

ENDMILL SERIES

A NEW NAME
IN QUALITY TOOLS

zectecTM 



AEROSPACE | MEDICAL | ENERGY | DEFENCE

PROUDLY
MADE IN
 **INDIA**

INTRODUCTION

The brand ZECTEC is built on 45 years of experience in manufacturing precision round tools and microtools, with a strong and successful focus on the Swiss and German metal-cutting markets over the last 25 years.

We have been manufacturing in India for the world since 1980, originally under the company name Dagger Master Tools. We began by supplying HMT Watch and exporting PCB drills to the USA in 1981.

In 2006, we transformed into an Indo-German joint venture, and in 2019, we changed our company name to align with our global brand presence.

In the mid-1990s, we indigenised several Swiss-made microtools for India's leading watch brand. This gave us the confidence to begin exporting to Switzerland in 1998. By 2000, we had decided to fully transition into metal-cutting tools, building a strong reputation for best-in-class solutions for difficult and challenging materials.

With decades of experience delivering precision tools to the most demanding markets and applications, we bring together our technology expertise and the strengths of our international supplier base to offer a range of drills and end mills under the ZECTEC brand. These tools are designed for focused applications in essential industries such as medical, aerospace, defence, and energy, enabling easier machining of challenging materials.

By uniquely designing one tool to machine multiple materials, ZECTEC helps reduce customer costs and inventory while boosting output and efficiency.

The ZECTEC product range is aligned with the needs of India and Asia. New products, innovations, and product lines will be continuously introduced to enhance customer machining processes and support operational sustainability.

We deliver German engineering, Swiss precision, and Indian values under one roof. Our promise is to supply consistent and repeatable round tools every time, making customer processes dependable — all the time, every time.

Vidhu Nevatia
Founder Director
JAI HIND

PRECISION ► PERFORMANCE ► PERFECTION



ENDMILL SERIES

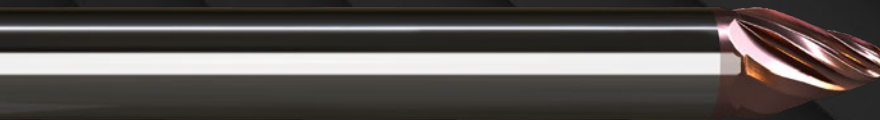
SERIES OPTIONS

Numerous variations are available in the ZECTEC endmill series, which we will break down for you below. Here you will find a brief explanation of the different tool series as well as relevant info for the properties of the tools. More information about the series can be found on the following pages.



300.C4 SERIES

4-flute, Conical Taper milling cutter
HB1/HB2 coating
6.0-16.0 mm
Pages 13-14



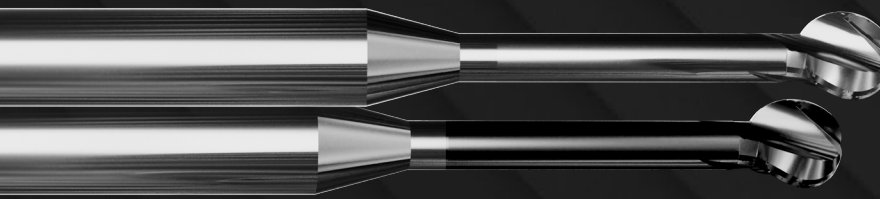
300.C6 SERIES

6-flute, Conical Taper milling cutter
HB1 coating
6.0-16.0mm
Pages 15-16



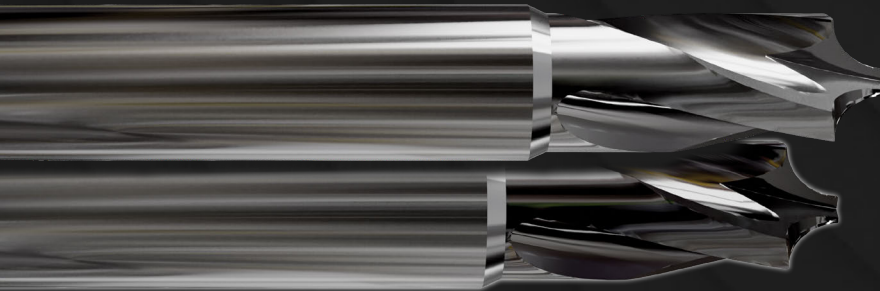
300.C8 SERIES

8-flute, Conical Taper milling cutter
HB1 coating
6.0-16.0mm
Pages 15-16



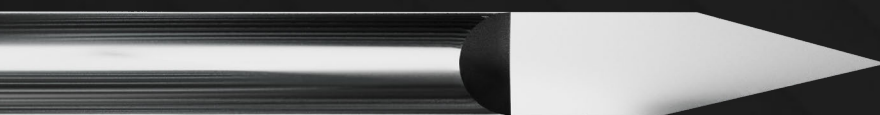
305 SERIES

3-flute lollipop end mill
Optional coating
1.0 - 6.0 mm
Pages 17-18



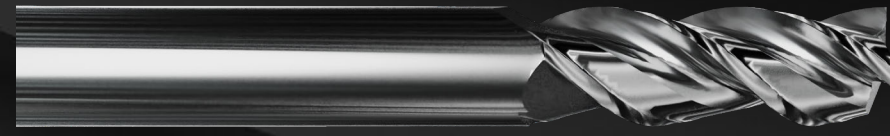
306 SERIES

3-flute inner-radius end mill
Optional coating
0.5 - 1.5 mm
Pages 19-20



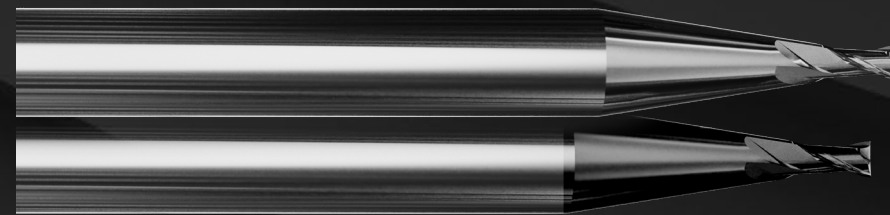
318 SERIES

1-flute engraving tool
Uncoated
0.05 - 1.0 mm
Pages 21-22



333N.F3 SERIES

3-flute square end mill
Uncoated
1.0 - 12.0 mm
Pages 23-24



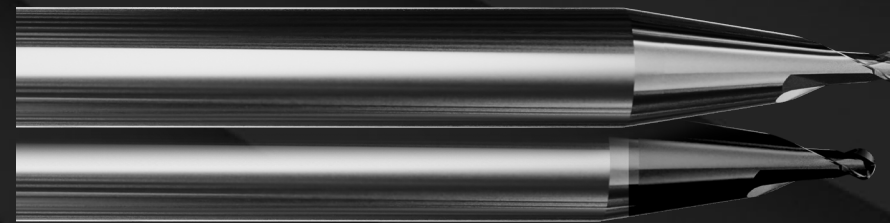
335.F2 SERIES

2-flute square end mill
Optional coating
0.2 - 3.0 mm
Pages 25-29



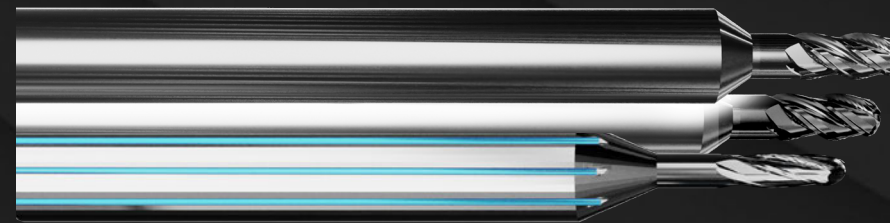
335.F3 SERIES

3-flute square end mill
Optional coatings
0.3 - 3.0 mm
Pages 30-36



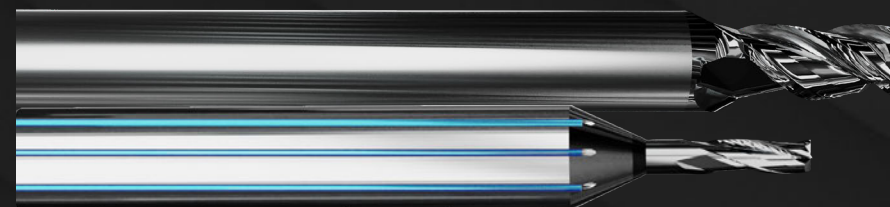
336.B2 SERIES

2-flute ball-nosed end mill
Optional coating
0.3 - 3.0 mm
Pages 37-39



338.B4 SERIES

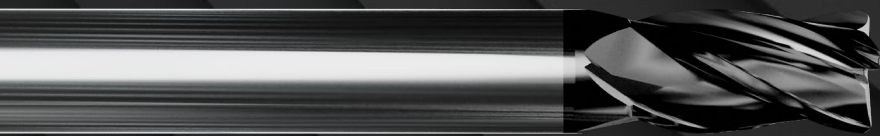
4-flute ball-nose end mill
Optional coating/TSC
1.0 - 8.0 mm*
Pages 40-42



338.F3 SERIES

3-flute square end mill
Optional coatings/TSC
0.3 - 6.0 mm*
Pages 43-47

ENDMILL SERIES



338.F4/T4 SERIES

4-flute square end mill
Optional coating
3.0 - 12.0 mm
Pages 48-50



338.F5/T5 SERIES

5-flute toric end mill
HB1/HB2 coating
6.0-16.0 mm
Pages 51-52



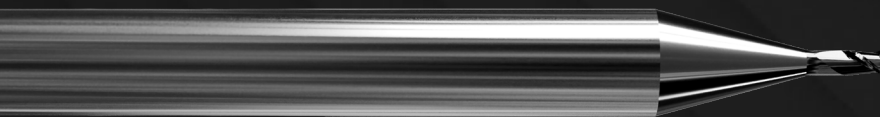
338.F6/T6 SERIES

6-flute toric end mill
HB1
6.0-16.0 mm
Pages 53-55



377 SERIES TORX®

3 or 4-flute square end mill
HB2 coating
0.2 - 3.0 mm
Pages 56-57



378.F2 SERIES

2-flute square end mill
HB2 coating
0.2 - 1.0 mm
Pages 58-60





CATALOG HOW-TO

This catalog is built so that you can find the most important information you need efficiently. A couple of quick tips before you start:

Above each list of article numbers for a tool series section, there is a quick overview of information regarding the tools listed below it. Included is a breakdown of which materials the tools are suitable for machining with, with the approved material group marked with a ✓:

Material Group: ☒ P ☒ M ☒ K ☒ N ☒ S ☒ H

The materials are listed by the ISO groupings, which are broken down into the following categories:

Material Group	Type of Materials in Group
P	Steels up to RM < 1200N/mm²
M	Stainless steels Ferritic, Martensitic, Austenitic
K	Cast Iron
N	Non-ferrous metals
S	Heat-resistant steels, Titanium, CrCo
H	Hardened Steels ≥ 55 HRC

Below this is a quick overview regarding tool design elements (number of flutes, coating, etc.), with the appropriate box being checked with a ✓ when that tool series section includes that design element:

Material Group: ☒ P ☒ M ☒ K ☒ N ☒ S ☒ H
Cutting Edges: ☐ 1-flute ☐ 2-flute ☒ 3-flute ☐ 4-flute
Coating: ☒ uncoated ☐ HB1 ☐ HB2 ☐ AR2
Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

At the end of each tool series, there is also the cutting data listed for various materials organized within the ISO material groups. This data is meant to be a starting point for your cutting data, and more detailed data can be provided with help of your technical representative.



IDENTIFICATION WITHOUT INTERFERENCE

Each Zectec tool is laser-marked at the base for lifetime traceability. This allows for the exact reproduction of your specific tool years down the line. Because we avoid laser marking on the shank's mounting surface, concentricity remains flawless, ensuring maximum stability and performance.



H4 SHANK TOLERANCE – STANDARD ACROSS ALL TOOLS

All tools feature h4-tolerance shanks for a precise toolholder fit, minimizing runout and vibration to ensure superior machining accuracy and extended tool life. Also reduces spindle and holder wear.

ENDMILL SERIES

SERIES OVERVIEW

The ZECTEC endmill series has several variations, which we break down below. Here you will find a brief explanation of the tool series as well as relevant info for the properties of the tools.

Series	Material Group																Coating			Tool design			
	P	M	K	N	S (S1, S2, S3)	H	Drilling	Engraving	Roughing	Pre-Finishing	Finishing	HSC	Dry	Wet	HB1	HB2	AR2	Geometry	Shank Coolant	Flutes	Size Range		
300.C4	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓		Conical Taper		4	6 - 16 mm		
300.C6	✓	✓	✓	✓	✓	✓				✓	✓	✓		✓	✓	✓		Conical Taper		6	6 - 16 mm		
300.C8	✓	✓	✓	✓	✓	✓				✓	✓	✓		✓	✓	✓		Conical Taper		8	6 - 16 mm		
305	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓		✓	Lollipop		3	1 - 6 mm		
306	✓	✓	✓	✓	✓	✓				✓	✓	✓		✓	✓		✓ ²	Inner Radius		3	0.5 - 1.5 mm		
318	✓	✓		✓	✓			✓						✓	✓			Engraver		1	0.05 - 1 mm		
333.N.F3				✓						✓	✓	✓	✓	✓	✓			Square		3	1 - 12 mm		
335.F2	✓	✓		✓	✓					✓	✓	✓		✓	✓		✓ ²	Square		2	0.2 - 3 mm		
335.F3	✓	✓		✓	✓					✓	✓	✓		✓	✓		✓ ² ✓ ²	Square		3	0.3 - 3 mm		
336.B2	✓	✓		✓	✓					✓	✓	✓		✓	✓		✓ ²	Ball-Nose		2	0.3 - 3 mm		
338.B4	✓	✓	✓	✓	✓	✓				✓	✓	✓		✓	✓		✓ ²	Ball-Nose	✓ ²	4	1 - 8 mm ³		
338.F3	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓		✓ ² ✓ ²	Square	✓ ²	3	0.3 - 6mm ³		
338.F4/T4	✓	✓	✓	✓	✓	✓				✓	✓	✓		✓	✓		✓ ²	Square/Toric		4	3 - 12 mm ³		
338.F5/T5	✓	✓			✓	✓				✓	✓	✓		✓	✓	✓	✓ ²	Square/Toric		5	6 - 16 mm		
338.F6/T6	✓	✓			✓	✓				✓	✓	✓		✓	✓	✓		Square/Toric		6	6 - 16 mm		
377		✓			✓					✓	✓	✓		✓	✓		✓	Square		3/4	0.2 - 3 mm		
378.F2		✓			✓	✓				✓	✓	✓		✓	✓		✓	Square		2	0.2 - 1 mm		

¹ Material Groups based on the following ISO groupings:

Material Group	Type of Materials in Group
P	Steels up to RM < 1200N/mm²
M	Stainless steels Ferritic, Martensitic, Austenitic
K	Cast Iron
N	Non-ferrous metals
S	Heat-resistant steels, Titanium, CrCo
H	Hardened Steels ≥ 55 HRC

² Optional

³ Not all sizes available with all shank coolant options

- ✓ Primary choice
- ✓ Secondary choice

² Optional

³ Not all sizes available with all shank coolant options

- ✓ Primary choice
- ✓ Secondary choice

All tools feature h4-tolerance shanks for a precise toolholder fit, minimizing runout and vibration to ensure superior machining accuracy and extended tool life. Also reduces spindle and holder wear.

ENDMILL SERIES

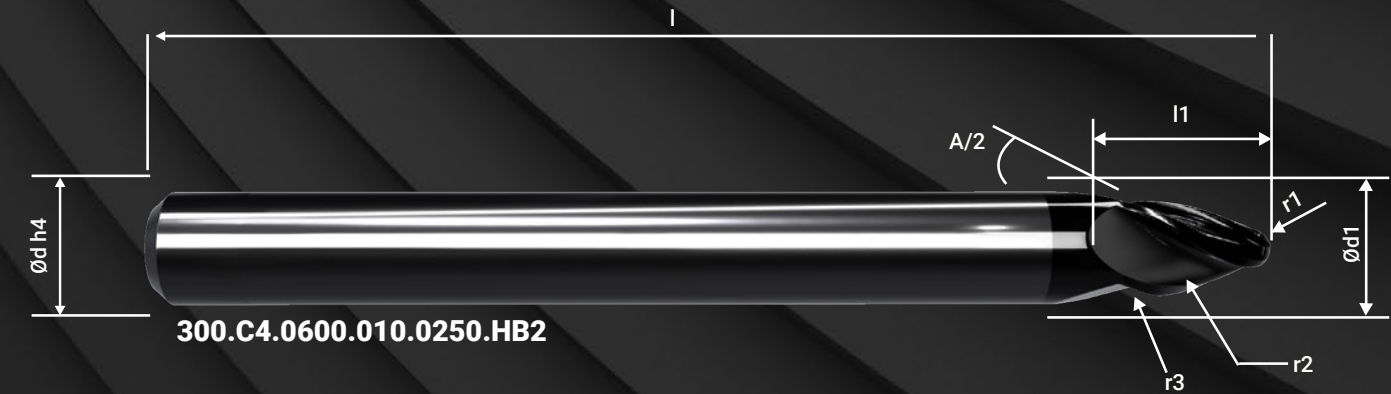
MATERIAL CLASSIFICATION

Material Group	Work Material	Material Number	DIN EN ISO	AISI/ASTM/UNS
P	Steels up to RM < 1200N/mm²	1.0044	S275JR	AISI 1020
		1.0715	11SMn30	AISI 1215
		1.2344	X40CrMoV5-1	AISI H13
		1.2379	X153CrMoV12	AISI D2
		1.7131	16MnCr5	AISI 5115
		1.3505	100Cr6	AISI 52100
		1.7225	42CrMo4	AISI 4140
M	Stainless steels Ferritic,Martensitic, Austenitic,Duplex, Super-Duplex	1.4034	X46Cr13	AISI 420C
		1.4542	X5CrNiCuNb 16-4	AISI 630 / ASTM 17-4 PH
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH
		1.4301	X5CrNi 18-10	AISI 304
		1.4410	X2CrNiMoN25-7-4	F53
		1.4435	X2CrNiMo 18-14-3	AISI 316L
		1.4462	X2CrNiMoN22-5-3	AISI 318LN
K	Cast Iron	0.6020	GG20	ASTM 30
		0.6030	GG30	ASTM 40B
		0.7040	GGG40	ASTM 60-40-18
		0.7060	GGG60	ASTM 80-60-03
N	Non-ferrous metals	3.2315	AlMgSi1	ASTM 6351
		2.0065	Cu-ETP / CW004A	UNS C11000
		2.0321	CuZn37 CW508L	UNS C27400
		2.0401	CuZn39Pb3 / CW614N	UNS C38500
		2.0966	CuAl10Ni5Fe4	UNS C63000
S	Heat-resistant steels,Titanium,CrCo	2.4617	NiMo28	Hastelloy B-2
		2.4665	NiCr22Fe18Mo	Hastelloy X
		2.4668	Inconel 718 /NiCr19NbMo	ASTM B 637 /UNS N07718
		2.4683	N07777	ASTM B637
		3.7165	TiAl6V4	ASTM B348 / F136
		9.9367	TiAl6Nb7	ASTM F1295
		2.4964	CoCr20W15Ni	Haynes 25
			CrCoMo28	ASTM F1537
H	Hardened Steels ≥ 55 HRC	1.2510	100MnCrMoW4	AISI O1
		1.2379	X153CrMoV12	AISI D2
		1.2344	X40CrMoV5-1	AISI H13
		1.3401	X120Mn12	AISI A128
		1.4021	X20Cr13	AISI 420C

PRECISION ► PERFORMANCE ► PERFECTION

PROUDLY
MADE IN
INDIA

ENDMILL SERIES



300.C4 SERIES

- Solid carbide 4-flute Conical Taper milling cutter
- Design for improved traditional ball-end applications and finishing
- For finishing and semi-finishing profiling

Material Group: ☒ P ☐ M ☒ K ☒ N ☐ S ☒ H
Cutting Edges: ☐ 1-flute ☐ 2-flute ☐ 3-flute ☒ 4-flute
Coating: ☐ uncoated ☒ HB1 ☐ HB2 ☐ AR2
Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	l1	r1	r2	r3	d _{h4}	l	A/2	Z
300.C4.0600.010.0250.HB1	6.0	9.50	1.00	250	3.00	6.0	64	17.5	4
300.C4.0800.015.0250.HB1	8.0	11.43	1.50	250	4.00	8.0	76	17.5	4
300.C4.1000.020.0250.HB1	10.0	12.50	2.00	250	5.00	10.0	80	20.0	4
300.C4.1200.030.0250.HB1	12.0	22.00	3.00	250	6.00	12.0	88	20.0	4
300.C4.1600.040.1000.HB1	16.0	24.00	4.00	1000	5.00	16.0	109	12.5	4

Material Group: ☒ P ☐ M ☒ K ☒ N ☐ S ☒ H
Cutting Edges: ☐ 1-flute ☐ 2-flute ☐ 3-flute ☒ 4-flute
Coating: ☐ uncoated ☐ HB1 ☒ HB2 ☐ AR2
Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	l1	r1	r2	r3	d _{h4}	l	A/2	Z
300.C4.0600.010.0250.HB2	6.0	9.50	1.00	250	3.00	6.0	64	17.5	4
300.C4.0800.015.0250.HB2	8.0	11.43	1.50	250	4.00	8.0	76	17.5	4
300.C4.1000.020.0250.HB2	10.0	12.50	2.00	250	5.00	10.0	80	20.0	4
300.C4.1200.030.0250.HB2	12.0	22.00	3.00	250	6.00	12.0	88	20.0	4
300.C4.1600.040.1000.HB2	16.0	24.00	4.00	1000	5.00	16.0	109	12.5	4

CUTTING DATA

		Ø6	Ø 8	Ø 10	Ø 12	Ø 16
Material Group	vc [m/min]	fz [mm]	fz [m/min]	fz [mm]	fz [m/min]	fz [mm]
P	100 -200	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
	80 -160	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
M	70 -110	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
	60 -100	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
K	100 -220	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
N	200 -700	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
	100 -300	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
S	20 -40	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
	40 -60	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
	40 -60	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
H	40 -80	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013

ENDMILL SERIES



300.C6 SERIES

- Solid carbide 4-flute Conical Taper milling cutter
- Design for improved traditional ball-end applications and finishing
- For finishing and semi-finishing profiling

Material Group: ☒ P ☒ M ☒ K ☒ N ☒ S ☒ H

Cutting Edges: ☐ 1-flute ☐ 2-flute ☐ 3-flute ☐ 4-flute ☒ 6-flute

Coating: ☐ uncoated ☒ HB1 ☐ HB2 ☐ AR2

Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	l1	r1	r2	r3	d _{h4}	l	A/2	Z
300.C6.0600.010.0250.HB1	6.0	9.50	1.00	2.50	3.00	6.0	64	17.5	6
300.C6.0800.015.0250.HB1	8.0	11.43	1.50	2.50	4.00	8.0	76	17.5	6
300.C6.1000.020.0250.HB1	10.0	12.50	2.00	2.50	5.00	10.0	80	20.0	6
300.C6.1200.030.0250.HB1	12.0	22.00	3.00	2.50	6.00	12.0	88	20.0	6
300.C6.1600.040.1000.HB1	16.0	24.00	4.00	10.00	5.00	16.0	109	12.5	6

300.C8 SERIES

Material Group: ☒ P ☒ M ☒ K ☒ N ☒ S ☒ H

Cutting Edges: ☐ 1-flute ☐ 2-flute ☐ 3-flute ☐ 4-flute ☒ 8-flute

Coating: ☐ uncoated ☒ HB1 ☐ HB2 ☐ AR2

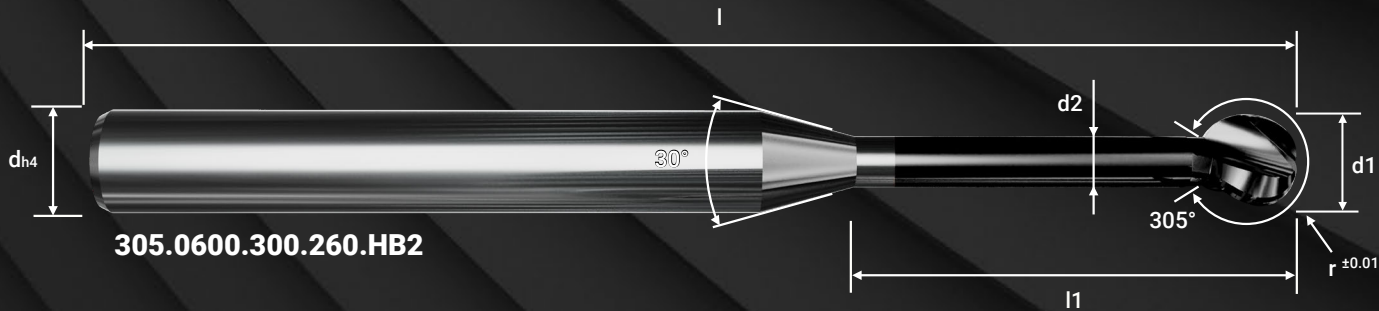
Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	l1	r1	r2	r3	d _{h4}	l	A/2	Z
300.C8.0600.010.0250.HB1	6.0	9.50	1.00	2.50	3.00	6.0	64	17.5	8
300.C8.0800.015.0250.HB1	8.0	11.43	1.50	2.50	4.00	8.0	76	17.5	8
300.C8.1000.020.0250.HB1	10.0	12.50	2.00	2.50	5.00	10.0	80	20.0	8
300.C8.1200.030.0250.HB1	12.0	22.00	3.00	2.50	6.00	12.0	88	20.0	8
300.C8.1600.040.1000.HB1	16.0	24.00	4.00	10.00	5.00	16.0	109	12.5	8

CUTTING DATA

		Ø6	Ø 8	Ø 10	Ø 12	Ø 16
Material Group	vc [m/min]	fz [mm]	fz [m/min]	fz [mm]	fz [m/min]	fz [mm]
P	100 -200	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
	80 -160	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
M	70 -110	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
	60 -100	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
K	100 -220	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
N	200 -700	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
	100 -300	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
S	20 -40	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
	40 -60	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
	40 -60	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013
H	40 -80	0.03 - 0.08	0.04 - 0.09	0.05 - 0.010	0.06 - 0.011	0.07 - 0.013

ENDMILL SERIES



305 SERIES

- Solid carbide 3-flute lollipop end mill with 18° helix angle
- Designed to eliminate secondary burrs when machining INOX, titanium, cast iron, and other materials
- Uncoated and HB2-coated options
- For dry or wet roughing/pre-finishing/finishing

Material Group: ☒ P ☐ M ☒ K ☒ N ☐ S ☒ H

Cutting Edges: ☐ 1-flute ☐ 2-flute ☒ 3-flute ☐ 4-flute

Coating: ☒ uncoated ☐ HB1 ☐ HB2 ☐ AR2

Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	d2	r	l1	d _{h4}	l	Z
305.0100.050.060	1.00	0.50	0.50	6.00	4.00	60	3
305.0200.100.100	2.00	1.00	1.00	10.00	4.00	60	3
305.0300.150.140	3.00	1.50	1.50	14.00	4.00	60	3
305.0400.200.180	4.00	2.00	2.00	18.00	6.00	70	3
305.0600.300.260	6.00	3.00	3.00	26.00	6.00	70	3

Material Group: ☒ P ☐ M ☒ K ☒ N ☐ S ☒ H

Cutting Edges: ☐ 1-flute ☐ 2-flute ☒ 3-flute ☐ 4-flute

Coating: ☐ uncoated ☐ HB1 ☒ HB2 ☐ AR2

Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

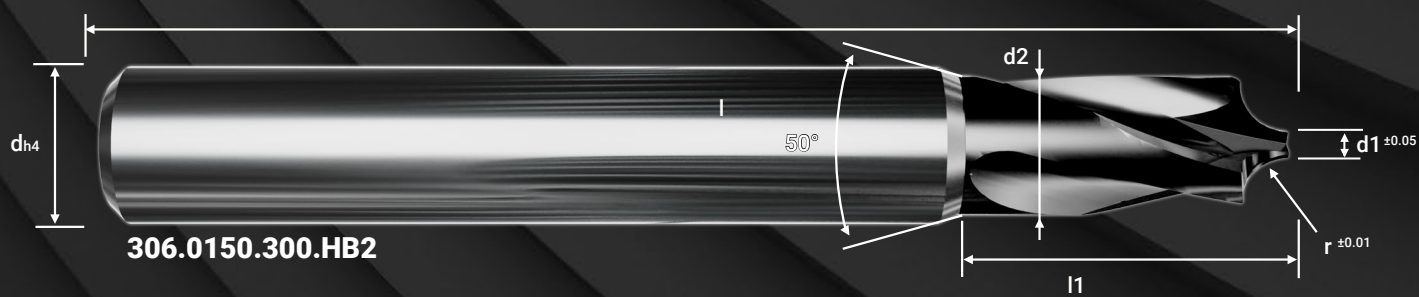
Article No.	d1	d2	r	l1	d _{h4}	l	Z
305.0100.050.060.HB2	1.00	0.50	0.50	6.00	4.00	60	3
305.0200.100.100.HB2	2.00	1.00	1.00	10.00	4.00	60	3
305.0300.150.140.HB2	3.00	1.50	1.50	14.00	4.00	60	3
305.0400.200.180.HB2	4.00	2.00	2.00	18.00	6.00	70	3
305.0600.300.260.HB2	6.00	3.00	3.00	26.00	6.00	70	3

CUTTING DATA

Material Group	Work Material	Vc [m/min]	Operations	Tool Diameter Ø (in Metric)Y				
				1	2	3	4	6
				fz [mm/tooth]				
P	Steels up to RM < 1200N/mm²	50 - 140	Deburring	0.055	0.070	0.080	0.090	0.100
			Profilling	0.035	0.055	0.060	0.065	0.075
			Slotting	0.025	0.040	0.050	0.055	0.060
M	Stainless steels: Ferritic, Martensitic, Austenitic	35 - 110	Deburring	0.050	0.060	0.065	0.075	0.085
			Profilling	0.030	0.040	0.050	0.055	0.065
			Slotting	0.020	0.030	0.045	0.050	0.055
K	Cast Iron	40 - 120	Deburring	0.045	0.065	0.080	0.090	0.100
			Profilling	0.025	0.060	0.070	0.075	0.080
			Slotting	0.020	0.050	0.060	0.065	0.070
N	Non-ferrous metals	130 - 450	Deburring	0.120	0.150	0.200	0.240	0.250
			Profilling	0.045	0.100	0.160	0.180	0.200
			Slotting	0.060	0.080	0.140	0.150	0.160
S	Heat-resistant steels, Titanium, CrCo	20 - 60	Deburring	0.035	0.040	0.050	0.060	0.065
			Profilling	0.025	0.030	0.035	0.040	0.045
			Slotting	0.015	0.020	0.025	0.030	0.035
H	Hardened Steels ≥ 55 HRC	no information entered						

Note:
*Feed is considered based on 3 x D neck length and should be increased or decreased based on other neck lengths and tool hold out.
Cutting data is for reference only. Adjustments should be made according to the specific application, setup rigidity, and machine conditions.

ENDMILL SERIES



306 SERIES

- Solid carbide 3-flute inner-radius end mill
- Designed for efficient chip removal and clean inner radius cuts
- Uncoated and HB2-coated options
- For dry or wet roughing/pre-finishing/finishing

Material Group: ☒ P ☒ M ☒ K ☒ N ☒ S ☒ H
Cutting Edges: ☐ 1-flute ☐ 2-flute ☒ 3-flute ☐ 4-flute
Coating: ☒ uncoated ☐ HB1 ☐ HB2 ☐ AR2
Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	d2	r	l1	d _{h4}	l	Z
306.0050.020	0.50	1.00	0.20	4.00	3.00	50.00	3
306.0050.030	0.50	1.25	0.30	4.00	3.00	50.00	3
306.0050.040	0.50	1.40	0.40	5.00	3.00	50.00	3
306.0050.050	0.50	1.60	0.50	6.00	3.00	50.00	3
306.0080.100	0.80	2.80	1.00	8.00	3.00	50.00	3
306.0150.150	1.50	4.40	1.50	12.00	6.00	50.00	3
306.0150.200	1.50	5.30	2.00	14.00	6.00	50.00	3
306.0150.250	1.50	6.20	2.50	16.00	8.00	60.00	3
306.0150.300	1.50	7.10	3.00	17.00	8.00	60.00	3

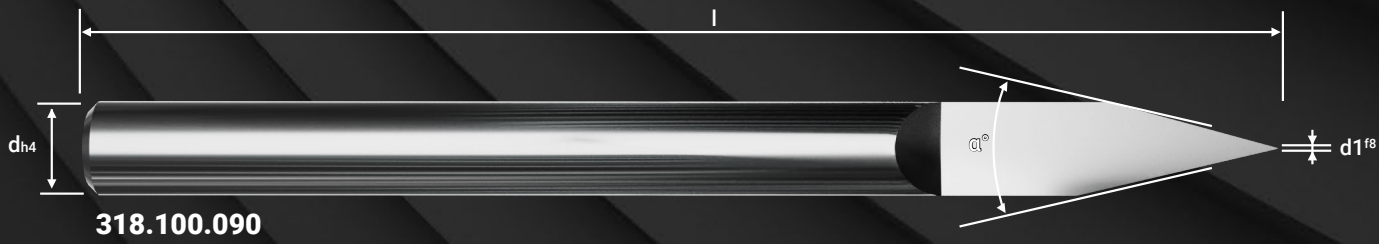
Material Group: ☒ P ☒ M ☒ K ☒ N ☒ S ☒ H
Cutting Edges: ☐ 1-flute ☐ 2-flute ☒ 3-flute ☐ 4-flute
Coating: ☐ uncoated ☐ HB1 ☒ HB2 ☐ AR2
Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	d2	r	l1	d _{h4}	l	Z
306.0050.020.HB2	0.50	1.00	0.20	4.00	3.00	50.00	3
306.0050.030.HB2	0.50	1.25	0.30	4.00	3.00	50.00	3
306.0050.040.HB2	0.50	1.40	0.40	5.00	3.00	50.00	3
306.0050.050.HB2	0.50	1.60	0.50	6.00	3.00	50.00	3
306.0080.100.HB2	0.80	2.80	1.00	8.00	3.00	50.00	3
306.0150.150.HB2	1.50	4.40	1.50	12.00	6.00	50.00	3
306.0150.200.HB2	1.50	5.30	2.00	14.00	6.00	50.00	3
306.0150.250.HB2	1.50	6.20	2.50	16.00	8.00	60.00	3
306.0150.300.HB2	1.50	7.10	3.00	17.00	8.00	60.00	3

CUTTING DATA

	Ø 1 - Ø 2 mm		Ø 2.5 - Ø 4 mm		Ø 6 - Ø 8 mm	
Material Group	vc [m/min]	fz [mm]	vc [m/min]	fz [mm]	vc [m/min]	fz [mm]
P	100 - 140	0.02 - 0.035	100 - 140	0.03 - 0.045	100 - 140	0.05 - 0.065
	100 - 140	0.02 - 0.03	100 - 140	0.03 - 0.04	100 - 140	0.05 - 0.055
M	80 - 110	0.02 - 0.03	80 - 110	0.035 - 0.045	80 - 110	0.045 - 0.055
	70 - 100	0.015 - 0.025	70 - 100	0.035 - 0.045	70 - 100	0.045 - 0.055
K	80 - 140	0.02 - 0.04	80 - 140	0.04 - 0.055	80 - 140	0.05 - 0.065
N	80 - 160	0.02 - 0.04	80 - 160	0.035 - 0.06	80 - 160	0.055 - 0.06
	80 - 140	0.02 - 0.045	80 - 140	0.035 - 0.06	80 - 140	0.055 - 0.06
	80 - 120	0.02 - 0.045	80 - 120	0.035 - 0.06	80 - 120	0.055 - 0.06
S	50 - 80	0.02 - 0.03	50 - 80	0.03 - 0.04	50 - 80	0.03 - 0.05
	50 - 80	0.02 - 0.03	50 - 80	0.03 - 0.04	50 - 80	0.03 - 0.05
	50 - 80	0.02 - 0.03	50 - 80	0.03 - 0.04	50 - 80	0.03 - 0.05
H						

ENDMILL SERIES



318 SERIES

- Solid carbide engraving tool with 0° helix angle
- Uncoated
- For wet or dry engraving with a ground depth of 0.1 mm

Material Group: ☒ P ☐ M ☐ K ☒ N ☒ S ☐ H

Cutting Edges: ☒ 1-flute ☐ 2-flute ☐ 3-flute ☐ 4-flute

Coating: ☒ uncoated ☐ HB1 ☐ HB2 ☐ AR2

Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	α°	d _{h4}	l	Z
318.005.030	0.05	30°	3.00	38	1
318.010.030	0.10	30°	3.00	38	1
318.020.030	0.20	30°	3.00	38	1
318.050.030	0.50	30°	3.00	38	1
318.070.030	0.70	30°	3.00	38	1
318.100.030	1.00	30°	3.00	38	1
318.005.060	0.05	60°	3.00	38	1
318.010.060	0.10	60°	3.00	38	1
318.020.060	0.20	60°	3.00	38	1
318.050.060	0.50	60°	3.00	38	1
318.070.060	0.70	60°	3.00	38	1
318.100.060	1.00	60°	3.00	38	1
318.010.090	0.10	90°	3.00	38	1
318.020.090	0.20	90°	3.00	38	1
318.050.090	0.50	90°	3.00	38	1
318.070.090	0.70	90°	3.00	38	1
318.100.090	1.00	90°	3.00	38	1

CUTTING DATA

	Ø 0.05 - Ø 1 mm	
Material Group	max rpm	f [mm/U]
P	30	0.004
	30	0.004
M	30	0.004
N	30	0.004
S	30	0.004
	30	0.004

ENDMILL SERIES



333N.F3 SERIES

- Solid carbide 3-flute square end mill with 40° helix angle
- Designed for high-feed milling
- For dry or wet roughing/pre-finishing/finishing

Material Group: ☒ P ☐ M ☐ K ☒ N ☐ S ☐ H

Cutting Edges: ☐ 1-flute ☐ 2-flute ☒ 3-flute ☐ 4-flute

Coating: ☒ uncoated ☐ HB1 ☐ HB2 ☐ AR2

Tool Extras: ☒ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	l1	l2	d _{h4}	l	Z
333N.F3.0100.000.030	1.00	3.00	3.60	4.00	45	3
333N.F3.0150.000.045	1.50	4.50	5.70	4.00	45	3
333N.F3.0200.000.060	2.00	6.00	7.00	4.00	45	3
333N.F3.0250.000.075	2.50	7.50	9.00	4.00	50	3
333N.F3.0300.000.090	3.00	9.00	11.00	4.00	50	3
333N.F3.0400.000.120	4.00	12.00		4.00	50	3
333N.F3.0500.000.150	5.00	15.00	18.00	6.00	50	3
333N.F3.0600.000.180	6.00	18.00		6.00	50	3
333N.F3.0800.000.200	8.00	20.00		8.00	60	3
333N.F3.1000.000.250	10.00	25.00		10.00	75	3
333N.F3.1200.000.300	12.00	30.00		12.00	75	3

CUTTING DATA

Material Group	Work Material	Vc [m/min]	Operations				Tool Diameter Ø (in Metric)				
			Slot Milling		Side Milling		1	1.5*	2*	2.5*	3*
			Ae	Ap	Ae	Ap	fz [mm/tooth]				
N	Non-ferrous metals	200 - 550	-	-	≤0.2D	< 1.5D	0.020 - 0.040	0.030 - 0.060	0.042 - 0.084	0.050 - 0.100	0.060 - 0.120
		150 - 380	>0.3D	<D	-	-	0.006 - 0.012	0.009 - 0.018	0.012 - 0.024	0.015 - 0.030	0.018 - 0.036
	Non-ferrous plastics	200 - 270	-	-	≤0.2D	< 1.5D	0.025 - 0.050	0.040 - 0.070	0.050 - 0.085	0.060 - 0.100	0.075 - 0.150
		120 - 170	>0.3D	<D	-	-	0.008 - 0.015	0.012 - 0.020	0.016 - 0.025	0.018 - 0.033	0.022 - 0.045

Material Group	Work Material	Vc [m/min]	Operations				Tool Diameter Ø (in Metric)					
			Slot Milling		Side Milling		4*	5	6	8	10	12
			Ae	Ap	Ae	Ap	fz [mm/tooth]					
N	Non-ferrous metals	200 - 550	-	-	≤0.2D	< 1.5D	0.080 - 0.160	0.100 - 0.210	0.120 - 0.250	0.160 - 0.300	0.200 - 0.400	0.250 - 0.450
		150 - 380	>0.3D	<D	-	-	0.024 - 0.048	0.030 - 0.060	0.036 - 0.072	0.048 - 0.096	0.060 - 0.120	0.072 - 0.144
	Non-ferrous plastics	200 - 270	-	-	≤0.2D	< 1.5D	0.085 - 0.200	0.100 - 0.250	0.120 - 0.300	0.120 - 0.320	0.150 - 0.350	0.180 - 0.400
		120 - 170	>0.3D	<D	-	-	0.025 - 0.065	0.030 - 0.075	0.034 - 0.085	0.038 - 0.095	0.045 - 0.110	0.055 - 0.125

Note:
* Profile milling > 25% Ap is not recommended.
Use appropriate coolant based on material and feature being machined.
Above 16000 RPM, balancing is required.
Cutting data is for reference only. Adjustments should be made according to the specific application, setup rigidity, and machine conditions.

ENDMILL SERIES



335.F2 SERIES

- Solid carbide 2-flute square end mill with 30° helix angle
- Designed with short cutting flutes for stable milling
- For dry or wet roughing/pre-finishing/finishing

Material Group: ☒ P ☐ M ☒ K ☒ N ☐ S ☒ H

Cutting Edges: ☐ 1-flute ☒ 2-flute ☐ 3-flute ☐ 4-flute

Coating: ☒ uncoated ☐ HB1 ☐ HB2 ☐ AR2

Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	l1	d _{h4}	l	Z
335.F2.020.040	0.20	0.40	3.00	38.00	2
335.F2.020.070	0.20	0.70	3.00	38.00	2
335.F2.025.050	0.25	0.50	3.00	38.00	2
335.F2.025.090	0.25	0.90	3.00	38.00	2
335.F2.030.060	0.30	0.60	3.00	38.00	2
335.F2.030.110	0.30	1.10	3.00	38.00	2
335.F2.030.150	0.30	1.50	3.00	38.00	2
335.F2.040.080	0.40	0.80	3.00	38.00	2
335.F2.040.140	0.40	1.40	3.00	38.00	2
335.F2.040.200	0.40	2.00	3.00	38.00	2
335.F2.050.100	0.50	1.00	3.00	38.00	2
335.F2.050.180	0.50	1.80	3.00	38.00	2
335.F2.050.250	0.50	2.50	3.00	38.00	2
335.F2.060.120	0.60	1.20	3.00	38.00	2
335.F2.060.210	0.60	2.10	3.00	38.00	2
335.F2.060.300	0.60	3.00	3.00	38.00	2
335.F2.070.140	0.70	1.40	3.00	38.00	2
335.F2.070.250	0.70	2.50	3.00	38.00	2
335.F2.070.350	0.70	3.50	3.00	38.00	2
335.F2.080.160	0.80	1.60	3.00	38.00	2
335.F2.080.280	0.80	2.80	3.00	38.00	2
335.F2.080.400	0.80	4.00	3.00	38.00	2

Article No.	d1	l1	d _{h4}	l	Z
335.F2.090.180	0.90	1.80	3.00	38.00	2
335.F2.090.320	0.90	3.20	3.00	38.00	2
335.F2.090.450	0.90	4.50	3.00	38.00	2
335.F2.100.200	1.00	2.00	3.00	38.00	2
335.F2.100.350	1.00	3.50	3.00	38.00	2
335.F2.100.500	1.00	5.00	3.00	38.00	2
335.F2.120.240	1.20	2.40	3.00	38.00	2
335.F2.120.420	1.20	4.20	3.00	38.00	2
335.F2.120.600	1.20	6.00	3.00	38.00	2
335.F2.150.300	1.50	3.00	3.00	38.00	2
335.F2.150.520	1.50	5.20	3.00	38.00	2
335.F2.150.750	1.50	7.50	3.00	38.00	2
335.F2.200.400	2.00	4.00	3.00	38.00	2
335.F2.200.700	2.00	7.00	3.00	38.00	2
335.F2.200.1000	2.00	10.00	3.00	38.00	2
335.F2.250.500	2.50	5.00	3.00	38.00	2
335.F2.250.880	2.50	8.80	3.00	38.00	2
335.F2.250.1250	2.50	12.50	3.00	38.00	2
335.F2.300.600	3.00	6.00	3.00	38.00	2
335.F2.300.1050	3.00	10.50	3.00	38.00	2
335.F2.300.1500	3.00	15.00	3.00	38.00	2

ENDMILL SERIES



335.F2 SERIES CONTINUED

- Solid carbide 2-flute square end mill with 30° helix angle
- Designed with short cutting flutes for stable milling
- For dry or wet roughing/pre-finishing/finishing

Material Group: ☒ P ☐ M ☒ K ☒ N ☐ S ☒ H

Cutting Edges: ☐ 1-flute ☒ 2-flute ☐ 3-flute ☐ 4-flute

Coating: ☐ uncoated ☐ HB1 ☒ HB2 ☐ AR2

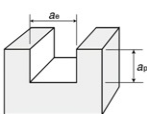
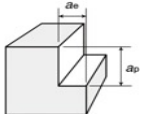
Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	l1	d _{h4}	l	Z
335.F2.020.040.HB2	0.20	0.40	3.00	38.00	2
335.F2.020.070.HB2	0.20	0.70	3.00	38.00	2
335.F2.025.050.HB2	0.25	0.50	3.00	38.00	2
335.F2.025.090.HB2	0.25	0.90	3.00	38.00	2
335.F2.030.060.HB2	0.30	0.60	3.00	38.00	2
335.F2.030.110.HB2	0.30	1.10	3.00	38.00	2
335.F2.030.150.HB2	0.30	1.50	3.00	38.00	2
335.F2.040.080.HB2	0.40	0.80	3.00	38.00	2
335.F2.040.140.HB2	0.40	1.40	3.00	38.00	2
335.F2.040.200.HB2	0.40	2.00	3.00	38.00	2
335.F2.050.100.HB2	0.50	1.00	3.00	38.00	2
335.F2.050.180.HB2	0.50	1.80	3.00	38.00	2
335.F2.050.250.HB2	0.50	2.50	3.00	38.00	2
335.F2.060.120.HB2	0.60	1.20	3.00	38.00	2
335.F2.060.210.HB2	0.60	2.10	3.00	38.00	2
335.F2.060.300.HB2	0.60	3.00	3.00	38.00	2
335.F2.070.140.HB2	0.70	1.40	3.00	38.00	2
335.F2.070.250.HB2	0.70	2.50	3.00	38.00	2
335.F2.070.350.HB2	0.70	3.50	3.00	38.00	2
335.F2.080.160.HB2	0.80	1.60	3.00	38.00	2
335.F2.080.280.HB2	0.80	2.80	3.00	38.00	2
335.F2.080.400.HB2	0.80	4.00	3.00	38.00	2

Article No.	d1	l1	d _{h4}	l	Z
335.F2.090.180.HB2	0.90	1.80	3.00	38.00	2
335.F2.090.320.HB2	0.90	3.20	3.00	38.00	2
335.F2.090.450.HB2	0.90	4.50	3.00	38.00	2
335.F2.100.200.HB2	1.00	2.00	3.00	38.00	2
335.F2.100.350.HB2	1.00	3.50	3.00	38.00	2
335.F2.100.500.HB2	1.00	5.00	3.00	38.00	2
335.F2.120.240.HB2	1.20	2.40	3.00	38.00	2
335.F2.120.420.HB2	1.20	4.20	3.00	38.00	2
335.F2.120.600.HB2	1.20	6.00	3.00	38.00	2
335.F2.150.300.HB2	1.50	3.00	3.00	38.00	2
335.F2.150.520.HB2	1.50	5.20	3.00	38.00	2
335.F2.150.750.HB2	1.50	7.50	3.00	38.00	2
335.F2.200.400.HB2	2.00	4.00	3.00	38.00	2
335.F2.200.700.HB2	2.00	7.00	3.00	38.00	2
335.F2.200.1000.HB2	2.00	10.00	3.00	38.00	2
335.F2.250.500.HB2	2.50	5.00	3.00	38.00	2
335.F2.250.880.HB2	2.50	8.80	3.00	38.00	2
335.F2.250.1250.HB2	2.50	12.50	3.00	38.00	2
335.F2.300.600.HB2	3.00	6.00	3.00	38.00	2
335.F2.300.1050.HB2	3.00	10.50	3.00	38.00	2
335.F2.300.1500.HB2	3.00	15.00	3.00	38.00	2

cutting data on the following page...

CUTTING DATA

			Operations				Tool Diameter Ø (in Metric)												
Material Group	Work Material	Vc [m/min]			0.5	8	0.8	1	1.5	2	3								
			Slot Milling									Side Milling		fz [mm/tooth]					
			Ae	Ap								Ae	Ap						
P	Steels up to RM < 1200N/mm²	70 - 200	-	–	< 0.15D	< 0.5D	0.007 - 0.009	0.010 - 0.016	0.014 - 0.024	0.015 - 0.026	0.024 - 0.04	0.026 - 0.055							
			≥0.5D	≤0.5D	-	-	0.005 - 0.007	0.007 - 0.012	0.009 - 0.015	0.010 - 0.018	0.015 - 0.025	0.018 - 0.036							
M	Stainless steels Ferritic, Martensitic, Austenitic	40 - 60	-	-	< 0.15D	< 0.5D	0.007 - 0.009	0.010 - 0.016	0.010 - 0.020	0.012 - 0.026	0.018 - 0.035	0.025 - 0.055							
			≥0.5D	≤0.5D	-	-	0.003 - 0.006	0.005 - 0.010	0.006 - 0.012	0.009 - 0.018	0.012 - 0.024	0.018 - 0.036							
K	Cast Iron	45 - 75	-	-	< 0.15D	< 0.5D	0.007 - 0.009	0.010 - 0.016	0.010 - 0.020	0.012 - 0.026	0.018 - 0.035	0.025 - 0.055							
			≥0.5D	≤0.5D	-	-	0.003 - 0.006	0.005 - 0.010	0.006 - 0.012	0.009 - 0.018	0.012 - 0.024	0.018 - 0.036							
N	Non-ferrous metals	150 - 320	-	-	< 0.15D	< 0.5D	0.010 - 0.016	0.014 - 0.020	0.016 - 0.035	0.022 - 0.042	0.026 - 0.048	0.040 - 0.064							
			≥0.5D	≤0.5D	-	-	0.008 - 0.010	0.008 - 0.010	0.010 - 0.022	0.014 - 0.026	0.018 - 0.030	0.025 - 0.040							
S	Heat-resistant steels, Titanium, CrCo	40 - 80	-	-	< 0.15D	< 0.5D	0.007 - 0.009	0.010 - 0.016	0.009 - 0.016	0.014 - 0.025	0.020 - 0.035	0.028 - 0.046							
			≥0.5D	≤0.5D	-	-	0.003 - 0.006	0.005 - 0.010	0.006 - 0.010	0.009 - 0.016	0.012 - 0.022	0.018 - 0.030							
H	Hardened Steels ≥ 55 HRC	40 - 80	-	-	< 0.15D	< 0.5D	0.007 - 0.009	0.010 - 0.085	0.012 - 0.022	0.016 - 0.032	0.022 - 0.040	0.032 - 0.058							
			≥0.5D	≤0.5D	-	-	0.004 - 0.007	0.006 - 0.012	0.008 - 0.014	0.010 - 0.020	0.014 - 0.026	0.020 - 0.038							

Note:
Cutting data is for reference only. Adjustments should be made according to the specific application, setup rigidity, and machine conditions.
Use appropriate coolant based on material and feature being machined.

PROUDLY
MADE IN
INDIA

ENDMILL SERIES

335.F3 SERIES

- Solid carbide 3-flute square end mill with 30° helix angle
- Designed with short cutting flutes for stable milling
- For dry or wet roughing/pre-finishing/finishing

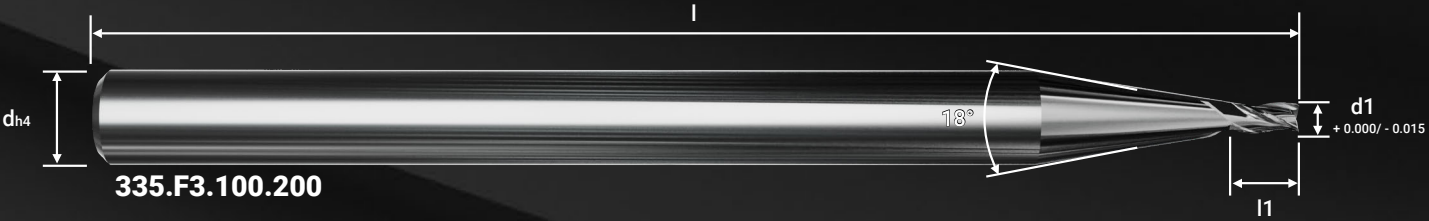
Material Group: ☒ P ☒ M ☒ K ☒ N ☒ S ☒ H

Cutting Edges: ☐ 1-flute ☐ 2-flute ☒ 3-flute ☐ 4-flute

Coating: ☒ uncoated ☐ HB1 ☐ HB2 ☐ AR2

Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	l1	d _{h4}	l	Z
335.F3.030.060	0.30	0.60	3.00	38.00	3
335.F3.030.110	0.30	1.10	3.00	38.00	3
335.F3.030.150	0.30	1.50	3.00	38.00	3
335.F3.040.080	0.40	0.80	3.00	38.00	3
335.F3.040.140	0.40	1.40	3.00	38.00	3
335.F3.040.200	0.40	2.00	3.00	38.00	3
335.F3.050.100	0.50	1.00	3.00	38.00	3
335.F3.050.180	0.50	1.80	3.00	38.00	3
335.F3.050.250	0.50	2.50	3.00	38.00	3
335.F3.060.120	0.60	1.20	3.00	38.00	3
335.F3.060.210	0.60	2.10	3.00	38.00	3
335.F3.060.300	0.60	3.00	3.00	38.00	3
335.F3.070.140	0.70	1.40	3.00	38.00	3
335.F3.070.250	0.70	2.50	3.00	38.00	3
335.F3.070.350	0.70	3.50	3.00	38.00	3
335.F3.080.160	0.80	1.60	3.00	38.00	3
335.F3.080.280	0.80	2.80	3.00	38.00	3
335.F3.080.400	0.80	4.00	3.00	38.00	3
335.F3.090.180	0.90	1.80	3.00	38.00	3
335.F3.090.320	0.90	3.20	3.00	38.00	3
335.F3.090.450	0.90	4.50	3.00	38.00	3
335.F3.100.200	1.00	2.00	3.00	38.00	3
335.F3.100.350	1.00	3.50	3.00	38.00	3
335.F3.100.500	1.00	5.00	3.00	38.00	3
335.F3.110.220	1.10	2.20	3.00	38.00	3



Article No.	d1	l1	d _{h4}	l	Z
335.F3.120.240	1.20	2.40	3.00	38.00	3
335.F3.120.420	1.20	4.20	3.00	38.00	3
335.F3.120.600	1.20	6.00	3.00	38.00	3
335.F3.130.260	1.30	2.60	3.00	38.00	3
335.F3.140.280	1.40	2.80	3.00	38.00	3
335.F3.150.300	1.50	3.00	3.00	38.00	3
335.F3.150.520	1.50	5.20	3.00	38.00	3
335.F3.150.750	1.50	7.50	3.00	38.00	3
335.F3.160.320	1.60	3.20	3.00	38.00	3
335.F3.170.340	1.70	3.40	3.00	38.00	3
335.F3.180.360	1.80	3.60	3.00	38.00	3
335.F3.190.380	1.90	3.80	3.00	38.00	3
335.F3.200.400	2.00	4.00	3.00	38.00	3
335.F3.200.700	2.00	7.00	3.00	38.00	3
335.F3.200.1000	2.00	10.00	3.00	38.00	3
335.F3.210.420	2.10	4.20	3.00	38.00	3
335.F3.220.440	2.20	4.40	3.00	38.00	3
335.F3.230.460	2.30	4.60	3.00	38.00	3
335.F3.240.480	2.40	4.80	3.00	38.00	3
335.F3.250.500	2.50	5.00	3.00	38.00	3
335.F3.250.880	2.50	8.80	3.00	38.00	3
335.F3.250.1250	2.50	12.50	3.00	38.00	3
335.F3.300.600	3.00	6.00	3.00	38.00	3
335.F3.300.1050	3.00	10.50	3.00	38.00	3
335.F3.300.1500	3.00	15.00	3.00	38.00	3

continued on next page...

335.F3 SERIES CONTINUED...

- Solid carbide 3-flute square end mill with 30° helix angle
- Designed with short cutting flutes for stable milling
- For dry or wet roughing/pre-finishing/finishing

Material Group: ☒ P ☐ M ☒ K ☒ N ☐ S ☒ H

Cutting Edges: ☐ 1-flute ☐ 2-flute ☒ 3-flute ☐ 4-flute

Coating: ☐ uncoated ☐ HB1 ☒ HB2 ☐ AR2

Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	l1	d _{h4}	l	Z
335.F3.030.060.HB2	0.30	0.60	3.00	38.00	3
335.F3.030.110.HB2	0.30	1.10	3.00	38.00	3
335.F3.030.150.HB2	0.30	1.50	3.00	38.00	3
335.F3.040.080.HB2	0.40	0.80	3.00	38.00	3
335.F3.040.140.HB2	0.40	1.40	3.00	38.00	3
335.F3.040.200.HB2	0.40	2.00	3.00	38.00	3
335.F3.050.100.HB2	0.50	1.00	3.00	38.00	3
335.F3.050.180.HB2	0.50	1.80	3.00	38.00	3
335.F3.050.250.HB2	0.50	2.50	3.00	38.00	3
335.F3.060.120.HB2	0.60	1.20	3.00	38.00	3
335.F3.060.210.HB2	0.60	2.10	3.00	38.00	3
335.F3.060.300.HB2	0.60	3.00	3.00	38.00	3
335.F3.070.140.HB2	0.70	1.40	3.00	38.00	3
335.F3.070.250.HB2	0.70	2.50	3.00	38.00	3
335.F3.070.350.HB2	0.70	3.50	3.00	38.00	3
335.F3.080.160.HB2	0.80	1.60	3.00	38.00	3
335.F3.080.280.HB2	0.80	2.80	3.00	38.00	3
335.F3.080.400.HB2	0.80	4.00	3.00	38.00	3
335.F3.090.180.HB2	0.90	1.80	3.00	38.00	3
335.F3.090.320.HB2	0.90	3.20	3.00	38.00	3
335.F3.090.450.HB2	0.90	4.50	3.00	38.00	3
335.F3.100.200.HB2	1.00	2.00	3.00	38.00	3
335.F3.100.350.HB2	1.00	3.50	3.00	38.00	3
335.F3.100.500.HB2	1.00	5.00	3.00	38.00	3
335.F3.110.220.HB2	1.10	2.20	3.00	38.00	3



Article No.	d1	l1	d _{h4}	l	Z
335.F3.120.240.HB2	1.20	2.40	3.00	38.00	3
335.F3.120.420.HB2	1.20	4.20	3.00	38.00	3
335.F3.120.600.HB2	1.20	6.00	3.00	38.00	3
335.F3.130.260.HB2	1.30	2.60	3.00	38.00	3
335.F3.140.280.HB2	1.40	2.80	3.00	38.00	3
335.F3.150.300.HB2	1.50	3.00	3.00	38.00	3
335.F3.150.520.HB2	1.50	5.20	3.00	38.00	3
335.F3.150.750.HB2	1.50	7.50	3.00	38.00	3
335.F3.160.320.HB2	1.60	3.20	3.00	38.00	3
335.F3.170.340.HB2	1.70	3.40	3.00	38.00	3
335.F3.180.360.HB2	1.80	3.60	3.00	38.00	3
335.F3.190.380.HB2	1.90	3.80	3.00	38.00	3
335.F3.200.400.HB2	2.00	4.00	3.00	38.00	3
335.F3.200.700.HB2	2.00	7.00	3.00	38.00	3
335.F3.200.1000.HB2	2.00	10.00	3.00	38.00	3
335.F3.210.420.HB2	2.10	4.20	3.00	38.00	3
335.F3.220.440.HB2	2.20	4.40	3.00	38.00	3
335.F3.230.460.HB2	2.30	4.60	3.00	38.00	3
335.F3.240.480.HB2	2.40	4.80	3.00	38.00	3
335.F3.250.500.HB2	2.50	5.00	3.00	38.00	3
335.F3.250.880.HB2	2.50	8.80	3.00	38.00	3
335.F3.250.1250.HB2	2.50	12.50	3.00	38.00	3
335.F3.300.600.HB2	3.00	6.00	3.00	38.00	3
335.F3.300.1050.HB2	3.00	10.50	3.00	38.00	3
335.F3.300.1500.HB2	3.00	15.00	3.00	38.00	3

continued on next page...

335.F3 SERIES CONTINUED...

- Solid carbide 3-flute square end mill with 30° helix angle
- Designed with short cutting flutes for stable milling
- For dry or wet roughing/pre-finishing/finishing

Material Group: ☒ P ☒ M ☒ K ☒ N ☒ S ☒ H

Cutting Edges: ☐ 1-flute ☐ 2-flute ☒ 3-flute ☐ 4-flute

Coating: ☐ uncoated ☐ HB1 ☐ HB2 ☒ AR2

Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

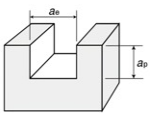
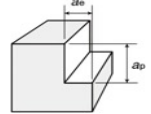
Article No.	d1	l1	d _{h4}	l	Z
335.F3.030.060.AR2	0.30	0.60	3.00	38.00	3
335.F3.030.110.AR2	0.30	1.10	3.00	38.00	3
335.F3.030.150.AR2	0.30	1.50	3.00	38.00	3
335.F3.040.080.AR2	0.40	0.80	3.00	38.00	3
335.F3.040.140.AR2	0.40	1.40	3.00	38.00	3
335.F3.040.200.AR2	0.40	2.00	3.00	38.00	3
335.F3.050.100.AR2	0.50	1.00	3.00	38.00	3
335.F3.050.180.AR2	0.50	1.80	3.00	38.00	3
335.F3.050.250.AR2	0.50	2.50	3.00	38.00	3
335.F3.060.120.AR2	0.60	1.20	3.00	38.00	3
335.F3.060.210.AR2	0.60	2.10	3.00	38.00	3
335.F3.060.300.AR2	0.60	3.00	3.00	38.00	3
335.F3.070.140.AR2	0.70	1.40	3.00	38.00	3
335.F3.070.250.AR2	0.70	2.50	3.00	38.00	3
335.F3.070.350.AR2	0.70	3.50	3.00	38.00	3
335.F3.080.160.AR2	0.80	1.60	3.00	38.00	3
335.F3.080.280.AR2	0.80	2.80	3.00	38.00	3
335.F3.080.400.AR2	0.80	4.00	3.00	38.00	3
335.F3.090.180.AR2	0.90	1.80	3.00	38.00	3
335.F3.090.320.AR2	0.90	3.20	3.00	38.00	3
335.F3.090.450.AR2	0.90	4.50	3.00	38.00	3
335.F3.100.200.AR2	1.00	2.00	3.00	38.00	3
335.F3.100.350.AR2	1.00	3.50	3.00	38.00	3
335.F3.100.500.AR2	1.00	5.00	3.00	38.00	3
335.F3.110.220.AR2	1.10	2.20	3.00	38.00	3



Article No.	d1	l1	d _{h4}	l	Z
335.F3.120.420.AR2	1.20	4.20	3.00	38.00	3
335.F3.120.600.AR2	1.20	6.00	3.00	38.00	3
335.F3.130.260.AR2	1.30	2.60	3.00	38.00	3
335.F3.140.280.AR2	1.40	2.80	3.00	38.00	3
335.F3.150.300.AR2	1.50	3.00	3.00	38.00	3
335.F3.150.520.AR2	1.50	5.20	3.00	38.00	3
335.F3.150.750.AR2	1.50	7.50	3.00	38.00	3
335.F3.160.320.AR2	1.60	3.20	3.00	38.00	3
335.F3.170.340.AR2	1.70	3.40	3.00	38.00	3
335.F3.180.360.AR2	1.80	3.60	3.00	38.00	3
335.F3.190.380.AR2	1.90	3.80	3.00	38.00	3
335.F3.200.400.AR2	2.00	4.00	3.00	38.00	3
335.F3.200.700.AR2	2.00	7.00	3.00	38.00	3
335.F3.200.1000.AR2	2.00	10.00	3.00	38.00	3
335.F3.210.420.AR2	2.10	4.20	3.00	38.00	3
335.F3.220.440.AR2	2.20	4.40	3.00	38.00	3
335.F3.230.460.AR2	2.30	4.60	3.00	38.00	3
335.F3.240.480.AR2	2.40	4.80	3.00	38.00	3
335.F3.250.500.AR2	2.50	5.00	3.00	38.00	3
335.F3.250.880.AR2	2.50	8.80	3.00	38.00	3
335.F3.250.1250.AR2	2.50	12.50	3.00	38.00	3
335.F3.300.600.AR2	3.00	6.00	3.00	38.00	3
335.F3.300.1050.AR2	3.00	10.50	3.00	38.00	3
335.F3.300.1500.AR2	3.00	15.00	3.00	38.00	3
335.F3.300.1500.AR2	3.00	15.00	3.00	38.00	3

cutting data on the following page...

CUTTING DATA

			Operations				Tool Diameter Ø (in Metric)						
Material Group	Work Material	Vc [m/min]											
			Slot Milling		Side Milling		0.5	8	0.8	1	1.5	2	3
			Ae	Ap	Ae	Ap	fz [mm/tooth]						
P	Steels up to RM < 1200N/mm²	70 - 200	-	--	< 0.15D	< 0.5D	0.007 - 0.009	0.010 - 0.016	0.014 - 0.024	0.015 - 0.026	0.024 - 0.04	0.026 - 0.055	
			≥0.5D	≤0.5D	-	-	0.005 - 0.007	0.007 - 0.012	0.009 - 0.015	0.010 - 0.018	0.015 - 0.025	0.018 - 0.036	
M	Stainless steels Ferritic, Martensitic, Austenitic	40 - 60	-	-	< 0.15D	< 0.5D	0.007 - 0.009	0.010 - 0.016	0.010 - 0.020	0.012 - 0.026	0.018 - 0.035	0.025 - 0.055	
			≥0.5D	≤0.5D	-	-	0.003 - 0.006	0.005 - 0.010	0.006 - 0.012	0.009 - 0.018	0.012 - 0.024	0.018 - 0.036	
K	Cast Iron	45 - 75	-	-	< 0.15D	< 0.5D	0.007 - 0.009	0.010 - 0.016	0.010 - 0.020	0.012 - 0.026	0.018 - 0.035	0.025 - 0.055	
			≥0.5D	≤0.5D	-	-	0.003 - 0.006	0.005 - 0.010	0.006 - 0.012	0.009 - 0.018	0.012 - 0.024	0.018 - 0.036	
N	Non-ferrous metals	150 - 320	-	-	< 0.15D	< 0.5D	0.010 - 0.016	0.014 - 0.020	0.016 - 0.035	0.022 - 0.042	0.026 - 0.048	0.040 - 0.064	
			≥0.5D	≤0.5D	-	-	0.008 - 0.010	0.008 - 0.010	0.010 - 0.022	0.014 - 0.026	0.018 - 0.030	0.025 - 0.040	
S	Heat-resistant steels, Titanium, CrCo	40 - 80	-	-	< 0.15D	< 0.5D	0.007 - 0.009	0.010 - 0.016	0.009 - 0.016	0.014 - 0.025	0.020 - 0.035	0.028 - 0.046	
			≥0.5D	≤0.5D	-	-	0.003 - 0.006	0.005 - 0.010	0.006 - 0.010	0.009 - 0.016	0.012 - 0.022	0.018 - 0.030	
H	Hardened Steels ≥ 55 HRC	40 - 80	-	-	< 0.15D	< 0.5D	0.007 - 0.009	0.010 - 0.085	0.012 - 0.022	0.016 - 0.032	0.022 - 0.040	0.032 - 0.058	
			≥0.5D	<=0.5D	-	-	0.004 - 0.007	0.006 - 0.012	0.008 - 0.014	0.010 - 0.020	0.014 - 0.026	0.020 - 0.038	

Note:
Cutting data is for reference only. Adjustments should be made according to the specific application, setup rigidity, and machine conditions.
Use appropriate coolant based on material and feature being machined.

PROUDLY
MADE IN
INDIA

ENDMILL SERIES



336.B2 SERIES

- Solid carbide 2-flute ball-nosed end mill with 30° helix angle
- Designed with short cutting flutes for stable milling
- For dry or wet roughing/pre-finishing/finishing

Material Group: ☒ P ☐ M ☒ K ☒ N ☐ S ☒ H
Cutting Edges: ☐ 1-flute ☒ 2-flute ☐ 3-flute ☐ 4-flute
Coating: ☒ uncoated ☐ HB1 ☐ HB2 ☐ AR2
Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

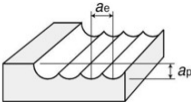
Article No.	d1	r	l1	d_h4	l	Z
336.B2.030.023	0.30	0.15	0.23	3.00	38.00	2
336.B2.030.090	0.30	0.15	0.90	3.00	38.00	2
336.B2.040.030	0.40	0.20	0.30	3.00	38.00	2
336.B2.040.120	0.40	0.20	1.20	3.00	38.00	2
336.B2.050.038	0.50	0.25	0.38	3.00	38.00	2
336.B2.050.150	0.50	0.25	1.50	3.00	38.00	2
336.B2.060.045	0.60	0.30	0.45	3.00	38.00	2
336.B2.060.180	0.60	0.30	1.80	3.00	38.00	2
336.B2.070.055	0.70	0.35	0.55	3.00	38.00	2
336.B2.070.210	0.70	0.35	2.10	3.00	38.00	2
336.B2.080.060	0.80	0.40	0.60	3.00	38.00	2
336.B2.080.240	0.80	0.40	2.40	3.00	38.00	2
336.B2.090.068	0.90	0.45	0.68	3.00	38.00	2
336.B2.090.270	0.90	0.45	2.70	3.00	38.00	2
336.B2.100.075	1.00	0.50	0.75	3.00	38.00	2
336.B2.100.300	1.00	0.50	3.00	3.00	38.00	2
336.B2.150.113	1.50	0.75	1.13	3.00	38.00	2
336.B2.150.450	1.50	0.75	4.50	3.00	38.00	2
336.B2.200.150	2.00	1.00	1.50	3.00	38.00	2
336.B2.200.600	2.00	1.00	6.00	3.00	38.00	2
336.B2.250.188	2.50	1.25	1.88	3.00	38.00	2
336.B2.250.750	2.50	1.25	7.50	3.00	38.00	2
336.B2.300.225	3.00	1.50	2.25	3.00	38.00	2
336.B2.300.900	3.00	1.50	9.00	3.00	38.00	2

Material Group: ☒ P ☐ M ☒ K ☒ N ☐ S ☒ H
Cutting Edges: ☐ 1-flute ☒ 2-flute ☐ 3-flute ☐ 4-flute
Coating: ☐ uncoated ☐ HB1 ☒ HB2 ☐ AR2
Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	r	l1	d_h4	l	Z
336.B2.030.023.HB2	0.30	0.15	0.23	3.00	38.00	2
336.B2.030.090.HB2	0.30	0.15	0.90	3.00	38.00	2
336.B2.040.030.HB2	0.40	0.20	0.30	3.00	38.00	2
336.B2.040.120.HB2	0.40	0.20	1.20	3.00	38.00	2
336.B2.050.038.HB2	0.50	0.25	0.38	3.00	38.00	2
336.B2.050.150.HB2	0.50	0.25	1.50	3.00	38.00	2
336.B2.060.045.HB2	0.60	0.30	0.45	3.00	38.00	2
336.B2.060.180.HB2	0.60	0.30	1.80	3.00	38.00	2
336.B2.070.055.HB2	0.70	0.35	0.55	3.00	38.00	2
336.B2.070.210.HB2	0.70	0.35	2.10	3.00	38.00	2
336.B2.080.060.HB2	0.80	0.40	0.60	3.00	38.00	2
336.B2.080.240.HB2	0.80	0.40	2.40	3.00	38.00	2
336.B2.090.068.HB2	0.90	0.45	0.68	3.00	38.00	2
336.B2.090.270.HB2	0.90	0.45	2.70	3.00	38.00	2
336.B2.100.075.HB2	1.00	0.50	0.75	3.00	38.00	2
336.B2.100.300.HB2	1.00	0.50	3.00	3.00	38.00	2
336.B2.150.113.HB2	1.50	0.75	1.13	3.00	38.00	2
336.B2.150.450.HB2	1.50	0.75	4.50	3.00	38.00	2
336.B2.200.150.HB2	2.00	1.00	1.50	3.00	38.00	2
336.B2.200.600.HB2	2.00	1.00	6.00	3.00	38.00	2
336.B2.250.188.HB2	2.50	1.25	1.88	3.00	38.00	2
336.B2.250.750.HB2	2.50	1.25	7.50	3.00	38.00	2
336.B2.300.225.HB2	3.00	1.50	2.25	3.00	38.00	2
336.B2.300.900.HB2	3.00	1.50	9.00	3.00	38.00	2

cutting data on the following page...

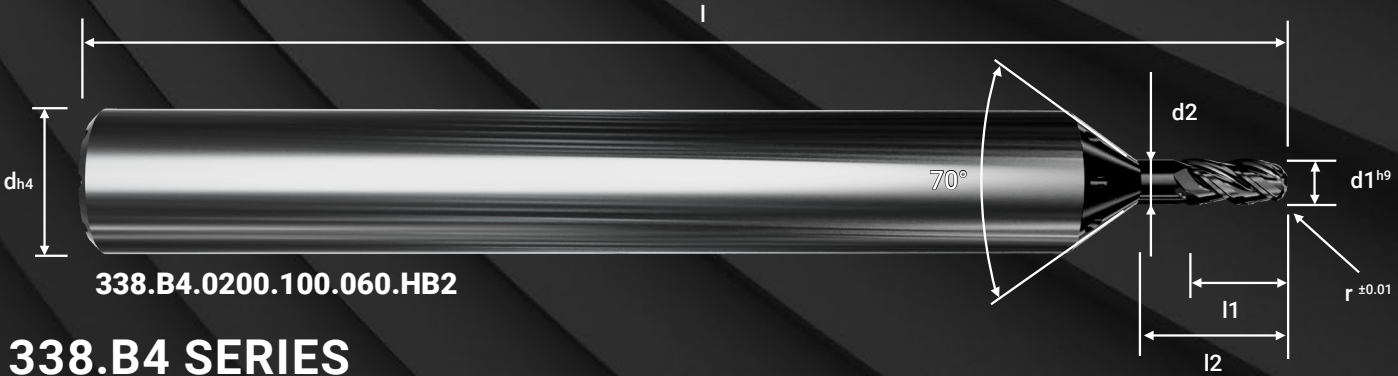
CUTTING DATA

				Tool Diameter Ø (in Metric)							
Material Group	Work Material	Vc [m/min]	Operation			0.3 - 0.5	0.6 - 0.8	0.7 - 1	1.5	2	3
				Ap	Ae						
P	Steels up to RM < 1200N/mm²	70 - 130	Finishing	0.03 - 0.05D	0.02 - 0.05D	0.005 - 0.010	0.008 - 0.020	0.015 - 0.022	0.022 - 0.030	0.030 - 0.035	0.040 - 0.045
			Roughing	0.07 - 0.01D	0.02 - 0.3D	0.010 - 0.020	0.015 - 0.030	0.025 - 0.035	0.035 - 0.040	0.045 - 0.065	0.055 - 0.085
M	Stainless steels Ferritic, Martensitic, Austenitic	35 - 75	Finishing	0.03 - 0.05D	0.02 - 0.05D	0.005 - 0.008	0.008 - 0.016	0.015 - 0.022	0.020 - 0.030	0.025 - 0.032	0.030 - 0.040
			Roughing	0.07 - 0.1D	0.2 - 0.3D	0.010 - 0.020	0.015 - 0.030	0.025 - 0.035	0.035 - 0.040	0.045 - 0.065	0.055 - 0.085
K	Cast Iron	N/A									
N	Non-ferrous metals	150 - 270	Finishing	0.03 - 0.07D	0.02 - 0.05D	0.008 - 0.015	0.012 - 0.030	0.025 - 0.035	0.025 - 0.040	0.030 - 0.055	0.040 - 0.055
			Roughing	0.07 - 0.15D	0.2 - 0.3D	0.020 - 0.030	0.025 - 0.040	0.035 - 0.045	0.040 - 0.050	0.060 - 0.075	0.070 - 0.100
S	Heat-resistant steels, Titanium, CrCo	30 - 75	Finishing	0.02 - 0.03D	0.02 - 0.05D	0.005 - 0.010	0.008 - 0.020	0.015 - 0.022	0.022 - 0.030	0.030 - 0.035	0.040 - 0.045
			Roughing	0.03 - 0.1D	0.02 - 0.3D	0.010 - 0.020	0.015 - 0.030	0.025 - 0.035	0.035 - 0.040	0.045 - 0.075	0.055 - 0.085
H	Hardened Steels ≥ 55 HRC	30 - 75	Finishing	0.02 - 0.03D	0.02 - 0.05D	0.005 - 0.010	0.008 - 0.020	0.015 - 0.022	0.022 - 0.030	0.030 - 0.035	0.040 - 0.045
			Roughing	0.03 - 0.01D	0.2 - 0.03D	0.010 - 0.020	0.015 - 0.035	0.025 - 0.035	0.035 - 0.040	0.025 - 0.07	0.055 - 0.085

Note:
Above 16000 RPM, balancing is required
Cutting data is for reference only. Adjustments should be made according to the specific application, setup rigidity, and machine conditions.

PROUDLY
MADE IN
INDIA

ENDMILL SERIES



338.B4 SERIES

- Solid carbide 4-flute ball-nose end mill with center cut and 38°/40° helix angle
- Designed for high-feed milling
- For dry or wet roughing/pre-finishing/finishing

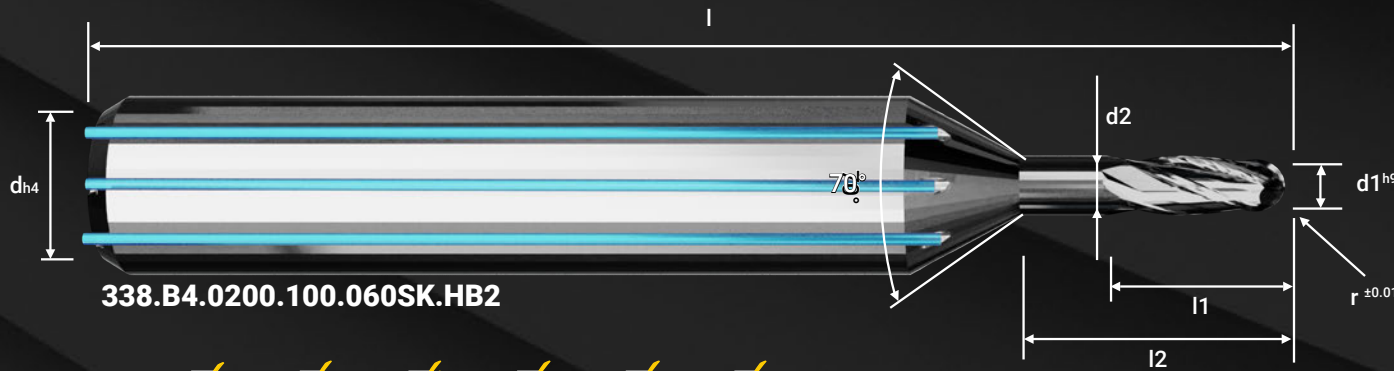
- Material Group: ☒ P ☒ M ☒ K ☒ N ☒ S ☒ H
- Cutting Edges: ☐ 1-flute ☐ 2-flute ☐ 3-flute ☒ 4-flute
- Coating: ☒ uncoated ☐ HB1 ☐ HB2 ☐ AR2
- Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	r	d2	l1	l2	d_h4	l	Z
338.B4.0100.050.030	1.00	0.50	0.90	2.00	3.00	4.00	40.00	4
338.B4.0100.050.050	1.00	0.50	0.90	2.00	5.00	4.00	40.00	4
338.B4.0150.075.045	1.50	0.75	1.40	3.00	4.50	4.00	40.00	4
338.B4.0150.075.075	1.50	0.75	1.40	3.00	7.50	4.00	40.00	4
338.B4.0200.100.060	2.00	1.00	1.90	4.00	6.00	4.00	50.00	4
338.B4.0200.100.100	2.00	1.00	1.90	4.00	10.00	4.00	50.00	4
338.B4.0300.150.090	3.00	1.50	2.90	6.00	9.00	4.00	60.00	4
338.B4.0300.150.150	3.00	1.50	2.90	6.00	15.00	4.00	60.00	4
338.B4.0400.200.120	4.00	2.00	3.90	8.00	12.00	6.00	60.00	4
338.B4.0400.200.200	4.00	2.00	3.90	8.00	20.00	6.00	60.00	4
338.B4.0500.250.150	5.00	2.50	4.90	10.00	15.00	6.00	68.00	4
338.B4.0500.250.250	5.00	2.50	4.90	10.00	25.00	6.00	68.00	4
338.B4.0600.300.180	6.00	3.00	5.90	12.00	18.00	6.00	68.00	4
338.B4.0600.300.300	6.00	3.00	5.90	12.00	30.00	6.00	68.00	4
338.B4.0800.400.240	8.00	4.00	7.90	16.00	24.00	8.00	93.00	4

- Material Group: ☒ P ☒ M ☒ K ☒ N ☒ S ☒ H
- Cutting Edges: ☐ 1-flute ☐ 2-flute ☐ 3-flute ☒ 4-flute
- Coating: ☐ uncoated ☐ HB1 ☒ HB2 ☐ AR2
- Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	r	d2	l1	l2	d_h4	l	Z
338.B4.0100.050.030.HB2	1.00	0.50	0.90	2.00	3.00	4.00	40.00	4
338.B4.0100.050.050.HB2	1.00	0.50	0.90	2.00	5.00	4.00	40.00	4

Article No.	d1	r	d2	l1	l2	d_h4	l	Z
338.B4.0150.075.045.HB2	1.50	0.75	1.40	3.00	4.50	4.00	40.00	4
338.B4.0150.075.075.HB2	1.50	0.75	1.40	3.00	7.50	4.00	40.00	4
338.B4.0200.100.060.HB2	2.00	1.00	1.90	4.00	6.00	4.00	50.00	4
338.B4.0200.100.100.HB2	2.00	1.00	1.90	4.00	10.00	4.00	50.00	4
338.B4.0300.150.090.HB2	3.00	1.50	2.90	6.00	9.00	4.00	60.00	4
338.B4.0300.150.150.HB2	3.00	1.50	2.90	6.00	15.00	4.00	60.00	4
338.B4.0400.200.120.HB2	4.00	2.00	3.90	8.00	12.00	6.00	60.00	4
338.B4.0400.200.200.HB2	4.00	2.00	3.90	8.00	20.00	6.00	60.00	4
338.B4.0500.250.150.HB2	5.00	2.50	4.90	10.00	15.00	6.00	68.00	4
338.B4.0500.250.250.HB2	5.00	2.50	4.90	10.00	25.00	6.00	68.00	4
338.B4.0600.300.180.HB2	6.00	3.00	5.90	12.00	18.00	6.00	68.00	4
338.B4.0600.300.300.HB2	6.00	3.00	5.90	12.00	30.00	6.00	68.00	4
338.B4.0800.400.240.HB2	8.00	4.00	7.90	16.00	24.00	8.00	93.00	4

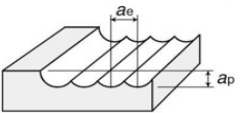


- Material Group: ☒ P ☒ M ☒ K ☒ N ☒ S ☒ H
- Cutting Edges: ☐ 1-flute ☐ 2-flute ☐ 3-flute ☒ 4-flute
- Coating: ☒ uncoated¹ ☐ HB1 ☒ HB2² ☐ AR2
- Tool Extras: ☐ hi-speed cut ☒ shaft coolant ☐ internal coolant

Article No.	d1	r	d2	l1	l2	d_h4	l	Z
338.B4.0100.050.030SK ¹	1.00	0.50	0.90	2.00	3.00	6.00	50.00	4
338.B4.0150.075.045SK ¹	1.50	0.75	1.40	3.00	4.50	6.00	50.00	4
338.B4.0200.100.060SK ¹	2.00	1.00	1.90	4.00	6.00	6.00	50.00	4
338.B4.0300.150.090SK ¹	3.00	1.50	2.90	6.00	9.00	6.00	50.00	4
338.B4.0400.200.120SK ¹	4.00	2.00	3.90	8.00	12.00	6.00	50.00	4
338.B4.0100.050.030SK.HB2 ²	1.00	0.50	0.90	2.00	3.00	6.00	50.00	4
338.B4.0150.075.045SK.HB2 ²	1.50	0.75	1.40	3.00	4.50	6.00	50.00	4
338.B4.0200.100.060SK.HB2 ²	2.00	1.00	1.90	4.00	6.00	6.00	50.00	4
338.B4.0300.150.090SK.HB2 ²	3.00	1.50	2.90	6.00	9.00	6.00	50.00	4
338.B4.0400.200.120SK.HB2 ²	4.00	2.00	3.90	8.00	12.00	6.00	50.00	4

cutting data on the following page...

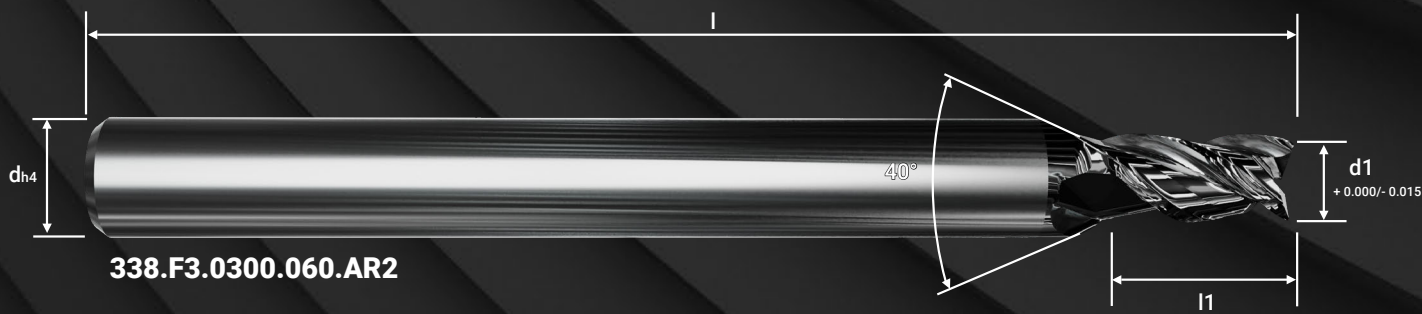
CUTTING DATA

Material Group	Work Material	Vc [m/min]	Operations	Tool Diameter Ø (in Metric)					
									
				1-2	3	4	5-6	8	
				Ae	Ap	fz [mm/tooth]			
P	Steels up to RM < 1200N/mm²	100 - 140	Finishing	0.05 - 0.1D	0.02D				
			Roughing	0.1D	0.3D	0.011 - 0.052	0.016 - 0.052	0.026 - 0.055	0.030 - 0.065
M	Stainless steels Ferritic, Martensitic, Austenitic	70 - 100	Finishing	0.05 - 0.1D	0.02D				
			Roughing	0.1D	0.3D	0.016 - 0.025	0.016 - 0.05	0.026 - 0.055	0.035 - 0.075
K	Cast Iron	80 - 140	Finishing						
			Roughing			0.016 - 0.025	0.03 - 0.055	0.026 - 0.065	0.035 - 0.085
N	Non-ferrous metals	80 - 160	Finishing	0.05 - 0.1D	0.02D				
			Roughing	0.1D	0.3D	0.020 - 0.025	0.025 - 0.07	0.035 - 0.08	0.035 - 0.085
S	Heat-resistant steels, Titanium, CrCo	50 - 80	Finishing	0.05 - 0.1D	0.02D				
			Roughing	0.1D	0.3D	0.010 - 0.025	0.01 - 0.035	0.015 - 0.05	0.020 - 0.06
H	Hardened Steels ≥ 55 HRC	50 - 80	Finishing	0.05 - 0.1D	0.02D				
			Roughing	0.1D	0.3D	0.010 - 0.025	0.01 - 0.035	0.015 - 0.05	0.020 - 0.06

Note:
Use appropriate coolant based on material and feature being machined.
Above 16000 RPM, balancing is required.
Cutting data is for reference only. Adjustments should be made according to the specific application, setup rigidity, and machine conditions.

PROUDLY
MADE IN
INDIA

ENDMILL SERIES



338.F3 SERIES

- Solid carbide 3-flute square end mill with 40° helix angle, one tooth off center
- Designed with short cutting flutes for stable milling
- For dry or wet roughing/pre-finishing/finishing

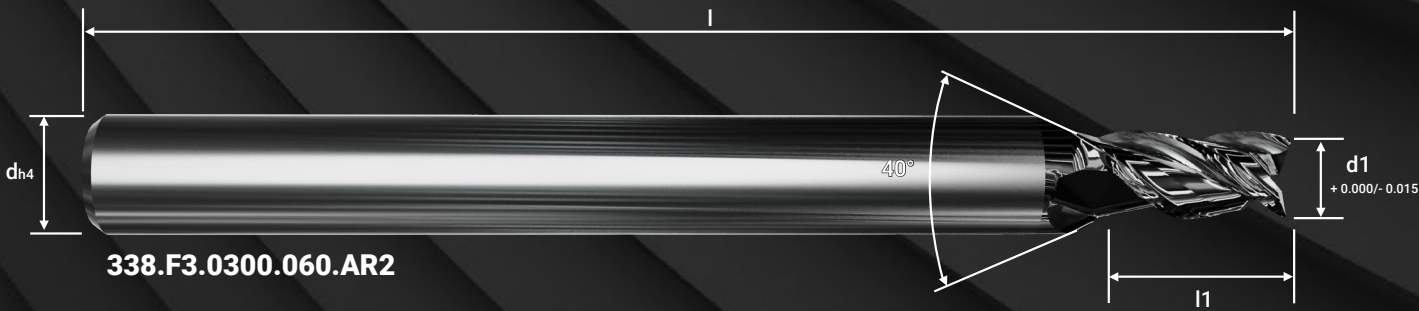
Material Group: ☒ P ☒ M ☒ K ☒ N ☒ S ☒ H
Cutting Edges: ☐ 1-flute ☐ 2-flute ☒ 3-flute ☐ 4-flute
Coating: ☒ uncoated ☐ HB1 ☐ HB2 ☐ AR2
Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	l1	d _{h4}	l	Z
338.F3.0030.006	0.30	0.60	4.00	40.00	3
338.F3.0040.008	0.40	0.80	4.00	40.00	3
338.F3.0050.010	0.50	1.00	4.00	40.00	3
338.F3.0060.012	0.60	1.20	4.00	40.00	3
338.F3.0070.014	0.70	1.40	4.00	40.00	3
338.F3.0080.016	0.80	1.60	4.00	40.00	3
338.F3.0090.018	0.90	1.80	4.00	40.00	3
338.F3.0100.020	1.00	2.00	4.00	40.00	3
338.F3.0120.024	1.20	2.40	4.00	40.00	3
338.F3.0150.030	1.50	3.00	4.00	40.00	3
338.F3.0200.040	2.00	4.00	4.00	40.00	3
338.F3.0250.050	2.50	5.00	4.00	40.00	3
338.F3.0300.060	3.00	6.00	4.00	40.00	3
338.F3.0350.070	3.50	7.00	4.00	40.00	3
338.F3.0400.080	4.00	8.00	4.00	40.00	3
338.F3.0450.140	4.50	14.00	6.00	50.00	3
338.F3.0500.150	5.00	15.00	6.00	50.00	3
338.F3.0600.180	6.00	18.00	6.00	50.00	3

Material Group: ☒ P ☒ M ☒ K ☒ N ☒ S ☒ H
Cutting Edges: ☐ 1-flute ☐ 2-flute ☒ 3-flute ☐ 4-flute
Coating: ☐ uncoated ☐ HB1 ☒ HB2 ☐ AR2
Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	l1	d _{h4}	l	Z
338.F3.0030.006.HB2	0.30	0.60	4.00	40.00	3
338.F3.0040.008.HB2	0.40	0.80	4.00	40.00	3
338.F3.0050.010.HB2	0.50	1.00	4.00	40.00	3
338.F3.0060.012.HB2	0.60	1.20	4.00	40.00	3
338.F3.0070.014.HB2	0.70	1.40	4.00	40.00	3
338.F3.0080.016.HB2	0.80	1.60	4.00	40.00	3
338.F3.0090.018.HB2	0.90	1.80	4.00	40.00	3
338.F3.0100.020.HB2	1.00	2.00	4.00	40.00	3
338.F3.0120.024.HB2	1.20	2.40	4.00	40.00	3
338.F3.0150.030.HB2	1.50	3.00	4.00	40.00	3
338.F3.0200.040.HB2	2.00	4.00	4.00	40.00	3
338.F3.0250.050.HB2	2.50	5.00	4.00	40.00	3
338.F3.0300.060.HB2	3.00	6.00	4.00	40.00	3
338.F3.0350.070.HB2	3.50	7.00	4.00	40.00	3
338.F3.0400.080.HB2	4.00	8.00	4.00	40.00	3
338.F3.0450.140.HB2	4.50	14.00	6.00	50.00	3
338.F3.0500.150.HB2	5.00	15.00	6.00	50.00	3
338.F3.0600.180.HB2	6.00	18.00	6.00	50.00	3

ENDMILL SERIES



338.F3 SERIES CONTINUED...

- Solid carbide 3-flute square end mill with 40° helix angle, one tooth off center
- Designed with short cutting flutes for stable milling
- For dry or wet roughing/pre-finishing/finishing

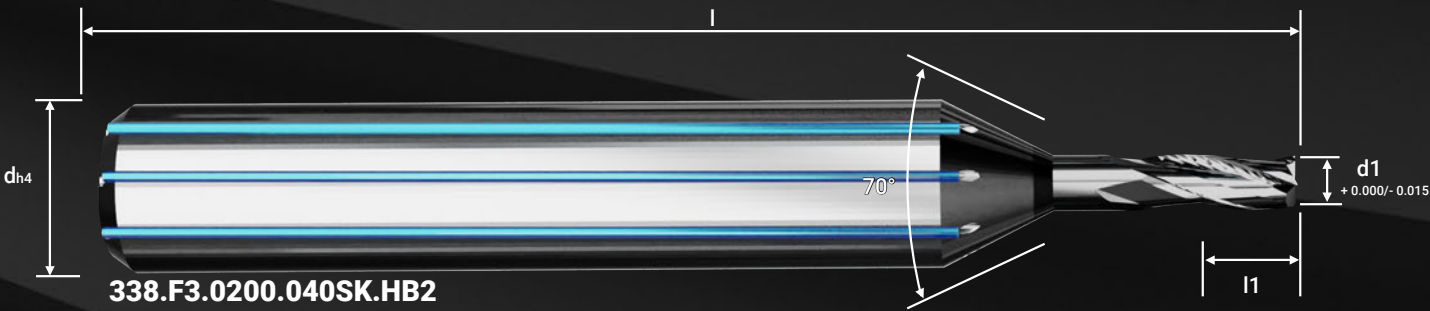
Material Group: ☒ P ☐ M ☒ K ☒ N ☐ S ☐ H

Cutting Edges: ☐ 1-flute ☐ 2-flute ☒ 3-flute ☐ 4-flute

Coating: ☐ uncoated ☐ HB1 ☐ HB2 ☒ AR2

Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	l1	d _{h4}	l	Z
338.F3.0030.006.AR2	0.30	0.60	4.00	40.00	3
338.F3.0040.008.AR2	0.40	0.80	4.00	40.00	3
338.F3.0050.010.AR2	0.50	1.00	4.00	40.00	3
338.F3.0060.012.AR2	0.60	1.20	4.00	40.00	3
338.F3.0070.014.AR2	0.70	1.40	4.00	40.00	3
338.F3.0080.016.AR2	0.80	1.60	4.00	40.00	3
338.F3.0090.018.AR2	0.90	1.80	4.00	40.00	3
338.F3.0100.020.AR2	1.00	2.00	4.00	40.00	3
338.F3.0120.024.AR2	1.20	2.40	4.00	40.00	3
338.F3.0150.030.AR2	1.50	3.00	4.00	40.00	3
338.F3.0200.040.AR2	2.00	4.00	4.00	40.00	3
338.F3.0250.050.AR2	2.50	5.00	4.00	40.00	3
338.F3.0300.060.AR2	3.00	6.00	4.00	40.00	3
338.F3.0350.070.AR2	3.50	7.00	4.00	40.00	3
338.F3.0400.080.AR2	4.00	8.00	4.00	40.00	3
338.F3.0450.140.AR2	4.50	14.00	6.00	50.00	3
338.F3.0500.150.AR2	5.00	15.00	6.00	50.00	3
338.F3.0600.180.AR2	6.00	18.00	6.00	50.00	3



Material Group: ☒ P ☐ M ☒ K ☒ N ☐ S ☐ H

Cutting Edges: ☐ 1-flute ☐ 2-flute ☒ 3-flute ☐ 4-flute

Coating: ☒ uncoated ☐ HB1 ☐ HB2 ☐ AR2

Tool Extras: ☐ hi-speed cut ☒ shaft coolant ☐ internal coolant

Article No.	d1	l1	d _{h4}	l	Z
338.F3.0200.040SK	2.00	4.00	6.00	50.00	3
338.F3.0250.050SK	2.50	5.00	6.00	50.00	3
338.F3.0300.060SK	3.00	6.00	6.00	50.00	3
338.F3.0350.070SK	3.50	7.00	6.00	50.00	3
338.F3.0400.080SK	4.00	8.00	6.00	50.00	3
338.F3.0450.140SK	4.50	14.00	6.00	50.00	3

Material Group: ☒ P ☐ M ☒ K ☒ N ☐ S ☐ H

Cutting Edges: ☐ 1-flute ☐ 2-flute ☒ 3-flute ☐ 4-flute

Coating: ☐ uncoated ☐ HB1 ☒ HB2 ☐ AR2

Tool Extras: ☐ hi-speed cut ☒ shaft coolant ☐ internal coolant

Article No.	d1	l1	d _{h4}	l	Z
338.F3.0200.040SK.HB2	2.00	4.00	6.00	50.00	3
338.F3.0250.050SK.HB2	2.50	5.00	6.00	50.00	3
338.F3.0300.060SK.HB2	3.00	6.00	6.00	50.00	3
338.F3.0350.070SK.HB2	3.50	7.00	6.00	50.00	3
338.F3.0400.080SK.HB2	4.00	8.00	6.00	50.00	3
338.F3.0450.140SK	4.50	14.00	6.00	50.00	3

Material Group: ☒ P ☐ M ☒ K ☒ N ☐ S ☐ H

Cutting Edges: ☐ 1-flute ☐ 2-flute ☒ 3-flute ☐ 4-flute

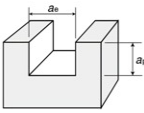
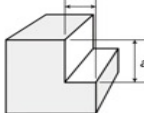
Coating: ☐ uncoated ☐ HB1 ☐ HB2 ☒ AR2

Tool Extras: ☐ hi-speed cut ☒ shaft coolant ☐ internal coolant

Article No.	d1	l1	d _{h4}	l	Z
338.F3.0200.040SK.AR2	2.00	4.00	6.00	50.00	3
338.F3.0250.050SK.AR2	2.50	5.00	6.00	50.00	3
338.F3.0300.060SK.AR2	3.00	6.00	6.00	50.00	3
338.F3.0350.070SK.AR2	3.50	7.00	6.00	50.00	3
338.F3.0400.080SK.AR2	4.00	8.00	6.00	50.00	3
338.F3.0450.140SK	4.50	14.00	6.00	50.00	3

cutting data on the following page...

CUTTING DATA

			Operations				Tool Diameter Ø (in Metric)			
Material Group	Work Material	Vc [m/min]			*0.3 - 0.8	*1 - 2	2.5 - 4	4.5 - 6		
			Slot Milling						Side Milling	
			Ae	Ap					Ae	Ap
P	Steels up to RM < 1200N/mm²	120 - 170	-	-	≤0.15D	< 1.2D	0.011 - 0.025	0.013 - 0.050	0.013 - 0.052	0.013 - 0.054
		100 - 140	≥0.5D	< 0.8D	-	-	0.011 - 0.025	0.013 - 0.052	0.026 - 0.055	0.03 - 0.065
M	Stainless steels Ferritic, Martensitic, Austenitic	100 - 130	-	-	≤0.15D	< 1.2D	0.011 - 0.025	0.013 - 0.05	0.026 - 0.055	0.035 - 0.065
		70 - 100	≥0.5D	< 0.3D	-	-	0.016 - 0.032	0.013 - 0.05	0.026 - 0.055	0.035 - 0.065
K	Cast Iron	100 - 170	-	-	≤0.12D	< 1D	0.016 - 0.032	0.02 - 0.055	0.026 - 0.065	0.035 - 0.07
		80 - 140	≥0.5D	< 0.5D	-	-				
N	Non-ferrous metals	150 - 350	-	-	≤0.2D	< 1.5D	0.016 - 0.025	0.022 - 0.07	0.035 - 0.08	0.035 - 0.085
		120 - 240	≥0.5D	< 0.8D	-	-				
S	Heat-resistant steels, Titanium, CrCo	50 - 100	-	-	≤0.1D	< 1D	0.01 - 0.025	0.01 - 0.035	0.013 - 0.05	0.018 - 0.06
		40 - 65	≥0.5D	< 0.3D	-	-	0.01 - 0.025	0.01 - 0.035	0.013 - 0.05	0.018 - 0.06
H	Hardened Steels ≥ 55 HRC	50 - 100	-	-	≤0.1D	< 1D	0.01 - 0.025	0.01 - 0.035	0.013 - 0.05	0.018 - 0.06
		40 - 65	≥0.5D	< 0.3D	-	-	0.01 - 0.025	0.01 - 0.035	0.013 - 0.05	0.018 - 0.06

Note:
* Profile milling > 10% Ap is not recommended.
Above 16000 RPM, balancing is required.
Use appropriate coolant based on material and feature being machined.
Cutting data is for reference only. Adjustments should be made according to the specific application, setup rigidity, and machine conditions.

PROUDLY
MADE IN
INDIA

ENDMILL SERIES



338.F4 SERIES

- Solid carbide 4-flute square end mill with 40° helix angle, one tooth off center
- Designed with short cutting flutes for stable milling
- For dry or wet roughing/pre-finishing/finishing

- Material Group: ☒ P ☐ M ☒ K ☒ N ☐ S ☒ H
- Cutting Edges: ☐ 1-flute ☐ 2-flute ☐ 3-flute ☒ 4-flute
- Coating: ☒ uncoated ☐ HB1 ☐ HB2 ☐ AR2
- Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	CH (45°)	l1	l2	d _{h4}	l	Z
338.F4.0300.045.090	3.00	0.05	7.50	9.00	6.00	60.00	4
338.F4.0400.045.120	4.00	0.05	10.00	12.00	6.00	60.00	4
338.F4.0500.045.150	5.00	0.05	12.50	15.00	6.00	60.00	4
338.F4.0600.045.180	6.00	0.05	15.00	18.00	6.00	60.00	4
338.F4.0800.045.240	8.00	0.05	20.00	24.00	8.00	63.00	4
338.F4.1000.045.300	10.00	0.05	25.00	30.00	10.00	72.00	4
338.F4.1200.045.360	12.00	0.05	30.00	36.00	12.00	83.00	4

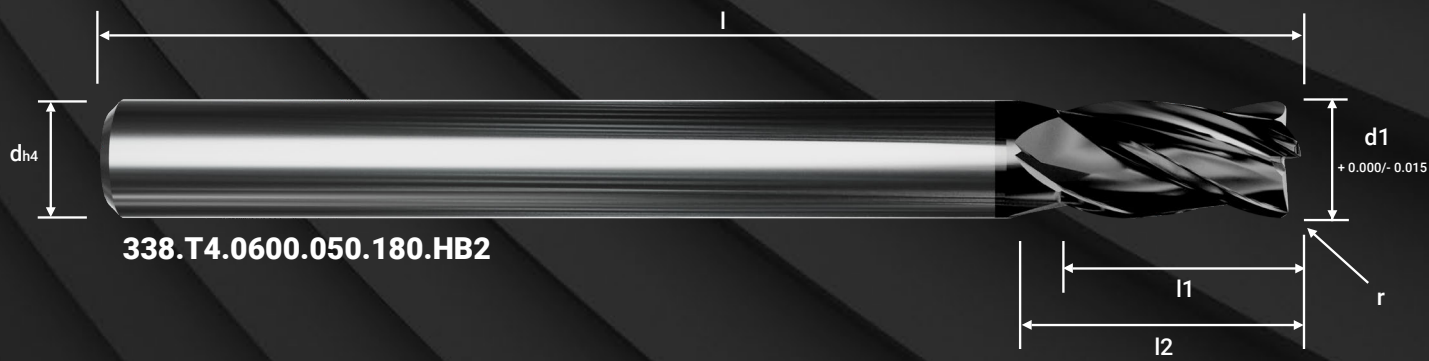
- Material Group: ☒ P ☐ M ☒ K ☒ N ☐ S ☒ H
- Cutting Edges: ☐ 1-flute ☐ 2-flute ☐ 3-flute ☒ 4-flute
- Coating: ☐ uncoated ☐ HB1 ☒ HB2 ☐ AR2
- Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	CH (45°)	l1	l2	d _{h4}	l	Z
338.F4.0300.045.090.HB2	3.00	0.05	7.50	9.00	6.00	60.00	4
338.F4.0400.045.120.HB2	4.00	0.05	10.00	12.00	6.00	60.00	4
338.F4.0500.045.150.HB2	5.00	0.05	12.50	15.00	6.00	60.00	4
338.F4.0600.045.180.HB2	6.00	0.05	15.00	18.00	6.00	60.00	4
338.F4.0800.045.240.HB2	8.00	0.05	20.00	24.00	8.00	63.00	4
338.F4.1000.045.300.HB2	10.00	0.05	25.00	30.00	10.00	72.00	4
338.F4.1200.045.360.HB2	12.00	0.05	30.00	36.00	12.00	83.00	4

PRECISION ► PERFORMANCE ► PERFECTION

PROUDLY
MADE IN
INDIA

ENDMILL SERIES



338.T4 SERIES

- Solid carbide 4-flute square end mill with 40° helix angle, one tooth off center
- Designed with short cutting flutes for stable milling
- For dry or wet roughing/pre-finishing/finishing

Material Group: ☒ P ☐ M ☒ K ☒ N ☐ S ☐ H

Cutting Edges: ☐ 1-flute ☐ 2-flute ☐ 3-flute ☒ 4-flute

Coating: ☒ uncoated ☐ HB1 ☐ HB2 ☐ AR2

Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	r	l1	l2	d _{h4}	l	Z
338.T4.0600.050.240	6.00	0.50	18.00	24.00	6.00	60.00	4
338.T4.0600.100.240	6.00	1.00	18.00	24.00	6.00	60.00	4
338.T4.0800.050.320	8.00	0.50	24.00	32.00	8.00	63.00	4
338.T4.0800.100.320	8.00	1.00	24.00	32.00	8.00	63.00	4
338.T4.1000.100.400	10.00	1.00	30.00	40.00	10.00	72.00	4
338.T4.1200.100.480	12.00	1.00	36.00	48.00	12.00	83.00	4

Material Group: ☒ P ☐ M ☒ K ☒ N ☐ S ☐ H

Cutting Edges: ☐ 1-flute ☐ 2-flute ☐ 3-flute ☒ 4-flute

Coating: ☐ uncoated ☐ HB1 ☒ HB2 ☐ AR2

Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

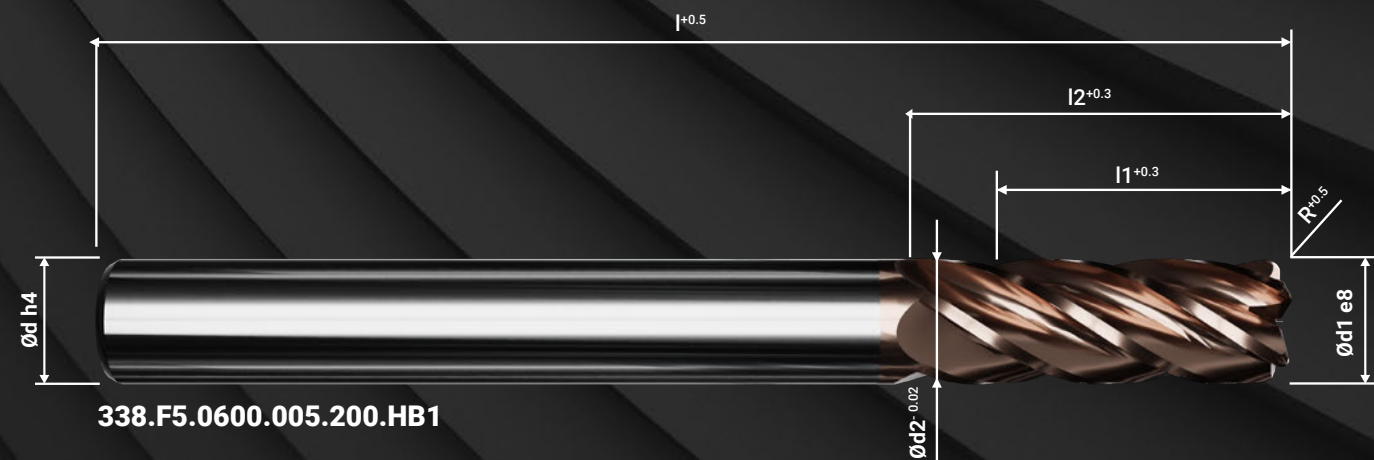
Article No.	d1	r	l1	l2	d _{h4}	l	Z
338.T4.0600.050.240.HB2	6.00	0.50	18.00	24.00	6.00	60.00	4
338.T4.0600.100.240.HB2	6.00	1.00	18.00	24.00	6.00	60.00	4
338.T4.0800.050.320.HB2	8.00	0.50	24.00	32.00	8.00	63.00	4
338.T4.0800.100.320.HB2	8.00	1.00	24.00	32.00	8.00	63.00	4
338.T4.1000.100.400.HB2	10.00	1.00	30.00	40.00	10.00	72.00	4
338.T4.1200.100.480.HB2	12.00	1.00	36.00	48.00	12.00	83.00	4

CUTTING DATA

Material Group	Work Material	Vc [m/min]	Operations				Tool Diameter Ø (in Metric)				
			Slot Milling		Side Milling		3-4	8	5-6	10	12
			Ae	Ap	Ae	Ap	fz [mm/tooth]				
P	Steels up to RM < 1200N/mm²	120 - 170	-	-	≤0.15D	< 1.2D	0.025 - 0.060	0.040 - 0.125	0.060 - 0.140	0.100 - 0.160	0.130 - 0.180
		100 - 140	≥0.5D	< 0.8D	-	-	0.011 - 0.025	0.025 - 0.052	0.030 - 0.055	0.045 - 0.065	0.055 - 0.075
M	Stainless steels Ferritic, Martensitic, Austenitic	100 - 130	-	-	≤0.15D	< 1.2D	0.040 - 0.060	0.045 - 0.120	0.065 - 0.130	0.085 - 0.160	0.110 - 0.180
		70 - 100	≥0.5D	< 0.3D	-	-	0.016 - 0.025	0.016 - 0.055	0.020 - 0.055	0.035 - 0.065	0.045 - 0.075
K	Cast Iron	100 - 170	-	-	≤0.12D	< 1D	0.040 - 0.060	0.060 - 0.130	0.075 - 0.180	0.090 - 0.130	0.120 - 0.175
		80 - 140	≥0.5D	< 0.5D	-	-	0.016 - 0.025	0.025 - 0.055	0.035 - 0.050	0.040 - 0.060	0.050 - 0.075
N	Non-ferrous metals	150 - 350	-	-	≤0.2D	< 1.5D	0.005 - 0.080	0.030 - 0.160	0.100 - 0.180	0.110 - 0.180	0.125 - 0.200
		120 - 240	≥0.5D	< 0.8D	-	-	0.020 - 0.035	0.030 - 0.070	0.040 - 0.080	0.045 - 0.085	0.055 - 0.075
S	Heat-resistant steels, Titanium, CrCo	50 - 100	-	-	≤0.1D	< 1D	0.025 - 0.045	0.045 - 0.085	0.060 - 0.100	0.075 - 0.120	0.090 - 0.140
		40 - 65	≥0.5D	< 0.3D	-	-	0.010 - 0.020	0.020 - 0.035	0.025 - 0.050	0.030 - 0.050	0.040 - 0.060
H	Hardened Steels ≥ 55 HRC	50 - 100	-	-	≤0.1D	< 1D	0.025 - 0.045	0.045 - 0.085	0.060 - 0.100	0.075 - 0.120	0.090 - 0.140
		40 - 65	≥0.5D	< 0.3D	-	-	0.010 - 0.020	0.020 - 0.035	0.020 - 0.50	0.030 - 0.050	0.040 - 0.060

Note:
Cutting data is for reference only. Adjustments should be made according to the specific application, setup rigidity, and machine conditions.
Use appropriate coolant based on material and feature being machined

ENDMILL SERIES



338.F5 SERIES

- Solid carbide 5-flute endmill with 38°/40° helix angle.
- Design for the machining of superalloys

Material Group: ☒ P ☒ M ☒ K ☒ N ☒ S ☒ H

Cutting Edges: ☐ 1-flute ☐ 2-flute ☐ 3-flute ☐ 4-flute ☒ 5-flute

Coating: ☐ uncoated ☒ HB1 ☒ HB2 ☐ AR2

Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	r	d2	l1	l2	d _{h4}	l	Z
338.F5.0600.005.200.HB1	6.00	0.05	5.70	13.5	20.0	6.0	60	5
338.F5.0800.005.250.HB1	8.00	0.05	7.70	19.5	25.0	8.0	60	5
338.F5.1000.005.300.HB1	10.00	0.05	9.70	22.0	30.0	10.0	72	5
338.F5.1200.005.360.HB1	12.00	0.05	11.60	26.5	36.0	12.0	83	5
338.F5.0600.005.200.HB2	6.00	0.05	5.70	13.5	20.0	6.0	60	5
338.F5.0800.005.250.HB2	8.00	0.05	7.70	19.5	25.0	8.0	60	5
338.F5.1000.005.300.HB2	10.00	0.05	9.70	22.0	30.0	10.0	72	5
338.F5.1200.005.360.HB2	12.00	0.05	11.60	26.5	36.0	12.0	83	5



338.T5 SERIES

- Solid carbide 5-flute endmill with 38°/40° helix angle.
- Design for the machining of superalloys

Material Group: ☒ P ☒ M ☒ K ☒ N ☒ S ☒ H

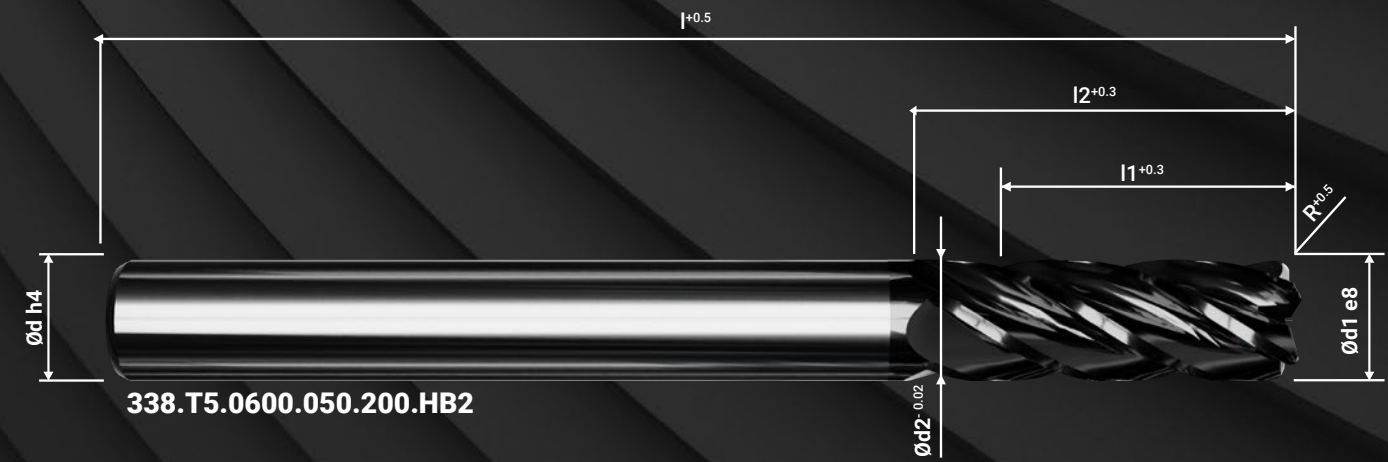
Cutting Edges: ☐ 1-flute ☐ 2-flute ☐ 3-flute ☐ 4-flute ☒ 5-flute

Coating: ☐ uncoated ☒ HB1 ☐ HB2 ☐ AR2

Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	r	d2	l1	l2	d _{h4}	l	Z
338.T5.0600.050.200.HB1	6.00	0.50	5.70	13.5	20.0	6.0	60	5
338.T5.0600.100.200.HB1	6.00	1.00	5.70	13.5	20.0	6.0	60	5
338.T5.0800.050.250.HB1	8.00	0.50	7.70	19.5	25.0	8.0	60	5
338.T5.0800.100.250.HB1	8.00	1.00	7.70	19.5	25.0	8.0	60	5
338.T5.0800.200.250.HB1	8.00	2.00	7.70	19.5	25.0	8.0	60	5
338.T5.1000.050.300.HB1	10.00	0.50	9.70	22.0	30.0	10.0	72	5
338.T5.1000.100.300.HB1	10.00	1.00	9.70	22.0	30.0	10.0	72	5
338.T5.1000.200.300.HB1	10.00	2.00	9.70	22.0	30.0	10.0	72	5
338.T5.1200.050.360.HB1	12.00	0.50	11.60	26.5	36.0	12.0	83	5
338.T5.1200.100.360.HB1	12.00	1.00	11.60	26.5	36.0	12.0	83	5
338.T5.1200.200.360.HB1	12.00	2.00	11.60	26.5	36.0	12.0	83	5
338.T5.1200.300.360.HB1	12.00	3.00	11.60	26.5	36.0	12.0	83	5
338.T5.1600.010.420.HB1	16.00	0.10	15.60	35.5	42.0	16.0	92	5
338.T5.1600.100.420.HB1	16.00	1.00	15.60	35.5	42.0	16.0	92	5
338.T5.1600.200.420.HB1	16.00	2.00	15.60	35.5	42.0	16.0	92	5
338.T5.1600.300.420.HB1	16.00	3.00	15.60	35.5	42.0	16.0	92	5
338.T5.1600.400.420.HB1	16.00	4.00	15.60	35.5	42.0	16.0	92	5

ENDMILL SERIES



338.T5 SERIES

- Solid carbide 5-flute endmill with 38°/40° helix angle.
- Design for the machining of superalloys

Material Group: ☒ P ☒ M ☐ K ☐ N ☒ S ☒ H

Cutting Edges: ☐ 1-flute ☐ 2-flute ☐ 3-flute ☐ 4-flute ☒ 5-flute

Coating: ☐ uncoated ☐ HB1 ☒ HB2 ☐ AR2

Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	r	d2	l1	l2	d _{h4}	l	Z
338.T5.0600.050.200.HB2	6.00	0.50	5.70	13.5	20.0	6.0	60	5
338.T5.0600.100.200.HB2	6.00	1.00	5.70	13.5	20.0	6.0	60	5
338.T5.0800.050.250.HB2	8.00	0.50	7.70	19.5	25.0	8.0	60	5
338.T5.0800.100.250.HB2	8.00	1.00	7.70	19.5	25.0	8.0	60	5
338.T5.0800.200.250.HB2	8.00	2.00	7.70	19.5	25.0	8.0	60	5
338.T5.1000.050.300.HB2	10.00	0.50	9.70	22.0	30.0	10.0	72	5
338.T5.1000.100.300.HB2	10.00	1.00	9.70	22.0	30.0	10.0	72	5
338.T5.1000.200.300.HB2	10.00	2.00	9.70	22.0	30.0	10.0	72	5
338.T5.1200.050.360.HB2	12.00	0.50	11.60	26.5	36.0	12.0	83	5
338.T5.1200.100.360.HB2	12.00	1.00	11.60	26.5	36.0	12.0	83	5
338.T5.1200.200.360.HB2	12.00	2.00	11.60	26.5	36.0	12.0	83	5
338.T5.1200.300.360.HB2	12.00	3.00	11.60	26.5	36.0	12.0	83	5
338.T5.1600.010.420.HB2	16.00	0.10	15.60	35.5	42.0	16.0	92	5
338.T5.1600.100.420.HB2	16.00	1.00	15.60	35.5	42.0	16.0	92	5
338.T5.1600.200.420.HB2	16.00	2.00	15.60	35.5	42.0	16.0	92	5
338.T5.1600.300.420.HB2	16.00	3.00	15.60	35.5	42.0	16.0	92	5
338.T5.1600.400.420.HB2	16.00	4.00	15.60	35.5	42.0	16.0	92	5



338.F6 SERIES

- Solid carbide 6-flute endmill with 38°/40° helix angle.
- Design for the machining of superalloys

Material Group: ☐ P ☒ M ☐ K ☐ N ☒ S ☒ H

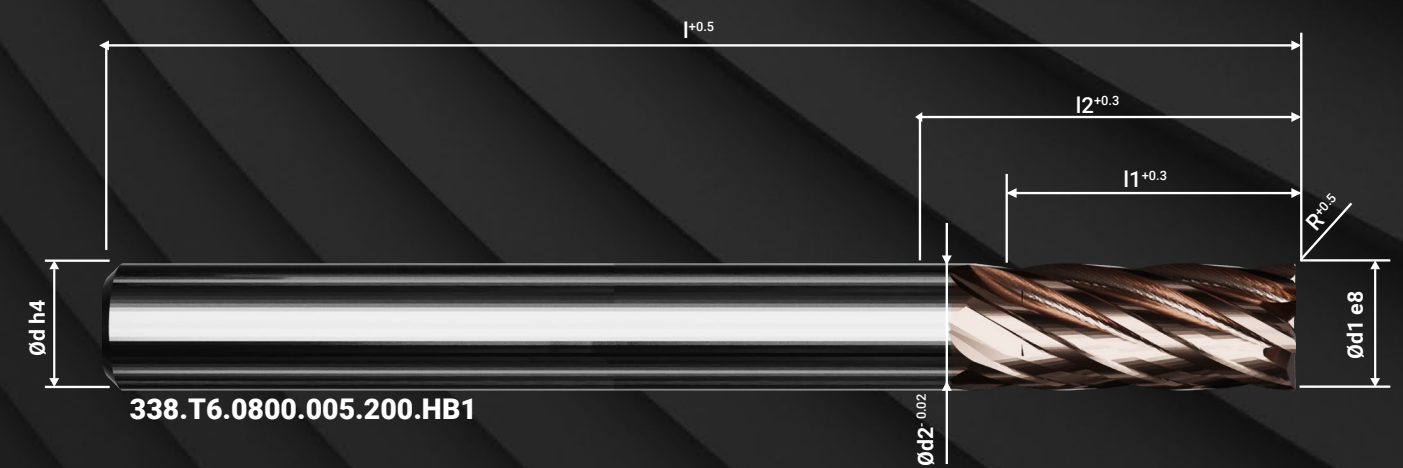
Cutting Edges: ☐ 1-flute ☐ 2-flute ☐ 3-flute ☐ 4-flute ☒ 6-flute

Coating: ☐ uncoated ☒ HB1 ☐ HB2 ☐ AR2

Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	r	d2	l1	l2	d _{h4}	l	Z
338.F6.0600.005.200.HB1	6.00	0.05	5.70	13.5	20.0	6.0	60	6
338.F6.0800.005.250.HB1	8.00	0.05	7.70	19.5	25.0	8.0	60	6
338.F6.1000.005.300.HB1	10.00	0.05	9.70	22.0	30.0	10.0	72	6
338.F6.1200.005.360.HB1	12.00	0.05	11.60	26.5	36.0	12.0	83	6

ENDMILL SERIES



338.T6 SERIES

- Solid carbide 6-flute endmill with 38°/40° helix angle.
- Design for the machining of superalloys

Material Group: ☒ P ☒ M ☐ K ☐ N ☒ S ☒ H
Cutting Edges: ☐ 1-flute ☐ 2-flute ☐ 3-flute ☐ 4-flute ☒ 6-flute
Coating: ☐ uncoated ☒ HB1 ☐ HB2 ☐ AR2
Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	d1	r	d2	l1	l2	d _{h4}	l	Z
338.T6.0800.050.250.HB1	8.00	0.50	7.70	19.5	25.0	8.0	60	6
338.T6.0800.100.250.HB1	8.00	1.00	7.70	19.5	25.0	8.0	60	6
338.T6.1000.050.300.HB1	10.00	0.50	9.70	22.0	30.0	10.0	72	6
338.T6.1000.100.300.HB1	10.00	1.00	9.70	22.0	30.0	10.0	72	6
338.T6.1200.050.360.HB1	12.00	0.50	11.60	26.5	36.0	12.0	83	6
338.T6.1200.100.360.HB1	12.00	1.00	11.60	26.5	36.0	12.0	83	6
338.T6.1200.300.360.HB1	12.00	3.00	11.60	26.5	36.0	12.0	83	6
338.T6.1600.100.420.HB1	16.00	1.00	15.60	35.5	42.0	16.0	92	6
338.T6.1600.200.420.HB1	16.00	2.00	15.60	35.5	42.0	16.0	92	6
338.T6.1600.300.420.HB1	16.00	3.00	15.60	35.5	42.0	16.0	92	6

CUTTING DATA

Material Group	Work Material	Vc [m/min]	Operations		Tool Diameter Ø (in Metric)					
			Side Milling							
			Ae	Ap	Ae	Ap	fz [mm/tooth]			
P	Steels up to RM < 1200N/mm²	120 - 170	-	-	= 0.1D	< 1.2D	0.035 - 0.07	0.045 - 0.15	0.100 - 0.200	0.160 - 0.240
		100 - 140	= 0.2D	< 1.2D	-	-	0.014 - 0.035	0.030 - 0.070	0.050 - 0.090	0.070 - 0.100
M	Stainless steels Ferritic, Martensitic, Austenitic	100 - 130	-	-	= 0.1D	< 1.2D	0.030 - 0.070	0.040 - 0.150	0.090 - 0.180	0.140 - 0.200
		70 - 100	= 0.2D	< 1.2D	-	-	0.012 - 0.030	0.020 - 0.060	0.040 - 0.080	0.060 - 0.090
K	Cast Iron	100 - 170	-	-	= 0.1D	< 1.2D	0.030 - 0.070	0.040 - 0.150	0.090 - 0.180	0.140 - 0.200
		80 - 140	= 0.15D	< 1.2D	-	-	0.012 - 0.030	0.020 - 0.060	0.040 - 0.080	0.060 - 0.090
N	Non-ferrous metals	150 - 350	-	-	= 0.1D	< 1.2D	NA			
		120 - 240	0.2D	< 1.2D	-	-				
S	Heat-resistant steels, Titanium, CrCo	50 - 100	-	-	= 0.05D	< 1.2D	0.030 - 0.070	0.040 - 0.150	0.090 - 0.180	0.140 - 0.200
		40 - 65	= 0.1D	< 1.2D	-	-	0.012 - 0.030	0.020 - 0.060	0.040 - 0.080	0.060 - 0.090
H	Hardened Steels ≥ 55 HRC	50 - 100	-	-	= 0.05D	< 1.5D	0.030 - 0.070	0.035 - 0.140	0.080 - 0.160	0.120 - 0.180
		40 - 65	= 0.1D	< 1D	-	-	0.012 - 0.030	0.020 - 0.60	0.040 - 0.080	0.060 - 0.090

Note:
Use appropriate coolant based on material and feature being machined
Cutting data is for reference only. Adjustments should be made according to the specific application, setup rigidity, and machine conditions.

ENDMILL SERIES



377 SERIES TORX®

- Solid carbide 3 or 4-flute square end mill with 38°/40° helix angle, edge-protection corner radius of .01mm+.01
- Designed for the milling of TORX® contours
- For dry or wet roughing/pre-finishing/finishing, trochoidal machining

Material Group: ☐ P ☒ M ☐ K ☐ N ☒ S ☐ H

Cutting Edges: ☐ 1-flute ☐ 2-flute ☒ 3-flute ☒ 4-flute

Coating: ☐ uncoated ☐ HB1 ☒ HB2 ☐ AR2

Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	Torx®	d1	d2	l1	l2	dh4	l	Z
377.F3.020.070.HB2	T4	0.20	0.19	0.36	0.70	4.00	40.00	3
377.F3.020.100.HB2	T4	0.20	0.19	0.36	1.00	4.00	40.00	3
377.F3.025.090.HB2	T5	0.25	0.23	0.45	0.90	4.00	40.00	3
377.F3.025.130.HB2	T5	0.25	0.23	0.45	1.30	4.00	40.00	3
377.F3.030.110.HB2	T6	0.30	0.28	0.54	1.10	4.00	40.00	3
377.F3.030.150.HB2	T6	0.30	0.28	0.54	1.50	4.00	40.00	3
377.F4.040.140.HB2	T8	0.40	0.38	0.72	1.40	4.00	40.00	4
377.F4.040.200.HB2	T8	0.40	0.38	0.72	2.00	4.00	40.00	4
377.F4.050.180.HB2	T10	0.50	0.47	0.90	1.80	4.00	40.00	4
377.F4.050.250.HB2	T10	0.50	0.47	0.90	2.50	4.00	40.00	4
377.F4.060.210.HB2	T20	0.60	0.56	1.08	2.10	4.00	40.00	4
377.F4.060.300.HB2	T20	0.60	0.56	1.08	3.00	4.00	40.00	4
377.F4.070.250.HB2	T20/T25	0.70	0.65	1.26	2.50	4.00	40.00	4
377.F4.070.350.HB2	T20/T25	0.70	0.65	1.26	3.50	4.00	40.00	4
377.F4.080.280.HB2	T25	0.80	0.75	1.44	2.80	4.00	40.00	4
377.F4.080.400.HB2	T25	0.80	0.75	1.44	4.00	4.00	40.00	4
377.F4.100.350.HB2	T30	1.00	0.94	1.80	3.50	4.00	40.00	4
377.F4.100.500.HB2	T30	1.00	0.94	1.80	5.00	4.00	40.00	4
377.F4.120.420.HB2	T40 / T45	1.20	1.14	2.16	4.20	4.00	40.00	4
377.F4.150.525.HB2	T45 / T50	1.50	1.44	2.70	5.25	4.00	40.00	4
377.F4.200.700.HB2	T55 / T60	2.00	1.95	3.60	7.00	4.00	40.00	4
377.F4.250.875.HB2	T60	2.50	2.45	4.50	8.75	4.00	40.00	4
377.F4.300.1050.HB2	T70 / T80	3.00	2.95	5.40	10.50	4.00	40.00	4

CUTTING DATA

Material Group	T4 - T6		T8 - T10		T20 - T30	
	vc [m/min]	fz [mm]	vc [m/min]	fz [mm]	vc [m/min]	fz [mm]
M	30 - 50	0.001 - 0.003	40 - 70	0.003 - 0.006	60 - 100	0.006 - 0.010

TORX MILLING

APPROACH

Solid carbide micro pilot drill for spot drilling and centering 612 Torx® 613 Torx®



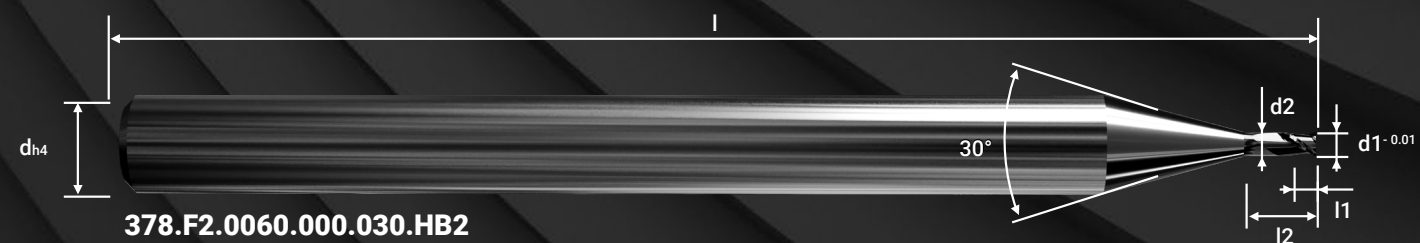
Solid carbide micro drill Lobe Drill 632K



Solid carbide micro end mill 377



ENDMILL SERIES



378.F2 SERIES

- Solid carbide 2-flute square end mill
- Designed with short cutting flutes for stable milling
- For dry or wet roughing/pre-finishing/finishing

Material Group: ☐ P ☒ M ☐ K ☐ N ☒ S ☐ H

Cutting Edges: ☐ 1-flute ☒ 2-flute ☐ 3-flute ☐ 4-flute

Coating: ☐ uncoated ☐ HB1 ☒ HB2 ☐ AR2

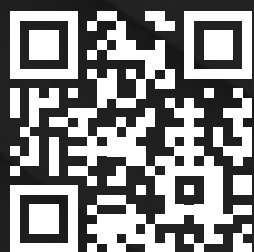
Tool Extras: ☐ hi-speed cut ☐ shaft coolant ☐ internal coolant

Article No.	Torx ®	d1	d2	r	l1	l2	d_h4	l	Z
378.F2.0020.000.006.HB2	T4	0.20	0.19	-	0.30	0.60	4.00	48.00	2
378.F2.0020.000.010.HB2	T4	0.20	0.19	-	0.30	1.00	4.00	48.00	2
378.F2.0030.000.009.HB2	T6	0.30	0.28	-	0.45	0.90	4.00	48.00	2
378.F2.0030.000.015.HB2	T6	0.30	0.28	-	0.45	1.50	4.00	48.00	2
378.F2.0040.000.012.HB2	T8	0.40	0.38	-	0.60	1.20	4.00	48.00	2
378.F2.0040.000.020.HB2	T8	0.40	0.38	-	0.60	2.00	4.00	48.00	2
378.F2.0050.000.015.HB2	T10	0.50	0.47	-	0.75	1.50	4.00	48.00	2
378.F2.0050.000.025.HB2	T10	0.50	0.47	-	0.75	2.50	4.00	48.00	2
378.F2.0060.000.018.HB2	T20	0.60	0.56	-	0.90	1.80	4.00	48.00	2
378.F2.0060.000.030.HB2	T20	0.60	0.56	-	0.90	3.00	4.00	48.00	2
378.F2.0070.000.021.HB2	T20/T25	0.70	0.65	-	1.05	2.10	4.00	48.00	2
378.F2.0070.000.035.HB2	T20/T25	0.70	0.65	-	1.05	3.50	4.00	48.00	2
378.F2.0080.000.024.HB2	T25	0.80	0.75	-	1.20	2.40	4.00	48.00	2
378.F2.0080.000.040.HB2	T25	0.80	0.75	-	1.20	4.00	4.00	48.00	2
378.F2.0100.000.030.HB2	T30	1.00	0.94	-	1.50	3.00	4.00	48.00	2
378.F2.0100.000.050.HB2	T30	1.00	0.94	-	1.50	5.00	4.00	48.00	2
378.T2.0150.020.040.HB2		1.50	1.45	0.20	2.00	4.00	4.00	48.00	2
378.T2.0150.020.060.HB2		1.50	1.45	0.20	2.00	6.00	4.00	48.00	2
378.T2.0150.020.080.HB2		1.50	1.45	0.20	2.00	8.00	4.00	48.00	2

CUTTING DATA

	Ø 0.2 - 0.3 mm		Ø 0.4 - 0.5 mm		Ø 0.7 - 1.0 mm	
Material Group	vc [m/min]	fz [mm]	vc [m/min]	fz [mm]	vc [m/min]	fz [mm]
M	30-50	0.001-0.003	40-70	0.003-0.006	60-100	0.006-0.010
S	30-50	0.003-0.006	40-70	0.008-0.015	60-100	0.015-0.03
	30-50	0.001-0.003	40-70	0.008-0.015	60-100	0.015-0.03
	30-50	0.001-0.003	40-70	0.008-0.015	60-100	0.015-0.03

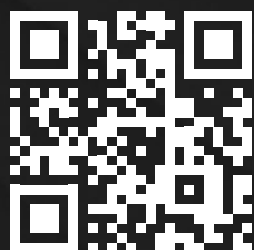
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