



A700⁺ Series **Solid Carbide**

End Mills



Guide Page

Carbide Material & Types of tool ①

Series ②

Code No. ③

Description ④

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Diameter tolerance ⑥

Specification Table ⑦

DIN Standard ⑧

Cutting Suitability ⑨

Work Material ⑩

UFMG Carbide - High-Speed End Mill

A700⁺ - 11454TB

• Square - 4-Flute x 3D
• Helix 45°

Icon ⑤

Diameter tolerance ⑥

Code No.	CED	CEL	SD	OAL	Flute
A700 ⁺ -11454TB	1	3	4	50	4
	2	6	4	50	
	3	9	4	50	
	4	12	4	50	
	5	15	6	50	
	6	18	6	50	
	8	24	8	65	
	10	30	10	75	
12	36	12	80		

Specification Table ⑦

Code No.	CED	CEL	SD	OAL	Flute
A700 ⁺ -11454TB	3	9	6	57	4
	4	12	6	65	
	5	15	6	65	
	6	18	6	65	

DIN Standard ⑧

Code No.	CED	CEL	SD	OAL	Flute
A700 ⁺ -11454TB	3	9	6	57	4
	4	12	6	65	
	5	15	6	65	
	6	18	6	65	

Cutting Suitability ⑨

Depth of cut	12	12	12	12	12	12	12	12
ap	3,840	910	3,480	550	2,700	380	2,160	260
ae	1.5D	0.2D	1.5D	0.1D	1.5D	0.05D	1.5D	0.03D

Work Material ⑩

P			H		
G1	G2	G3	G14	G15	G16
•	•	•	•	•	•

Work Material ⑩

Work Material ⑩

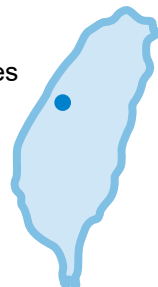
- Please select high rigid tool holder and collet chuck during machining.
- Please select the suitable coolant fluid.
- For dry cutting, please use air blow for chip removal and cooling.
- These cutting data are for reference only. Please adjust the cutting speed according to machine capability and working conditions.
- If vibrations occur during cutting process, adjust and reduce the cutting speed.

About Us

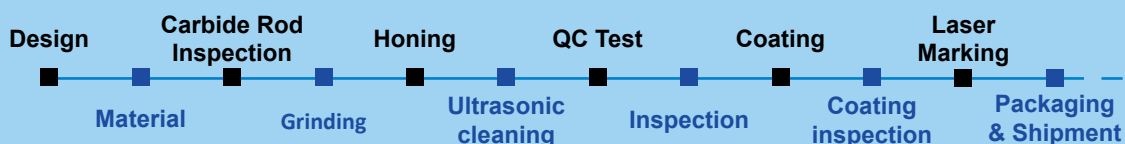
Founded in **1986**, **CITY TOOLS** is a leading solid carbide cutting tool manufacturer located in Taiwan.

ISO9001:2000 certified, our products are widely used in Aerospace, Medical, Automotive, Electronic industry, Mechanical parts, Molds & Die, Woodworking, Plastic and all kinds of Metal / Non-Metal processing industrial.

In order to improve our production quality, we imported advanced CNC grinding machines from Germany. We use advanced inspection equipment to conduct 100% inspections at every stage of production to ensure quality and provide customers with perfect service.



Manufacturing



Walter Grinding Machine

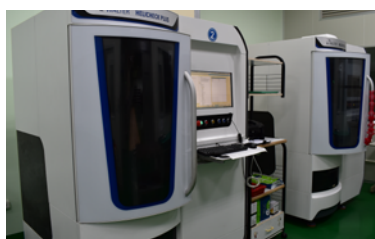
Production | *Ensure accuracy quality tools and Increase productivity*



Quality Management

Full inspection on each tool with precised accuracy

100% comprehensive inspection with precised accuracy

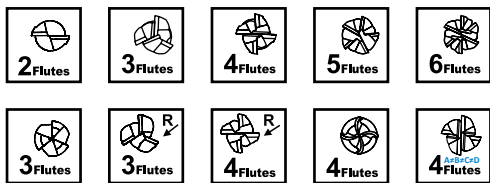


Icon Guide

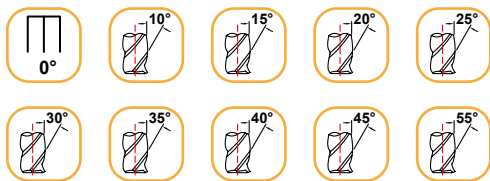
Type of Flute



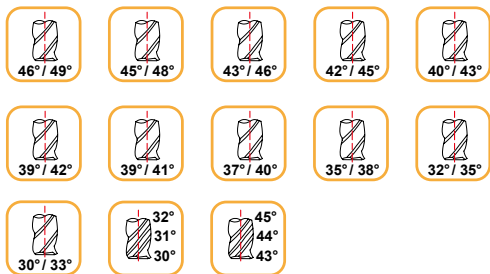
Type of Uneven Flute



Helix angle



Variable helix angle



Honing Process



Type of cutting edge



IE



Processing direction



Work piece material hardness



Angle & Type of Cutting Edge



Icon Guide

Type of Coating



Code	Name	Oxidation Temperature	Surface Hardness(Hv)	Coefficient of Friction	Coating Thickness(μm)
TA	AlTiCrN	900°C	3200	0.5	0.1~0.4
TN	TiAlN	800°C	2600	0.4	0.1~0.4
TB	AlTiSiN-B	1100°C	3500	0.45	0.1~0.4
TO	AlTiSiN	1000°C	3200	0.45	0.1~0.4
Z3	AlTiSiZrN	1000°C	3000	0.4	0.1~0.4
DLC	Diamod	550°C	2500	0.1	0.8
TS	TA-C	1100°C	5500	0.1	0.1~1

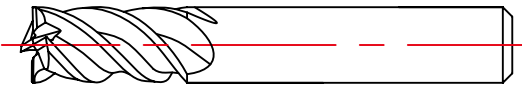
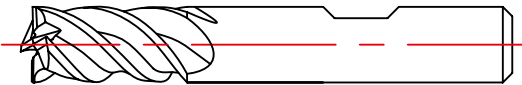
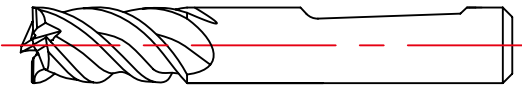
※ Actual coating color may have slight difference due to coating temperature.

Solid Carbide Material

icon	Grade	Grain size	Cobalt	Hardness
	Ultrafine Micro Grain Carbide	0.2um~0.3um	8.2%	HRA93.7
	Ultra Micro Grain Carbide	0.4um~0.5um	12%	HRA92.7
	Super Micro Grain Carbide	0.6um~0.8um	10%	HRA92.3
	High Speed Steel	---	8%	HRC66~68

Icon Guide

Optional Weldon Shank HB, HE Service

Form HA, plain	
Form HB, with drive flat	
Form HE, with whistle notch flat	

Type of cutting edge

	Gashland Edge: The tools with Gashland Edge have reduced corner sharpness, increasing strength and preventing chipping to enhance tool life.
	Sharp Edge: The sharp edge blade is used for cleaning pin corners on the workpiece, which are left uncleaned by tools with Gashland Edge.

Honing Process

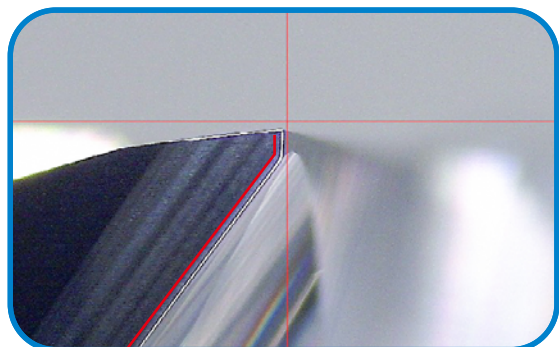
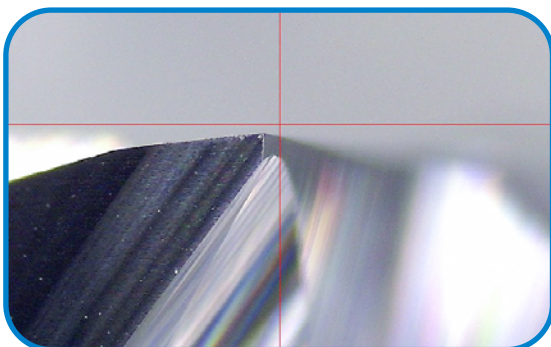
The honing process creates a micro R on the edge, it's enable to reduce chipping, enhancing coating adhesion and prolonging tool life.



without honing



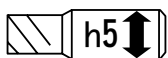
with honing



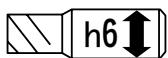
Material CHART

ISO	Group	Material	Tensile Strength N/mm2	Hardness HB
P	G1	Non-alloyed Steel, cast steel, free cutting steel	420 - 848	125 - 300
	G2	<24HRC Low-alloyed Steel, cast steel	600 - 1200	200 - 300
	G3	<30HRC Hi-alloyed Steel, cast steel, tool steel	680-1100	200- 325
M	G4	Stainless Steel, cast steel	600 - 820	180 - 240
K	G5	Gray Cast Iron, Ductile cast iron, Malleable cast iron		130 - 260
N	G6	Aluminium		60 - 130
	G7	Copper		90 - 110
	G8	Plastics, Hard rubber		
	G9	FRP CFRP Composite Material		
	G10	Graphite		
S	G11	High Temp Alloys		200 - 280
	G12	Nickel		320 - 350
	G13	Titanium	400 - 1,050	
H	G14	30-38HRC Hardened Steel		
	G15	38-48HRC Hardened Steel		
	G16	48-56HRC Hardened Steel		
	G17	56-65HRC Hardened Steel		

High Precision Shank Tolerance

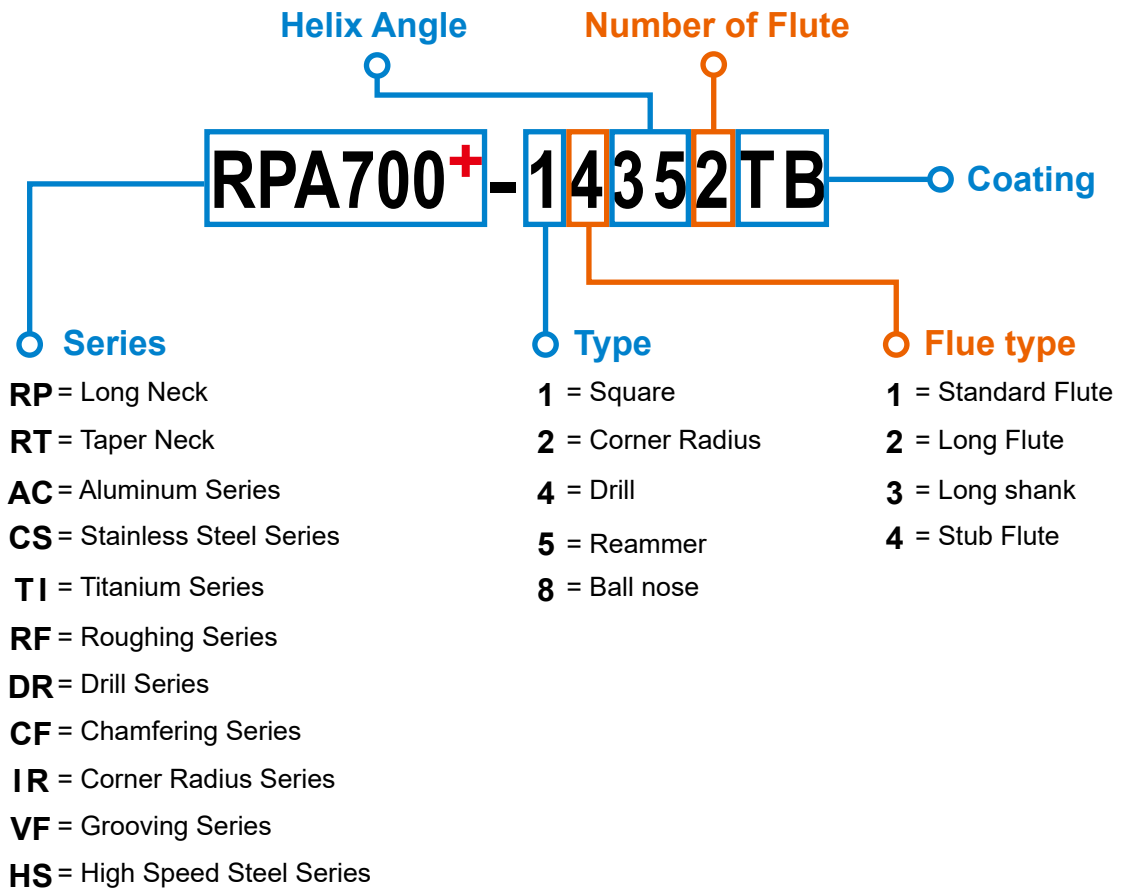


The h5 high precision tolerance, optimum concentricity and runout for precision chucks.



h6 high precision tolerance for HSS series, optimum concentricity and runout for precision chucks.

Coding Principle



A700IE+-11384TH

I = Uneven flute
E = Variable helix angle

S500M+-11302TN

M = Miniature

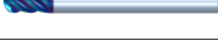
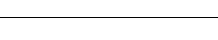
AC100RN+-11403

R = Heavy Duty Operation

N = Sharp edge

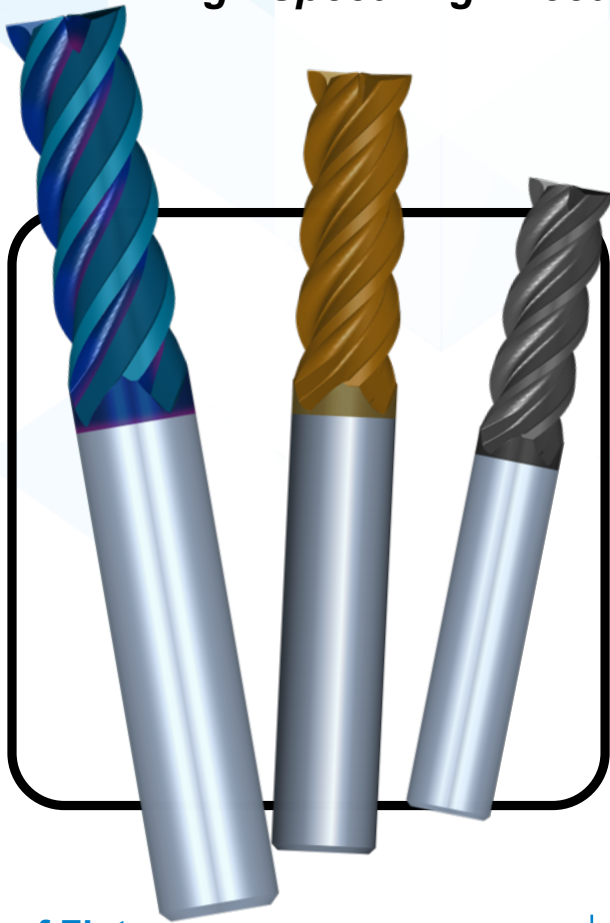
A700⁺ Series

High Speed High Feed & Finishing

Appearance	Code No	Description	Size	Pg
	A700 ⁺ -11454TB	Square - 4-Flute x 3D - Helix 45°	Ø1~Ø12	19
	A700 ⁺ -11554TB	Square - 4-Flute x 2.5D - Helix 55°	Ø4~Ø20	21
	A700 ⁺ -11555TB	Square - 5-Flute x 2.5D - Helix 55°	Ø4~Ø20	21
	A700 ⁺ -11556TB	Square - 6-Flute x 2.5D - Helix 55°	Ø4~Ø20	21
	A700 ⁺ -81402TB	Ball Nose - 2-Flute x 2D - Helix 40°	0.5R~6R	23
	A700 ⁺ -81454TB	Ball Nose - 4-Flute x 2D - Helix 45°	3R~10R	25
	A700 ⁺ -83402TB	Ball Nose - 2-Flute x 1D / Long Shank Helix 40°	0.5R~6R	27
	A700 ⁺ -83454TB	Ball Nose - 4-Flute x 2D / Long Shank Helix 45°	3R~10R	29
	A700 ⁺ -21454TB	Corner Radius - 4-Flute x 3D - Helix 45°	Ø1~Ø12	31
	A700IE ⁺ -11454TB	Square - 4-Flute x 3D Uneven Flute / Variable Helix 45°/48°	Ø4~Ø20	33
	A700IE ⁺ -12464TB	Square - 4-Flute x 4D / Long Flute Uneven Flute / Variable Helix 46°/49°	Ø4~Ø20	35
	A700IE ⁺ -12465TB	Square - 5-Flute x 4D / Long Flute Uneven Flute / Variable Helix 46°/49°	Ø4~Ø20	35
	A700IE ⁺ -12466TB	Square - 6-Flute x 4D / Long Flute Uneven Flute / Variable Helix 46°/49°	Ø4~Ø20	35
	A700IE ⁺ -81404TB	Ball Nose - 4-Flute x 2D Uneven Flute / Variable Helix 40°/43°	3R~10R	37
	A700IE ⁺ -21454TB	Corner Radius - 4-Flute x 3D Uneven Flute / Variable Helix 45°/48°	Ø1~Ø12	39
	RPA700 ⁺ -14352TB	Square - 2-Flute x 1.5D - Long Neck Helix 35°	Ø0.5~Ø6	41
	RPA700 ⁺ -84302TB	Ball Nose - 2-Flute x 1.5D - Long Neck Helix 30°	0.25R~3R	43
	RTA700 ⁺ -14352TB	Square - 2-Flute x 1.5D Taper Neck Helix 35°	Ø0.5~Ø6	45
	RTA700 ⁺ -84302TB	Ball Nose - 2-Flute x 1.5D Taper Neck Helix 30°	0.25R~3R	47

A700⁺ Series

High Speed High Feed & Finishing



Super Ultrafine Micro
Grain Carbide



Suitable for work material
~HRC65

Optional Coating



Optional 3 types of selectable coating

Types of Flute



Types of Uneven Flute



Honing Process



with
honing



without
honing

Cutting edge protection



with gashland
protection



sharp
corner

Helix angle

30° / 35° / 40° / 45° / 46° / 55°



Optional DIN Weldon Shank



Special & Custom Tooling Services

Customized acceptable !

From Coating, flute, Helix angle, cutting length, to total length.

UFMG Carbide - High-Speed Finishing End Mill

A700IE⁺-11454TB



Starter Pack

**Experience High-Speed Cutting
One pack for all needs!**



Package sizes $\varnothing 6$, $\varnothing 8$, $\varnothing 10$, $\varnothing 12$

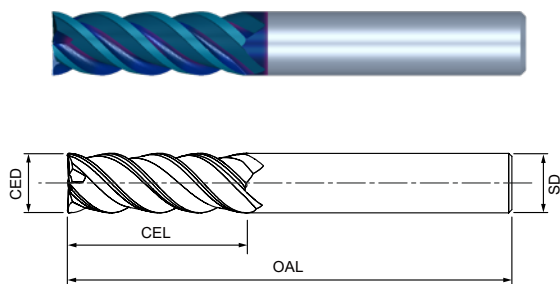
Code No.	CED	CEL	SD	OAL
A700IE ⁺ -11454TB	$\varnothing 6$	18	6	50
	$\varnothing 8$	24	8	65
	$\varnothing 10$	30	10	75
	$\varnothing 12$	36	12	80

Contact us now for more information!

UFMG Carbide - High-Speed End Mill

A700⁺ - 11454TB

- ◆ Square - 4-Flute x 3D
- ◆ Helix 45°



CED Tolerance(mm)	
1~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

(unit : mm)

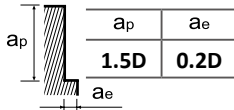
Code No.	CED	CEL	SD	OAL	Flute
A700 ⁺ -11454TB	1	3	4	50	4
	2	6	4	50	
	3	9	4	50	
	4	12	4	50	
	5	15	6	50	
	6	18	6	50	
	8	24	8	65	
	10	30	10	75	
	12	36	12	80	

Code No.	CED	CEL	SD	OAL	Flute
A700 ⁺ -11454TB	3	9	6	57	4
	4	12	6	65	
	5	15	6	65	
	6	18	6	65	
	8	24	8	75	
	10	30	10	80	
	12	36	12	93	

※ Customized Special sizes, Coating type and Inches are available to order.

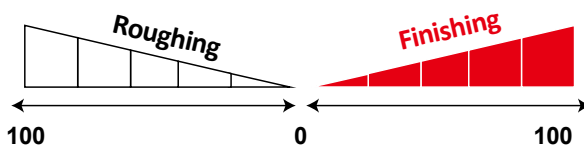
Recommended Cutting Condition

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC													
Cutting Condition	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min												
CED	a_p : 1.5D	a_e : 0.2D	a_p : 1.5D	a_e : 0.1D	a_p : 1.5D	a_e : 0.05D	a_p : 1.5D	a_e : 0.03D												
1	33,600	530	30,480	390	24,000	280	19,200	195												
2	20,760	650	17,040	480	13,600	240	10,880	165												
3	15,240	770	12,960	550	10,300	380	8,240	260												
4	11,520	825	9,600	570	7,680	400	6,100	280												
5	9,120	880	7,920	650	6,300	450	5,040	310												
6	7,680	1,100	6,480	770	5,100	540	4,080	380												
8	5,760	1,100	5,040	750	4,000	530	3,200	370												
10	4,560	980	4,080	715	3,200	500	2,560	350												
12	3,840	910	3,480	550	2,700	380	2,160	260												
Depth of cut			<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>1.5D</td><td>0.1D</td></tr></table>		a_p	a_e	1.5D	0.1D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>1.5D</td><td>0.05D</td></tr></table>		a_p	a_e	1.5D	0.05D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>1.5D</td><td>0.03D</td></tr></table>		a_p	a_e	1.5D	0.03D
					a_p	a_e														
					1.5D	0.1D														
a_p	a_e																			
1.5D	0.05D																			
a_p	a_e																			
1.5D	0.03D																			

Work Material

P			H		
G1	G2	G3	G14	G15	G16
●	●	●	●	●	○

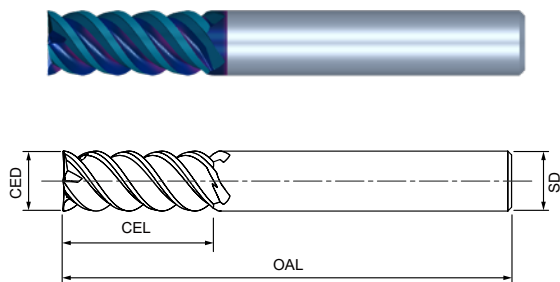


1. Please select high rigid tool holder and collet chuck during machining.
2. Please select the suitable coolant fluid.
3. For dry cutting, please use air blow for chip removal and cooling.
4. These cutting data are for reference only. Please adjust the cutting speed according to machine capability and working conditions.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

UFMG Carbide - High-Speed Finishing End Mill

A700⁺ - 11554TB / 11555TB / 11556TB

- ◆ Square - 4~6-Flute x 2.5D
- ◆ Helix 55°



CED Tolerance(mm)	
4~6	0~-0.018
6~10	0~-0.02
10~16	0~-0.025
16~20	0~-0.03

h5 (unit : mm)

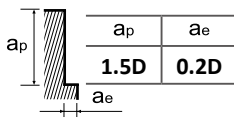
Code No.	CED	CEL	SD	OAL	Flute
A700 ⁺ -11554TB	4	10	4	50	4
	5	13	6	50	
A700 ⁺ -11555TB	6	15	6	50	5
	8	20	8	60	
A700 ⁺ -11556TB	10	25	10	75	6
	12	30	12	75	
	16	40	16	100	
	20	50	20	100	

Code No.	CED	CEL	SD	OAL	Flute
A700 ⁺ -11554TB	4	11	6	57	4
	5	13	6	57	
A700 ⁺ -11555TB	6	13	6	57	5
	8	19	8	63	
A700 ⁺ -11556TB	10	22	10	72	6
	12	26	12	83	

※ Customized Special sizes, Coating type and Inches are available to order.

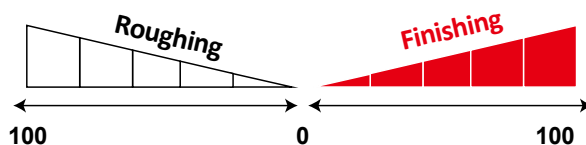
Recommended Cutting Condition

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC													
Cutting Condition	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min												
CED	a _p : 1.5D	a _e : 0.2D	a _p : 1.5D	a _e : 0.1D	a _p : 1.5D	a _e : 0.05D	a _p : 1.5D	a _e : 0.03D												
4	11,520	825	9,600	570	7,680	400	6,100	280												
5	9,120	880	7,920	650	6,300	450	5,040	310												
6	7,680	1,100	6,480	770	5,100	540	4,080	380												
8	5,760	1,100	5,040	750	4,000	530	3,200	370												
10	4,560	980	4,080	715	3,200	500	2,560	350												
12	3,840	910	3,480	550	2,700	380	2,160	260												
16	2,880	680	2,640	440	2,100	300	1,680	210												
20	2,280	550	2,160	300	1,720	210	1,370	150												
Depth of cut			<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>1.5D</td><td>0.1D</td></tr></table>		a _p	a _e	1.5D	0.1D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>1.5D</td><td>0.05D</td></tr></table>		a _p	a _e	1.5D	0.05D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>1.5D</td><td>0.03D</td></tr></table>		a _p	a _e	1.5D	0.03D
					a _p	a _e														
1.5D	0.1D																			
a _p	a _e																			
1.5D	0.05D																			
a _p	a _e																			
1.5D	0.03D																			

Work Material

P			H		
G1	G2	G3	G14	G15	G16
•	•	•	•	•	•

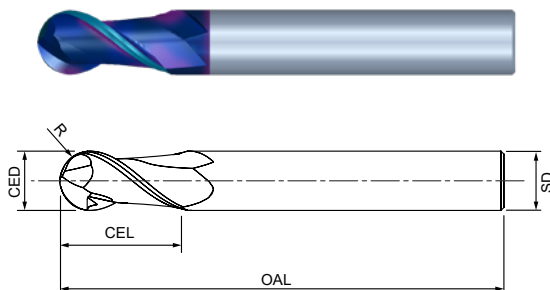


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2. Please select the suitable coolant fluid.
3. For dry cutting, please use air blow for chip removal and cooling.
4. These cutting data are for reference only. Please adjust the cutting speed according to machine capability and working conditions.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

UFMG Carbide - High-Speed Ball End Mill

A700⁺ - 81402TB

- ♦ Ball Nose - 2-Flute x 2D
- ♦ Helix 40°



CED Tolerance(mm)	
R	±0.02

(unit : mm)

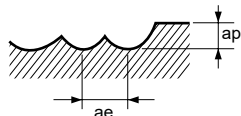
Code No.	Radius	CEL	SD	OAL	Flute
A700 ⁺ -81402TB	0.5R	2	4	50	2
	1R	4	4	50	
	1.5R	6	4	50	
	2R	8	4	50	
	2.5R	10	6	50	
	3R	12	6	50	
	4R	16	8	60	
	5R	20	10	75	
	6R	24	12	75	

Code No.	Radius	CEL	SD	OAL	Flute
A700 ⁺ -81402TB	1.5R	6	6	57	2
	2R	8	6	57	
	2.5R	10	6	57	
	3R	12	6	57	
	4R	16	8	63	
	5R	20	10	72	
	6R	24	12	83	

※ Customized Special sizes, Coating type and Inches are available to order.

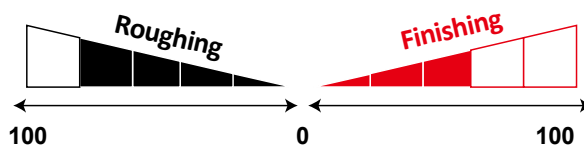
Recommended Cutting Condition

General Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC																	
Cutting Condition	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min																
R	a _p : 0.1D	a _e : 0.2D	a _p : 0.08D	a _e : 0.2D	a _p : 0.05D	a _e : 0.1D	a _p : 0.03D	a _e : 0.1D																
0.5R	30,000	600	28,000	360	24,000	290	21,600	220																
1.0R	21,600	870	17,000	520	13,800	350	12,420	260																
1.5R	14,000	840	11,700	540	10,100	430	9,090	310																
2R	10,800	840	9,000	520	7,700	410	6,930	325																
2.5R	8,600	830	7,200	510	6,100	470	5,490	360																
3R	7,200	830	5,800	490	5,100	390	4,590	430																
4R	5,400	810	4,400	490	3,800	550	3,420	430																
5R	4,300	810	3,500	490	3,000	390	2,700	400																
6R	3,600	810	2,900	490	2,500	390	2,250	310																
Depth of cut	 <table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.1D</td><td>0.2D</td></tr></table>		a _p	a _e	0.1D	0.2D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.08D</td><td>0.2D</td></tr></table>		a _p	a _e	0.08D	0.2D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.05D</td><td>0.1D</td></tr></table>		a _p	a _e	0.05D	0.1D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.03D</td><td>0.1D</td></tr></table>		a _p	a _e	0.03D	0.1D
			a _p	a _e																				
			0.1D	0.2D																				
a _p	a _e																							
0.08D	0.2D																							
a _p	a _e																							
0.05D	0.1D																							
a _p	a _e																							
0.03D	0.1D																							

Work Material

P			H		
G1	G2	G3	G14	G15	G16
•	•	•	•	•	•

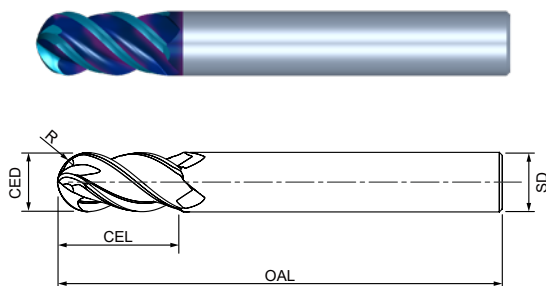


1. Please select high rigid tool holder and collet chuck during machining.
2. Please select the suitable coolant fluid.
3. For dry cutting, please use air blow for chip removal and cooling.
4. These cutting data are for reference only. Please adjust the cutting speed according to machine capability and working conditions.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

UFMG Carbide - High-Speed Ball End Mill

A700⁺ - 81454TB

- ♦ Ball Nose - 4-Flute x 2D
- ♦ Helix 45°



CED Tolerance(mm)	
R	±0.02

(unit : mm)

Code No.	Radius	CEL	SD	OAL	Flute
A700 ⁺ -81454TB	3R	12	6	50	4
	4R	16	8	60	
	5R	20	10	75	
	6R	24	12	75	
	8R	32	16	100	
	10R	40	20	100	

Code No.	Radius	CEL	SD	OAL	Flute
A700 ⁺ -81454TB	3R	12	6	57	4
	4R	16	8	63	
	5R	20	10	72	
	6R	24	12	83	

※ Customized Special sizes, Coating type and Inches are available to order.

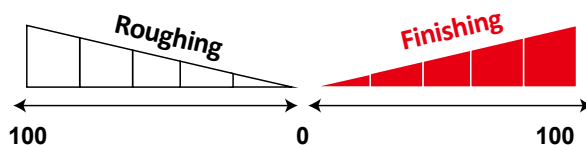
Recommended Cutting Condition

General Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC																	
Cutting Condition	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min																
R	a_p : 0.1D	a_e : 0.2D	a_p : 0.08D	a_e : 0.2D	a_p : 0.05D	a_e : 0.1D	a_p : 0.03D	a_e : 0.1D																
3R	8,400	1,400	7,560	1,120	6,000	780	4,800	540																
4R	6,300	1,400	5,670	1,120	4,500	780	3,600	540																
5R	5,000	1,400	4,500	1,120	3,600	780	2,880	540																
6R	4,200	1,400	3,780	1,120	3,000	780	2,400	540																
8R	3,100	1,400	2,790	1,120	2,200	780	1,760	540																
10R	2,500	1,200	2,250	960	1,800	670	1,440	470																
Depth of cut	 <table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.1D</td><td>0.2D</td></tr></table>		a_p	a_e	0.1D	0.2D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.08D</td><td>0.2D</td></tr></table>		a_p	a_e	0.08D	0.2D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.05D</td><td>0.1D</td></tr></table>		a_p	a_e	0.05D	0.1D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.03D</td><td>0.1D</td></tr></table>		a_p	a_e	0.03D	0.1D
a_p	a_e																							
0.1D	0.2D																							
a_p	a_e																							
0.08D	0.2D																							
a_p	a_e																							
0.05D	0.1D																							
a_p	a_e																							
0.03D	0.1D																							

Work Material

P			H		
G1	G2	G3	G14	G15	G16
•	•	•	•	•	•

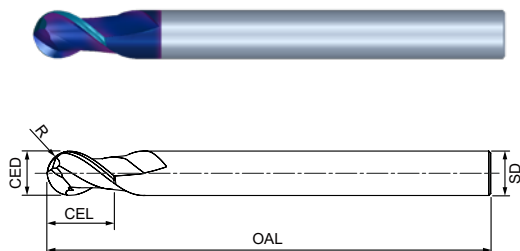


1. Please select high rigid tool holder and collet chuck during machining.
2. Please select the suitable coolant fluid.
3. For dry cutting, please use air blow for chip removal and cooling.
4. These cutting data are for reference only. Please adjust the cutting speed according to machine capability and working conditions.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

UFMG Carbide - High-Speed Long Shank Ball End Mill

A700⁺ - 83402TB

- ♦ Ball Nose - 2-Flute x 1D / Long Shank
- ♦ Helix 40°



CED Tolerance(mm)	
R	±0.02

(unit : mm)

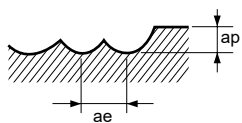
Code No.	Radius	CEL	SD	OAL	Flute
A700 ⁺ -83402TB	0.5R	1	4	75	2
	1R	2	4	75	
	1.5R	3	4	75	
	2R	4	4	75	
	2.5R	5	6	75	
	3R	6	6	75	
	4R	8	8	100	
	5R	10	10	100	
	6R	12	12	100	

Code No.	Radius	CEL	SD	OAL	Flute
A700 ⁺ -83402TB	1.5R	3	6	80	2
	2R	4	6	80	
	2.5R	5	6	80	
	3R	6	6	80	
	4R	8	8	90	
	5R	10	10	100	
	6R	12	12	120	

※ Customized Special sizes, Coating type and Inches are available to order.

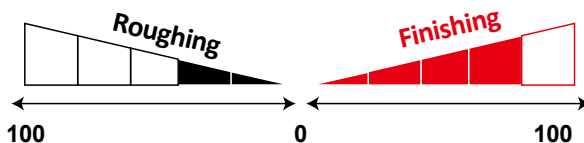
Recommended Cutting Condition

General Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC													
Cutting Condition	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min												
R	a_p : 0.1D	a_e : 0.2D	a_p : 0.08D	a_e : 0.2D	a_p : 0.05D	a_e : 0.1D	a_p : 0.03D	a_e : 0.1D												
0.5R	36,000	680	33,600	400	28,800	320	25,000	240												
1.0R	25,920	900	20,400	540	16,560	380	14,900	280												
1.5R	16,800	920	14,040	550	12,120	470	10,900	340												
2R	12,960	920	10,800	550	9,240	450	8,300	360												
2.5R	10,320	910	8,640	540	7,320	510	6,500	400												
3R	8,640	910	6,960	540	6,120	430	5,500	470												
4R	6,480	890	5,280	530	4,560	600	4,100	470												
5R	5,160	890	4,200	530	3,600	430	3,200	440												
6R	4,320	890	3,480	530	3,000	430	2,700	340												
Depth of cut			<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.08D</td><td>0.2D</td></tr></table>		a_p	a_e	0.08D	0.2D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.05D</td><td>0.1D</td></tr></table>		a_p	a_e	0.05D	0.1D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.03D</td><td>0.1D</td></tr></table>		a_p	a_e	0.03D	0.1D
	a_p	a_e																		
	0.08D	0.2D																		
a_p	a_e																			
0.05D	0.1D																			
a_p	a_e																			
0.03D	0.1D																			
<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.1D</td><td>0.2D</td></tr></table>	a_p	a_e	0.1D	0.2D																
a_p	a_e																			
0.1D	0.2D																			

Work Material

P			H		
G1	G2	G3	G14	G15	G16
•	•	•	•	•	•

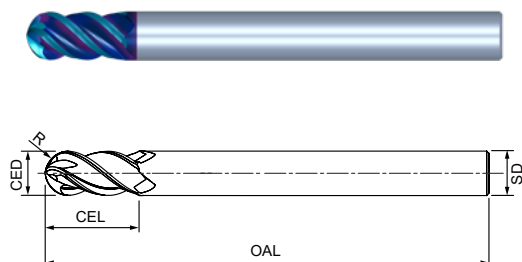


1. Please select high rigid tool holder and collet chuck during machining.
2. Please select the suitable coolant fluid.
3. For dry cutting, please use air blow for chip removal and cooling.
4. These cutting data are for reference only. Please adjust the cutting speed according to machine capability and working conditions.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

UFMG Carbide - High-Speed Long Shank Ball End Mill

A700⁺ - 83454TB

- ♦ Ball Nose - 4-Flute x 2D / Long Shank
- ♦ Helix 45°



CED Tolerance(mm)	
R	±0.02

(unit : mm)

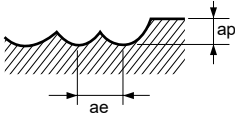
Code No.	Radius	CEL	SD	OAL	Flute
A700 ⁺ -83454TB	3R	12	6	75	4
	4R	16	8	100	
	5R	20	10	100	
	6R	24	12	100	
	8R	32	16	150	
	10R	40	20	150	

Code No.	Radius	CEL	SD	OAL	Flute
A700 ⁺ -83454TB	3R	12	6	100	4
	4R	16	8	100	
	5R	20	10	100	
	6R	24	12	150	

※ Customized Special sizes, Coating type and Inches are available to order.

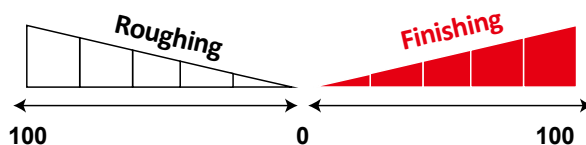
Recommended Cutting Condition

General Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC													
Cutting Condition	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min												
R	a _p : 0.1D	a _e : 0.2D	a _p : 0.08D	a _e : 0.2D	a _p : 0.05D	a _e : 0.1D	a _p : 0.03D	a _e : 0.1D												
3R	8,400	1,400	7,560	1,120	6,000	780	4,800	540												
4R	6,300	1,400	5,670	1,120	4,500	780	3,600	540												
5R	5,000	1,400	4,500	1,120	3,600	780	2,880	540												
6R	4,200	1,400	3,780	1,120	3,000	780	2,400	540												
8R	3,100	1,400	2,790	1,120	2,200	780	1,760	540												
10R	2,500	1,200	2,250	960	1,800	670	1,440	470												
Depth of cut			<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.08D</td><td>0.2D</td></tr></table>		a _p	a _e	0.08D	0.2D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.05D</td><td>0.1D</td></tr></table>		a _p	a _e	0.05D	0.1D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.03D</td><td>0.1D</td></tr></table>		a _p	a _e	0.03D	0.1D
	a _p	a _e																		
0.08D	0.2D																			
a _p	a _e																			
0.05D	0.1D																			
a _p	a _e																			
0.03D	0.1D																			
	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.1D</td><td>0.2D</td></tr></table>	a _p	a _e	0.1D	0.2D															
a _p	a _e																			
0.1D	0.2D																			

Work Material

P			H		
G1	G2	G3	G14	G15	G16
•	•	•	•	•	•

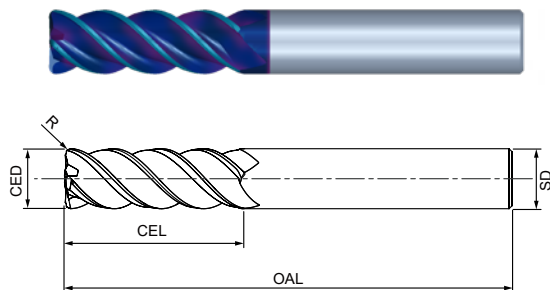


1. Please select high rigid tool holder and collet chuck during machining.
2. Please select the suitable coolant fluid.
3. For dry cutting, please use air blow for chip removal and cooling.
4. These cutting data are for reference only. Please adjust the cutting speed according to machine capability and working conditions.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

UFMG Carbide - High-Speed Corner Radius End Mill

A700⁺ - 21454TB

- ◆ Corner Radius - 4-Flute x 3D
- ◆ Helix 45°



CED Tolerance(mm)	
1~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

(unit : mm)

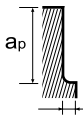
Code No.	CED	CEL	SD	OAL	Radius	Flute
A700 ⁺ -21454TB	1	3	4	50	0.2R	4
	2	6	4	50	0.2R	
	3	9	4	50	0.2R	
	4	12	4	50	0.2R	
	5	15	6	50	0.2R	
	6	18	6	50	0.2R	
	8	24	8	65	0.2R	
					0.5R	
	10	30	10	75	0.2R	
					0.5R	
	12	36	12	80	0.2R	
					0.5R	

Code No.	CED	CEL	SD	OAL	Radius	Flute
A700 ⁺ -21454TB	3	9	6	57	0.2R	4
	4	12	6	65	0.2R	
	5	15	6	65	0.2R	
	6	18	6	65	0.2R	
	8	24	8	75	0.2R	
					0.5R	
	10	30	10	80	0.2R	
					0.5R	
	12	36	12	93	0.2R	
					0.5R	

※ Customized Special sizes, Coating type and Inches are available to order.

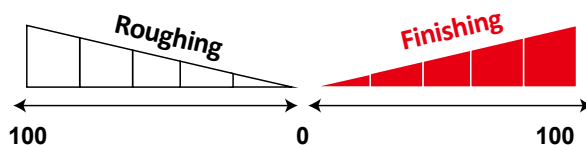
Recommended Cutting Condition

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC													
Cutting Condition	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min												
CED	a _p : 1.5D	a _e : 0.2D	a _p : 1.5D	a _e : 0.1D	a _p : 1.5D	a _e : 0.05D	a _p : 1.5D	a _e : 0.03D												
1	33,600	530	30,480	390	24,000	280	19,200	195												
2	20,760	650	17,040	480	13,600	240	10,880	165												
3	15,240	770	12,960	550	10,300	380	8,240	260												
4	11,520	825	9,600	570	7,680	400	6,100	280												
5	9,120	880	7,920	650	6,300	450	5,040	310												
6	7,680	1,100	6,480	770	5,100	540	4,080	380												
8	5,760	1,100	5,040	750	4,000	530	3,200	370												
10	4,560	980	4,080	710	3,200	500	2,560	350												
12	3,840	910	3,480	550	2,700	380	2,160	260												
Depth of cut			<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>1.5D</td><td>0.1D</td></tr></table>		a _p	a _e	1.5D	0.1D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>1.5D</td><td>0.05D</td></tr></table>		a _p	a _e	1.5D	0.05D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>1.5D</td><td>0.03D</td></tr></table>		a _p	a _e	1.5D	0.03D
					a _p	a _e														
1.5D	0.1D																			
a _p	a _e																			
1.5D	0.05D																			
a _p	a _e																			
1.5D	0.03D																			

Work Material

P			H		
G1	G2	G3	G14	G15	G16
•	•	•	•	•	•

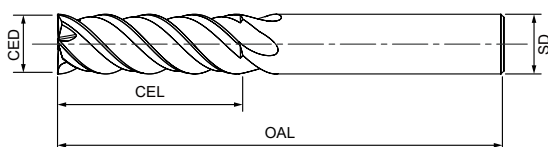
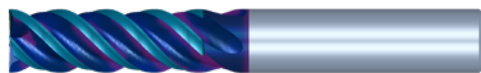


1. Please select high rigid tool holder and collet chuck during machining.
2. Please select the suitable coolant fluid.
3. For dry cutting, please use air blow for chip removal and cooling.
4. These cutting data are for reference only. Please adjust the cutting speed according to machine capability and working conditions.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

UFMG Carbide - High-Speed Finishing End Mill

A700IE⁺ - 11454TB

- ♦ Square - 4-Flute x 3D
- ♦ Uneven Flute / Variable Helix 45° / 48°



CED Tolerance(mm)	
4~6	0~-0.018
6~10	0~-0.02
10~16	0~-0.025
16~20	0~-0.03

(unit : mm)

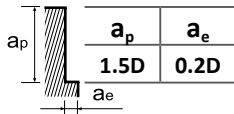
Code No.	CED	CEL	SD	OAL	Flute
A700IE ⁺ -11454TB	4	12	4	50	4
	5	15	6	50	
	6	18	6	50	
	8	24	8	65	
	10	30	10	75	
	12	36	12	80	
	16	48	16	100	
	20	60	20	125	

Code No.	CED	CEL	SD	OAL	Flute
A700IE ⁺ -11454TB	4	12	4	65	4
	5	15	6	65	
	6	18	6	65	
	8	24	8	75	
	10	30	10	80	
	12	36	12	93	

※ Customized Special sizes, Coating type and Inches are available to order.

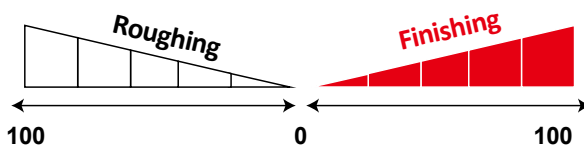
Recommended Cutting Condition

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC													
Cutting Condition	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min												
CED	a _p : 1.5D	a _e : 0.2D	a _p : 1.5D	a _e : 0.1D	a _p : 1.5D	a _e : 0.05D	a _p : 1.5D	a _e : 0.03D												
4	10,750	1,000	9,100	850	8,100	680	7,290	400												
5	8,599	1,350	7,300	1,150	6,500	910	5,850	540												
6	7,150	1,500	6,000	1,270	5,400	1,000	4,860	610												
8	5,350	1,600	4,500	1,360	4,000	1,080	3,600	650												
10	4,300	1,500	3,650	1,270	3,200	1,010	2,880	610												
12	3,600	1,450	3,060	1,200	2,700	980	2,430	580												
16	2,700	1,400	2,300	1,200	2,000	950	1,800	570												
20	2,150	1,350	1,820	1,150	1,600	910	1,440	540												
Depth of cut			<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>1.5D</td><td>0.1D</td></tr></table>		a _p	a _e	1.5D	0.1D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>1.5D</td><td>0.05D</td></tr></table>		a _p	a _e	1.5D	0.05D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>1.5D</td><td>0.03D</td></tr></table>		a _p	a _e	1.5D	0.03D
					a _p	a _e														
1.5D	0.1D																			
a _p	a _e																			
1.5D	0.05D																			
a _p	a _e																			
1.5D	0.03D																			

Work Material

P			H		
G1	G2	G3	G14	G15	G16
•	•	•	•	•	•

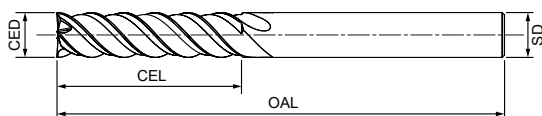
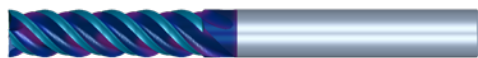


1. Please select high rigid tool holder and collet chuck during machining.
2. Please select the suitable coolant fluid.
3. For dry cutting, please use air blow for chip removal and cooling.
4. These cutting data are for reference only. Please adjust the cutting speed according to machine capability and working conditions.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

UFMG Carbide - High-Speed Finishing Long Flute End Mill

A700IE⁺ - 12464TB / 12465TB / 12466TB

- ♦ Square - 4~6-Flute x 4D / Long Flute
- ♦ Uneven Flute / Variable Helix 46° / 49°



CED Tolerance(mm)	
4~6	0~-0.018
6~10	0~-0.02
10~16	0~-0.025
16~20	0~-0.03

(unit : mm)

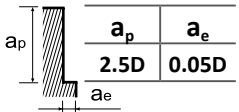
Code No.	CED	CEL	SD	OAL	Flute
A700IE ⁺ -12464TB	4	16	4	60	4
	5	20	6	60	
A700IE ⁺ -12465TB	6	24	6	65	5
	8	32	8	90	
A700IE ⁺ -12466TB	10	40	10	100	6
	12	48	12	110	
	16	64	16	140	
	20	80	20	160	

Code No.	CED	CEL	SD	OAL	Flute
A700IE ⁺ -12464TB	4	16	6	65	4
	5	20	6	65	
A700IE ⁺ -12465TB	6	24	6	65	5
	8	32	8	80	
A700IE ⁺ -12466TB	10	40	10	90	6
	12	48	12	100	

※ Customized Special sizes, Coating type and Inches are available to order.

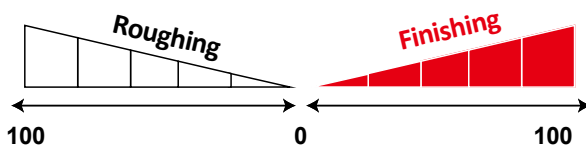
Recommended Cutting Condition

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC													
Cutting Condition	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min												
CED	a _p : 2.5D	a _e : 0.05D	a _p : 2.5D	a _e : 0.03D	a _p : 2.5D	a _e : 0.02D	a _p : 2.5D	a _e : 0.01D												
4	9,600	900	8,100	760	7,290	610	6,500	360												
5	7,700	1,215	6,570	1,000	5,850	810	5,200	480												
6	6,400	1,350	5,400	1,100	4,860	910	4,300	450												
8	4,800	1,440	4,050	1,200	3,600	970	3,240	580												
10	3,870	1,350	3,285	1,140	2,880	910	2,600	550												
12	3,240	1,305	2,750	1,080	2,430	880	2,190	520												
16	2,430	1,260	2,070	1,080	1,800	855	1,600	510												
20	1,900	1,215	1,630	1,030	1,440	820	1,300	480												
Depth of cut			<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>2.5D</td><td>0.03D</td></tr></table>		a _p	a _e	2.5D	0.03D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>2.5D</td><td>0.02D</td></tr></table>		a _p	a _e	2.5D	0.02D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>2.5D</td><td>0.01D</td></tr></table>		a _p	a _e	2.5D	0.01D
					a _p	a _e														
2.5D	0.03D																			
a _p	a _e																			
2.5D	0.02D																			
a _p	a _e																			
2.5D	0.01D																			

Work Material

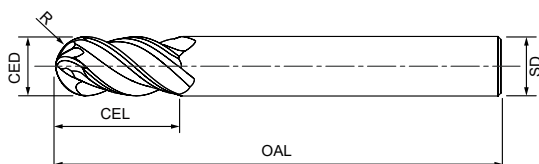
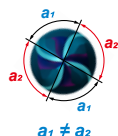
P			H		
G1	G2	G3	G14	G15	G16
•	•	•	•	•	•



1. Please select high rigid tool holder and collet chuck during machining.
2. Please select the suitable coolant fluid.
3. For dry cutting, please use air blow for chip removal and cooling.
4. These cutting data are for reference only. Please adjust the cutting speed according to machine capability and working conditions.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

A700IE⁺ - 81404TB

- ♦ Ball Nose - 4-Flute x 2D
- ♦ Uneven Flute / Variable Helix 40° / 43°



CED Tolerance(mm)	
R	±0.02

(unit : mm)

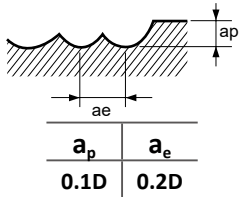
Code No.	Radius	CEL	SD	OAL	Flute
A700IE ⁺ -81404TB	3R	12	6	50	4
	4R	16	8	60	
	5R	20	10	75	
	6R	24	12	75	
	8R	32	16	100	
	10R	40	20	100	

Code No.	Radius	CEL	SD	OAL	Flute
A700IE ⁺ -81404TB	3R	12	6	57	4
	4R	16	8	63	
	5R	20	10	72	
	6R	24	12	83	

※ Customized Special sizes, Coating type and Inches are available to order.

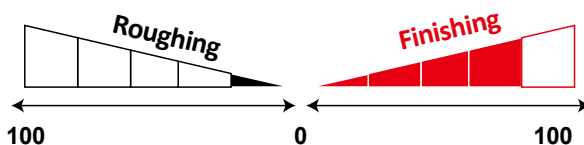
Recommended Cutting Condition

General Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC													
Cutting Condition	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min												
R	a_p : 0.1D	a_e : 0.2D	a_p : 0.08D	a_e : 0.2D	a_p : 0.05D	a_e : 0.1D	a_p : 0.03D	a_e : 0.1D												
3R	10,080	1,820	9,000	1,400	7,200	1,000	5,760	700												
4R	7,560	1,820	6,800	1,400	5,400	1,000	4,320	700												
5R	6,000	1,820	5,400	1,400	4,320	1,000	3,400	700												
6R	5,040	1,820	4,500	1,400	3,600	1,000	2,880	700												
8R	3,720	1,820	3,300	1,400	2,640	1,000	2,100	700												
10R	3,000	1,560	2,700	1,250	2,160	870	1,700	610												
Depth of cut			<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.08D</td><td>0.2D</td></tr></table>		a_p	a_e	0.08D	0.2D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.05D</td><td>0.1D</td></tr></table>		a_p	a_e	0.05D	0.1D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.03D</td><td>0.1D</td></tr></table>		a_p	a_e	0.03D	0.1D
	a_p	a_e																		
0.08D	0.2D																			
a_p	a_e																			
0.05D	0.1D																			
a_p	a_e																			
0.03D	0.1D																			
	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.1D</td><td>0.2D</td></tr></table>	a_p	a_e	0.1D	0.2D															
a_p	a_e																			
0.1D	0.2D																			

Work Material

P			H		
G1	G2	G3	G14	G15	G16
•	•	•	•	•	•

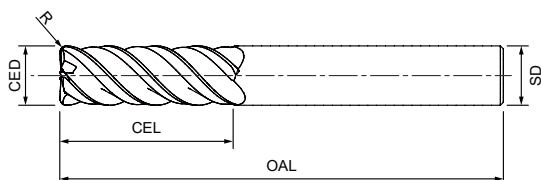


1. Please select high rigid tool holder and collet chuck during machining.
2. Please select the suitable coolant fluid.
3. For dry cutting, please use air blow for chip removal and cooling.
4. These cutting data are for reference only. Please adjust the cutting speed according to machine capability and working conditions.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

UFMG Carbide - High-Speed Finishing Corner Radius End Mill

A700IE⁺ - 21454TB

- ◆ Corner Radius - 4-Flute x 3D
- ◆ Uneven Flute / Variable Helix 45° / 48°



CED Tolerance(mm)	
1~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

(unit : mm)

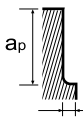
Code No.	CED	CEL	SD	OAL	Radius	Flute
A700IE ⁺ -21454TB	1	3	4	50	0.2R	4
	2	6	4	50	0.2R	
	3	9	4	50	0.2R	
	4	12	4	50	0.2R	
	5	15	6	50	0.2R	
	6	18	6	50	0.2R	
	8	24	8	65	0.2R	
					0.5R	
	10	30	10	75	0.2R	
					0.5R	
	12	36	12	80	0.2R	
					0.5R	

Code No.	CED	CEL	SD	OAL	Radius	Flute
A700IE ⁺ -21454TB	3	9	6	57	0.2R	4
	4	12	6	65	0.2R	
	5	15	6	65	0.2R	
	6	18	6	65	0.2R	
	8	24	8	75	0.2R	
					0.5R	
	10	30	10	80	0.2R	
					0.5R	
	12	36	12	93	0.2R	
					0.5R	

※ Customized Special sizes, Coating type and Inches are available to order.

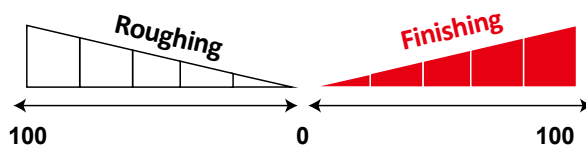
Recommended Cutting Condition

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC													
Cutting Condition	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min												
CED	a _p : 1.5D	a _e : 0.2D	a _p : 1.5D	a _e : 0.1D	a _p : 1.5D	a _e : 0.05D	a _p : 1.5D	a _e : 0.03D												
1	43,000	500	36,500	420	32,800	330	29,520	200												
2	21,500	600	18,200	510	16,300	400	14,670	240												
3	14,300	850	12,100	720	10,800	570	9,720	340												
4	10,750	1,000	9,100	850	8,100	680	7,290	400												
5	8,600	1,350	7,300	1,150	6,500	910	5,850	540												
6	7,150	1,500	6,000	1,270	5,400	1,000	4,860	610												
8	5,350	1,600	4,500	1,360	4,000	1,080	3,600	650												
10	4,300	1,500	3,650	1,270	3,200	1,010	2,880	610												
12	3,600	1,450	3,060	1,200	2,700	980	2,430	580												
Depth of cut			<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>1.5D</td><td>0.2D</td></tr></table>		a _p	a _e	1.5D	0.2D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>1.5D</td><td>0.2D</td></tr></table>		a _p	a _e	1.5D	0.2D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>1.5D</td><td>0.2D</td></tr></table>		a _p	a _e	1.5D	0.2D
					a _p	a _e														
1.5D	0.2D																			
a _p	a _e																			
1.5D	0.2D																			
a _p	a _e																			
1.5D	0.2D																			

Work Material

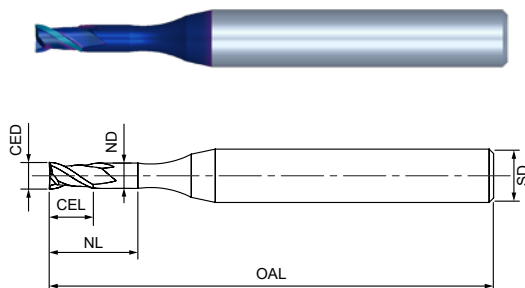
P			H		
G1	G2	G3	G14	G15	G16
•	•	•	•	•	•



1. Please select high rigid tool holder and collet chuck during machining.
2. Please select the suitable coolant fluid.
3. For dry cutting, please use air blow for chip removal and cooling.
4. These cutting data are for reference only. Please adjust the cutting speed according to machine capability and working conditions.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

RPA700⁺ - 14352TB

- ♦ Square - 2-Flute x 1.5D / Long Neck / Long Shank
- ♦ Helix 35°



CED Tolerance(mm)	
0.5~3	0~-0.014
3~6	0~-0.018

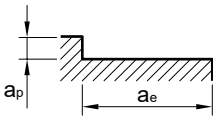
h5 (unit : mm)

Code No.	CED	CEL	SD	OAL	NL	ND	Flute
RPA700 ⁺ -14352TB	0.5	0.7	4	50	4	0.45	2
					6		
					8		
	1	1.5	4	50	6	0.95	
					8		
					10		
	1.5	2.3	4	50	6	1.45	
					8		
					10		
	2	3	4	50	6	1.95	
					8		
					10		
	3	5	6	50	8	2.85	
					10		
					12		
	4	6	6	60	12	3.85	
				60	16		
				70	20		
	5	8	6	60	16	4.8	
				70	20		
				80	30		
	6	9	6	70	20	5.8	
				80	30		
				90	40		

※ Customized Special sizes, Coating type and Inches are available to order.

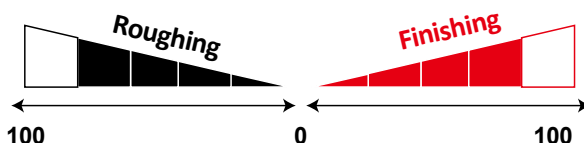
Recommended Cutting Condition

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC	
Cutting Condition	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min
CED	a_p : 0.05D	a_e : 0.6D	a_p : 0.04D	a_e : 0.5D	a_p : 0.03D	a_e : 0.4D	a_p : 0.02D	a_e : 0.2D
0.5	32,000	180	32,000	140	29,000	110	20,000	70
1	30,000	360	30,000	280	22,000	220	14,960	130
1.5	17,000	600	17,000	480	13,000	380	9,360	230
2	15,000	800	14,000	640	11,000	510	7,480	300
3	10,000	800	10,000	640	8,000	510	5,440	300
4	7,000	700	7,000	560	6,000	440	4,080	260
5	6,000	600	5,500	480	5,000	380	3,250	230
6	5,000	500	4,600	400	4,000	320	2,700	190
Depth of cut								
	a_p	a_e	a_p	a_e	a_p	a_e	a_p	a_e
	0.05D	0.6D	0.04D	0.5D	0.03D	0.4D	0.02D	0.2D

Work Material

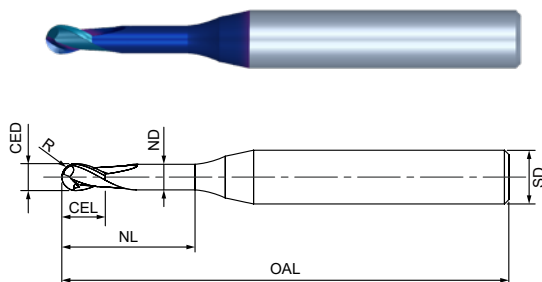
P			H		
G1	G2	G3	G14	G15	G16
•	•	•	•	•	•



1. Please select high rigid tool holder and collet chuck during machining.
2. Please select the suitable coolant fluid.
3. For dry cutting, please use air blow for chip removal and cooling.
4. These cutting data are for reference only. Please adjust the cutting speed according to machine capability and working conditions.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

RPA700⁺ - 84302TB

- ♦ Ball Nose - 2-Flute x 1.5D / Long Neck / Long Shank
- ♦ Helix 30°



CED Tolerance(mm)	
R	±0.02

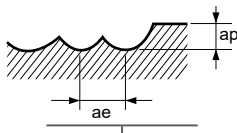
(unit : mm)

Code No.	Radius	CEL	SD	OAL	NL	ND	Flute
RPA700 ⁺ -84302TB	0.25R	0.7	4	50	4	0.45	2
					6		
					8		
	0.5R	1.5	4	50	6	0.95	
					8		
					10		
	0.75R	2.3	4	50	6	1.45	
					8		
					10		
	1R	3	4	50	6	1.95	
					8		
					10		
	1.5R	5	6	50	8	2.85	
					10		
					12		
	2R	6	6	60	12	3.85	
				60	16		
				70	20		
	2.5R	8	6	60	16	4.8	
				70	20		
				80	30		
	3R	9	6	70	20	5.8	
				80	30		
				90	40		

※ Customized Special sizes, Coating type and Inches are available to order.

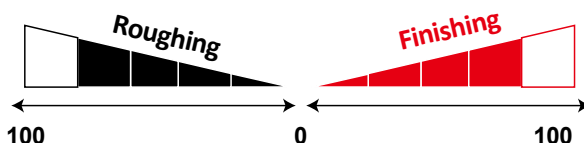
Recommended Cutting Condition

General Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC													
Cutting Condition	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min												
R	a_p : 0.05D	a_e : 0.1D	a_p : 0.03D	a_e : 0.05D	a_p : 0.02D	a_e : 0.03D	a_p : 0.02D	a_e : 0.03D												
0.25R	32,000	800	32,000	640	29,000	480	20,000	300												
0.5R	30,000	1,300	30,000	1,040	22,000	780	14,960	500												
0.75R	17,000	1,820	17,000	1,456	13,000	1,092	9,360	700												
1R	15,000	1,950	14,000	1,560	11,000	1,170	7,480	760												
1.5R	10,000	2,080	10,000	1,664	8,000	1,248	5,440	800												
2R	7,000	2,080	7,000	1,664	6,000	1,248	4,080	800												
2.5R	6,000	1,820	5,500	1,456	5,000	1,092	3,250	710												
3R	5,000	1,800	4,600	1,440	4,000	1,080	2,700	700												
Depth of cut			<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.03D</td><td>0.05D</td></tr></table>		a_p	a_e	0.03D	0.05D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.02D</td><td>0.03D</td></tr></table>		a_p	a_e	0.02D	0.03D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.02D</td><td>0.03D</td></tr></table>		a_p	a_e	0.02D	0.03D
	a_p	a_e																		
	0.03D	0.05D																		
a_p	a_e																			
0.02D	0.03D																			
a_p	a_e																			
0.02D	0.03D																			
<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.05D</td><td>0.1D</td></tr></table>	a_p	a_e	0.05D	0.1D																
a_p	a_e																			
0.05D	0.1D																			

Work Material

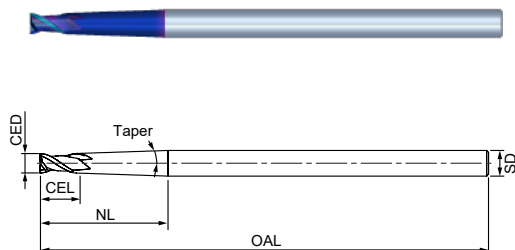
P			H		
G1	G2	G3	G14	G15	G16
•	•	•	•	•	•



1. Please select high rigid tool holder and collet chuck during machining.
2. Please select the suitable coolant fluid.
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RTA700⁺ - 14352TB

- ♦ Square - 2-Flute x 1.5D / Taper Neck / Long Shank
- ♦ Helix 35°



CED Tolerance(mm)	
0.5~3	0~-0.014
3~6	0~-0.018

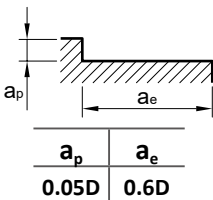
(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute	NL	Taper
RTA700 ⁺ -14352TB	0.5	0.7	4	50	2	8	1.5°
	1	1.5	4	50		10	1.5°
	1.5	2.3	4	50		12	1°
	2	3	4	50		14	1°
	3	5	6	70		20	1°
	4	6	6	70		30	1°
	5	8	8	80		40	1°
	6	9	8	90		40	1°

※ Customized Special sizes, Coating type and Inches are available to order.

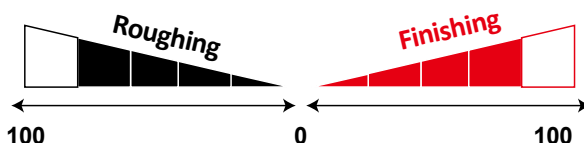
Recommended Cutting Condition

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC													
Cutting Condition	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min												
CED	a_p : 0.05D	a_e : 0.6D	a_p : 0.04D	a_e : 0.5D	a_p : 0.03D	a_e : 0.4D	a_p : 0.02D	a_e : 0.2D												
0.5	32,000	180	32,000	140	29,000	110	20,000	70												
1	30,000	360	30,000	280	22,000	220	14,960	130												
1.5	17,000	600	17,000	480	13,000	380	9,360	230												
2	15,000	800	14,000	640	11,000	510	7,480	300												
3	10,000	800	10,000	640	8,000	510	5,440	300												
4	7,000	700	7,000	560	6,000	440	4,080	260												
5	6,000	600	5,500	480	5,000	380	3,250	230												
6	5,000	500	4,600	400	4,000	320	2,700	190												
Depth of cut			<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.04D</td><td>0.5D</td></tr></table>		a_p	a_e	0.04D	0.5D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.03D</td><td>0.4D</td></tr></table>		a_p	a_e	0.03D	0.4D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.02D</td><td>0.2D</td></tr></table>		a_p	a_e	0.02D	0.2D
a_p	a_e																			
0.04D	0.5D																			
a_p	a_e																			
0.03D	0.4D																			
a_p	a_e																			
0.02D	0.2D																			

Work Material

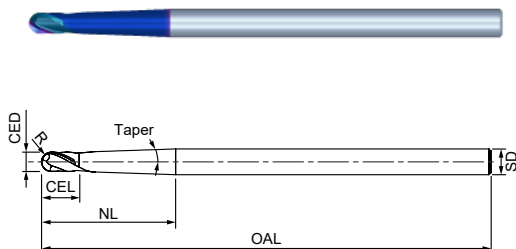
P			H		
G1	G2	G3	G14	G15	G16
•	•	•	•	•	•



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RTA700⁺ - 84302TB

- ♦ Ball Nose - 2-Flute x 1.5D / Taper Neck / Long Shank
- ♦ Helix 30°



CED Tolerance(mm)	
R	±0.02

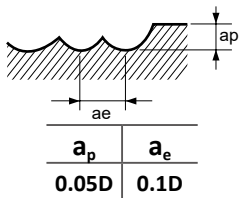
(unit : mm)

Code No.	Radius	CEL	SD	OAL	Flute	NL	Taper
RTA700 ⁺ -84302TB	0.25R	0.35	4	50	2	8	1°
							2°
	0.5R	0.75	4	50		10	0.5°
							1°
	0.75R	1.1	4	50		12	0.5°
							1°
	1R	1.5	4	50		14	1°
	1.5R	2.25	6	70		20	1°
	2R	3	6	70		30	1°
	2.5R	3.75	8	80		40	1°
	3R	4.5	8	90		40	1°

※ Customized Special sizes, Coating type and Inches are available to order.

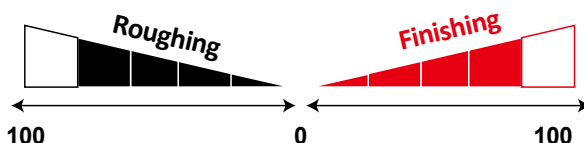
Recommended Cutting Condition

General Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC													
Cutting Condition	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min	Speed RPM/ min	Feed mm/ min												
R	a _p : 0.05D	a _e : 0.1D	a _p : 0.03D	a _e : 0.05D	a _p : 0.02D	a _e : 0.03D	a _p : 0.02D	a _e : 0.03D												
0.25R	32,000	800	32,000	640	29,000	480	20,000	300												
0.5R	30,000	1,300	30,000	1,040	22,000	780	14,960	500												
0.75R	17,000	1,820	17,000	1,456	13,000	1,092	9,360	700												
1R	15,000	1,950	14,000	1,560	11,000	1,170	7,480	760												
1.5R	10,000	2,080	10,000	1,664	8,000	1,248	5,440	800												
2R	7,000	2,080	7,000	1,664	6,000	1,248	4,080	800												
2.5R	6,000	1,820	5,500	1,456	5,000	1,092	3,250	710												
3R	5,000	1,800	4,600	1,440	4,000	1,080	2,700	700												
Depth of cut			<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.03D</td><td>0.05D</td></tr></table>		a _p	a _e	0.03D	0.05D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.02D</td><td>0.03D</td></tr></table>		a _p	a _e	0.02D	0.03D	<table><tr><td>a_p</td><td>a_e</td></tr><tr><td>0.02D</td><td>0.03D</td></tr></table>		a _p	a _e	0.02D	0.03D
	a _p	a _e																		
	0.03D	0.05D																		
a _p	a _e																			
0.02D	0.03D																			
a _p	a _e																			
0.02D	0.03D																			

Work Material

P			H		
G1	G2	G3	G14	G15	G16
•	•	•	•	•	•



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