -0.013



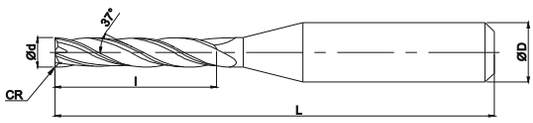
N ●

DESCRIPTION				PART NUMBER		Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	CVD Coated	
0.50	1.50	38.00	3.00	E81-M00500-0015V0	E81DM00500-0015V0	*
1.00	3.00	50.00	3.00	E81-M01000-0030V0	E81DM01000-0030V0	*
1.50	4.50	50.00	3.00	E81-M01500-0045V0	E81DM01500-0045V0	*
2.00	6.00	50.00	3.00	E81-M02000-0060V0	E81DM02000-0060V0	*
2.50	7.00	50.00	3.00	E81-M02500-0070V0	E81DM02500-0070V0	*
3.00	8.00	57.00	6.00	E81-M03000-0080V0	E81DM03000-0080V0	*
3.00	25.00	64.00	6.00	E81-M03000-0250V0	E81DM03000-0250V0	*
3.00	35.00	80.00	6.00	E81-M03000-0350V0	E81DM03000-0350V0	*
4.00	9.00	57.00	6.00	E81-M04000-0090V0	E81DM04000-0090V0	*
4.00	25.00	64.00	6.00	E81-M04000-0250V0	E81DM04000-0250V0	*
4.00	35.00	80.00	6.00	E81-M04000-0350V0	E81DM04000-0350V0	*
5.00	11.00	57.00	6.00	E81-M05000-0110V0	E81DM05000-0110V0	*
5.00	25.00	64.00	6.00	E81-M05000-0250V0	E81DM05000-0250V0	*
5.00	40.00	100.00	6.00	E81-M05000-0400V0	E81DM05000-0400V0	*
6.00	13.00	57.00	6.00	E81-M06000-0130V0	E81DM06000-0130V0	*
6.00	30.00	76.00	6.00	E81-M06000-0300V0	E81DM06000-0300V0	*
6.00	40.00	100.00	6.00	E81-M06000-0400V0	E81DM06000-0400V0	*
8.00	19.00	63.00	8.00	E81-M08000-0190V0	E81DM08000-0190V0	*
8.00	35.00	83.00	8.00	E81-M08000-0350V0	E81DM08000-0350V0	*
8.00	50.00	100.00	8.00	E81-M08000-0500V0	E81DM08000-0500V0	*
10.00	22.00	72.00	10.00	E81-M10000-0220V0	E81DM10000-0220V0	*
10.00	40.00	89.00	10.00	E81-M10000-0400V0	E81DM10000-0400V0	*
10.00	60.00	130.00	10.00	E81-M10000-0600V0	E81DM10000-0600V0	*
12.00	26.00	83.00	12.00	E81-M12000-0260V0	E81DM12000-0260V0	*
12.00	50.00	102.00	12.00	E81-M12000-0500V0	E81DM12000-0500V0	*
12.00	75.00	152.00	12.00	E81-M12000-0750V0	E81DM12000-0750V0	*
14.00	30.00	87.00	14.00	E81-M14000-0300V0	E81DM14000-0300V0	*
16.00	32.00	92.00	16.00	E81-M16000-0320V0	E81DM16000-0320V0	*
16.00	65.00	117.00	16.00	E81-M16000-0650V0	E81DM16000-0650V0	*
16.00	75.00	152.00	16.00	E81-M16000-0750V0	E81DM16000-0750V0	*
20.00	38.00	104.00	20.00	E81-M20000-0380V0	E81DM20000-0380V0	*
20.00	80.00	133.00	20.00	E81-M20000-0800V0	E81DM20000-0800V0	*
20.00	95.00	152.00	20.00	E81-M20000-0950V0	E81DM20000-0950V0	*

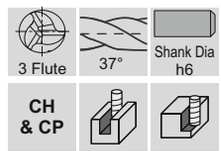
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

3 Flute Endmill with Corner radius

E82



CUTTING DIA	TOLERANCES (mm)
≤Ø3.00	+0.000 / -0.006
>Ø3.00 - Ø6.00	+0.000 / -0.008
>Ø6.00 - Ø10.00	+0.000 / -0.009
>Ø10.00 - Ø18.00	+0.000 / -0.012
>Ø18.00 - Ø20.00	+0.000 / -0.013



N ●

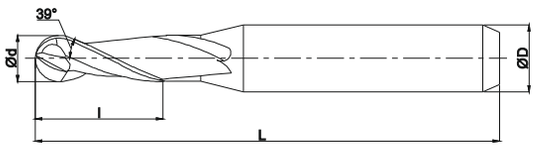
DESCRIPTION					PART NUMBER	Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Radius CR	Uncoated	
1.00	3.00	57.00	3.00	0.10	E82-M01000-0030V0	*
1.50	4.50	57.00	3.00	0.10	E82-M01500-0045V0	*
2.00	6.00	57.00	3.00	0.20	E82-M02000-0060V0	*
2.50	7.00	57.00	3.00	0.20	E82-M02500-0070V0	*
3.00	10.00	50.00	4.00	0.30	E82-M03000-0100V0	*
3.00	20.00	60.00	4.00	0.30	E82-M03000-0200V0	*
3.00	30.00	75.00	4.00	0.30	E82-M03000-0300V0	*
3.00	35.00	100.00	4.00	0.30	E82-M03000-0350V0	*
4.00	10.00	50.00	6.00	0.30	E82-M04000-0100V0	*
4.00	20.00	60.00	6.00	0.30	E82-M04000-0200V0	*
4.00	30.00	75.00	6.00	0.30	E82-M04000-0300V0	*
4.00	40.00	100.00	6.00	0.30	E82-M04000-0400V0	*
5.00	20.00	60.00	6.00	0.30	E82-M05000-0200V0	*
5.00	30.00	75.00	6.00	0.30	E82-M05000-0300V0	*
5.00	40.00	100.00	6.00	0.30	E82-M05000-0400V0	*
6.00	30.00	75.00	6.00	0.30	E82-M06000-0300V0	*
6.00	40.00	100.00	6.00	0.30	E82-M06000-0400V0	*
8.00	30.00	75.00	8.00	0.50	E82-M08000-0300V0	*
8.00	40.00	100.00	8.00	0.50	E82-M08000-0400V0	*
10.00	30.00	75.00	10.00	0.50	E82-M10000-0300V0	*
10.00	40.00	100.00	10.00	0.50	E82-M10000-0400V0	*
10.00	60.00	120.00	10.00	0.50	E82-M10000-0600V0	*
12.00	45.00	100.00	12.00	0.50	E82-M12000-0450V0	*
12.00	75.00	150.00	12.00	0.50	E82-M12000-0750V0	*
16.00	45.00	100.00	16.00	1.00	E82-M16000-0450V0	*
16.00	75.00	150.00	16.00	1.00	E82-M16000-0750V0	*
20.00	55.00	100.00	20.00	1.00	E82-M20000-0550V0	*
20.00	75.00	150.00	20.00	1.00	E82-M20000-0750V0	*
20.00	110.00	180.00	20.00	1.00	E82-M20000-1100V0	*

Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

2 Flute Ball Nose Endmill

B03

Standard, Long and Extra Long



CUTTING DIA	TOLERANCES (mm)
≤Ø3.00	+0.000 / -0.006
>Ø3.00 - Ø6.00	+0.000 / -0.008
>Ø6.00 - Ø10.00	+0.000 / -0.009
>Ø10.00 - Ø18.00	+0.000 / -0.012
>Ø18.00 - Ø20.00	+0.000 / -0.013

2 Flute | 39° | Shank Dia h6

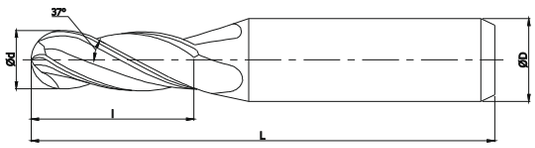
CH & CP | N ●

DESCRIPTION				PART NUMBER	Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	
0.50	1.50	38.00	3.00	B03-M00500-0015V0	*
1.00	3.00	50.00	3.00	B03-M01000-0030V0	*
1.50	4.50	50.00	3.00	B03-M01500-0045V0	*
2.00	6.00	50.00	3.00	B03-M02000-0060V0	*
2.50	7.00	50.00	3.00	B03-M02500-0070V0	*
3.00	8.00	57.00	6.00	B03-M03000-0080V0	*
3.00	25.00	64.00	6.00	B03-M03000-0250V0	*
3.00	35.00	80.00	6.00	B03-M03000-0350V0	*
4.00	9.00	57.00	6.00	B03-M04000-0090V0	*
4.00	25.00	64.00	6.00	B03-M04000-0250V0	*
4.00	35.00	80.00	6.00	B03-M04000-0350V0	*
5.00	11.00	57.00	6.00	B03-M05000-0110V0	*
5.00	25.00	64.00	6.00	B03-M05000-0250V0	*
5.00	40.00	100.00	6.00	B03-M05000-0400V0	*
6.00	13.00	57.00	6.00	B03-M06000-0130V0	*
6.00	30.00	76.00	6.00	B03-M06000-0300V0	*
6.00	40.00	100.00	6.00	B03-M06000-0400V0	*
8.00	19.00	63.00	8.00	B03-M08000-0190V0	*
8.00	35.00	83.00	8.00	B03-M08000-0350V0	*
8.00	50.00	100.00	8.00	B03-M08000-0500V0	*
10.00	22.00	72.00	10.00	B03-M10000-0220V0	*
10.00	40.00	89.00	10.00	B03-M10000-0400V0	*
10.00	60.00	130.00	10.00	B03-M10000-0600V0	*
12.00	26.00	83.00	12.00	B03-M12000-0260V0	*
12.00	50.00	102.00	12.00	B03-M12000-0500V0	*
12.00	75.00	152.00	12.00	B03-M12000-0750V0	*
14.00	30.00	87.00	14.00	B03-M14000-0300V0	*
16.00	32.00	92.00	16.00	B03-M16000-0320V0	*
16.00	65.00	117.00	16.00	B03-M16000-0650V0	*
16.00	75.00	152.00	16.00	B03-M16000-0750V0	*
20.00	38.00	104.00	20.00	B03-M20000-0380V0	*
20.00	80.00	133.00	20.00	B03-M20000-0800V0	*
20.00	95.00	152.00	20.00	B03-M20000-0950V0	*

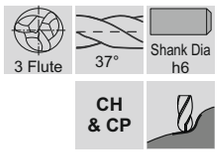
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

3 Flute Ball Nose Endmill

Standard, Long and Extra Long



CUTTING DIA	TOLERANCES (mm)
≤Ø3.00	+0.000 / -0.006
>Ø3.00 - Ø6.00	+0.000 / -0.008
>Ø6.00 - Ø10.00	+0.000 / -0.009
>Ø10.00 - Ø18.00	+0.000 / -0.012
>Ø18.00 - Ø20.00	+0.000 / -0.013

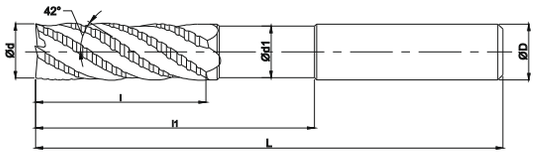


DESCRIPTION				PART NUMBER	Stock
Diameter Ød	Cutting Length l	Overall Length L	Shank Dia. ØD	Uncoated	
1.00	3.00	57.00	3.00	B15-M01000-0030V0	*
1.50	4.50	57.00	3.00	B15-M01500-0045V0	*
2.00	6.00	57.00	3.00	B15-M02000-0060V0	*
2.50	7.00	57.00	3.00	B15-M02500-0070V0	*
3.00	10.00	50.00	4.00	B15-M03000-0100V0	*
3.00	20.00	60.00	4.00	B15-M03000-0200V0	*
3.00	30.00	75.00	4.00	B15-M03000-0300V0	*
3.00	35.00	100.00	4.00	B15-M03000-0350V0	*
4.00	10.00	50.00	6.00	B15-M04000-0100V0	*
4.00	20.00	60.00	6.00	B15-M04000-0200V0	*
4.00	30.00	75.00	6.00	B15-M04000-0300V0	*
4.00	40.00	100.00	6.00	B15-M04000-0400V0	*
5.00	20.00	60.00	6.00	B15-M05000-0200V0	*
5.00	30.00	75.00	6.00	B15-M05000-0300V0	*
5.00	40.00	100.00	6.00	B15-M05000-0400V0	*
6.00	30.00	75.00	6.00	B15-M06000-0300V0	*
6.00	40.00	100.00	6.00	B15-M06000-0400V0	*
8.00	30.00	75.00	8.00	B15-M08000-0300V0	*
8.00	40.00	100.00	8.00	B15-M08000-0400V0	*
10.00	30.00	75.00	10.00	B15-M10000-0300V0	*
10.00	40.00	100.00	10.00	B15-M10000-0400V0	*
10.00	60.00	120.00	10.00	B15-M10000-0600V0	*
12.00	45.00	100.00	12.00	B15-M12000-0450V0	*
12.00	75.00	150.00	12.00	B15-M12000-0750V0	*
16.00	45.00	100.00	16.00	B15-M16000-0450V0	*
16.00	75.00	150.00	16.00	B15-M16000-0750V0	*
20.00	55.00	100.00	20.00	B15-M20000-0550V0	*
20.00	75.00	150.00	20.00	B15-M20000-0750V0	*
20.00	110.00	180.00	20.00	B15-M20000-1100V0	*

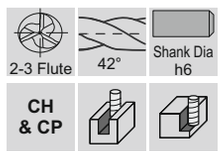
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

2-3 Flute Rougher Endmill

E83



CUTTING DIA	TOLERANCES (mm)
Ø6.00 - Ø10.00	+0.000 / -0.009
>Ø10.00 - Ø18.00	+0.000 / -0.012
>Ø18.00 - Ø20.00	+0.000 / -0.013

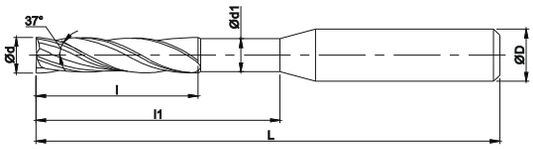


DESCRIPTION							PART NUMBER		Stock
Diameter Ød	Cutting Length l	Step Length l1	U-Cut Dia Ød1	Overall Length L	Shank Dia. ØD	Flutes Z	Uncoated	Diamond Coated	
6.00	16.00	21.00	5.80	65.00	6.00	2	E83-M06000-0160V0	E83DM06000-0160V0	*
8.00	22.00	27.00	7.80	70.00	8.00	2	E83-M08000-0220V0	E83DM08000-0220V0	*
10.00	25.00	32.00	9.80	72.00	10.00	2	E83-M10000-0250V0	E83DM10000-0250V0	*
12.00	28.00	38.00	11.80	83.00	12.00	3	E83-M12000-0280V0	E83DM12000-0280V0	*
18.00	36.00	50.00	17.80	92.00	18.00	3	E83-M18000-0360V0	E83DM18000-0360V0	*
20.00	41.00	54.00	19.80	104.00	20.00	3	E83-M20000-0410V0	E83DM20000-0410V0	*

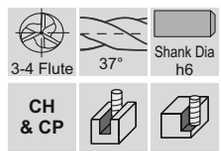
Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

3-4 Flute Long Reach Endmill

E84



CUTTING DIA	TOLERANCES (mm)
≤Ø3.00	+0.000 / -0.006
>Ø3.00 - Ø6.00	+0.000 / -0.008
>Ø6.00 - Ø10.00	+0.000 / -0.009
>Ø10.00 - Ø18.00	+0.000 / -0.012
>Ø18.00 - Ø20.00	+0.000 / -0.013



N ●

DESCRIPTION							PART NUMBER		Stock
Diameter Ød	Cutting Length l	Step Length l1	U-Cut Dia Ød1	Overall Length L	Shank Dia. ØD	Flutes Z	Uncoated	Diamond Coated	
2.00	4.00	6.00	1.80	57.00	6.00	3	E84-M02000-0040V0	E84DM02000-0040V0	*
3.00	6.00	10.00	2.70	57.00	6.00	3	E84-M03000-0060V0	E84DM03000-0060V0	*
4.00	8.00	14.00	3.70	57.00	6.00	3	E84-M04000-0080V0	E84DM04000-0080V0	*
5.00	10.00	16.00	5.70	57.00	6.00	3	E84-M05000-0100V0	E84DM05000-0100V0	*
6.00	12.00	20.00	5.70	57.00	6.00	3	E84-M06000-0120V0	E84DM06000-0120V0	*
6.00	12.00	30.00	5.70	70.00	6.00	3	E84-M06000-0120VA	E84DM06000-0120VA	*
6.00	12.00	40.00	5.70	80.00	6.00	3	E84-M06000-0120VB	E84DM06000-0120VB	*
8.00	16.00	35.00	7.70	80.00	8.00	3	E84-M08000-0160V0	E84DM08000-0160V0	*
8.00	16.00	45.00	7.70	90.00	8.00	3	E84-M08000-0160VA	E84DM08000-0160VA	*
8.00	16.00	55.00	7.70	100.00	8.00	3	E84-M08000-0160VB	E84DM08000-0160VB	*
10.00	20.00	35.00	9.70	80.00	10.00	3	E84-M10000-0200V0	E84DM10000-0200V0	*
10.00	20.00	45.00	9.70	90.00	10.00	3	E84-M10000-0200VA	E84DM10000-0200VA	*
10.00	20.00	55.00	9.70	100.00	10.00	3	E84-M10000-0200VB	E84DM10000-0200VB	*
12.00	24.00	35.00	11.70	80.00	12.00	4	E84-M12000-0240V0	E84DM12000-0240V0	*
12.00	24.00	55.00	11.70	100.00	12.00	4	E84-M12000-0240VA	E84DM12000-0240VA	*
12.00	24.00	70.00	11.70	115.00	12.00	4	E84-M12000-0240VB	E84DM12000-0240VB	*
16.00	32.00	45.00	15.70	90.00	16.00	4	E84-M16000-0320V0	E84DM16000-0320V0	*
16.00	32.00	55.00	15.70	100.00	16.00	4	E84-M16000-0320VA	E84DM16000-0320VA	*
16.00	32.00	70.00	15.70	115.00	16.00	4	E84-M16000-0320VB	E84DM16000-0320VB	*
18.00	36.00	55.00	17.70	100.00	18.00	4	E84-M18000-0360V0	E84DM18000-0360V0	*
18.00	36.00	70.00	17.70	115.00	18.00	4	E84-M18000-0360VA	E84DM18000-0360VA	*
18.00	36.00	85.00	17.70	130.00	18.00	4	E84-M18000-0360VB	E84DM18000-0360VB	*
20.00	40.00	55.00	19.70	100.00	20.00	4	E84-M20000-0400V0	E84DM20000-0400V0	*
20.00	40.00	70.00	19.70	115.00	20.00	4	E84-M20000-0400VA	E84DM20000-0400VA	*
20.00	40.00	85.00	19.70	130.00	20.00	4	E84-M20000-0400VB	E84DM20000-0400VB	*

Stock Availability: * In stock, ** Check availability
Material Recommendation: ● Highly Recommended ◐ Recommended

Cutting Parameter

E00, E01, E16, E81, E82, B03, B15, E83, E84

Application	v_c factor	f_z factor	feed width (a_e)	feed depth (a_p)
Slotting	**1**	**1** (0.7 bei a_p = 2xd)	1xd	0.5 up to 1xd
Roughing	**1**	**1** (0.7 bei a_p = 2xd)	0.4 up to 0.9xd	0.5 up to 1xd
Finishing	**1**	**1**	0.01 up to 0.1xd	1 up to 2xd
HPC-Roughing	**1.3**	**1.5**	0.15 up to 0.4xd	1 up to 2xd
HSC-Roughing	**1.5**	**2**	0.05 up to 0.15xd	1 up to 2xd

Material	Hardness	recommended Typ	Type of application	cut v_c	fz (mm/z) with nom. Ø							
					3	6	8	10	12	16	20	25
Structural + free-cutting steels. unalloyed heat-treatable + case hardened steels 1.0035 S185. 1.0486 P275N. 1.0345 P235GH. 1.0050. 1.0070. 1.8937 1.0718 11SMnPb30. 1.0736 11SMn37 1.0402 C22. 1.1178 C30E 1.0503 C45. 1.1191 C30E 1.0301 C10. 1.1121 C10E 1.1750 C75W. 1.2076 102Cr6. 1.2307 29CrMoV9	up to 850 N/mm²											
Free-cutting steels. unalloyed case hard. steels. nitr. steels 1.0727 46 S20. 1.0728 60 S20. 1.0757 46SPb20 1.0601 C60. 1.1221 C60E 1.7043 38Cr4 1.5752 15NiCr13. 1.7131 16MnCr5. 1.7264 20CrMo5 1.8504 34CrAl6 1.8519 31CrMoV9. 1.8550 34CrAlNi7	850-1.200 N/mm²											
Alloyed heat-treatable. tool and high speed steels 1.5131 50MnSi4. 1.7003 38Cr2. 1.7030 28Cr4 1.5710 36NiCr6. 1.7035 41Cr4. 1.7225 42CrMo4 1.2080 X210Cr12. 1.2083 X42Cr13. 1.2419 105WCr6. 1.2379 X155CrVMo12-1 1.3243 S 6-5-2-5. 1.3343 S 6-5-2. 1.3344 S 6-5-3 Federstahl = 1.5026 55Si7. 1.7176 55Cr3. 1.8159 51CrV4	850-1.400 N/mm²											
Hardened steel Werkzeugstahl. Vergütungstahl. Federstahl. Schnellarbeitsstahl. Einsatzstahl. etc. Z.B.: 1.2344 X40CrMoV5-1; 1.2767 X45NiCrMo4; 1.2379 X155CrVMo12-1 ;1.2080 X210Cr12 1.3343 S 6-5-2	up to 54 HRC											
	54-60 HRC											
Stainless steel 1.4104 X14CrMoS17. 1.4105 X6CrMoS17. 1.4305 X10CrNiS18-9 USA = 303. 410. 420F. 430. 430F	up to 750 N/mm²											
Stainless steel 1.4301 X5CrNi18-10. 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304. 304L. 420	750-850 N/mm²											
Stainless steel 1.4438 X2CrNiMo18-15-4. 1.4404 X2CrNiMo17-12-2. 1.4571 X6CrNiTi18-10 USA = 310. 316. 316B. 316L. 317	over 850 N/mm²											
Special alloys (nickel based "Ni") Nimonic. Inconel. Monel. Hastelloy	up to 1.300 N/mm²											
Titanium alloys ("Ti") 3.7024 Ti99.5. 3.7114 TiAl5Sn2.5. 3.7124 TiCu2 3.7154 TiAl6Zr5. 3.7164 TiAl6V4. 3.7184 TiAl4Mo4Sn2.5	up to 1.300 N/mm²											
Cast iron. grey cast iron. spher. graphite/malleable cast iron 0.6010 EN-GL100 (GG10). 0.6020 EN-GJL-200 (GG20). 0.7050 EN-GJS-500-7 (GGG50). 0.8535 EN-GJMW-350-4 (GTW35)	up to 240 HB 30											
Cast iron. grey cast iron. spher. graphite/malleable cast iron 0.6025 EN-GL250 (GG25). 0.6035 EN-GJL-350 (GG35). 0.7070 EN-GJS-700-2 (GGG70). 0.8170 EN-GJMB-700-2 (GTS70)	over 240 HB 30											
Aluminium. Alu-Knetlegierungen. Alulegierungen 3.0255 Al99.5. 3.2315 AlMgSi1. 3.3515 AlMg1 3.0615 AlMgSiPb. 3.1325 AlCuMg1. 3.3245 AlMg3Si. 3.4365 AlZnMgCu1.5	up to 3% Si	2-fluted	Slotting	350	0.014	0.028	0.035	0.046	0.056	0.067	0.077	0.112
		2-fluted	Roughing	420	0.014	0.028	0.039	0.049	0.060	0.070	0.084	0.119
		2-fluted	Finishing	700	0.013	0.025	0.032	0.042	0.049	0.063	0.070	0.105
Aluminium-cast alloys 3.2131 G-AlSi5Cu1. 3.2153 G-AlSi7Cu3. 3.2573 G-AlSi9 3.2581 G-AlSi12. 3.2583 G-AlSi12Cu. - G-AlSi12CuNiMg	over 3% Si	2-fluted	Slotting	160	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
		2-fluted	Roughing	200	0.014	0.028	0.035	0.046	0.056	0.067	0.077	0.112
		2-fluted	Finishing	245	0.013	0.025	0.032	0.042	0.049	0.063	0.070	0.105
Magnesium-alloys MgMn2. G-MgAl8Zn1. G-MgAl6Zn3	-	2-fluted	Slotting	125	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
		2-fluted	Roughing	150	0.014	0.028	0.035	0.046	0.056	0.067	0.077	0.112
		2-fluted	Finishing	200	0.013	0.025	0.032	0.042	0.049	0.063	0.070	0.105
Non-ferrous metals (copper. short- or long-chipping brass or bronze) 2.0070 SE-Cu. 2.1020 CuSn6. 2.1096 G-CuSn5ZnPb 2.0380 CuZn39Pb2. 2.0401 CuZn39Pb3. 2.0410 CuZn43Pb2 2.0250 CuZn20. 2.0280 CuZn33. 2.0332 CuZn37Pb0.5 2.1090 CuSn7ZnPb. 2.1170 CuPb5Sn5. 2.1176 CuPb10Sn 2.0916 CuAl5. 2.0960 CuAl9Mn. 2.1050 CuSn10	up to 850 N/mm²	2-fluted	Slotting	175	0.011	0.018	0.025	0.032	0.035	0.046	0.056	0.084
		2-fluted	Roughing	210	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
		2-fluted	Finishing	280	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098

Application/Troubleshooting

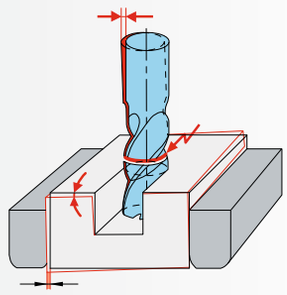
General notes

All the cutting rate recommendations specified in this catalogue are standard values valid exclusively for new tools or tools re-ground to Hartner specifications. Pre-requisites are stable machines, optimal cooling, optimal tool clamping and maximum concentricity of the tool and the machine spindle. Our recommended cutting rates must be reduced if the conditions deviate. The values may also be adjusted to influence surface quality, machining rate or tool life.

1. Workpiece clamping
Loss of tool life or tool breakage through unstable clamping

- improve workpiece clamping

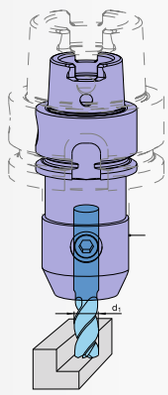
Alternative:
- reduce feed
- reduce cutting width or depth



2. Tool clamping
Loss of tool life or tool breakage through unstable, worn or too small/long/thin tool holder

- apply new or larger tool holder or holder with increased clamping force and increased concentricity

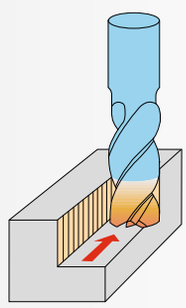
Alternative:
- reduce cutting rates
- reduce clamping length
- apply tool with smaller diameter
- check clamping screws for wear



3. Surface quality
Excessive peak-to-valley height R_a/R_z at the tool surface through excessive feed and feed rates or vibrations

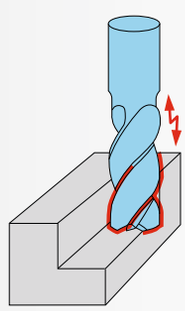
- improve workpiece clamping and tool clamping (see points 1 and 2)

Alternative:
- reduce feed and feed rate
- increase cutting speed



4. Vibrations
High tool wear, insufficient workpiece surface quality and insufficient dimensional accuracy through vibration

- improve workpiece and tool clamping (see points 1 and 2)
- increase tooth feed, because the chip centre thickness is too small
- modify speed
- modify milling strategy, i.e. select alternative cutting distribution
- change tool selection, i.e. reduce no. of teeth or spiral

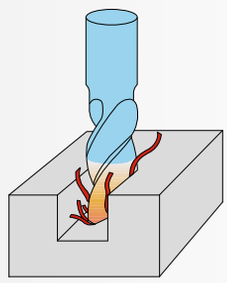


Application/Troubleshooting

5. Chip congestion/cooling
Significant reduction in tool life, crumbling on cutting lips, edge build-up or conglutination of flutes through insufficient chip evacuation

- select milling cutters with internal cooling

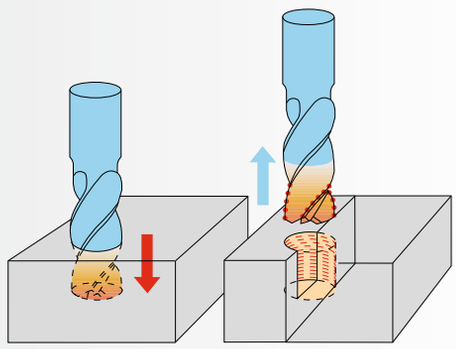
Alternative:
- peripheral cooling via GM 300 chuck
- increase volume flow
- adjust coolant flow
- apply compressed air cooling (according to tool and material)
- reduce feed rate
- modify cutting distribution



6. Pecking when drilling
Significant reduction in tool life as well as crumbling of cutting lips through insufficient chip evacuation and thermal stresses

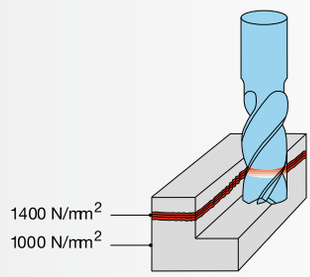
- select milling cutter with internal cooling
- with drilling depths > 0.5 x D pecking in stages

Alternative:
- peripheral cooling via GM 300 chuck
- increase volume flow
- adjust coolant flow
- reduce feed rate

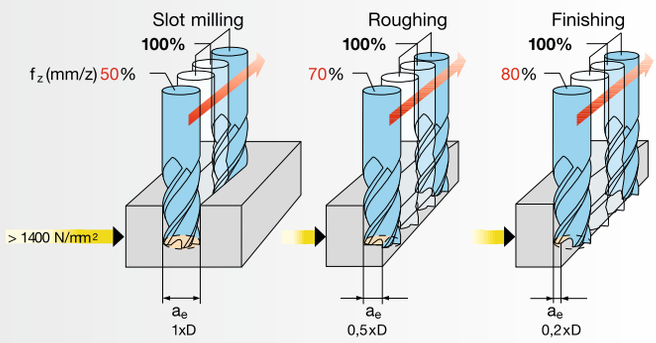


7. Thermal influence on materials
Through welding or torch cutting, the material characteristics at the parting line do not correspond with the specified material class

- reduce cutting rates
- select tool for materials with a higher tensile strength



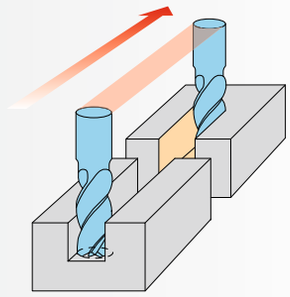
8. Entry in hardened materials
For entering materials over 1400 N/mm2 (44HRC), reduce the feed rate vf (mm/min) in accordance with the illustration on the right



Application/Troubleshooting

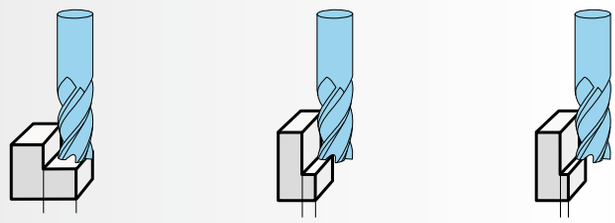
9. Loss in tool life with interrupted cutting
Significant loss in tool life through interrupted cutting (especially with milling angles of 90º)

- modify cutting distribution
- reduce feed rate for entry and exit
- reduce approach angle



10. Feed rate adjustment: Modifying the cutting width

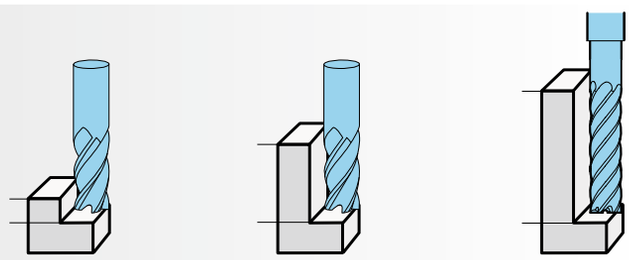
- when modifying the cutting width a_e, the feed rate must be reduced in accordance with the illustration on the right
- cutting speed or revolutions remain unchanged
- double reduction applies when also modifying the cutting depth a_p



$a_e = 1 \times D$, $f_z = 25$ %
$a_e = 0{,}5 \times D$, $f_z = 50$ %
$a_e = 0{,}25 \times D$, $f_z = 100$ %

11. Feed rate adjustment: Modifying the cutting depth

- when modifying the cutting depth a_p, the feed rate must be reduced in accordance with the illustration on the right
- cutting speed or revolutions remain unchanged up to cutting depths of 3xD, must only be adapted over 3xD
- double reduction applies when also modifying the cutting width a_e



$a_p = 1 \times D$, $f_z = 100$ %
$a_p = 2 \times D$, $f_z = 50$ %
$a_p = 3 \times D$, $f_z = 25$ %

12. Plunging strategies
for drilling:

- reduced feed rate v_f (mm/min.)
- additional pecking for drilling depths > 0.5xD or transition to radial machining

Attention: Danger of breakage through abrupt load increase!

Oblique plunging up to 15º (preferred):

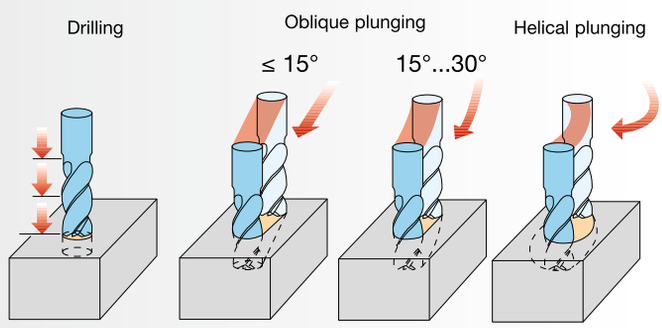
- reduction in feed rate vf (mm/min.) not required

Oblique plunging between 15º and 30º:

- reduce feed rate vf (mm/min.) in accordance with the illustration on the right

Helical plunging:

- for helical plunging on a milling cycle, we recommend a feed of 0.1 to 0.2 per cycle
- reduce feed rate v_f (mm/min.) in accordance with the illustration on the right
- select preferred hole diameter 1.8 x D



90°, f_z -70 %
≤ 15°, f_z = 100 %
15°...30°, f_z -30 %
f_z -15 %

Application/Troubleshooting

13. HSC milling with ball nosed copy milling cutters

HSC = High Speed Cutting:

Milling operations with very low metal removal but with consideration of the effective tool diameter.

3D machining with ball or Torus milling.

- **low cutting width (a_e)**
- **low cutting depth (a_p)**
- **high feed rate per tooth (f_z)**
- **very high cutting speed (V_c)**

Function and Advantages

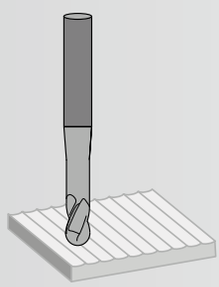
Calculation of the effective tool diameter

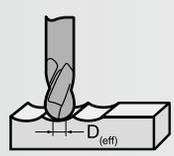
- adjusting speed to effective tool diameter
- increasing the overall feed rate
- improving the surface quality

Consideration of the pressure angle / width

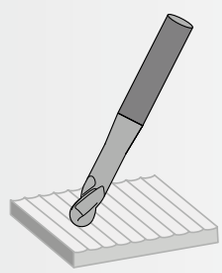
- adjusting the tooth feed to achieve the required surface quality

At cutting depths a_p <0.2xD the actual engaged effective diameter $D_{(eff)}$ must be used to calculate the speed. It is derived from the graphic below with the spindle not engaged. To increase the tool life, we recommend machining with a tilted spindle.



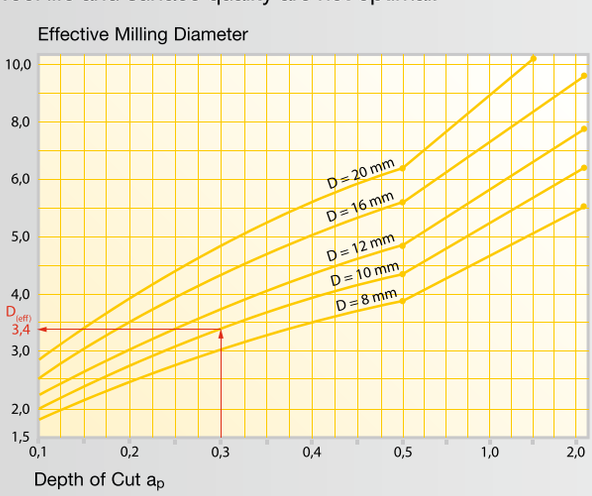


$$D_{(eff)} = 2 \cdot \sqrt{D \cdot a_p - a_p^2}$$



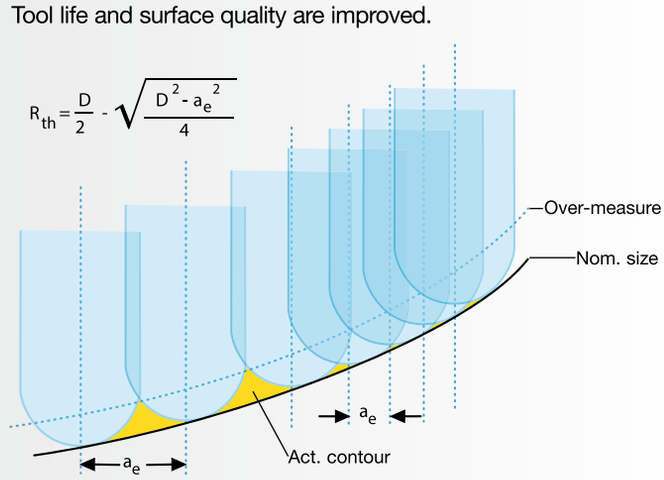
The ball-nosed milling cutter is perpendicular to the machining surface. In the centre of the tool is the cutting speed = 0 . Tool life and surface quality are not optimal.

The ball-nosed milling cutter is oblique to the machining surface. The centre of the tool is not engaged. Tool life and surface quality are improved.



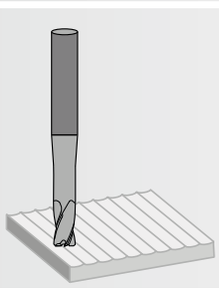
Example: For a full copy milling radius Ø 10 mm and a depth of cut a_p of 0.3 mm results in an effective diameter $D_{(eff)}$ = 3.4 mm
This $D_{(eff)}$ shall be used to calculate the cutting speed V_c

$$R_{th} = \frac{D}{2} - \sqrt{\frac{D^2 - a_e^2}{4}}$$



The reduction of the cutting width, ae. leads to an improvement of the surface quality of the workpiece (reduced peak-to-valley height).

14. HSC milling with corner radius - copy milling cutters / Torus milling



HSC milling & Torus milling

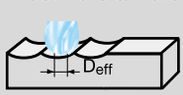
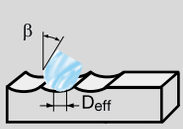
3D-machining with Torus milling cutters. Engagement of the tool predominantly on the corner radius. Improves the surface quality and the tool life. Of advantage when 3D-machining flat contour areas on 3-axis machines.

Comparison of Hardness

Tens. strength (N/mm²)	HRC	HB30	HV10
240		71	75
255		76	80
270		81	85
285		86	90
305		90	95
320		95	100
335		100	105
350		105	110
370		109	115
385		114	120
400		119	125
415		124	130
430		128	135
450		133	140
465		138	145
480		143	150
495		147	155
510		152	160
530		157	165
545		162	170
560		166	175
575		171	180
595		176	185
610		181	190
625		185	195
640		190	200
660		195	205
675		199	210
690		204	215
705		209	220
720		214	225
740		219	230
755		223	235
770		228	240
785		233	245
800	22	238	250
820	23	242	255
835	24	247	260
860	25	255	268
870	26	258	272
900	27	266	280
920	28	273	287
940	29	278	293
970	30	287	302
995	31	295	310
1020	32	301	317
1050	33	311	327
1080	34	319	336
1110	35	328	345
1140	36	337	355
1170	37	346	364

Tens. strength (N/mm²)	HRC	HB30	HV10
1200	38	354	373
1230	39	363	382
1260	40	372	392
1300	41	383	403
1330	42	393	413
1360	43	402	423
1400	44	413	434
1440	45	424	446
1480	46	435	458
1530	47	449	473
1570	48	460	484
1620	49	472	497
1680	50	488	514
1730	51	501	527
1790	52	517	544
1845	53	532	560
1910	54	549	578
1980	55	567	596
2050	56	584	615
2140	57	607	639
2180	58	622	655
	59		675
	60		698
	61		720
	62		745
	63		773
	64		800
	65		829
	66		864
	67		900
	68		940

Formula

Symbol	Description	metric	Formula
z	No. of teeth		
D	Milling cutter diameter	mm	
a_p	Depth of cut	mm	
a_e	Width of cut	mm	
l_f	Milling length	mm	
n	Revolution per min.	U/min	$n = \frac{v_c \cdot 1000}{\pi \cdot D}$
v_c	Cutting speed	m/min	$v_c = \frac{\pi \cdot D \cdot n}{1000}$
v_f	Feed per min.	mm	$v_f = n \cdot z \cdot f_z$
f_z	Feed per tooth	mm	$f_z = \frac{v_f}{n \cdot z}$
f/U	Feed per revolution	mm	$f/U = \frac{v_f}{n}$
f/U	Feed per revolution	mm	$f/U = f_z \cdot z$
Q	Chip volume	cm^3/min	$Q = \frac{a_p \cdot a_e \cdot v_f}{1000}$
T	Milling time	min	$T = \frac{l_f}{v_f}$
hm	Average chip thickness	mm	$hm = fz \cdot \sqrt{\frac{a_e}{D}}$
$D_{(eff)}$	Effective diameter 	mm	$D_{(eff)} = 2 \cdot \sqrt{D \cdot a_p - a_p^2}$
	Effective diameter with approach angle 	mm	$D_{(eff)} = D \cdot \sin\left[\beta + \arccos\left(\frac{D - 2a_p}{D}\right)\right]$
R_{th}	Peak-to-valley height	mm	$R_{th} = \frac{D}{2} = \sqrt{\frac{D^2 - a_e^2}{4}}$
Z_b	Optimal step over for torus milling	mm	$Z_b = \frac{D - 2 \times R}{2}$

Notes

Notes

WHERE PRECISION
MEETS PERFECTION

certified according to:
ISO 9001
ISO 14001
ISO 13485

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