ZUQ

METAL WORKING TOOLS CATALOG

End Mills / Drills / Special Tools



Guide Page

Carbide Material & Types of tool

Series ②

Code No. ③

Description ④

Icon ⑤

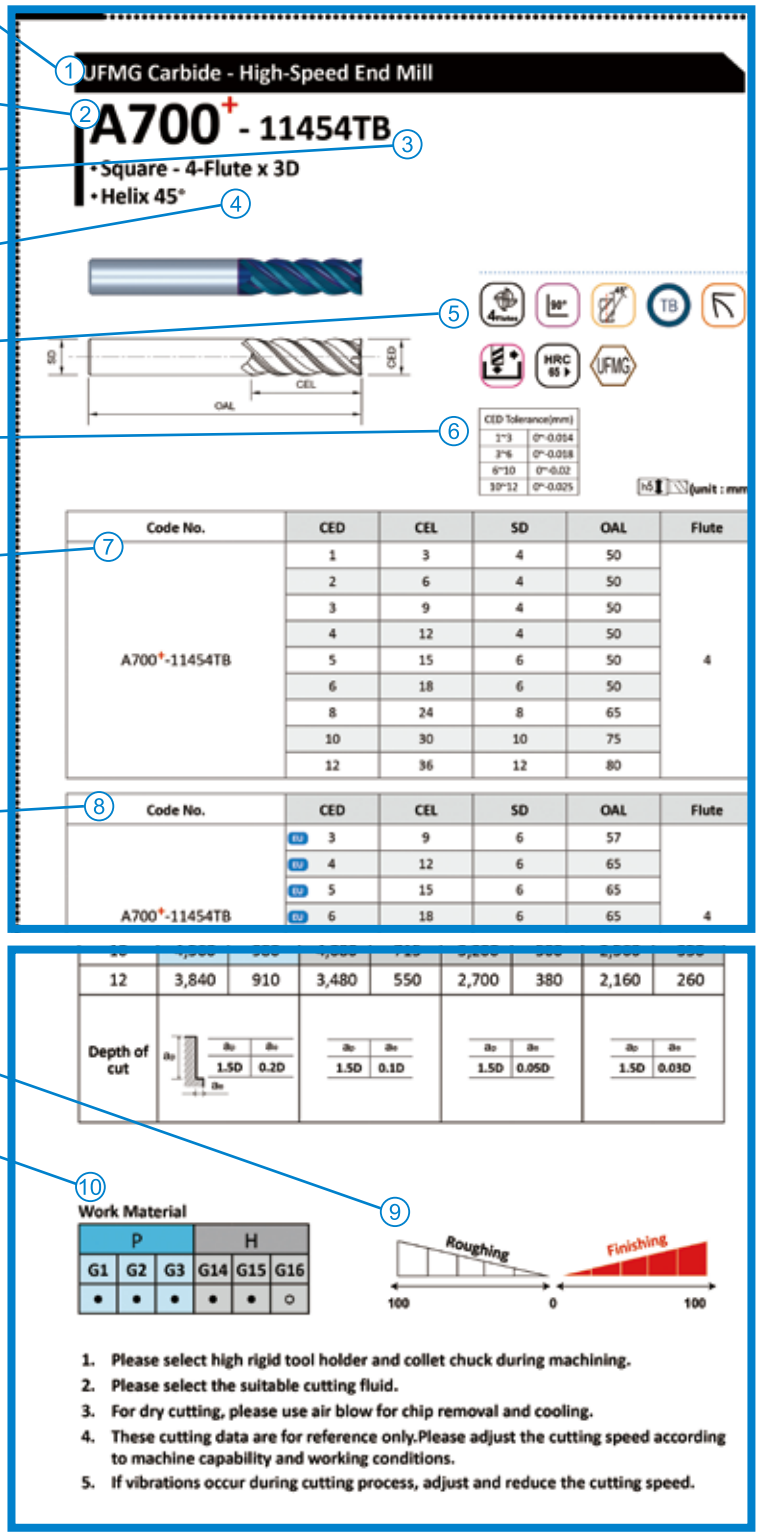
Diameter tolerance ⑥

Specification Table ⑦

DIN Standard ⑧

Cutting Suitability ⑨

Work Material ⑩



About Us

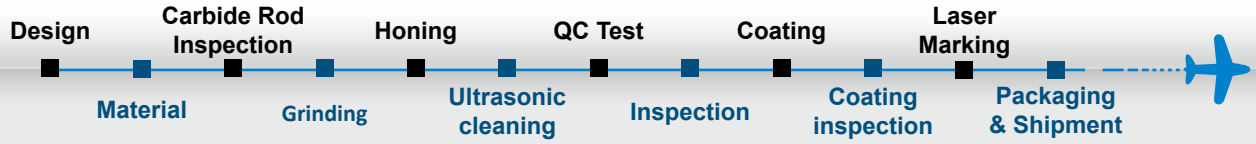
Founded in 1986, **CITY TOOLS** is a leading manufacturer of solid carbide cutting tools based in Taiwan, dedicated to delivering high-quality tooling solutions to customers worldwide.

ISO 9001 certified, our products are widely used across a broad range of industries, including Aerospace, Medical, Automotive, Semiconductor, Precision Engineering, Mold & Die, Woodworking, Plastics, and various Metal and Non-Metal machining applications.

To ensure superior product quality and manufacturing precision, CITY TOOLS utilizes advanced CNC grinding machines imported from Germany, along with state-of-the-art inspection equipment. Every tool undergoes rigorous quality control procedures and 100% inspection throughout the production process to guarantee consistent performance, reliability, and customer satisfaction.



Manufacturing



Walter Grinding Machine

Production ***Ensure accuracy quality tools and Increase productivity***





Quality Management

Full inspection on each tool with precise accuracy

100% comprehensive inspection with precise accuracy



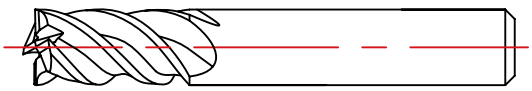
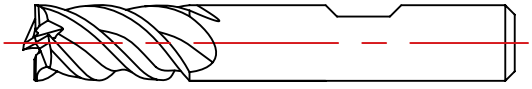
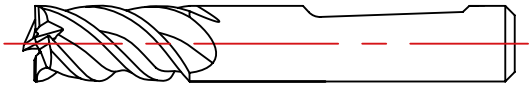




Material CHART

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		

Optional Weldon Shank HB, HE Service

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

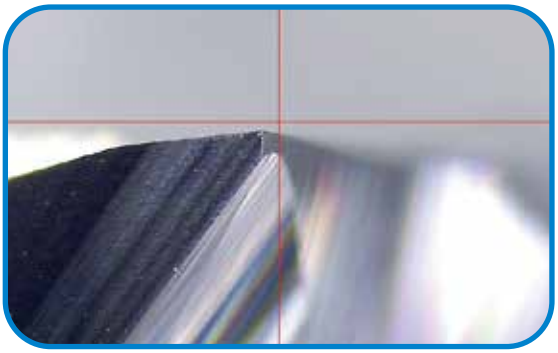
Type of cutting edge

	**Gashland Edge:** The tools with Gashland Edge reduced corner sharpness, which increases edge strength, minimizes chipping, and delivers longer-lasting performance.
	**Sharp Edge:** The Sharp-Edge tools are ideal for cleaning pin corners on the workpiece—areas that tools with a Gashland Edge may not fully reach.

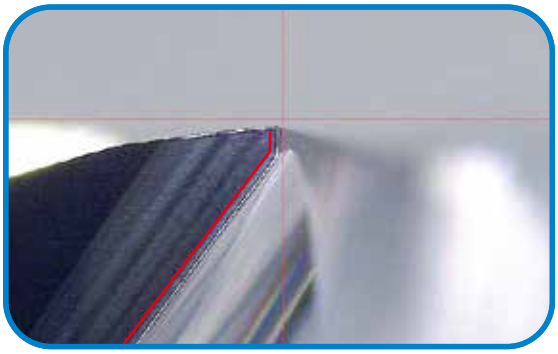
Honing Process

Tools with honing generate a micro-radius on the cutting edge, which helps reduce chipping, improve coating adhesion, and extends tool life.

 **without honing**



 **with honing**



Icon Guide

Tools Design & Flute Types

Best Seller IE Series — **Uneven Flute / Variable Helix Angle**

Square



Square - Uneven Flute



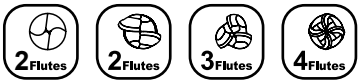
Corner Radius



Corner Radius - Uneven Flute



Ball Nose

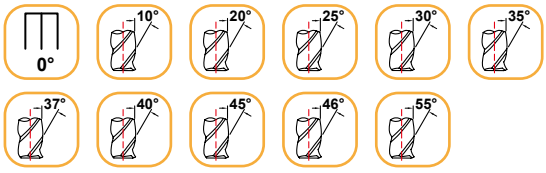


Ball Nose - Uneven Flute

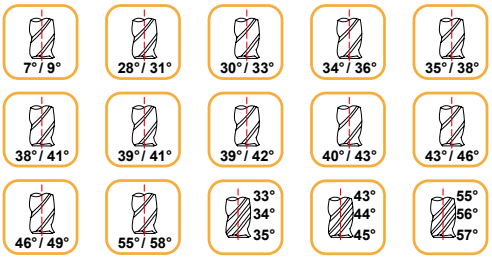


Type of Helix Angle

Helix Angle



Variable Helix Angle



Rake Angle & Relief



Slant Relief

Eccentric Relief

Big Eccentric Relief

Corner Processing



Chamfering

Corner rounding

Icon Guide

Operation Direction & Material Hardness

Processing Direction



Work Piece Material Hardness



Tool Types and Tip Angle

Type of End Mill



Square



Ball Nose



Corner Chamfer



Corner Radius



Spherical Ball End Mill

Type of Roughing End Mill



Fine tooth Corner Chamfer



Fine tooth sharp edge



Roughing

Tip Angle



Honing & Edge Type

Honing Process



with honing



without honing

Type of Edge Corner



with gashland protection



sharp corner

Icon Guide

Type of Coating



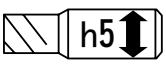
Code	Name	Oxidation Temperature	Surface Hardness(Hv)	Coefficient of Friction	Coating Thickness(μm)
TA	AlTiCrN	900℃	3200	0.5	1~4
TN	TiAlN	800℃	2600	0.4	1~4
TB	AlTiSiN-B	1100℃	3500	0.45	1~4
TO	AlTiSiN	1000℃	3200	0.45	1~4
TG	TiN	1000℃	2600	0.4	1~6
TZ	Diamond	600℃	7000	0.2	5~10
Z3	AlTiSiZrN	500℃	3000	0.4	0.4
TD	DLC	400℃	2200	0.15	1~4
TS	TA-C	1100℃	5500	0.1	0.1~1

※ **Note: The coating color may vary slightly due to production process.**

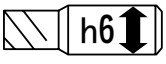
Tool Material Properties

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

Shank Cylindricity Tolerance



The h5 tolerance applies to all Solid Carbide series.
The high-concentricity shank helps achieve precision milling and increase tool life.



The h6 tolerance applies to the HSS series.
The high-concentricity shank helps achieve stable milling performance.

Coding Principle



Series

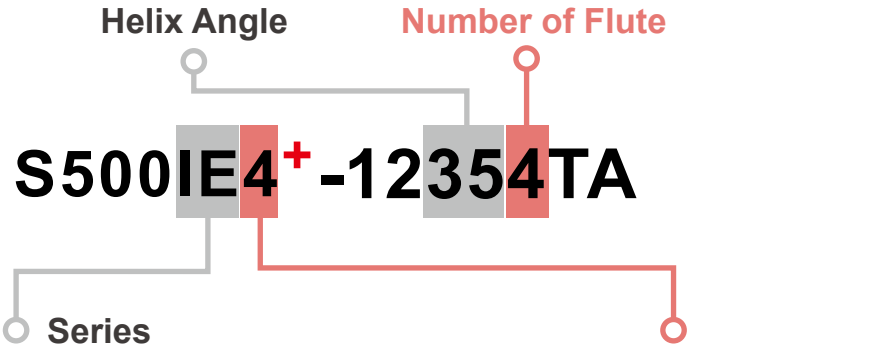
- **RP** = Long Neck
- **RT** = Taper Neck
- **AC** = Aluminum Series
- **CS** = Stainless Steel Series
- **TI** = Titanium Series
- **RF** = Roughing Series
- **DR** = Drill Series
- **CF** = Chamfering Series
- **IR** = Corner Radius Series
- **VF** = Grooving Series
- **HS** = High Speed Steel Series

Type

- **1** = Square
- **2** = Corner Radius
- **4** = Drill
- **5** = Reamer
- **8** = Ball nose

Flute type

- **1** = Standard Flute
- **2** = Long Flute
- **3** = Long shank
- **4** = Stub Flute



Series

- **I** = Uneven Flute
- **E** = Variable Helix Angle
- **J** = Optimized Ball End
- **M** = Miniature
- **R** = Heavy Duty Operation
- **N** = Sharp Edge
- **P** = Polished Flute

A700+ High-Speed & High-Hardness Series

Appearance	Code No	Description	Size	Pg
	A700I4+-11464TB	Square - 4-Flute x 3D / Uneven Flute / Helix 46°	Ø1~Ø20	28
	A700I4+-11554TB	Square - 4-Flute x 2.5D / Uneven Flute / Helix 55°	Ø1~Ø20	30
	A700IE4+-11464TB	Square - 4-Flute x 3D / Uneven Flute / Variable Helix 46°/49°	Ø1~Ø20	32
	A700IE3+-11466TB	Square - 6-Flute x 3D / Uneven Flute / Variable Helix 46°/49°	Ø6~Ø20	34
	A700IE3+-12466TB	Square - 6-Flute x 4D / Long Flute / Uneven Flute / Variable Helix 46°/49°	Ø6~Ø20	36
	A700IE3+-12466TB	Square - 6-Flute x 5D / Long Flute / Uneven Flute / Variable Helix 46°/49°	Ø6~Ø20	38
	A700I4+-21464TB	Corner Radius - 4-Flute x 3D / Uneven Flute / Helix 46°	Ø4~Ø12	40
	A700IE4+-21464TB	Corner Radius - 4-Flute x 3D / Uneven Flute / Variable Helix 46°/49°	Ø4~Ø12	42
	A700J+-81402TB	Ball Nose - 2-Flute x 2D / Helix 40°	1R~6R	44
	A700JI2+-81454TB	Ball Nose - 4-Flute x 2D / Uneven Flute / Helix 45°	1R~6R	46
	A700J+-83402TB	Ball Nose - 2-Flute x 2D / Long Shank End / Helix 40°	2R~10R	48
	A700JI2+-83454TB	Ball Nose - 4-Flute x 2D / Long Shank / Uneven Flute / Helix 45°	2R~10R	50

X600+ High-Performance Series

Appearance	Code No	Description	Size	Pg
	X600I4+-11374TO	Square - 4-Flute x 2.5D / Uneven Flute / Helix 37°	Ø1~Ø12	54
	X600I4+-11374TO	Square - 4-Flute x 3D / Uneven Flute / Helix 37°	Ø1~Ø20	56
	X600I4+-12374TO	Square - 4-Flute x 4D / Long Flute / Uneven Flute / Helix 37°	Ø6~Ø25	58
	X600IE4+-11394TO	Square - 4-Flute x 2.5D / Uneven Flute / Variable Helix 39°/42°	Ø1~Ø12	60
	X600IE4+-11394TO	Square - 4-Flute x 3D / Uneven Flute / Variable Helix 39°/42°	Ø1~Ø20	62
	X600IE3+-12396TO	Square - 6-Flute x 4D / Long Flute / Uneven Flute / Variable Helix 39°/42°	Ø6~Ø25	64
	X600IE3+-12396TO	Square - 6-Flute x 5D / Long Flute / Uneven Flute / Variable Helix 39°/42°	Ø6~Ø25	66
	X600M+-14352TO	Square - 2-Flute x 1D / Miniature / Helix 35°	Ø0.2~Ø0.9	68
	X600JM+-84352TO	Ball Nose - 2-Flute x 1D / Miniature / Helix 35°	0.1R~0.45R	70
	X600IE4+-13394TO	Square - 4-Flute x 2.5D / Long Shank / Uneven Flute / Variable Helix 39°/42°	Ø4~Ø12	72
	X600J+-81372TO	Ball Nose - 2-Flute x 2D / Helix 37°	0.5R~8R	74
	X600JI2+-81404TO	Ball Nose - 4-Flute x 2D / Uneven Flute / Helix 40°	0.5R~10R	76
	X600J+-83372TO	Ball Nose - 2-Flute x 2D / Long Shank / Helix 37°	0.5R~10R	78
	X600JI2+-83404TO	Ball Nose - 4-Flute x 2D / Long Shank / Uneven Flute / Helix 40°	0.5R~6R	80
	X600IE4+-21394TO	Corner Radius - 4-Flute x 3D / Uneven Flute / Variable Helix 39°/42°	Ø1~Ø12	82
	X600IE4+-23394TO	Corner Radius - 4-Flute x 3D / Long Shank / Uneven Flute / Helix 39°/42°	Ø1~Ø12	84

S500+ General-Purpose Series

Appearance	Code No	Description	Size	Pg
	S500I2+-11352TN	Square - 2-Flute x 2.5D / Uneven Flute / Helix 35°	Ø1~Ø12	88
	S500I4+-11354TN	Square - 4-Flute x 2.5D / Uneven Flute / Helix 35°	Ø1~Ø12	90
	S500I4+-11354TN	Square - 4-Flute x 3D / Uneven Flute / Helix 35°	Ø1~Ø20	92
	S500I4+-12354TN	Square - 4-Flute x 4D / Long Flute / Uneven Flute / Helix 35°	Ø6~Ø25	94
	S500I4+-11454TN	Square - 4-Flute x 3D / Uneven Flute / Helix 45°	Ø1~Ø20	96
	S500E2+-11282TN	Square - 2-Flute x 2.5D / Variable Helix 28°/31°	Ø1~Ø12	98
	S500E2+-11284TN	Square - 4-Flute x 2.5D / Variable Helix 28°/31°	Ø1~Ø12	100
	S500IE4+-11354TA	Square - 4-Flute x 2.5D / Uneven Flute / Variable Helix 35°/38°	Ø1~Ø12	102
	S500IE4+-11354TA	Square - 4-Flute x 3D / Uneven Flute / Variable Helix 35°/38°	Ø1~Ø20	104
	S500IE4+-13354TA	Square - 4-Flute x 3D / Long Shank / Uneven Flute / Variable Helix 35°/38°	Ø1~Ø20	106
	S500IE4+-12354TA	Square - 4-Flute x 4D / Long Flute / Uneven Flute / Variable Helix 35°/38°	Ø6~Ø25	108
	S500IE2+-11434TA	Square - 4-Flute x 2.5D / Uneven Flute / Variable Helix 43°/46°	Ø1~Ø12	110
	S500IE2+-11434TA	Square - 4-Flute x 3D / Uneven Flute / Variable Helix 43°/46°	Ø1~Ø20	112
	S500IE2+-12434TA	Square - 4-Flute x 4D / Long Flute / Uneven Flute / Variable Helix 43°/46°	Ø6~Ø25	114
	S500IE2+-12434TA	Square - 4-Flute x 5D / Long Flute / Uneven Flute / Variable Helix 43°/46°	Ø5~Ø25	116
	S500IE2+-11384TA	Square - 4-Flute x 2.5D / Uneven Flute / Variable Helix 38°/41°	Ø1~Ø12	118
	S500IE2+-11384TA	Square - 4-Flute x 3D / Uneven Flute / Variable Helix 38°/41°	Ø1~Ø20	120
	S500IE2+-12384TA	Square - 4-Flute x 4D / Long Flute / Uneven Flute / Variable Helix 38°/41°	Ø6~Ø25	122
	S500IE2+-12384TA	Square - 4-Flute x 5D / Long Flute / Uneven Flute / Variable Helix 38°/41°	Ø6~Ø25	124
	S500J+-81302TN	Ball Nose - 2-Flute x 2D / Helix 30°	0.5R~8R	126

S500+ General-Purpose Series

Appearance	Code No	Description	Size	Pg
	S500JI2+-81354TN	Ball Nose - 4-Flute x 2D / Uneven Flute / Helix 35°	0.5R~10R	128
	S500J+-83302TN	Ball Nose - 2-Flute x 2D / Long Reduced Neck / Helix 30°	0.5R~6R	130
	S500JI2+-83354TN	Ball Nose - 4-Flute x 2D / Long Reduced Neck / Uneven Flute / Helix 35°	3R~10R	132
	S500I4+-21354TN	Corner Radius - 4-Flute x 3D / Uneven Flute / Helix 35°	Ø1~Ø12	134
	S500IE2+-21434TA	Corner Radius - 4-Flute x 3D / Uneven Flute / Variable Helix 43°/46°	Ø1~Ø12	136
	S500IE4+-23354TA	Corner Radius - 4-Flute x 3D / Long Shank / Uneven Flute / Variable Helix 35°/38°	Ø6~Ø20	138
	S500I2+-11402TN	Square - 2-Flute x 3D / Uneven Flute / Helix 40°	Ø3~Ø12	140
	S500I4+-11404TN	Square - 4-Flute x 3D / Uneven Flute / Helix 40°	Ø3~Ø12	142

Special Purpose Milling Cutter

Appearance	Code No	Description	Size	Pg
Rib Processing End Mill				
	RPX600E3+-84333TO	Ball Nose - 3-Flute x 1D - Long Neck / Variable Helix 33°/34°/35°	0.5R~3R	146
	RPX600IE2+-84344TO	Ball Nose - 4-Flute x 1D - Long Neck / Uneven Flute / Variable Helix 34°/36°	0.5R~3R	150
	RPX600IE3+-24333TO	Corner Radius - 3-Flute x 1.2D - Long Neck / Uneven Flute / Variable Helix 33°/34°/35°	Ø2~Ø6	154
	RPX600IE4+-24344TO	Corner Radius - 4-Flute x 1.5D - Long Neck / Uneven Flute / Variable Helix 34°/36°	Ø2~Ø6	158
	RPX600IE3+-14333TO	Square - 3-Flute x 1.2D - Long Neck / Uneven Flute / Variable Helix 33°/34°/35°	Ø2~Ø6	162
	RPX600IE4+-14344TO	Square - 4-Flute x 1.5D - Long Neck / Uneven Flute / Variable Helix 34°/36°	Ø2~Ø6	166
	RTX600E3+-84333TO	Ball Nose - 3-Flute x 1.5D - Taper Neck / Variable Helix 33°/34°/35°	0.5R~3R	170
	RTX600IE2+-84344TO	Ball Nose - 4-Flute x 1.5D - Taper Neck / Uneven Flute / Variable Helix 34°/36°	0.5R~3R	174
	RTX600IE3+-24333TO	Corner Radius - 3-Flute x 1.2D - Taper Neck / Uneven Flute / Variable Helix 33°/34°/35°	Ø2~Ø6	178
	RTX600IE4+-24344TO	Corner Radius - 4-Flute x 1.5D - Taper Neck / Uneven Flute / Variable Helix 34°/36°	Ø2~Ø6	182
	RTX600IE3+-14333TO	Square - 3-Flute x 1.2D - Taper Neck / Uneven Flute / Variable Helix 33°/34°/35°	Ø2~Ø6	186
	RTX600IE4+-14344TO	Square - 4-Flute x 1.5D - Taper Neck / Uneven Flute / Variable Helix 34°/36°	Ø2~Ø6	190

Special Purpose Milling Cutter

Appearance	Code No	Description	Size	Pg
Spherical Ball End Mill				
	SS100+-84302TN	Spherical Ball End Mill - 2-Flute / Long Shank with Neck / 30° Helix	1.5R~8R	194
	SS100+-84304TN	Spherical Ball End Mill - 4-Flute / Long Shank with Neck / 30° Helix	2.5R~8R	196
Roughing End Mill				
	RF100IE2+-11394TN	Square - 4-Flute / Roughing x 3D / Uneven Flute / Variable Helix 39°/41	Ø6~Ø20	198
	RF100+-11304TN	Square - 4-Flute / Roughing x 3D / Helix 30°	Ø5~Ø20	200
	RF100IE2+-11354TO	Square - 4-Flute / Roughing x 3D / Uneven Flute / Variable Helix 35°/38	Ø1~Ø12	202
	RF100IE4+-12354TO	Square - 4-Flute / Roughing x 4D / Long Flute / Uneven Flute / Variable Helix 35°/38	Ø6~Ø25	204
	RF100IE4+-12354TO	Square - 4-Flute / Roughing x 5D / Long Flute / Uneven Flute / Variable Helix 35°/38	Ø6~Ø25	206
Chipbreaker End Mill				
	RF300IE4+-11384TN	Square - 4-Flute / Chipbreaker x 3D / Uneven Flute / Variable Helix 38°/41	Ø3~Ø12	208
	RF300IE4+-12384TN	Square - 4-Flute / Chipbreaker x 4D / Long Flute / Uneven Flute / Variable Helix 38°/41	Ø6~Ø25	210
	RF300IE4+-12384TN	Square - 4-Flute / Chipbreaker x 5D / Long Flute / Uneven Flute / Variable Helix 38°/41	Ø6~Ø25	212
	RF300IE5+-12385TN	Square - 5-Flute / Chipbreaker x 3D / Uneven Flute / Variable Helix 38°/41	Ø6~Ø20	214

Special Purpose Milling Cutter

Appearance	Code No	Description	Size	Pg
Aluminium Series				
	AC100IE3R+-11433TS	Square Aluminium - 3-Flute x 3D / Superb Chip Ejection / Uneven Flute / Variable Helix 43°/44°/45°	Ø3~Ø12	216
	AC100IE3+-21433TS	Corner Radius Aluminium - 3-Flute x 3D / Uneven Flute / Variable Helix 43°/44°/45°	Ø3~Ø12	218
	AC100J+-81302TD	Ball Nose Aluminium - 2-Flute x 2D / Helix 30°	1.5R~6R	220
	AC100IE3+-11433TD	Square Aluminium - 3-Flute x 3D / Uneven Flute / Variable Helix 43°/44°/45°	Ø3~Ø12	222
	AC100IE4+-12404TD	Square Aluminium - 4-Flute x 4D / Long Flute / Uneven Flute / Variable Helix 40°/43°	Ø6~Ø25	224
	AC100NP+-12452	Square Aluminium - 2-Flute x 6D Flute / Sharp Edge / Polished Flute / Helix 45°	Ø3~Ø20	226
	AC100NP+-11251	Square Aluminium - Single Flute x 2D / Sharp Edge / Polished Flute / Helix 25°	Ø3~Ø12	228
Copper Series				
	CP100+-11252TG	Square Copper - 2-Flute x 2.5D / Helix 25°	Ø1~Ø10	230
	CP100+-81252TG	Ball Nose Copper - 2-Flute x 2.5D / Helix 25°	0.5R~10R	232
Stainless Steel Series				
	CS100IE4+-11404Z3	Square Stainless Steel - 4-Flute x 2.5D / Uneven Flute / Variable Helix 40°/43°	Ø4~Ø16	234
	CS100IE4+-21404Z3	Corner Radius Stainless Steel - 4-Flute x 2.5D / Uneven Flute / Variable Helix 40°/43°	Ø4~Ø16	236
	CS100J+-81352Z3	Ball Nose Stainless Steel - 2-Flute x 2D / Helix 35°	2R~8R	238

Special Purpose Milling Cutter

Appearance	Code No	Description	Size	Pg
Titanium Series				
	TI100IE4+-11404Z3	Square Titanium - 4-Flute x 2.5D / Uneven Flute / Variable Helix 40°/43°	Ø4~Ø16	240
	TI100IE4+-21404Z3	Corner Radius Titanium - 4-Flute x 2.5D / Uneven Flute / Variable Helix 40°/43°	Ø4~Ø16	242
	TI100J+-81402Z3	Ball Nose Titanium - 2-Flute x 2D / Helix 40°	2R~8R	244
	TI200I2+-81404Z3	Tapered Ball Nose Titanium - 4-Flute / Uneven Flute / Helix 40°	0.5R~3R	246
	TI200IE4+-21404Z3	Tapered Corner Radius Titanium - 4-Flute / Uneven Flute / Variable Helix 40°/43°	Ø1~Ø6	248
Flat Drill				
	DR360+-41202TN	Flat Drill - 2-Flute x 3D / Helix 20°	Ø6~Ø16	250
	DR365+-41202TN	Flat Drill - 2-Flute x 3D / Coolant-Holes / Helix 20°	Ø6~Ø16	252
Carbide Drill				
	DR300+-41302TN-3D	Carbide Drill - 2-Flute x 3D / Helix 30° / Drill Point 140°	Ø3~Ø13	254
	DR300+-42302TN-5D	Carbide Drill - 2-Flute x 5D / Helix 30° / Drill Point 140°	Ø3~Ø13	258
	DR300+-42302TN-8D	Carbide Drill - 2-Flute x 8D / Helix 30° / Drill Point 140°	Ø3~Ø13	262
	DR350+-41302TN-3D	Carbide Drill - 2-Flute x 3D / Coolant-Holes / Helix 30° / Drill Point 140°	Ø3~Ø13	266
	DR350+-42302TN-5D	Carbide Drill - 2-Flute x 5D / Coolant-Holes / Helix 30° / Drill Point 140°	Ø3~Ø13	270

Special Purpose Milling Cutter

Appearance	Code No	Description	Size	Pg
Carbide Drill				
	DR350+-42302TN-8D	Carbide Drill - 2-Flute x 8D / Coolant-Holes / Helix 30° / Drill Point 140°	Ø3~Ø13	274
	DR100+-40902TN	Carbide Spot Drill - 2-Flute / 90° / Helix 15°	Ø4~Ø12	278
	DR100+-90120TN	Carbide Spot Drill - 2-Flute / 120° /90° / Helix 20°	Ø3~Ø12	280
	DR500+-40902TN	Carbide Drill Point End Mill - 2-Flute / 90° / Helix 30°	Ø4~Ø12	282
	DR200+-40602TN	Carbide Center Drill - 2-Flute / 60° / Helix 25°	Ø1~Ø5	284
Hard Cut Drill				
	HCD+-Drill	Broken Tap Removal Drill / Tap Extractor / Trigon Flute Form - V 60°	Ø2~Ø6	286
Corner Radius End Mill				
	IR100+-81003TN	Corner Radius End Mill - 3-Flute / 3-Flute Inner Corner Radius	0.5R~5R	288
Chamfering End Mill				
	VF100+-11903TN	V-Groove Chamfer Mill - 3-Flute / Short Neck / 45° Chamfering / V 90°	Ø1.5~Ø6	290
	VF100+-11903TN	V-Groove Chamfer Mill - 3-Flute / Long Neck / 45° Chamfering / V 90°	Ø3~Ø6	292
	VF100+-11904TN	V-Groove Chamfer Mill - 4-Flute / Long Neck / 45° Chamfering / V 90°	Ø8	292
	VF100+-11905TN	V-Groove Chamfer Mill - 5-Flute / Long Neck / 45° Chamfering / V 90°	Ø10	292

Special Purpose Milling Cutter

Appearance	Code No	Description	Size	Pg
Chamfering End Mill				
	VF100+-11906TN	V-Groove Chamfer Mill - 6-Flute / Long Neck / 45° Chamfering / V 90°	Ø12	292
	CF400+-40903TN	Spiral Chamfer Mill - 3-Flute / 45° Chamfering / V 90°	Ø4~Ø12	294
	CF300+-40903TN	Chamfer Mill - 3-Flute / 45° Chamfering / V 90°	Ø4~Ø10	296
	CF300+-40906TN	Chamfer Mill - 6-Flute / 45° Chamfering / V 90°	Ø4~Ø12	298
	CF300+-41202TN	Chamfer Mill - 2-Flute / 30° Chamfering / V 120°	Ø4~Ø10	300
	CF300+-40602TN	Chamfer Mill - 2-Flute / 60° Chamfering / V 60°	Ø4~Ø10	302
	CF300+-40902TN	Chamfer Mill - 2-Flute / 45° Chamfering / V 90°	Ø4~Ø10	304
Carbide Spiral Cutter				
	CC100+	Carbide Spiral Cutter for Chamfering Machine / 36-Flute / Helix 20°	Ø25	306
Engraving End Mill				
	CF500+-40601TN	Engraving End Mill - Single Flute Double Ended / V 60°	Ø6	308
	CF500+-40601	Engraving End Mill - Single Flute Double Ended / V 60°	Ø6	308
Special Custom Tools				
	DR600+-41202	Custom Stepped Drill - 2-Flute / 60°/120° / Helix 10° / V 120°	Ø1.6	309

Special Purpose Milling Cutter

Appearance	Code No	Description	Size	Pg
Special Custom Tools				
	DR700+-40901	Custom Spot Drill - Single Flute / V 90°	Ø3	310
	CF500+-40602TN	Custom Spiral Chamfer Mill - 2-Flute / Double Ended / V 60° / Helix 25°	Ø6	311
	TA400+-11254TN	Custom Tapered End Mill - 4-Flute / Double Ended / V 60° / Helix 25°	Ø1~Ø4	312
CNC Lathe Machine End Mill				
	SL100IE2+-14304TN	Square Lathe - 4-Flute x 1.2D Stub Flute / Uneven Flute / Variable Helix 30°/33°	Ø1.5~Ø6	314
	SL100IE2+-84304TN	Ball Nose Lathe - 4-Flute x 1.2D Stub Flute / Uneven Flute / Variable Helix 30°/33°	Ø3~Ø6	316
	SL100IE2+-24304TN	Corner Radius Lathe - 4-Flute x 1.2D Stub Flute / Uneven Flute / Variable Helix 30°/33°	Ø8	318
	SLRF100IE2+-14304TN	Square Fine Pitch Lathe x 1.2D Stub Flute / Uneven Flute / Variable Helix 30°/33°	Ø10	320
Taper End Mill				
	TA100IE4+-11304TN	Taper Square - 4-Flute / Uneven Flute / Variable Helix 30°/33°	Ø1~Ø6	322
	TA200I2+-81304TN	Taper Ball Nose - 4-Flute / Uneven Flute / Helix 30°	1R~3R	324
	TA300IE4+-21304TN	Taper Corner Radius - 4-Flute / Uneven Flute / Variable Helix 30°/33°	Ø1~Ø6	326
HPC End Mill for Mold Machining (Torus End Mill)				
	RS100I4+-23004TN	Torus End / Radius End Mill for Hard Material / 4-Flute / Uneven-Straight Flute	Ø2	328

Special Purpose Milling Cutter

Appearance	Code No	Description	Size	Pg
HPC End Mill for Mold Machining (Torus End Mill)				
	RS100I5+-23005TN	Torus End / Radius End Mill for Hard Material / 5-Flute / Uneven-Straight Flute	Ø3~Ø2	328
	RS100I4+-24004TN	Torus End - Corner Radius End Mill for Hard Material / 4-Flute / Uneven-Straight Flute	Ø2	330
	RS100I5+-24005TN	Torus End - Corner Radius End Mill for Hard Material / 5-Flute / Uneven-Straight Flute	Ø3~Ø2	330
Oval Ball Nose End Mill				
	OV100I2+-84354TN	Oval Ball Nose - 4-Flute x 2D Stub Flute / Uneven Flute / Helix 35°	Ø6~Ø20	332
	OV200I2+-84354TN	Oval Ball Nose - 4-Flute x 2D / Uneven Flute / Helix 35°	Ø12~Ø16	334
Carbide Keyway End Mill				
	KE100NIE4+-11304TN	Carbide Keyway End Mill - 4-Flute x 2.5D / Sharp Edge / Uneven Flute / Variable Helix 30°/33°	Ø3~Ø12	336
End Mill for Dental				
	DT100+-81302TN	Dental Ball Nose - 2-Flute / 4mm Shank / Helix 30°	0.3R~1R	338
	DT100+-11302TN	Dental Square - 2-Flute / 4mm Shank / Helix 30°	Ø0.5~Ø2	340
	DT100+-21304TN	Dental Corner Radius - 4-Flute / 4mm Shank / Helix 30°	Ø1~Ø2	342
	DT100+-41302TN	Dental Drill Bits - 2-Flute / 3mm Shank / Helix 30° / Drill Point 140°	Ø0.5~Ø3	344
Carbide Reamers				
	CR100+-51004	Carbide Reamer - 4-Flute / Straight Cut	Ø3~Ø4	346

Special Purpose Milling Cutter

Appearance	Code No	Description	Size	Pg
Carbide Reamers				
	CR100+-51006	Carbide Reamer - 6-Flute / Straight Cut	Ø4.5~Ø12	346
	CR200IE4+-51074	Carbide Reamer - 4-Flute / Spiral Flute / Uneven Flute / Variable Helix 7°/9°	Ø3~Ø4	348
	CR200IE3+-51076	Carbide Reamer - 6-Flute / Spiral Flute / Uneven Flute / Variable Helix 7°/9°	Ø4.5~Ø12	348
	CR300IE3+-51553	Carbide Reamer - 3-Flute / Spiral Flute / Uneven Flute / Variable Helix 55°/56°/57°	Ø3~Ø5	350
	CR300IE4+-51554	Carbide Reamer - 4-Flute / Spiral Flute / Uneven Flute / Variable Helix 55°/58°	Ø3~Ø4	352
	CR300IE3+-51556	Carbide Reamer - 6-Flute / Spiral Flute / Uneven Flute / Variable Helix 55°/58°	Ø4.5~Ø12	352
Carbide T-Slot Cutter				
	CK100I	Carbide T-Slot Cutter / Uneven Flute	Ø4~Ø30	354

HSS High Speed Steel Series

Appearance	Code No	Description	Size	Pg
Roughing				
	HS400IE+-11304TN	HSS-Square - 4-Flute / Roughing / Uneven Flute / Variable Helix 30°/33°	Ø6~Ø25	360
	HS400IE+-11305TN	HSS-Square - 5-Flute /Roughing / Uneven Flute / Variable Helix 30°/33°	Ø6~Ø25	362
	HS400N+-11304TN	HSS-Square - 4-Flute / Roughing / Sharp Edge / Helix 30°	Ø8~Ø14	364
End Mill				
	HS100E+-11302TN	HSS-Square - 2-Flute End Mill / Variable Helix 30°/33°	Ø6~Ø20	366
	HS100IE+-11304TN	HSS-Square - 4-Flute End Mill / Uneven Flute / Variable Helix 30°/33°	Ø6~Ø20	368
Drill				
	HDR300+-41302TN	HSS-Twist Drill - 2-Flute / Helix 30° / 118° Tip	Ø0.2~Ø20	370
	HDR100+-40902TN	HSS-Spot Drill - 2-Flute / V 90° 45° Chamfering	Ø4~Ø20	376
	HPDR100+-90120TN	HSS-Spot Drill - 2-Flute / V 120° /90° / 45° Chamfering	Ø4~Ø20	378
Chamfering				
	HCF100+-40903TN	HSS-Chamfer Mill - 3-Flute / V 90° / 45° Chamfering	Ø6.3~Ø25	380
	HCF100I+-40903TN	HSS-Chamfer Mill - 3-Flute / V 90° / Uneven Flute / 45° Chamfering	Ø4.3~Ø35	382

Fiber End Mill

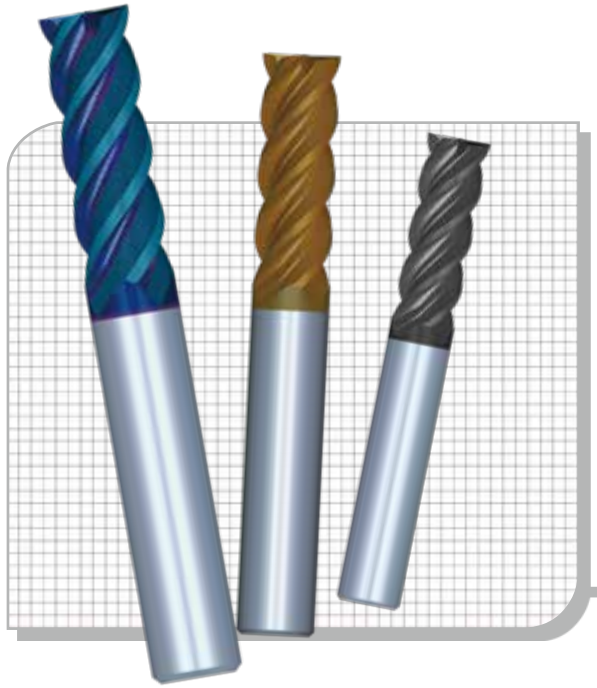
Appearance	Code No	Description	Size	Pg
	FG10010	Carbide Fiber End Mill - 2-Flute End Face / Upcut / Helix 10°	Ø4~Ø10	386
	FG20010	Carbide Fiber End Mill - Blank End Face Upcut / Helix 10°	Ø4~Ø10	386
	FG30010	Carbide Fiber End Mill - 2-Flute Drill / Upcut / Helix 10°	Ø4~Ø10	387
	FG40030	Carbide Fiber End Mill - Burr Face / Upcut / Helix 30°	Ø4~Ø10	387
	FG10030	Carbide Fiber End Mill - 2-Flute End Face / Upcut / Helix 30°	Ø4~Ø10	388
	FG30030	Carbide Fiber End Mill - 2-Flute Drill Point / Upcut / Helix 30°	Ø4~Ø10	388
	FG500-1108	Carbide Fiber End Mill - 8-Flute End Face / Upcut / Helix 10°	Ø4~Ø10	389
	FG600	Carbide Fiber End Mill - 2-Flute Drill Point / Upcut / Helix 30°	Ø4~Ø10	389

Rotary Burrs Series

Appearance	Code No	Description	Size	Pg
	Type-A	Cylinder / Flat End	Ø1.5~Ø25	392
	Type-B	Cylinder / with End Cut	Ø1.5~Ø25	394
	Type-C	Ball Nose Cylinder	Ø2~Ø20	396
	Type-D	Spherical Ball	Ø2~Ø25	398
	Type-E	Oval shape	Ø3~Ø20	400
	Type-F	Ball Nose Tree shape	Ø3~Ø20	402
	Type-G	Tree shape - Flat End	Ø3~Ø20	404
	Type-H	Flame shape	Ø3~Ø20	406
	Type-L	Ball Nose Cone shape	Ø3~Ø20	408
	Type-M	Cone shape - Flat End	Ø3~Ø16	410
	Type-N	Inverted Cone Shape - Flat End	Ø3~Ø20	412
	Type-O	Cylinder Corner Radius End Cut	Ø3~Ø16	412
	Type-J	Countersink deburring - V Shape 60°	Ø3~Ø25	414
	Type-K	Countersink deburring - V Shape 90°	Ø3~Ø20	414

A700+ Series

High Speed High Feed & Finishing



UFMG — Ultrafine Micro Grain Carbide

HRC ▶65 — Suitable for work material ~HRC65

Optional Coating

TB TO TH

Optional 3 types of selectable coating

Types of Flute

2Flutes 4Flutes 5Flutes 6Flutes 4Flutes(R)

2Flutes 4Flutes

Types of Uneven Flute

4Flutes(PCD) 4Flutes 5Flutes 6Flutes 4Flutes 4Flutes(R)

Honing Process

with honing

without honing

Cutting edge protection

with gashland protection

sharp corner

Helix angle

30° / 35° / 40° / 45° / 46° / 55°

Best Seller IE Series

Optional DIN Weldon Shank

DIN 6535 HA DIN 6535 HB DIN 6535 HE

Special & Custom Tooling Services

Customization acceptable !

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

A700IE4+-11554TB High Speed Finishing

Uneven Flute/Variable Helix angle geometry enable High-Speed Smooth Cutting on High Hardness material

Gashland Edge

High Strength & Stability Edge

Variable Helix Angle

Smooth Cutting Anti-Vibration

High Helix

Reduce Cutting Resistance

UFMG Carbide

High Rigidity Carbide for Workpiece Hardness ~HRC65



Unequal Flute

Anti-Vibration and fast chip Removal

Horned Cutting Edge

Smooth edge reduce Chipping & Breaking

TB - AlTiSiN Coating

Anti-Oxidation & Extends tool life

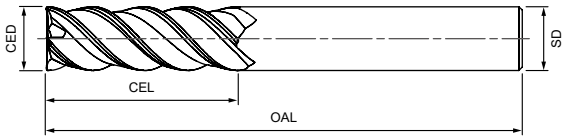
A700I4+-11464TB

- Square - 4-Flute x 3D
- Uneven Flute / Helix 46°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | 90° | 46° | TB

HRC 65 | UFMG

CED	Tolerance
1~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

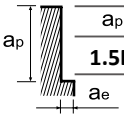
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
A700I4+-11464TB	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	
	16	48	16	100	
	20	60	20	125	

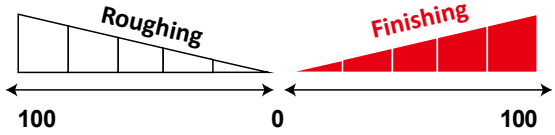
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	450	28,000	390	24,000	220	19,200	195	30,000	450	24,000	220
2	20,700	650	17,040	480	13,600	260	10,880	165	20,700	650	13,600	260
3	15,200	650	12,960	550	9,000	340	7,200	260	15,200	650	9,000	340
4	11,500	825	9,600	570	6,800	360	6,100	280	11,500	825	6,800	360
5	9,100	880	7,920	650	5,500	405	4,400	310	9,100	880	5,500	405
6	7,680	900	6,480	680	4,600	410	3,680	380	7,680	900	4,600	410
8	5,760	920	5,040	700	3,400	430	2,720	370	5,760	920	3,400	430
10	4,560	980	4,080	715	2,720	450	2,180	350	4,560	980	2,720	450
12	3,840	910	3,400	650	2,300	430	1,840	260	3,840	910	2,300	430
16	2,880	800	2,550	600	1,700	380	1,360	350	2,880	800	1,700	380
20	2,880	780	2,050	580	1,360	360	1,200	260	2,280	780	1,360	360
Depth of cut	 ap: 1.5D, ae: 0.1D		ap: 1.5D, ae: 0.1D		ap: 1.5D, ae: 0.05D		ap: 1.5D, ae: 0.03D		ap: 1.5D, ae: 0.2D		ap: 1.5D, ae: 0.05D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	●



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

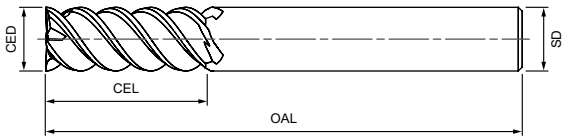
A700I4+-11554TB

- Square - 4-Flute x 2.5D
- Uneven Flute / Helix 55°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | 90° | 55° | TB

HRC 65 | UFMG

CED	Tolerance
1~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

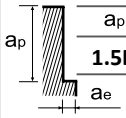
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
A700I4+-11554TB	1	3	4	50	4
	2	5	4	50	
	3	8	4	50	
	4	10	4	50	
	5	13	6	50	
	6	15	6	50	
	8	20	8	60	
	10	25	10	75	
	12	30	12	75	
	16	40	16	100	
	20	50	20	100	

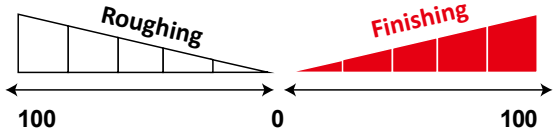
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	450	28,000	390	24,000	220	19,200	195	30,000	450	24,000	220
2	20,700	650	17,040	480	13,600	260	10,880	200	20,700	650	13,600	260
3	15,200	650	12,960	550	9,000	340	7,200	260	15,200	650	9,000	340
4	11,500	825	9,600	570	6,800	360	6,100	280	11,500	825	6,800	360
5	9,100	880	7,920	650	5,500	405	4,400	310	9,100	880	5,500	405
6	7,680	900	6,480	680	4,600	410	3,680	320	7,680	900	4,600	410
8	5,760	920	5,040	700	3,400	430	2,720	340	5,760	920	3,400	430
10	4,560	980	4,080	715	2,720	450	2,180	315	4,560	980	2,720	450
12	3,840	910	3,400	650	2,300	430	1,840	300	3,840	910	2,300	430
16	2,880	800	2,550	600	1,700	380	1,360	350	2,880	800	1,700	380
20	2,880	780	2,050	580	1,360	360	1,200	260	2,280	780	1,360	360
Depth of cut	 ap: 1.5D, ae: 0.2D		ap: 1.5D, ae: 0.1D		ap: 1.5D, ae: 0.05D		ap: 1.5D, ae: 0.03D		ap: 1.5D, ae: 0.2D		ap: 1.5D, ae: 0.05D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	●



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

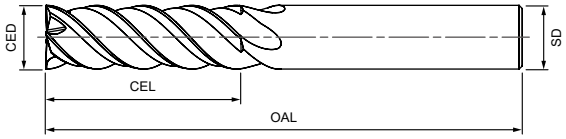
A700IE4+-11464TB

- Square - 4-Flute x 3D
- Uneven Flute / Variable Helix 46° /49°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | 90° | 46° / 49° | TB

HRC 65 | UFMG

CED	Tolerance
1~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

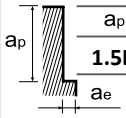
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
A700IE4+-11464TB	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	60	
	10	30	10	75	
	12	36	12	80	
	16	48	16	100	
	20	60	20	125	

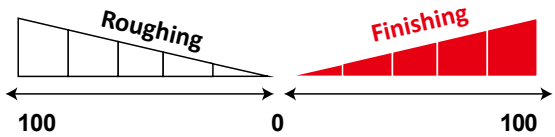
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	32,000	460	36,500	450	27,000	330	24,300	200	32,000	460	27,000	330
2	21,500	600	18,200	500	13,000	340	11,700	200	21,500	600	13,000	340
3	15,500	850	12,100	680	9,100	480	8,190	340	15,500	850	9,100	480
4	11,800	900	9,100	765	6,800	520	6,120	340	11,800	900	6,800	520
5	9,300	900	7,300	810	5,500	600	4,950	460	9,300	900	5,500	600
6	7,900	900	6,000	810	4,600	610	4,140	520	7,900	900	4,600	610
8	5,900	900	4,500	810	3,400	620	3,060	550	5,900	900	3,400	620
10	4,700	1,000	3,800	880	2,720	630	2,400	520	4,700	1,000	2,720	630
12	3,500	900	2,975	810	2,300	620	2,070	490	3,500	900	2,300	620
16	2,650	850	2,300	760	1,700	580	1,530	470	2,650	850	1,700	580
20	2,200	800	1,820	720	1,360	550	1,200	460	2,200	800	1,360	550
Depth of cut	 ap 1.5D, ae 0.2D		ap 1.5D, ae 0.1D		ap 1.5D, ae 0.05D		ap 1.5D, ae 0.03D		ap 1.5D, ae 0.2D		ap 1.5D, ae 0.05D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	●



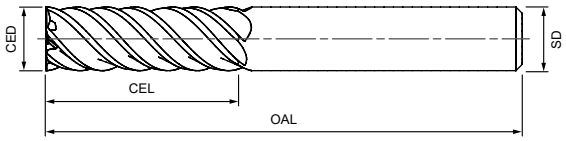
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

A700IE3+-11466TB

- Square - 6-Flute x 3D
- Uneven Flute / Variable Helix 46° /49°





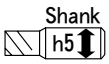


Best Seller IE Series





CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

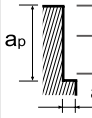


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
A700IE3+-11466TB	6	18	6	50	6
	8	24	8	65	
	10	30	10	75	
	12	36	12	80	
	16	48	16	100	
	20	60	20	125	

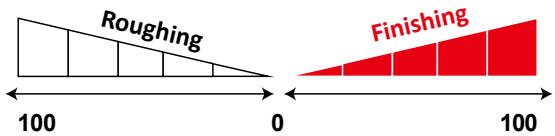
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	7,450	1,440	6,700	1,150	4,900	920	3,920	590	7,450	1,440	4,900	920
8	5,550	1,460	5,000	1,170	3,600	935	2,880	600	5,550	1,460	3,600	935
10	4,450	1,460	4,000	1,170	2,900	935	2,320	600	4,450	1,460	2,900	935
12	3,700	1,460	3,330	1,170	2,450	935	1,960	600	3,700	1,460	2,450	935
16	2,800	1,320	2,520	1,050	1,850	840	1,480	545	2,800	1,320	1,850	840
20	2,250	1,200	2,030	970	1,460	775	1,168	495	2,250	1,200	1,460	775
Depth of cut	 ap 1.5D / ae 0.2D		ap 1.5D / ae 0.1D		ap 1.5D / ae 0.05D		ap 1.5D / ae 0.03D		ap 1.5D / ae 0.2D		ap 1.5D / ae 0.05D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	●



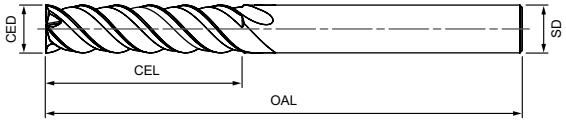
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

A700IE3+-12466TB

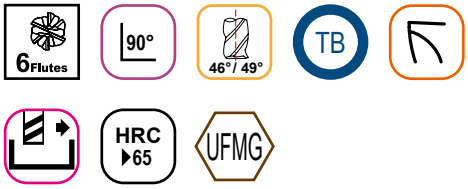
- Square - 6-Flute x 4D / Long Flute
- Uneven Flute / Variable Helix 46° /49°



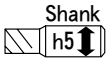




Best Seller IE Series



CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

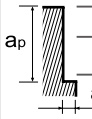


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
A700IE3+-12466TB	6	24	6	65	6
	8	32	8	90	
	10	40	10	100	
	12	48	12	110	
	16	64	16	125	
	20	80	20	150	

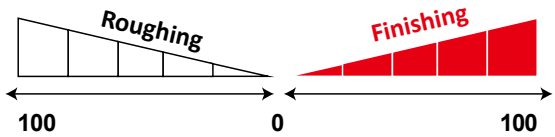
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	4,400	720	4,200	650	3,360	520	2,650	390	4,400	720	3,360	520
8	3,350	850	3,200	760	2,560	600	2,000	450	3,350	850	2,560	600
10	2,760	920	2,600	830	2,080	660	1,600	495	2,760	920	2,080	660
12	2,200	910	2,090	820	1,650	650	1,300	480	2,200	910	1,650	650
16	1,610	800	1,530	720	1,220	570	970	420	1,610	800	1,220	570
20	1,300	720	1,200	650	960	520	760	390	1,300	720	960	520
Depth of cut	 a_p 3D, a_e 0.03D		a_p 3D, a_e 0.02D		a_p 3D, a_e 0.01D		a_p 3D, a_e 0.05D		a_p 3D, a_e 0.03D		a_p 3D, a_e 0.01D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	●



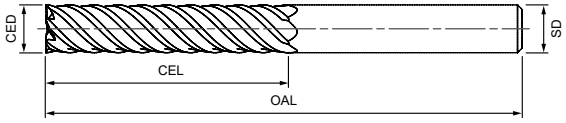
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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

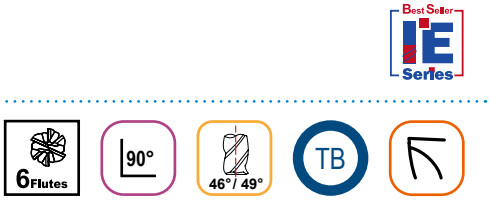
A700IE3+-12466TB

- Square - 6-Flute x 5D / Long Flute
- Uneven Flute / Variable Helix 46° /49°

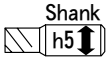








CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

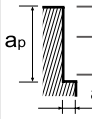


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
A700IE3+-12466TB	6	30	6	75	6
	8	40	8	90	
	10	50	10	100	
	12	60	12	110	
	16	80	16	150	
	20	100	20	200	

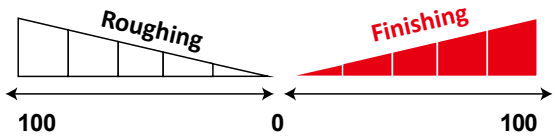
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	4,400	720	4,200	650	3,360	520	2,650	390	4,400	720	3,360	520
8	3,350	850	3,200	760	2,560	600	2,000	450	3,350	850	2,560	600
10	2,760	920	2,600	830	2,080	660	1,600	495	2,760	920	2,080	660
12	2,200	910	2,090	820	1,650	650	1,300	480	2,200	910	1,650	650
16	1,610	800	1,530	720	1,220	570	970	420	1,610	800	1,220	570
20	1,300	720	1,200	650	960	520	760	390	1,300	720	960	520
Depth of cut	 a_p 3D, a_e 0.03D		a_p 3D, a_e 0.02D		a_p 3D, a_e 0.01D		a_p 3D, a_e 0.05D		a_p 3D, a_e 0.03D		a_p 3D, a_e 0.01D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	●



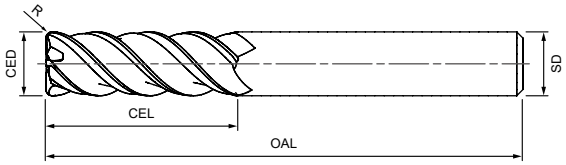
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

A700I4+-21464TB

- Corner Radius - 4-Flute x 3D
- Uneven Flute / Helix 46°



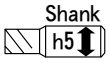




Best Seller IE Series



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

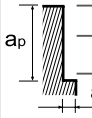


(unit : mm)

Code No.	CED	R	CEL	SD	OAL	Flute
A700I4+-21464TB	4	0.2R	12	4	50	4
	5	0.2R	15	6	50	
	6	0.2R	18	6	50	
	8	0.2R	24	8	65	
		0.5R				
	10	0.2R	30	10	75	
		0.5R				
	12	0.2R	36	12	80	
		0.5R				

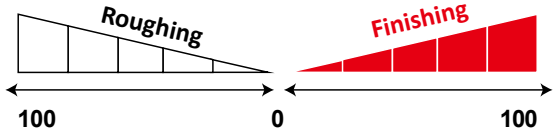
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
4	11,500	825	9,600	570	6,800	360	6,100	280	11,500	825	6,800	360
5	9,100	880	7,920	650	5,500	405	4,400	310	9,100	880	5,500	405
6	7,680	900	6,480	680	4,600	410	3,680	320	7,680	900	4,600	410
8	5,760	920	5,040	700	3,400	430	2,720	340	5,760	920	3,400	430
10	4,560	980	4,080	715	2,720	450	2,180	315	4,560	980	2,720	450
12	3,840	910	3,400	650	2,300	430	1,840	300	3,840	910	2,300	430
Depth of cut	 a_p 1.5D, a_e 0.1D		a_p 1.5D, a_e 0.1D		a_p 1.5D, a_e 0.05D		a_p 1.5D, a_e 0.03D		a_p 1.5D, a_e 0.2D		a_p 1.5D, a_e 0.05D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	●



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

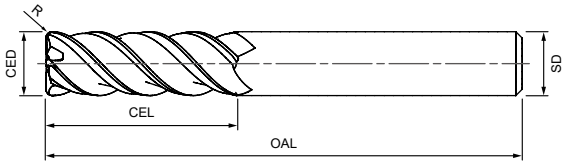
A700IE4+-21464TB

- Corner Radius - 4-Flute x 3D
- Uneven Flute / Variable Helix 46° /49°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | R | R | 46° / 49° | TB

HRC ▶65 | UFMG

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

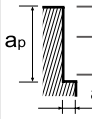
Shank h5

(unit : mm)

Code No.	CED	R	CEL	SD	OAL	Flute
A700IE4+-21464TB	4	0.2R	12	4	50	4
	5	0.2R	15	6	50	
	6	0.2R	18	6	50	
	8	0.2R	24	8	65	
		0.5R				
	10	0.2R	30	10	75	
		0.5R				
	12	0.2R	36	12	80	
		0.5R				

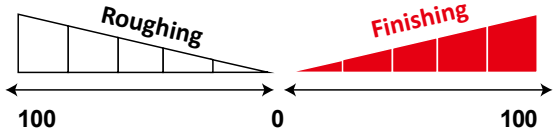
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
4	11,500	900	9,100	765	6,800	520	6,120	340	11,800	900	6,800	520
5	9,300	900	7,300	810	5,500	600	4,950	460	9,300	900	5,500	600
6	7,900	900	6,000	810	4,600	610	4,140	520	7,900	900	4,600	610
8	5,900	920	4,500	810	3,400	620	3,060	550	5,900	920	3,400	620
10	4,700	1,000	3,800	880	2,720	630	2,400	520	4,700	1,000	2,720	630
12	3,500	900	2,975	810	2,300	620	2,070	490	3,500	900	2,300	620
Depth of cut	 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		a_p 1.5D, a_e 0.2D		a_p 1.5D, a_e 0.05D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	●

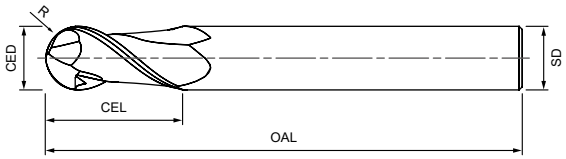


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

A700J+-81402TB

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









CED	Tolerance
R	±0.02

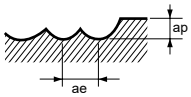
Shank h5

(unit : mm)

Code No.	R	CEL	SD	OAL	Flute
A700J+-81402TB	1R	4	4	50	2
	1.5R	6	4	50	
	2R	6	4	50	
	2.5R	10	6	50	
	3R	12	6	50	
	4R	16	8	60	
	5R	20	10	75	
	6R	24	12	75	

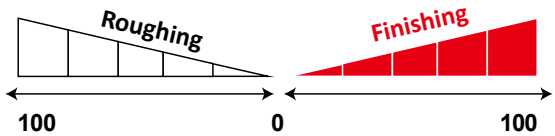
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1R	21,600	870	17,000	520	13,800	350	12,420	260	21,600	870	13,800	350
1.5R	14,000	840	11,700	540	10,100	430	9,090	310	14,000	840	10,100	430
2R	10,800	840	9,000	520	7,700	410	6,930	325	10,800	840	7,700	410
2.5R	8,600	830	7,200	510	6,100	470	5,490	360	8,600	830	6,100	470
3R	7,200	830	5,800	490	5,100	390	4,590	430	7,200	830	5,100	390
4R	5,400	810	4,400	490	3,800	550	3,420	430	5,400	810	3,800	550
5R	4,300	810	3,500	490	3,000	390	2,700	400	4,300	810	3,000	390
6R	3,600	810	2,900	490	2,500	390	2,250	310	3,600	810	2,500	390
Depth of cut	 ap: 0.1D, ae: 0.2D		ap: 0.08D, ae: 0.2D		ap: 0.05D, ae: 0.1D		ap: 0.03D, ae: 0.1D		ap: 0.1D, ae: 0.2D		ap: 1.5D, ae: 0.1D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	●



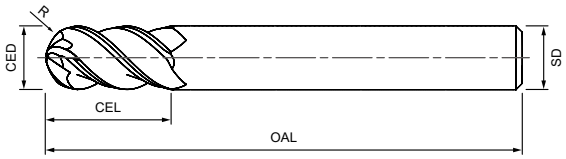
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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

A700JI2+-81454TB

- Ball Nose - 4-Flute x 2D
- Uneven Flute / Helix 45°







Best Seller IE Series

4 Flutes | R | 45° | TB

HRC ▶65 | UFMG

CED	Tolerance
R	±0.02

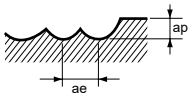
Shank h5

(unit : mm)

Code No.	R	CEL	SD	OAL	Flute
A700JI2+-81454TB	1R	4	4	50	4
	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	

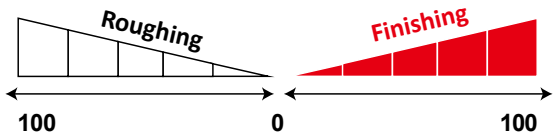
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1R	30,000	2,310	27,000	1,500	21,600	1,010	17,280	700	30,000	2,310	21,600	1,010
1.5R	20,040	3,520	18,000	1,560	14,400	1,090	11,500	750	20,040	3,520	14,400	1,090
2R	15,000	3,130	13,500	1,600	10,800	1,100	8,600	770	15,000	3,130	10,800	1,100
2.5R	12,000	2,970	10,800	1,600	8,640	1,100	6,900	780	12,000	2,970	8,640	1,100
3R	10,080	2,480	8,000	1,400	7,200	1,120	5,760	800	10,080	2,480	7,200	1,120
4R	7,560	2,420	6,000	1,400	5,400	1,120	4,320	810	7,560	2,420	5,400	1,120
5R	6,000	2,400	4,800	1,400	4,320	1,120	3,400	790	6,000	2,400	4,320	1,120
6R	5,040	2,310	4,000	1,400	3,600	1,120	2,880	780	5,040	2,310	3,600	1,120
Depth of cut												
	ap: 0.1D, ae: 0.2D		ap: 0.08D, ae: 0.2D		ap: 0.05D, ae: 0.1D		ap: 0.03D, ae: 0.1D		ap: 0.1D, ae: 0.2D		ap: 0.05D, ae: 0.1D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	●

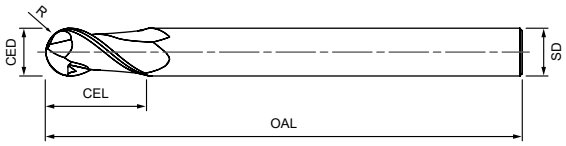


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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

A700J+-83402TB

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

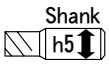








CED	Tolerance
R	±0.02

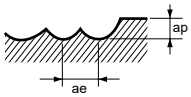


(unit : mm)

Code No.	R	CEL	SD	OAL	Flute
A700J+-83402TB	2R	8	4	75	2
	2.5R	10	6	75	
	3R	12	6	75	
	4R	16	8	100	
	5R	20	10	100	
	6R	24	12	100	
	8R	32	16	150	
	10R	40	20	150	

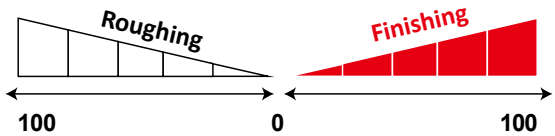
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
2R	6,500	530	5,850	425	5,250	340	4,700	270	6,500	530	5,250	340
2.5R	5,160	520	4,600	430	4,140	345	3,700	275	5,160	520	4,140	345
3R	4,320	520	3,900	430	3,510	345	3,160	275	4,320	520	3,510	345
4R	3,240	510	2,900	420	2,610	335	2,350	270	3,240	510	2,610	335
5R	2,580	510	2,300	420	2,070	335	1,860	270	2,580	510	2,070	335
6R	2,160	510	1,900	410	1,710	330	1,540	260	2,160	510	1,710	330
8R	1,620	500	1,450	400	1,300	320	1,170	255	1,620	500	1,300	320
10R	1,320	500	1,160	400	1,040	320	940	255	1,320	500	1,040	320
Depth of cut												
	ap: 0.1D, ae: 0.2D		ap: 0.08D, ae: 0.2D		ap: 0.05D, ae: 0.1D		ap: 0.03D, ae: 0.1D		ap: 0.1D, ae: 0.2D		ap: 0.05D, ae: 0.1D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	●



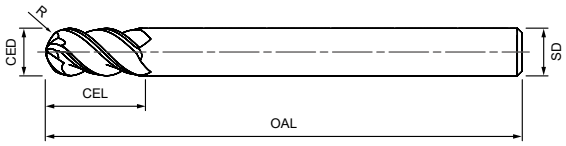
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3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

A700JI2+-83454TB

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







Best Seller IE Series

4 Flutes | R | 45° | TB

HRC ▶65 | UFMG

CED	Tolerance
R	±0.02

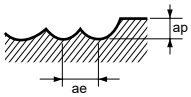
Shank h5

(unit : mm)

Code No.	R	CEL	SD	OAL	Flute
A700JI2+-83454TB	2R	8	4	75	4
	2.5R	10	6	75	
	3R	12	6	75	
	4R	16	8	100	
	5R	20	10	100	
	6R	24	12	100	
	8R	32	16	150	
	10R	40	20	150	

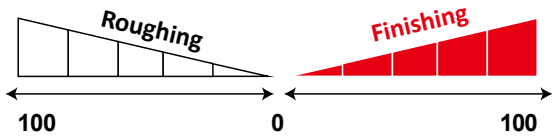
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
2R	9,000	1,500	8,100	1,200	7,290	960	6,500	760	9,000	1,500	7,290	960
2.5R	7,200	1,530	6,480	1,200	5,800	960	5,220	770	7,200	1,530	5,800	960
3R	6,000	1,530	5,400	1,250	4,860	1,000	4,360	800	6,000	1,530	4,860	1,000
4R	4,500	1,480	4,050	1,190	3,650	950	3,300	760	4,500	1,480	3,650	950
5R	3,600	1,450	3,240	1,160	2,900	930	2,600	745	3,600	1,450	2,900	930
6R	3,000	1,400	2,700	1,120	2,430	895	2,200	715	3,000	1,400	2,430	895
8R	2,200	1,400	2,000	1,120	1,800	890	1,620	710	2,200	1,400	1,800	890
10R	1,800	1,280	1,520	1,030	1,460	825	1,310	660	1,800	1,280	1,460	825
Depth of cut	 ap: 0.1D, ae: 0.2D		ap: 0.08D, ae: 0.2D		ap: 0.05D, ae: 0.1D		ap: 0.03D, ae: 0.1D		ap: 0.1D, ae: 0.2D		ap: 0.05D, ae: 0.1D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	●



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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

X600+Series

Mold Processing & Parts Processing



Variable Helix Angle & Uneven Flute
High Speed Cutting, enable to reduce vibration and noise

Cutting edge with Gashland
Enable to reduce chipping with longer tool life

Optional Coating
Optional 3 types of selectable coating

TO TE TA

UMG **Ultrafine Micro Grain Carbide**
Suitable for work material ~ HRC60

Types of Flute

2Flutes 4Flutes 6Flutes 4Flutes R 2Flutes 4Flutes

Types of Uneven Flute

4Flutes 4Flutes 4Flutes R 4Flutes

Optional DIN Weldon Shank

DIN 6535 HA DIN 6535 HB DIN 6535 HE

Honing Process

with honing

without honing

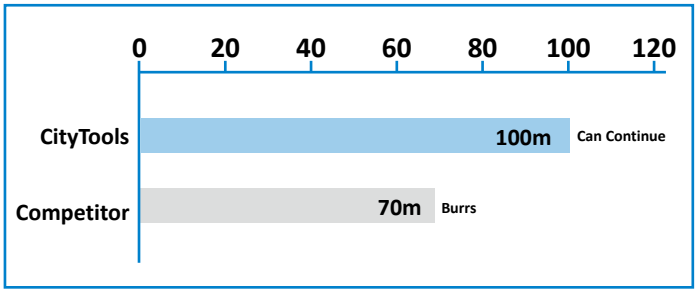
Special & Custom Tooling Services

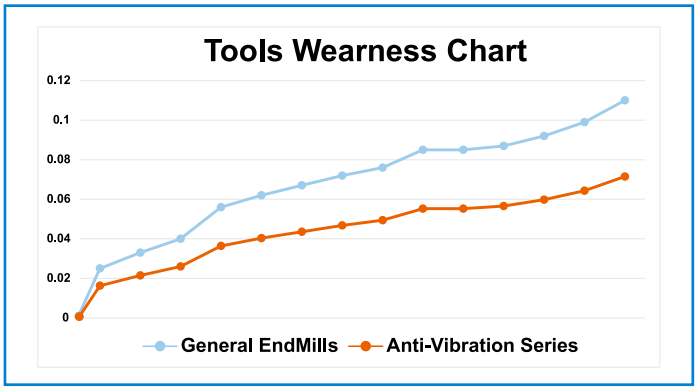
Customization acceptable !
From Coating, flute, Helix angle, cutting length, to total length.

Smooth cutting & Longer Tool Life

X600IE with Uneven Flute/Variable Helix angle geometry design, TO coating (AlTiCrSiN) layer with high temperature resistance and high hardness, resulting in better cutting stability and increasing longer tool life 30%.

Suitable for Mild steels, Cast Irons, Hardened steels with longer tool life.





Tool	X600IE+-11374TO
Tool Size	Ø10
Work Material	S50C
Milling Method	Side Milling
Cutting Speed	3870 rev/min
Feed Rate	850 (0.055 mm/t)
Depth of Cut	Ap=15mm, Ae=1mm
Coolant	Air Cooling
Machine	Vertical Machining Center

Unique heat resistance coating reduce wear reduction

Longer Tool life and Better Surface

Under the same condition of cutting, the wear resistance of X600IE+-11394TO is about 30% lower and get longer tool life comparing with competitor brand.

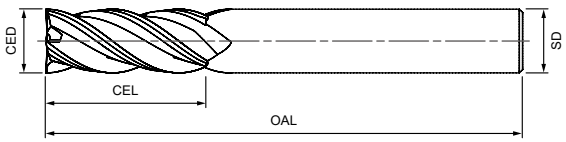
X6001I4+-11374TO

- Square - 4-Flute x 2.5D
- Uneven Flute / Helix 37°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | 90° | 37° | TO

HRC 60 | UMG

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

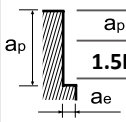
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
X6001I4+-11374TO	1	3	4	50	4
	2	5	4	50	
	3	8	4	50	
	4	10	4	50	
	5	13	6	50	
	6	15	6	50	
	8	20	8	60	
	10	25	10	75	
	12	30	12	75	

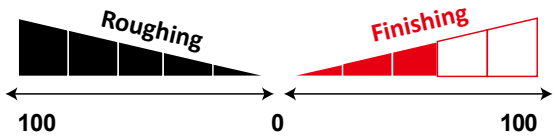
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	470	27,180	360	21,600	250	17,000	170	30,000	470	21,600	250
2	18,600	580	16,740	440	12,240	210	9,700	150	18,600	580	12,240	210
3	13,700	690	12,330	520	9,270	240	7,400	230	13,700	690	9,270	240
4	10,300	740	9,270	560	6,900	360	5,500	250	10,300	740	6,900	360
5	8,200	790	7,380	600	5,670	400	4,500	280	8,200	790	5,670	400
6	6,600	820	5,940	750	4,700	480	3,800	340	6,600	820	4,700	480
8	5,100	870	4,590	750	3,600	470	2,880	330	5,100	870	3,600	470
10	4,100	880	3,690	670	2,880	450	2,300	320	4,100	880	2,880	450
12	3,400	820	3,060	620	2,430	340	1,900	230	3,400	820	2,430	340
Depth of cut	 ap: 1.5D, ae: 0.2D		ap: 1.5D, ae: 0.1D		ap: 1.5D, ae: 0.05D		ap: 1.5D, ae: 0.03D		ap: 1.5D, ae: 0.2D		ap: 1.5D, ae: 0.05D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	○



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

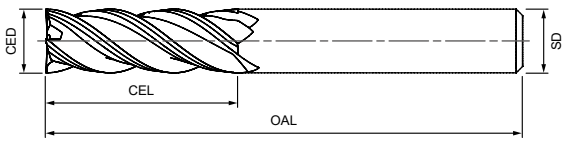
X6001I4+-11374TO

- Square - 4-Flute x 3D
- Uneven Flute / Helix 37°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4Flutes | 90° | 37° | TO

HRC 60 | UMG

CED	Tolerance
1~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

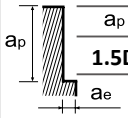
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
X6001I4+-11374TO	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	60	
	10	30	10	75	
	12	36	12	80	
	16	48	16	100	
	20	60	20	125	

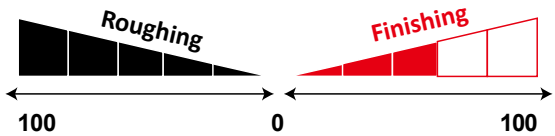
※ **Customized Special sizes, Coating type and Inches are available to order.**

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	470	27,180	360	21,600	250	17,000	170	30,000	470	21,600	250
2	18,600	580	16,740	440	12,240	210	9,700	150	18,600	580	12,240	210
3	13,700	690	12,330	520	9,270	240	7,400	230	13,700	690	9,270	240
4	10,300	740	9,270	560	6,900	360	5,500	250	10,300	740	6,900	360
5	8,200	790	7,380	600	5,670	400	4,500	280	8,200	790	5,670	400
6	6,600	820	5,940	750	4,700	480	3,800	340	6,600	820	4,700	480
8	5,100	870	4,590	750	3,600	470	2,880	330	5,100	870	3,600	470
10	4,100	880	3,690	670	2,880	450	2,300	320	4,100	880	2,880	450
12	3,400	820	3,060	620	2,430	340	1,900	230	3,400	820	2,430	340
16	2,600	720	2,340	460	1,890	270	1,500	190	2,600	720	1,890	270
20	2,050	680	1,840	370	1,500	190	1,200	140	2,050	680	1,500	190
Depth of cut	 ap 1.5D, ae 0.2D		ap 1.5D, ae 0.1D		ap 1.5D, ae 0.05D		ap 1.5D, ae 0.03D		ap 1.5D, ae 0.2D		ap 1.5D, ae 0.05D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	○



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

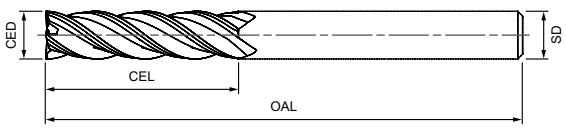
X600I4+-12374TO

- Square - 4-Flute x 4D / Long Flute
- Uneven Flute / Helix 37°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | 90° | 37° | TO | HRC 60 | UMG

CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

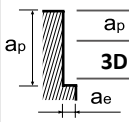
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
X600I4+-12374TO	6	24	6	65	4
	8	32	8	90	
	10	40	10	100	
	12	48	12	110	
	16	64	16	125	
	20	80	20	150	
	25	100	25	200	

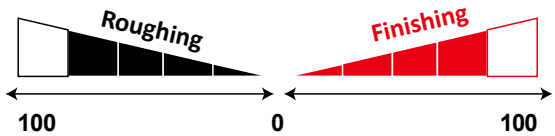
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	4,350	560	4,200	520	3,360	365	2,650	255	4,350	560	360	365
8	3,300	570	3,200	550	2,560	385	2,000	270	3,300	570	2,560	385
10	2,650	570	2,600	570	2,080	400	1,600	280	2,650	570	2,080	400
12	2,210	560	2,100	525	1,650	370	1,300	260	2,210	560	1,650	370
16	1,690	560	1,606	520	1,220	365	970	255	1,690	560	1,220	365
20	1,330	540	1,200	510	960	360	760	250	1,330	540	960	360
25	1,020	530	970	500	770	350	610	245	1,020	530	770	350
Depth of cut	 ap: 3D, ae: 0.03D		ap: 3D, ae: 0.02D		ap: 3D, ae: 0.01D		ap: 3D, ae: 0.05D		ap: 3D, ae: 0.2D		ap: 3D, ae: 0.01D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	○



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3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

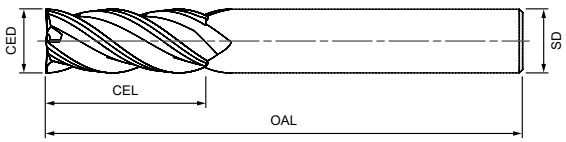
X600IE4+-11394TO

- Square - 4-Flute x 2.5D
- Uneven Flute / Variable Helix 39° /42°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | 90° | 39°/42° | TO

HRC 60 | UMG

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

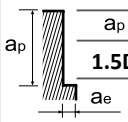
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
X600IE4+-11394TO	1	3	4	50	4
	2	5	4	50	
	3	8	4	50	
	4	10	4	50	
	5	13	6	50	
	6	15	6	50	
	8	20	8	60	
	10	25	10	75	
	12	30	12	75	

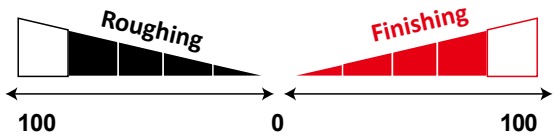
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	450	28,500	400	22,000	260	17,600	180	30,000	450	22,000	260
2	16,000	500	15,200	470	12,800	360	10,240	210	16,000	500	12,800	360
3	11,600	646	11,020	517	9,700	430	7,760	300	11,600	646	9,700	430
4	10,350	820	9,300	656	7,200	520	5,760	355	10,350	820	7,200	520
5	8,300	920	7,500	736	6,000	560	4,800	370	8,300	920	6,000	560
6	6,900	950	6,200	760	4,900	570	3,920	340	6,900	950	4,900	570
8	5,300	960	4,770	768	3,780	595	3,000	350	5,300	960	3,780	595
10	4,140	910	3,700	728	3,000	580	2,400	390	4,140	910	3,000	580
12	3,450	880	3,100	704	2,500	530	2,000	260	3,450	880	2,500	530
Depth of cut	 ap: 1.5D, ae: 0.2D		ap: 1.5D, ae: 0.1D		ap: 1.5D, ae: 0.05D		ap: 1.5D, ae: 0.03D		ap: 1.5D, ae: 0.2D		ap: 1.5D, ae: 0.05D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	○



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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

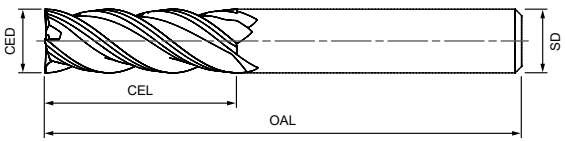
X600IE4+-11394TO

- Square - 4-Flute x 3D
- Uneven Flute / Variable Helix 39° /42°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | 90° | 39° / 42° | TO

HRC 60 | UMG

CED	Tolerance
1~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

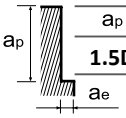
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
X600IE4+-11394TO	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	60	
	10	30	10	75	
	12	36	12	80	
	16	48	16	100	
	20	60	20	125	

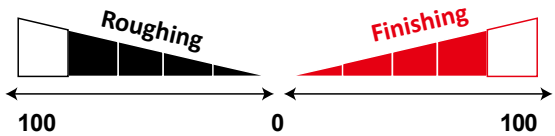
※ **Customized Special sizes, Coating type and Inches are available to order.**

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	450	28,500	400	22,000	260	17,600	180	30,000	450	22,000	260
2	16,000	500	15,200	470	12,800	360	10,240	210	16,000	500	12,800	360
3	11,600	646	11,020	517	9,700	430	7,760	300	11,600	646	9,700	430
4	10,350	820	9,300	656	7,200	520	5,760	355	10,350	820	7,200	520
5	8,300	920	7,500	736	6,000	560	4,800	370	8,300	920	6,000	560
6	6,900	950	6,200	760	4,900	570	3,920	340	6,900	950	4,900	570
8	5,300	960	4,770	768	3,780	595	3,000	350	5,300	960	3,780	595
10	4,140	910	3,700	728	3,000	580	2,400	390	4,140	910	3,000	580
12	3,450	880	3,100	704	2,500	530	2,000	360	3,450	880	2,500	530
16	2,600	860	2,340	710	1,800	515	1,440	350	2,600	860	1,800	515
20	2,070	860	1,860	705	1,440	510	1,150	300	2,070	860	1,440	510
Depth of cut	 ap 1.5D, ae 0.2D		ap 1.5D, ae 0.1D		ap 1.5D, ae 0.05D		ap 1.5D, ae 0.03D		ap 1.5D, ae 0.2D		ap 1.5D, ae 0.05D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	○



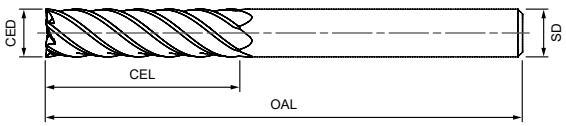
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

X600IE3^{+}-12396TO

- Square - 6-Flute x 4D / Long Flute
- Uneven Flute / Variable Helix 39° /42°





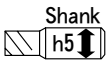


Best Seller IE Series





CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

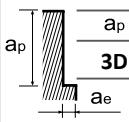


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
X600IE3^{+}-12396TO	6	24	6	65	6
	8	32	8	90	
	10	40	10	100	
	12	48	12	110	
	16	64	16	125	
	20	80	20	150	
	25	100	25	200	

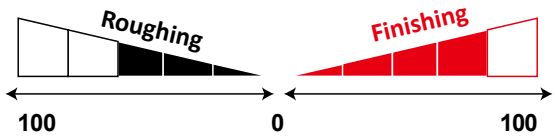
※ **Customized Special sizes, Coating type and Inches are available to order.**

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	4,300	720	4,100	650	3,280	520	2,650	390	4,300	720	3280	520
8	3,300	850	3,100	760	2,480	600	2,000	450	3,300	850	2,480	600
10	2,700	860	2,500	830	2,000	660	1,600	495	2,700	860	2,000	660
12	2,200	880	2,000	820	1,650	650	1,300	480	2,200	880	1,650	650
16	1,600	800	1,500	720	1,220	570	970	420	1,600	800	1,220	570
20	1,300	720	1,200	650	960	520	760	390	1,300	720	960	520
25	1,000	715	950	645	770	510	610	380	1,000	715	770	510
Depth of cut	 ap: 3D, ae: 0.03D		ap: 3D, ae: 0.02D		ap: 3D, ae: 0.01D		ap: 3D, ae: 0.05D		ap: 3D, ae: 0.2D		ap: 3D, ae: 0.01D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	○



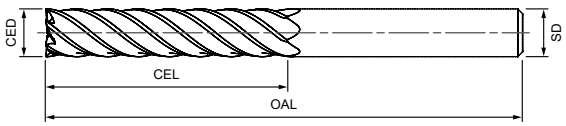
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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

X600IE3+-12396TO

- Square - 6-Flute x 5D / Long Flute
- Uneven Flute / Variable Helix 39° /42°







Best Seller IE Series

6 Flutes | 90° | 39°/42° | TO

HRC 60 | UMG

CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

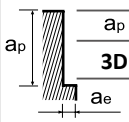
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
X600IE3+-12396TO	6	30	6	75	6
	8	40	8	90	
	10	50	10	100	
	12	60	12	110	
	16	80	16	150	
	20	100	20	200	
	25	125	25	200	

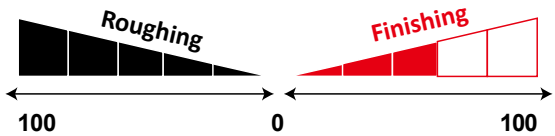
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	4,300	720	4,100	650	3,280	520	2,650	390	4,300	720	3280	520
8	3,300	850	3,100	760	2,480	600	2,000	450	3,300	850	2,480	600
10	2,700	860	2,500	830	2,000	660	1,600	495	2,700	860	2,000	660
12	2,200	880	2,000	820	1,650	650	1,300	480	2,200	880	1,650	650
16	1,600	800	1,500	720	1,220	570	970	420	1,600	800	1,220	570
20	1,300	720	1,200	650	960	520	760	390	1,300	720	960	520
25	1,000	715	950	645	770	510	610	380	1,000	715	770	510
Depth of cut	 ap: 3D, ae: 0.03D		ap: 3D, ae: 0.02D		ap: 3D, ae: 0.01D		ap: 3D, ae: 0.05D		ap: 3D, ae: 0.2D		ap: 3D, ae: 0.01D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	○



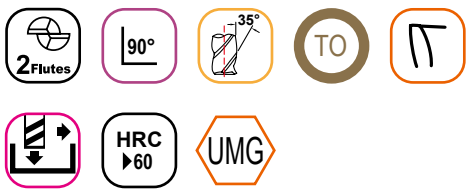
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

X600M+-14352TO

- Square - 2-Flute x 1D / Miniature
- Helix 35°







CED	Tolerance
0.2~0.9	0~-0.014

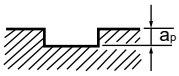
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
X600M+-14352TO	0.2	0.2	4	45	2
	0.3	0.3	4	45	
	0.4	0.4	4	45	
	0.5	0.5	4	45	
	0.6	0.6	4	45	
	0.7	0.7	4	45	
	0.8	0.8	4	45	
	0.9	0.9	4	45	

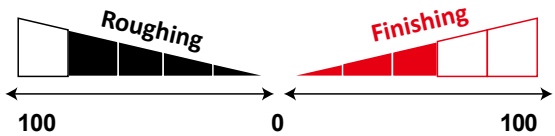
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
0.2	32,000	125	32,000	115	32,000	92	24,000	53	32,000	125	32,000	92
0.3	32,000	190	32,000	175	32,000	140	18,000	62	32,000	190	32,000	140
0.4	32,000	250	32,000	230	32,000	185	14,000	65	32,000	250	32,000	185
0.5	32,000	320	32,000	295	26,000	190	12,000	70	32,000	320	26,000	190
0.6	32,000	380	32,000	350	22,000	210	11,000	75	32,000	380	22,000	210
0.7	32,000	440	32,000	405	19,000	210	10,000	78	32,000	440	19,000	210
0.8	32,000	510	29,000	420	17,000	215	9,000	80	32,000	510	17,000	215
0.9	32,000	560	26,000	420	16,000	220	8,000	80	32,000	560	16,000	220
Depth of cut												
	a_p	a_e	a_p	a_e	a_p	a_e	a_p	a_e	a_p	a_e	a_p	a_e
	0.1D	1D	0.1D	1D	0.02D	1D	0.01D	1D	0.1D	1D	0.02D	1D

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	○



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

X600JM+-84352TO

- Ball Nose - 2-Flute x 1D / Miniature
- Helix 35°

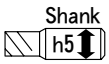








CED	Tolerance
R	±0.01

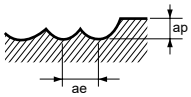


(unit : mm)

Code No.	R	CEL	SD	OAL	Flute
X600JM+-84352TO	0.1R	0.2	4	45	2
	0.15R	0.3	4	45	
	0.2R	0.4	4	45	
	0.25R	0.5	4	45	
	0.3R	0.6	4	45	
	0.35R	0.7	4	45	
	0.4R	0.8	4	45	
	0.45R	0.9	4	45	

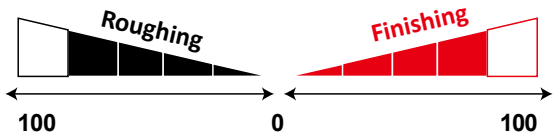
※ **Customized Special sizes, Coating type and Inches are available to order.**

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
0.1R	35,000	256	35,000	205	35,000	175	35,000	160	35,000	256	35,000	175
0.15R	35,000	400	35,000	320	35,000	265	35,000	240	35,000	400	35,000	265
0.2R	35,000	520	35,000	416	32,000	330	30,000	280	35,000	520	32,000	330
0.25R	35,000	650	35,000	520	32,000	430	30,000	360	35,000	650	32,000	430
0.3R	35,000	800	35,000	640	28,000	440	26,000	375	35,000	800	28,000	440
0.35R	35,000	950	35,000	760	28,000	515	26,000	440	35,000	950	28,000	515
0.4R	35,000	1,100	35,000	880	25,000	520	24,000	460	35,000	1,100	25,000	520
0.45R	35,000	1,250	35,000	1,000	23,000	560	22,000	480	35,000	1,250	23,000	560
Depth of cut												
	ap: 0.02D, ae: 0.05D		ap: 0.02D, ae: 0.05D		ap: 0.02D, ae: 0.05D		ap: 0.02D, ae: 0.05D		ap: 0.02D, ae: 0.05D		ap: 0.02D, ae: 0.05D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	○



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

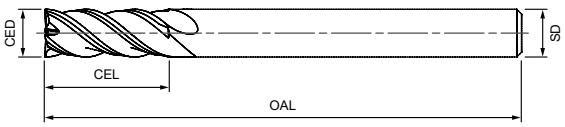
X600IE4^{+}-13394TO

- Square - 4-Flute x 2.5D / Long Shank
- Uneven Flute / Variable Helix 39° /42°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4Flutes | 90° | 39°/42° | TO | HRC 60 | UMG

CED	Tolerance
4~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

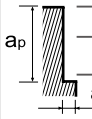
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
X600IE4^{+}-13394TO	4	10	4	75	4
	5	13	6	75	
	6	15	6	75	
	8	20	8	100	
	10	25	10	100	
	12	30	12	100	

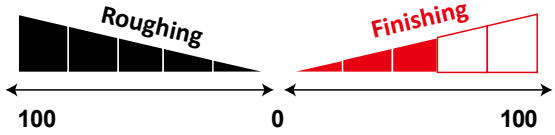
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
4	8,000	620	5,600	390	4,800	320	2,400	160	8,000	620	4,800	320
5	6,500	635	4,500	400	3,800	320	1,900	160	6,500	635	3,800	320
6	5,300	650	3,700	405	3,200	340	1,600	170	5,300	650	3,200	340
8	4,000	670	2,800	420	2,390	360	1,200	180	4,000	670	2,390	360
10	3,100	680	2,200	430	1,900	380	960	190	3,100	680	1,900	380
12	2,600	695	1,860	435	1,600	380	800	190	2,600	695	1,600	380
Depth of cut	 a_p 1.5D, a_e 0.1D		a_p 1.5D, a_e 0.05D		a_p 1.5D, a_e 0.02D		a_p 1.5D, a_e 0.01D		a_p 1.5D, a_e 0.1D		a_p 1.5D, a_e 0.02D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	○

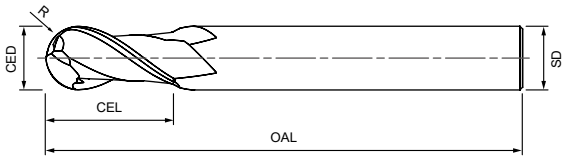


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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

X600J+-81372TO

- Ball Nose - 2-Flute x 2D
- Helix 37°

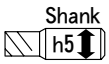








CED	Tolerance
R	±0.02

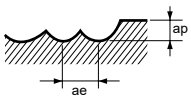


(unit : mm)

Code No.	R	CEL	SD	OAL	Flute
X600J+-81372TO	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	
	8R	32	16	100	

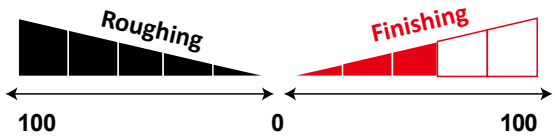
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
0.5R	29,000	580	28,000	350	23,000	290	20,000	220	29,000	580	23,000	290
1R	21,000	840	17,000	520	13,800	350	12,420	260	21,000	840	13,800	350
1.5R	14,000	840	11,700	540	10,000	430	9,000	310	14,000	840	10,000	430
2R	10,500	840	9,000	520	7,700	410	6,930	320	10,500	840	7,700	410
2.5R	8,600	830	7,200	510	6,100	470	5,490	324	8,600	830	6,100	470
3R	7,200	830	5,800	490	5,100	480	4,590	344	7,200	830	5,100	480
4R	5,400	810	4,400	490	3,900	490	3,510	328	5,400	810	3,900	490
5R	4,300	810	3,500	490	3,200	490	2,880	320	4,300	810	3,200	490
6R	3,600	810	2,900	490	2,500	450	2,250	310	3,600	810	2,500	450
8R	2,700	800	2,200	490	1,900	450	1,700	250	2,700	800	1,900	450
Depth of cut	 ap 0.1D, ae 0.2D		ap 0.08D, ae 0.2D		ap 0.05D, ae 0.1D		ap 0.03D, ae 0.1D		ap 0.1D, ae 0.2D		ap 0.05D, ae 0.1D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	○



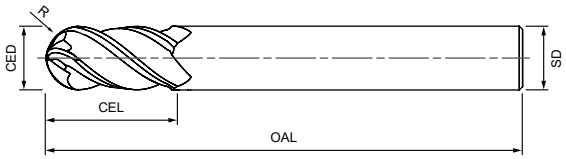
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

X600JI2+-81404TO

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







Best Seller IE Series





CED	Tolerance
R	±0.02

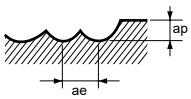
Shank h5

(unit : mm)

Code No.	R	CEL	SD	OAL	Flute
X600JI2+-81404TO	0.5R	2	4	50	4
	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	
	8R	32	16	100	
	10R	40	20	100	

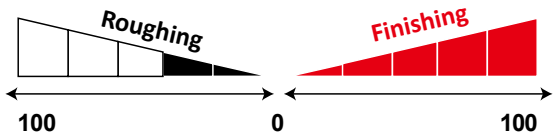
※ **Customized Special sizes, Coating type and Inches are available to order.**

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
0.5R	30,400	920	27,600	816	22,080	576	17,664	400	30,400	920	22,080	576
1R	23,200	1,440	21,600	1,120	17,280	808	13,824	560	23,200	1,440	17,280	808
1.5R	16,000	2,000	14,400	1,246	11,500	872	9,200	600	16,200	2,000	11,500	872
2R	12,000	2,000	10,800	1,280	8,600	880	6,880	640	12,000	2,000	8,600	880
2.5R	9,600	1,804	8,640	1,280	6,900	880	5,520	640	9,600	1,804	6,900	880
3R	8,048	1,560	7,200	1,120	5,760	800	4,608	560	8,064	1,560	5,760	800
4R	6,048	1,520	5,440	1,120	4,320	800	3,456	560	6,048	1,520	4,320	800
5R	4,800	1,456	4,320	1,120	3,400	800	2,720	560	4,800	1,456	3,400	800
6R	4,032	1,456	3,600	1,120	2,880	800	2,304	560	4,032	1,456	2,880	800
8R	2,976	1,456	2,640	1,120	2,100	800	1,680	560	2,976	1,456	2,100	800
10R	2,400	1,320	2,160	1,000	1,700	696	1,360	488	2,400	1,320	1,700	696
Depth of cut												
	ap: 0.1D, ae: 0.2D		ap: 0.08D, ae: 0.2D		ap: 0.05D, ae: 0.1D		ap: 0.03D, ae: 0.1D		ap: 0.1D, ae: 0.2D		ap: 0.05D, ae: 0.1D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	○

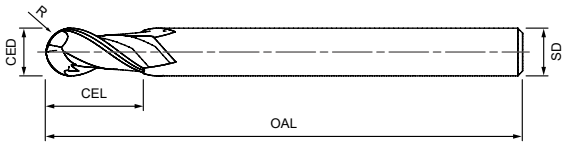


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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

X600J+-83372TO

- Ball Nose - 2-Flute x 2D / Long Shank
- Helix 37°

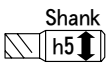








CED	Tolerance
R	±0.02

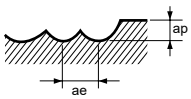


(unit : mm)

Code No.	R	CEL	SD	OAL	Flute
X600J+-83372TO	0.5R	2	4	75	2
	1R	4	4	75	
	1.5R	6	4	75	
	2R	8	4	75	
	2.5R	10	6	75	
	3R	12	6	75	
	4R	16	8	100	
	5R	20	10	100	
	6R	24	12	100	
	8R	32	16	100	
	10R	40	20	100	

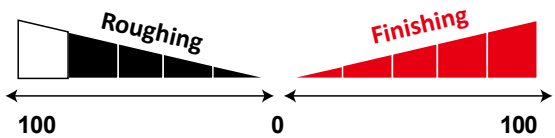
※ **Customized Special sizes, Coating type and Inches are available to order.**

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
0.5R	20,000	380	17,000	300	15,300	240	13,800	190	20,000	380	15,300	240
1R	12,000	500	10,800	400	9,720	320	8,800	250	12,000	500	9,720	320
1.5R	8,500	530	7,650	420	6,890	335	6,200	270	8,500	530	6,890	335
2R	6,500	530	5,850	425	5,250	340	4,700	270	6,500	530	5,250	340
2.5R	5,160	520	4,600	430	4,140	345	3,700	275	5,160	520	4,140	345
3R	4,320	520	3,900	430	3,510	345	3,160	275	4,320	520	3,510	345
4R	3,240	510	2,900	420	2,610	335	2,350	270	3,240	510	2,610	335
5R	2,580	510	2,300	420	2,070	335	1,860	270	2,580	510	2,070	335
6R	2,160	510	1,900	410	1,710	330	1,540	260	2,160	510	1,710	330
8R	1,620	500	1,450	400	1,300	320	1,1700	255	1,620	500	1,300	320
10R	1,320	500	1,160	400	1,040	320	940	255	1,320	500	1,040	320
Depth of cut	 ap: 0.1D, ae: 0.2D		ap: 0.08D, ae: 0.2D		ap: 0.05D, ae: 0.1D		ap: 0.03D, ae: 0.1D		ap: 0.1D, ae: 0.2D		ap: 0.05D, ae: 0.1D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	○



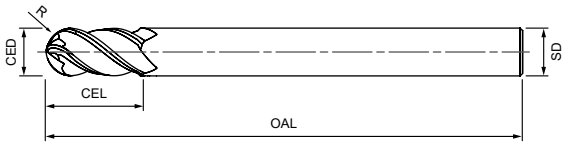
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

X600JI2+-83404TO

- Ball Nose - 4-Flute x 2D / Long Shank
- Uneven Flute / Helix 40°







Best Seller IE Series

4 Flutes | R | 40° | TO

HRC ▶60 | UMG

CED	Tolerance
R	±0.02

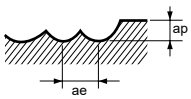
Shank h5

(unit : mm)

Code No.	R	CEL	SD	OAL	Flute
X600JI2+-83404TO	0.5R	2	4	75	4
	1R	4	4	75	
	1.5R	6	4	75	
	2R	8	4	75	
	2.5R	10	6	75	
	3R	12	6	75	
	4R	16	8	100	
	5R	20	10	100	
	6R	24	12	100	

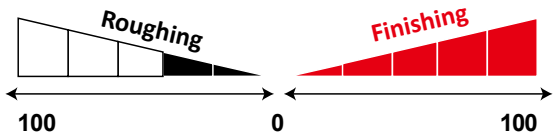
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
0.5R	25,000	900	22,500	720	22,250	570	18,200	455	25,000	900	20,250	570
1R	18,000	1,400	16,200	1,120	14,580	890	13,100	710	18,000	1,440	14,580	890
1.5R	12,000	1,480	10,800	1,180	9,720	940	8,750	750	12,000	1,480	9,720	940
2R	9,000	1,500	8,100	1,200	7,290	960	6,500	760	9,000	1,500	7,290	960
2.5R	7,200	1,530	6,480	1,200	5,800	960	5,220	770	7,200	1,530	5,800	960
3R	6,000	1,530	5,400	1,250	4,860	1,000	4,360	800	6,000	1,530	4,860	1,000
4R	4,500	1,480	4,050	1,190	3,650	950	3,300	760	4,500	1,480	3,650	950
5R	3,600	1,450	3,240	1,160	2,900	930	2,600	745	3,600	1,450	2,900	930
6R	3,000	1,400	2,700	1,120	2,430	895	2,200	715	3,000	1,400	2,430	895
Depth of cut	 ap: 0.1D, ae: 0.2D		ap: 0.08D, ae: 0.2D		ap: 0.05D, ae: 0.1D		ap: 0.03D, ae: 0.1D		ap: 0.1D, ae: 0.2D		ap: 0.05D, ae: 0.1D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	○



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

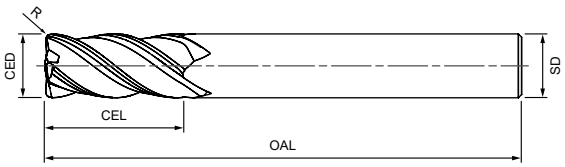
X600IE4+-21394TO

- Corner Radius - 4-Flute x 3D
- Uneven Flute / Variable Helix 39° /42°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | R | R | 39° / 42° | TO

HRC 60 | UMG

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

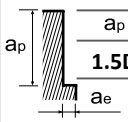
Shank h5

(unit : mm)

Code No.	CED	R	CEL	SD	OAL	Flute
X600IE4+-21394TO	1	0.2R	3	4	50	4
	2	0.2R	6	4	50	
	3	0.2R	9	4	50	
	4	0.2R	12	4	50	
	5	0.2R	15	6	50	
	6	0.2R	18	6	50	
	8	0.2R	24	8	65	
		0.5R				
	10	0.2R	30	10	75	
		0.5R				
	12	0.2R	36	12	80	
		0.5R				

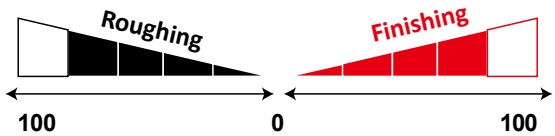
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	31,000	450	29,450	400	22,700	260	18,600	200	31,000	450	22,700	260
2	16,000	500	15,200	470	12,800	305	10,000	230	16,000	500	12,800	305
3	11,600	646	11,020	517	9,700	430	7,000	320	11,600	646	9,700	430
4	10,350	820	9,300	656	7,200	510	6,000	390	10,350	820	7,200	510
5	8,300	920	7,500	736	6,000	550	4,860	410	8,300	920	6,000	550
6	6,900	950	6,200	760	4,900	560	4,050	360	6,900	950	4,900	560
8	5,300	960	4,770	768	3,600	560	2,700	365	5,300	960	3,600	560
10	4,140	910	3,700	728	2,850	560	2,430	430	4,140	910	2,850	560
12	3,450	880	3,100	704	2,375	530	2,000	400	3,450	880	2,375	530
Depth of cut	 ap: 1.5D, ae: 0.2D		ap: 1.5D, ae: 0.1D		ap: 1.5D, ae: 0.05D		ap: 1.5D, ae: 0.03D		ap: 1.5D, ae: 0.2D		ap: 1.5D, ae: 0.05D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	○



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

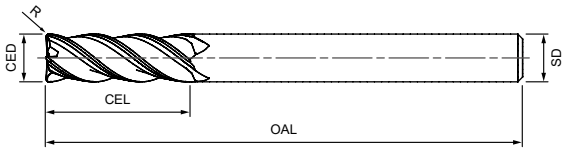
X600IE4+-23394TO

- Corner Radius - 4-Flute x 3D / Long Shank
- Uneven Flute / Variable Helix 39° /42°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | R | R | 39° / 42° | TO

HRC ▶60 | UMG

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

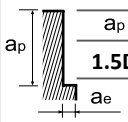
Shank h5

(unit : mm)

Code No.	CED	R	CEL	SD	OAL	Flute
X600IE4+-23394TO	1	0.2R	3	4	75	4
	2	0.2R	6	4	75	
	3	0.2R	9	4	75	
	4	0.2R	12	4	75	
	5	0.2R	15	6	75	
	6	0.2R	18	6	75	
	8	0.2R	24	8	100	
		0.5R				
	10	0.2R	30	10	100	
		0.5R				
	12	0.2R	36	12	100	
		0.5R				

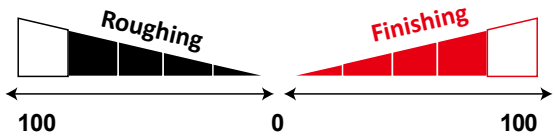
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	26,400	480	22,000	360	19,100	300	9,500	150	26,400	480	19,100	300
2	13,200	500	11,000	370	9,550	315	4,800	158	13,200	500	9,550	315
3	10,500	600	7,400	380	6,370	315	3,200	158	10,500	600	6,370	315
4	8,000	620	5,600	390	4,800	320	2,400	160	8,000	620	4,800	320
5	6,500	635	4,500	400	3,800	320	1,900	160	6,500	635	3,800	320
6	5,300	650	3,700	405	3,200	340	1,600	170	5,300	650	3,200	340
8	4,000	670	2,800	420	2,390	360	1,200	180	4,000	670	2,390	360
10	3,100	680	2,200	430	1,900	380	960	190	3,100	680	1,900	380
12	2,600	695	1,860	435	1,600	380	800	190	2,600	695	1,600	380
Depth of cut	 ap: 1.5D, ae: 0.1D		ap: 1.5D, ae: 0.05D		ap: 1.5D, ae: 0.02D		ap: 1.5D, ae: 0.01D		ap: 1.5D, ae: 0.1D		ap: 1.5D, ae: 0.05D	

Work Material

P			M	K	S		H			
G1	G2	G3	G4	G5	G11	G13	G14	G15	G16	G17
●	●	●	○	○	○	○	●	●	●	○

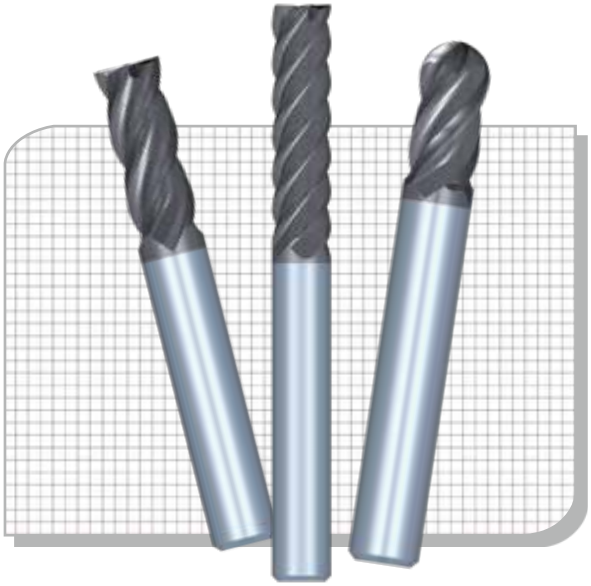


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

S500+ Series

Machinery Parts & General Process

This series is mainly focus on high speed cutting in roughing and semi-finishing process on hardness material <HRC55.



Solid Carbide Material

SMG — Super Micro Grain Carbide

HRC 55 — Applicable for material HRC 55

Coating Type

TN TA

Types of Flute

2Flutes 3Flutes 4Flutes 5Flutes 6Flutes

4Flutes R 2Flutes 3Flutes 4Flutes

Types of Uneven Flute

4Flutes 4Flutes 5Flutes 6Flutes 4Flutes 4Flutes R

Honing Process

with honing

without honing

Cutting edge

with gashland protection

Helix angle

Best Seller IE Series

30° / 32° / 35° / 37° / 42° / 43° / 45°

Optional DIN Weldon Shank

DIN 6535 HA DIN 6535 HB DIN 6535 HE

Special & Custom Tooling Services

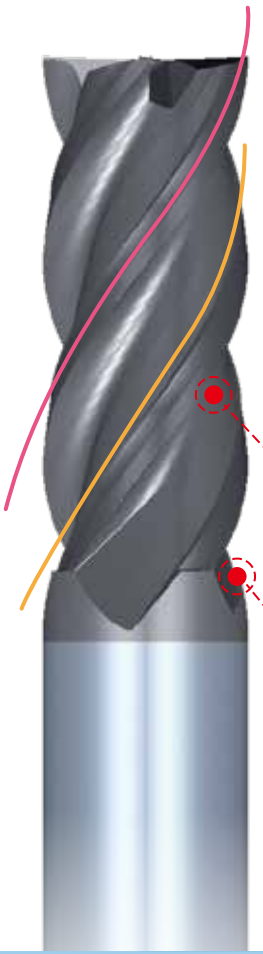
Customization acceptable !

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

High Speed & Anti-Vibration

Best Seller IE Series

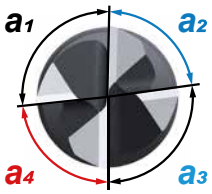
Ideal for Mild steels, Cast Irons, Hardened steels with extended tool life.





$a_1 \neq a_2$

Uneven Flute



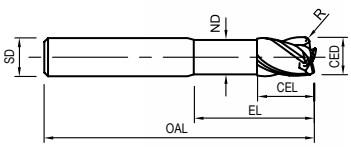
$a_1 \neq a_2 \neq a_3 \neq a_4$

Available Make to Order!

Variable Helix Angle
Anti-Vibration, Providing smooth and steady chip evacuation.

Unique coating for wear reduction and heat resistance.

Short Flute Provide	Multiple flute design provide	Heavy Duty Cutter design



Ideal for cutting different hard metals.



Ideal for high hardness metals and finishing applications.



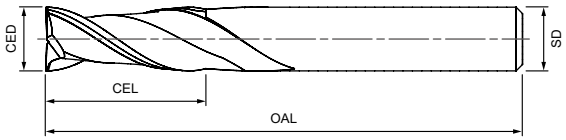
Ideal for heavy duty cutting operation.

S500I2+-11352TN

- Square - 2-Flute x 2.5D
- Uneven Flute / Helix 35°



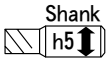




Best Seller IE Series



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

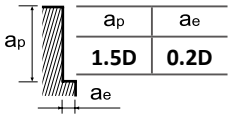
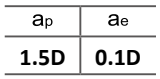
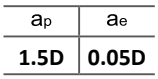
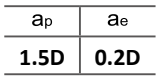
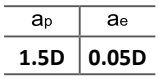


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500I2+-11352TN	1	3	4	50	2
	2	5	4	50	
	3	8	4	50	
	4	10	4	50	
	5	13	6	50	
	6	15	6	50	
	8	20	8	60	
	10	25	10	75	
	12	30	12	75	

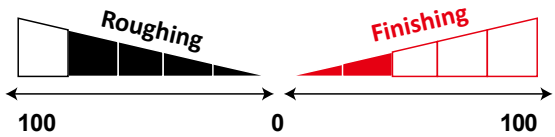
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	24,000	275	19,200	130	15,360	75	24,000	275	15,360	75
2	15,600	350	9,600	150	7,680	90	15,600	350	7,680	90
3	10,600	370	6,500	160	5,600	100	10,600	370	5,600	100
4	8,000	370	4,900	170	4,200	110	8,000	370	4,200	110
5	6,350	380	4,300	180	3,300	120	6,350	380	3,300	120
6	5,300	385	3,840	185	2,800	120	5,300	385	2,800	120
8	4,000	385	2,880	185	2,100	120	4,000	385	2,100	120
10	3,120	375	2,880	180	1,700	110	3,120	375	1,700	110
12	2,600	360	1,870	175	1,400	110	2,600	360	1,400	110
Depth of cut										

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



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

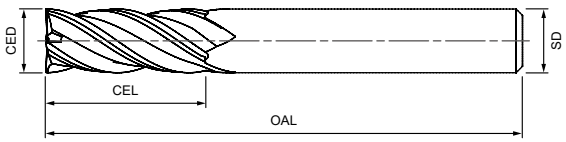
S500I4+-11354TN

- Square - 4-Flute x 2.5D
- Uneven Flute / Helix 35°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | 90° | 35° | TN

HRC 55 | SMG

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

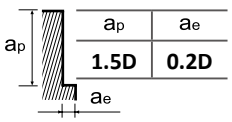
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500I4+-11354TN	1	3	4	50	4
	2	5	4	50	
	3	8	4	50	
	4	10	4	50	
	5	13	6	50	
	6	15	6	50	
	8	20	8	60	
	10	25	10	75	
	12	30	12	75	

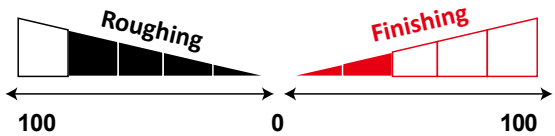
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	470	25,500	360	21,600	250	30,000	470	21,600	250
2	14,800	580	12,600	440	11,000	210	14,800	580	11,000	210
3	10,000	550	8,560	470	7,400	240	10,000	550	7,400	240
4	7,600	590	6,460	500	5,500	360	7,600	590	5,500	360
5	6,000	630	5,100	520	4,500	400	6,000	630	4,500	400
6	5,000	655	4,300	550	3,760	450	5,000	655	3,760	450
8	3,800	695	3,200	550	2,880	460	3,800	695	2,880	460
10	3,000	690	2,550	535	2,300	460	3,000	690	2,300	460
12	2,470	655	2,100	530	1,950	420	2,470	655	1,950	420
Depth of cut			ap ae 1.5D 0.1D		ap ae 1.5D 0.05D		ap ae 1.5D 0.2D		ap ae 1.5D 0.05D	

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



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

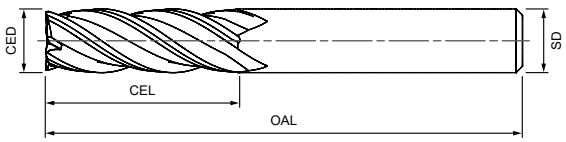
S500I4+-11354TN

- Square - 4-Flute x 3D
- Uneven Flute / Helix 35°



$a_1 \neq a_2 \neq a_3 \neq a_4$

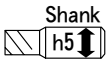




Best Seller IE Series



CED	Tolerance
1~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

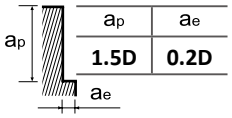


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500I4+-11354TN	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	
	16	48	16	100	
	20	60	20	125	

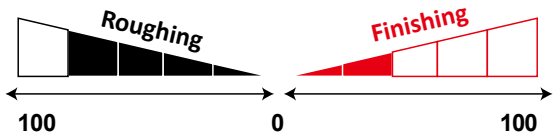
※ **Customized Special sizes, Coating type and Inches are available to order.**

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	470	25,500	360	21,600	250	30,000	470	21,600	250
2	14,800	580	12,600	440	11,000	210	14,800	580	11,000	210
3	10,000	550	8,560	470	7,400	240	10,000	550	7,400	240
4	7,600	590	6,460	500	5,500	360	7,600	590	5,500	360
5	6,000	630	5,100	520	4,500	400	6,000	630	4,500	400
6	5,000	655	4,300	550	3,760	450	5,000	655	3,760	450
8	3,800	695	3,200	550	2,880	460	3,800	695	2,880	460
10	3,000	690	2,550	535	2,300	460	3,000	690	2,300	460
12	2,470	655	2,100	530	1,950	420	2,470	655	1,950	420
16	1,850	575	1,600	460	1,500	410	1,850	575	1,500	410
20	1,520	560	1,300	450	1,200	390	1,520	560	1,200	390
Depth of cut	 ap 1.5D, ae 0.2D		ap 1.5D, ae 0.1D		ap 1.5D, ae 0.05D		ap 1.5D, ae 0.2D		ap 1.5D, ae 0.05D	

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



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

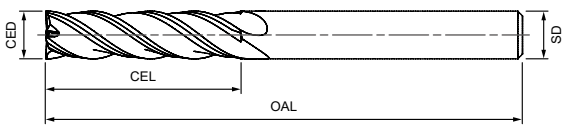
S500I4+-12354TN

- Square - 4-Flute x 4D / Long Flute
- Uneven Flute / Helix 35°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4Flutes | 90° | 35° | TN

HRC 55 | SMG

CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

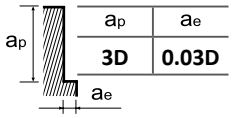
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500I4+-12354TN	6	24	6	65	4
	8	32	8	90	
	10	40	10	100	
	12	48	12	110	
	16	64	16	125	
	20	80	20	150	
	25	100	25	200	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	4,350	560	4,200	520	3,360	260	4,350	560	3,360	260
8	3,300	570	3,200	550	2,560	270	3,300	570	2,560	270
10	2,650	570	2,600	570	2,080	280	2,650	570	2,080	280
12	2,200	560	2,090	525	1,650	270	2,200	560	1,650	270
16	1,690	560	1,600	520	1,220	260	1,690	560	1,220	260
20	1,330	540	1,200	510	960	250	1,330	540	960	250
25	1,020	530	970	500	770	245	1,020	530	770	245
Depth of cut										

ap	ae
3D	0.03D

ap	ae
3D	0.02D

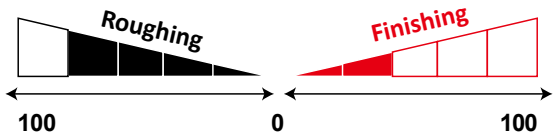
ap	ae
3D	0.01D

ap	ae
3D	0.03D

ap	ae
3D	0.01D

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



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3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

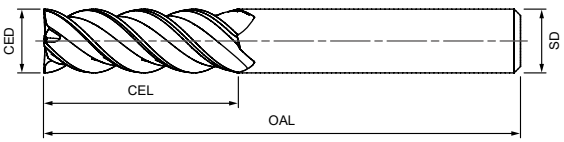
S500I4+-11454TN

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



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4Flutes | 90° | 45° | TN

HRC 55 | SMG

CED	Tolerance
1~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

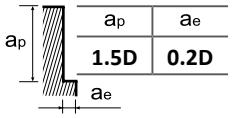
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500I4+-11454TN	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	
	16	48	16	100	
	20	60	20	125	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	470	25,500	360	21,600	250	30,000	470
2	14,800	580	12,600	440	11,000	210	14,800	580
3	10,000	550	8,560	470	7,400	240	10,000	550
4	7,600	590	6,460	500	5,500	360	7,600	590
5	6,000	630	5,100	520	4,500	400	6,000	630
6	5,000	655	4,300	550	3,760	450	5,000	655
8	3,800	695	3,200	550	2,880	460	3,800	695
10	3,000	690	2,550	535	2,300	460	3,000	690
12	2,470	655	2,100	530	1,950	420	2,470	655
16	1,850	575	1,600	460	1,500	410	1,850	575
20	1,520	560	1,300	450	1,200	390	1,520	560
Depth of cut								

ap	ae
1.5D	0.2D

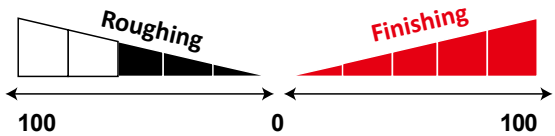
ap	ae
1.5D	0.1D

ap	ae
1.5D	0.05D

ap	ae
1.5D	0.2D

Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	●

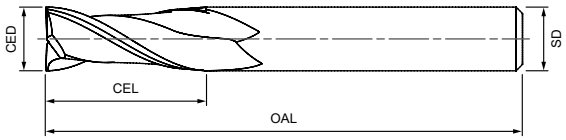


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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

S500E2+-11282TN

- Square - 2-Flute x 2.5D
- Variable Helix 28° /31°



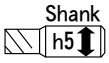


Best Seller IE Series





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

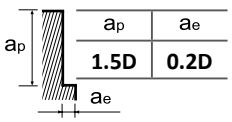


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500E2+-11282TN	1	3	4	50	2
	2	5	4	50	
	3	8	4	50	
	4	10	4	50	
	5	13	6	50	
	6	15	6	50	
	8	20	8	60	
	10	25	10	75	
	12	30	12	75	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	24,000	275	19,200	130	15,360	75	24,000	275	15,360	75
2	15,600	350	9,600	150	7,680	90	15,600	350	7,680	90
3	10,600	370	6,500	160	5,600	100	10,600	370	5,600	100
4	8,000	370	4,900	170	4,200	110	8,000	370	4,200	110
5	6,350	380	4,300	180	3,300	120	6,350	380	3,300	120
6	5,300	385	3,840	185	2,800	120	5,300	385	2,800	120
8	4,000	385	2,880	185	2,100	120	4,000	385	2,100	120
10	3,120	375	2,280	180	1,700	110	3,120	375	1,700	110
12	2,600	360	1,870	175	1,400	110	2,600	360	1,400	110
Depth of cut										

ap	ae
1.5D	0.2D

ap	ae
1.5D	0.1D

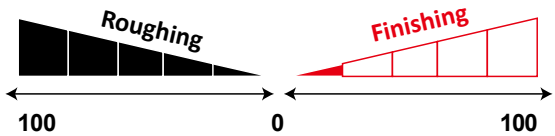
ap	ae
1.5D	0.05D

ap	ae
1.5D	0.2D

ap	ae
1.5D	0.05D

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○

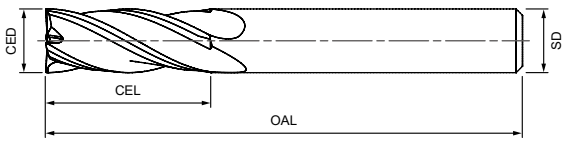


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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

S500E2+-11284TN

- Square - 4-Flute x 2.5D
- Variable Helix 28° /31°



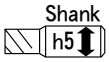


Best Seller IE Series





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

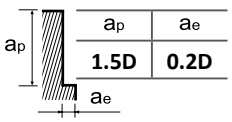


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500E2+-11284TN	1	3	4	50	4
	2	5	4	50	
	3	8	4	50	
	4	10	4	50	
	5	13	6	50	
	6	15	6	50	
	8	20	8	60	
	10	25	10	75	
	12	30	12	75	

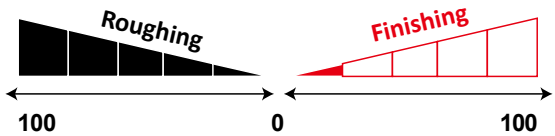
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	470	25,500	360	21,600	250	30,000	470	21,600	250
2	14,800	580	12,600	440	11,000	210	14,800	580	11,000	210
3	10,000	550	8,560	470	7,400	240	10,000	550	7,400	240
4	7,600	590	6,460	500	5,500	360	7,600	590	5,500	360
5	6,000	630	5,100	520	4,500	400	6,000	630	4,500	400
6	5,000	655	4,300	550	3,760	450	5,000	655	3,760	450
8	3,800	695	3,200	550	2,880	460	3,800	695	2,880	460
10	3,000	690	2,550	535	2,300	460	3,000	690	2,300	460
12	2,470	655	2,100	530	1,950	420	2,470	655	1,950	420
Depth of cut	 ap: 1.5D, ae: 0.2D		ap: 1.5D, ae: 0.1D		ap: 1.5D, ae: 0.05D		ap: 1.5D, ae: 0.2D		ap: 1.5D, ae: 0.05D	

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



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

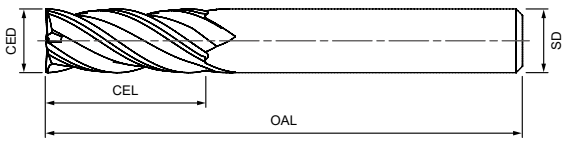
S500IE4+-11354TA

- Square - 4-Flute x 2.5D
- Uneven Flute / Variable Helix 35° /38°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4Flutes | 90° | 35°/ 38° | TA

HRC 55 | SMG

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

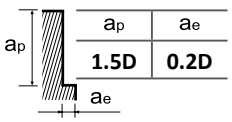
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500IE4+-11354TA	1	3	4	50	4
	2	5	4	50	
	3	8	4	50	
	4	10	4	50	
	5	13	6	50	
	6	15	6	50	
	8	20	8	60	
	10	25	10	75	
	12	30	12	75	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	450	28,500	400	22,000	260	30,000	450	22,000	260
2	16,000	500	15,200	470	12,800	360	16,000	500	12,800	360
3	11,600	646	11,000	510	9,700	430	11,600	646	9,700	430
4	10,350	820	9,300	650	7,200	520	10,350	820	7,200	520
5	8,300	920	7,500	730	6,000	560	8,300	920	6,000	560
6	6,900	950	6,200	760	4,900	570	6,900	950	4,900	570
8	5,300	960	4,700	770	3,780	595	5,300	960	3,780	595
10	4,100	910	3,700	730	3,000	580	4,100	910	3,000	580
12	3,450	880	3,100	700	2,500	530	3,450	880	2,500	530
Depth of cut										

a_p	a_e
1.5D	0.2D

a_p	a_e
1.5D	0.1D

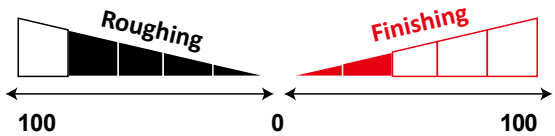
a_p	a_e
1.5D	0.05D

a_p	a_e
1.5D	0.2D

a_p	a_e
1.5D	0.05D

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



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

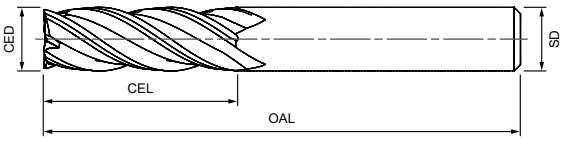
S500IE4+-11354TA

- Square - 4-Flute x 3D
- Uneven Flute / Variable Helix 35° /38°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4Flutes | 90° | 35°/ 38° | TA

HRC ▶55 | SMG

CED	Tolerance
1~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

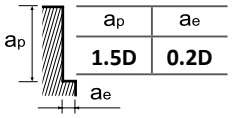
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500IE4+-11354TA	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	
	16	48	16	100	
	20	60	20	125	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	450	28,500	400	22,000	260	30,000	450	22,000	260
2	16,000	500	15,200	470	12,800	360	16,000	500	12,800	360
3	11,600	646	11,000	510	9,700	430	11,600	646	9,700	430
4	10,350	820	9,300	650	7,200	520	10,350	820	7,200	520
5	8,300	920	7,500	730	6,000	560	8,300	920	6,000	560
6	6,900	950	6,200	760	4,900	570	6,900	950	4,900	570
8	5,300	960	4,700	770	3,780	595	5,300	960	3,780	595
10	4,100	910	3,700	730	3,000	580	4,100	910	3,000	580
12	3,450	880	3,100	700	2,500	530	3,450	880	2,500	530
16	2,600	860	2,300	710	1,800	515	2,600	860	1,800	515
20	2,070	860	1,800	705	1,440	510	2,070	860	1,440	510
Depth of cut										

ap	ae
1.5D	0.2D

ap	ae
1.5D	0.1D

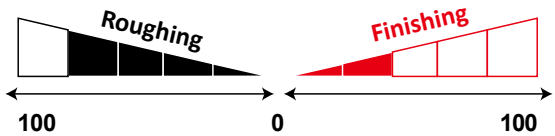
ap	ae
1.5D	0.05D

ap	ae
1.5D	0.2D

ap	ae
1.5D	0.05D

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

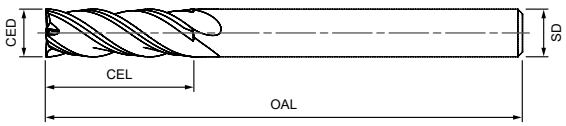
S500IE4+-13354TA

- Square - 4-Flute x 3D / Long Shank
- Uneven Flute / Variable Helix 35° /38°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4Flutes | 90° | 35°/ 38° | TA

HRC ▶55 | SMG

CED	Tolerance
1~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

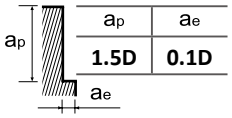
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500IE4+-13354TA	1	3	4	75	4
	2	6	4	75	
	3	9	4	75	
	4	12	4	75	
	5	15	6	75	
	6	18	6	75	
	8	24	8	100	
	10	30	10	100	
	12	36	12	100	
	16	48	16	150	
	20	60	20	150	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	26,400	480	22,000	360	19,100	300	26,400	480	19,100	300
2	13,200	500	11,000	370	9,550	315	13,200	500	9,550	315
3	10,500	600	7,400	380	6,370	315	10,500	600	6,370	315
4	8,000	620	5,600	390	4,800	320	8,000	620	4,800	320
5	6,500	635	4,500	400	3,800	320	6,500	635	3,800	320
6	5,300	650	3,700	405	3,200	340	5,300	650	3,200	340
8	4,000	670	2,800	420	2,390	360	4,000	670	2,390	360
10	3,100	680	2,200	430	1,900	380	3,100	680	1,900	380
12	2,600	695	1,860	435	1,600	380	2,600	695	1,600	380
16	1920	670	1400	440	1200	370	1920	670	1200	370
20	1500	670	1100	440	960	375	1500	670	960	375
Depth of cut										

ap	ae
1.5D	0.1D

ap	ae
1.5D	0.05D

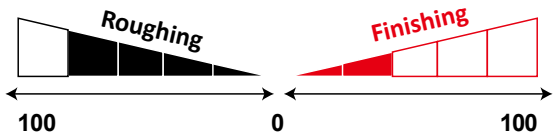
ap	ae
1.5D	0.02D

ap	ae
1.5D	0.1D

ap	ae
1.5D	0.02D

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



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3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

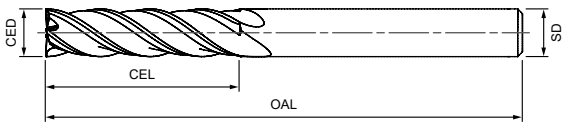
S500IE4+-12354TA

- Square - 4-Flute x 4D / Long Flute
- Uneven Flute / Variable Helix 35° /38°



$a_1 \neq a_2 \neq a_3 \neq a_4$

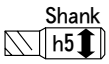








CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

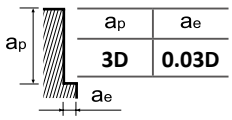


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500IE4+-12354TA	6	24	6	65	4
	8	32	8	90	
	10	40	10	100	
	12	48	12	110	
	16	64	16	125	
	20	80	20	150	
	25	100	25	200	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	4,350	560	4,200	520	3,300	360	4,300	560	3,300	365
8	3,300	570	3,400	540	2,500	385	3,300	570	2,500	385
10	2,650	570	2,700	560	2,100	400	2,600	570	2,100	400
12	2,200	560	2,090	525	1,650	370	2,200	560	1,650	370
16	1,700	560	1,600	520	1,220	365	1,700	560	1,220	365
20	1,300	540	1,200	510	960	360	1,300	540	960	360
25	1,020	530	970	500	770	350	1,020	530	770	350
Depth of cut										

ap	ae
3D	0.03D

ap	ae
3D	0.02D

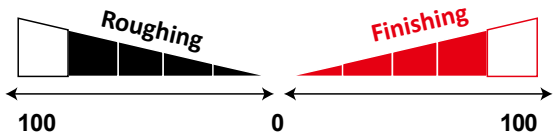
ap	ae
3D	0.05D

ap	ae
3D	0.03D

ap	ae
3D	0.01D

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



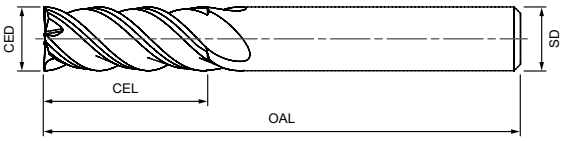
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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

S500IE2+-11434TA

- Square - 4-Flute x 2.5D
- Uneven Flute / Variable Helix 43° /46°







Best Seller IE Series

4Flutes | 90° | 43°/46° | TA

HRC 55 | SMG

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

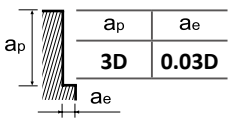
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500IE2+-11434TA	1	3	4	50	4
	2	5	4	50	
	3	8	4	50	
	4	10	4	50	
	5	13	6	50	
	6	15	6	50	
	8	20	8	60	
	10	25	10	75	
	12	30	12	75	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	450	28,500	400	22,000	260	30,000	450	22,000	260
2	16,000	500	15,200	470	12,800	360	16,000	500	12,800	360
3	11,600	646	11,000	510	9,700	430	11,600	646	9,700	430
4	10,350	820	9,300	650	7,200	520	10,350	820	7,200	520
5	8,300	920	7,500	730	6,000	560	8,300	920	6,000	560
6	6,900	950	6,200	760	4,900	570	6,900	950	4,900	570
8	5,300	960	4,700	770	3,780	595	5,300	960	3,780	595
10	4,100	910	3,700	730	3,000	580	4,100	910	3,000	580
12	3,450	880	3,100	700	2,500	530	3,450	880	2,500	530
Depth of cut										

a_p	a_e
3D	0.03D

a_p	a_e
3D	0.02D

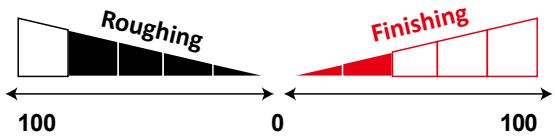
a_p	a_e
3D	0.01D

a_p	a_e
3D	0.03D

a_p	a_e
3D	0.01D

Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	●



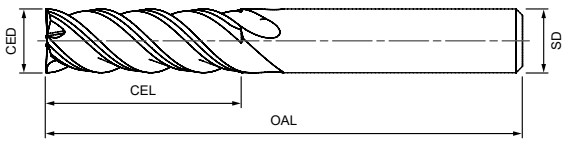
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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

S500IE2+-11434TA

- Square - 4-Flute x 3D
- Uneven Flute / Variable Helix 43° /46°







Best Seller IE Series

4 Flutes | 90° | 43°/46° | TA

HRC 55 | SMG

CED	Tolerance
1~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

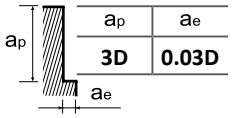
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500IE2+-11434TA	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	
	16	48	16	100	
	20	60	20	125	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	450	28,500	400	22,000	260	30,000	450
2	16,000	500	15,200	470	12,800	360	16,000	500
3	11,600	646	11,000	510	9,700	430	11,600	646
4	10,350	820	9,300	650	7,200	520	10,350	820
5	8,300	920	7,500	730	6,000	560	8,300	920
6	6,900	950	6,200	760	4,900	570	6,900	950
8	5,300	960	4,700	770	3,780	595	5,300	960
10	4,100	910	3,700	730	3,000	580	4,100	910
12	3,450	880	3,100	700	2,500	530	3,450	880
16	2,600	860	2,300	710	1,800	515	2,600	860
20	2,070	860	1,800	705	1,440	510	2,070	860
Depth of cut								

ap	ae
3D	0.03D

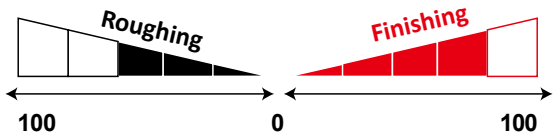
ap	ae
3D	0.02D

ap	ae
3D	0.01D

ap	ae
3D	0.03D

Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	●



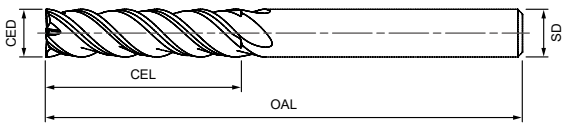
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

S500IE2^{+}-12434TA

- Square - 4-Flute x 4D / Long Flute
- Uneven Flute / Variable Helix 43° /46°



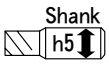




Best Seller IE Series



CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

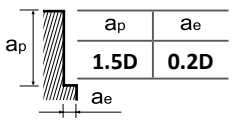


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500IE2^{+}-12434TA	6	24	6	65	4
	8	32	8	90	
	10	40	10	100	
	12	48	12	110	
	16	64	16	125	
	20	80	20	150	
	25	100	25	200	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	4,300	560	4,200	520	3,300	365	4,300	560	3,300	365
8	3,300	570	3,400	540	2,500	385	3,300	570	2,500	385
10	2,650	570	2,700	560	2,100	400	2,600	570	2,100	400
12	2,200	560	2,090	525	1,650	370	2,200	560	1,650	370
16	1,700	560	1,600	520	1,220	365	1,700	560	1,220	365
20	1,300	540	1,200	510	960	360	1,300	540	960	360
25	1,020	530	970	500	770	350	1,020	530	770	350
Depth of cut										

ap	ae
1.5D	0.2D

ap	ae
1.5D	0.1D

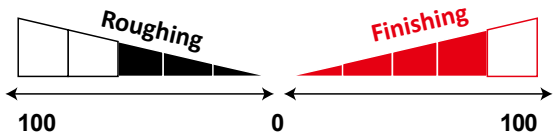
ap	ae
1.5D	0.05D

ap	ae
1.5D	0.2D

ap	ae
1.5D	0.05D

Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	●



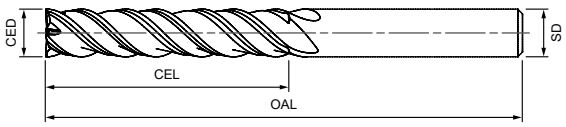
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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

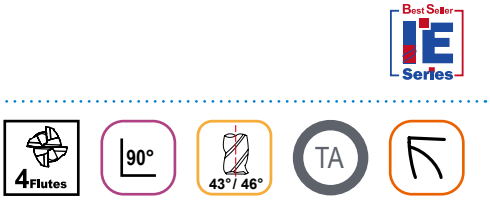
S500IE2+-12434TA

- Square - 4-Flute x 5D / Long Flute
- Uneven Flute / Variable Helix 43° /46°

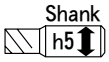








CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

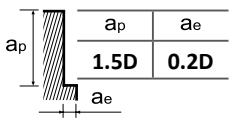


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500IE2+-12434TA	6	30	6	75	4
	8	40	8	90	
	10	50	10	100	
	12	60	12	110	
	16	80	16	150	
	20	100	20	200	
	25	125	25	200	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	4,300	560	4,200	520	3,300	365	4,300	560	3,300	365
8	3,300	570	3,400	540	2,500	385	3,300	570	2,500	385
10	2,600	570	2,700	560	2,100	400	2,600	570	2,100	400
12	2,200	560	2,090	525	1,650	370	2,200	560	1,650	370
16	1,700	560	1,600	520	1,220	365	1,700	560	1,220	365
20	1,300	540	1,200	510	960	360	1,300	540	960	360
25	1,020	530	970	500	770	350	1,020	530	770	350
Depth of cut										

ap	ae
1.5D	0.2D

ap	ae
1.5D	0.1D

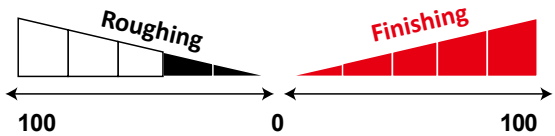
ap	ae
1.5D	0.05D

ap	ae
1.5D	0.2D

ap	ae
1.5D	0.05D

Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	●



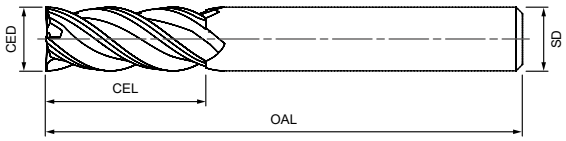
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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

S500IE2+-11384TA

- Square - 4-Flute x 2.5D
- Uneven Flute / Variable Helix 38° /41°







Best Seller IE Series

4Flutes | 90° | 38°/41° | TA

HRC 55 | SMG

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

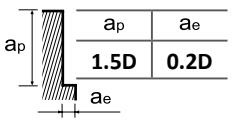
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500IE2+-11384TA	1	3	4	50	4
	2	5	4	50	
	3	8	4	50	
	4	10	4	50	
	5	13	6	50	
	6	15	6	50	
	8	20	8	60	
	10	25	10	75	
	12	30	12	75	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	450	28,500	400	22,000	260	30,000	450	22,000	260
2	16,000	500	15,200	470	12,800	360	16,000	500	12,800	360
3	11,600	646	11,000	510	9,700	430	11,600	646	9,700	430
4	10,350	820	9,300	650	7,200	520	10,350	820	7,200	520
5	8,300	920	7,500	730	6,000	560	8,300	920	6,000	560
6	6,900	950	6,200	760	4,900	570	6,900	950	4,900	570
8	5,300	960	4,700	770	3,780	595	5,300	960	3,780	595
10	4,100	910	3,700	730	3,000	580	4,100	910	3,000	580
12	3,450	880	3,100	700	2,500	530	3,450	880	2,500	530
Depth of cut										

a_p	a_e
1.5D	0.2D

a_p	a_e
1.5D	0.1D

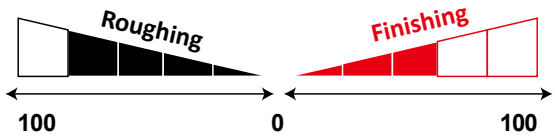
a_p	a_e
1.5D	0.05D

a_p	a_e
1.5D	0.2D

a_p	a_e
1.5D	0.05D

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



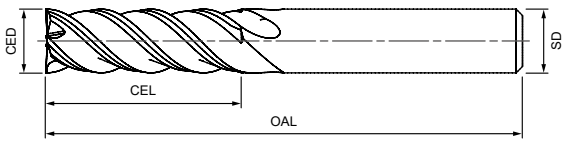
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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

S500IE2+-11384TA

- Square - 4-Flute x 3D
- Uneven Flute / Variable Helix 38° /41°







Best Seller IE Series

4Flutes | 90° | 38°/41° | TA

HRC 55 | SMG

CED	Tolerance
1~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

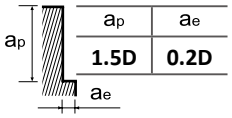
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500IE2+-11384TA	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	
	16	48	16	100	
	20	60	20	125	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	450	28,500	400	22,000	260	30,000	450	22,000	260
2	16,000	500	15,200	470	12,800	360	16,000	500	12,800	360
3	11,600	646	11,000	510	9,700	430	11,600	646	9,700	430
4	10,350	820	9,300	650	7,200	520	10,350	820	7,200	520
5	8,300	920	7,500	730	6,000	560	8,300	920	6,000	560
6	6,900	950	6,200	760	4,900	570	6,900	950	4,900	570
8	5,300	960	4,700	770	3,780	595	5,300	960	3,780	595
10	4,100	910	3,700	730	3,000	580	4,100	910	3,000	580
12	3,450	880	3,100	700	2,500	530	3,450	880	2,500	530
16	2,600	860	2,300	710	1,800	515	2,600	860	1,800	515
20	2,070	860	1,800	705	1,440	510	2,070	860	1,440	510
Depth of cut										

ap	ae
1.5D	0.2D

ap	ae
1.5D	0.1D

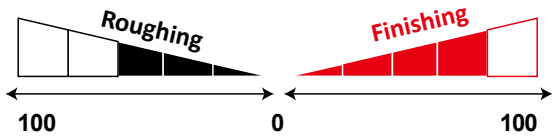
ap	ae
1.5D	0.05D

ap	ae
1.5D	0.2D

ap	ae
1.5D	0.05D

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



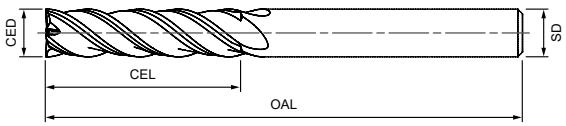
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3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

S500IE2+-12384TA

- Square - 4-Flute x 4D / Long Flute
- Uneven Flute / Variable Helix 38° /41°



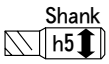




Best Seller IE Series



CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

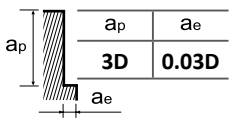


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500IE2+-12384TA	6	24	6	65	4
	8	32	8	90	
	10	40	10	100	
	12	48	12	110	
	16	64	16	125	
	20	80	20	150	
	25	100	25	200	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	4,300	560	4,200	520	3,300	365	4,300	560	3,300	365
8	3,300	570	3,400	540	2,500	385	3,300	570	2,500	385
10	2,600	570	2,700	560	2,100	400	2,600	570	2,100	400
12	2,200	560	2,090	525	1,650	370	2,200	560	1,650	370
16	1,700	560	1,600	520	1,220	365	1,700	560	1,220	365
20	1,300	540	1,200	510	960	360	1,300	540	960	360
25	1,020	530	970	500	770	350	1,020	530	770	350
Depth of cut										

ap	ae
3D	0.03D

ap	ae
3D	0.02D

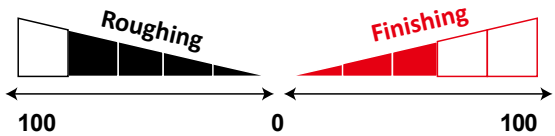
ap	ae
3D	0.01D

ap	ae
3D	0.03D

ap	ae
3D	0.01D

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



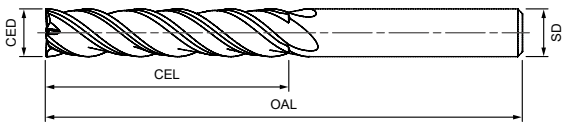
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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

S500IE2^{+}-12384TA

- Square - 4-Flute x 5D / Long Flute
- Uneven Flute / Variable Helix 38° /41°









CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

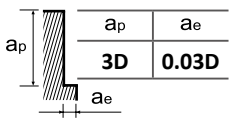
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500IE2^{+}-12384TA	6	30	6	75	4
	8	40	8	90	
	10	50	10	100	
	12	60	12	110	
	16	80	16	150	
	20	100	20	200	
	25	125	25	200	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	4,300	560	4,200	520	3,300	365	4,300	560	3,300	365
8	3,300	570	3,400	540	2,500	385	3,300	570	2,500	385
10	2,600	570	2,700	560	2,100	400	2,600	570	2,100	400
12	2,200	560	2,090	525	1,650	370	2,200	560	1,650	370
16	1,700	560	1,600	520	1,220	365	1,700	560	1,220	365
20	1,300	540	1,200	510	960	360	1,300	540	960	360
25	1,020	530	970	500	770	350	1,020	530	770	350
Depth of cut										

ap	ae
3D	0.03D

ap	ae
3D	0.02D

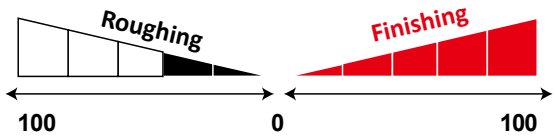
ap	ae
3D	0.01D

ap	ae
3D	0.03D

ap	ae
3D	0.01D

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○

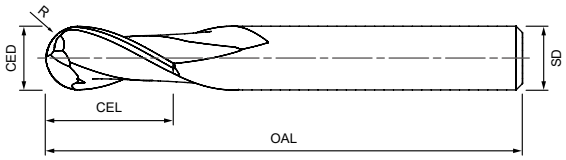


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

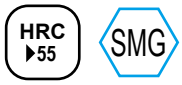
S500J+-81302TN

- Ball Nose - 2-Flute x 2D
- Helix 30°

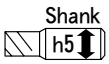








CED	Tolerance
R	±0.02

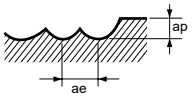


(unit : mm)

Code No.	R	CEL	SD	OAL	Flute
S500J+-81302TN	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	
	8R	32	16	100	

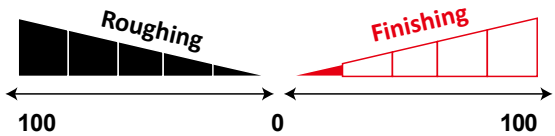
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
0.5R	29,000	580	28,000	350	23,000	290	29,000	580	23,000	290
1R	21,000	840	17,000	520	13,800	350	21,000	840	13,800	350
1.5R	14,000	840	11,700	540	10,000	430	14,000	840	10,000	430
2R	10,500	840	9,000	520	7,700	410	10,500	840	7,700	410
2.5R	8,600	830	7,200	510	6,100	470	8,600	830	6,100	470
3R	7,200	830	5,800	490	5,100	480	7,200	830	5,100	480
4R	5,400	810	4,400	490	3,900	490	5,400	810	3,900	490
5R	4,300	810	3,500	490	3,200	490	4,300	810	3,200	490
6R	3,600	810	2,900	490	2,500	450	3,600	810	2,500	450
8R	2,700	800	2,200	490	1,900	450	2,700	800	1,900	450
Depth of cut	 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 0.1D / a_e 0.2D		a_p 0.05D / a_e 0.1D	

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



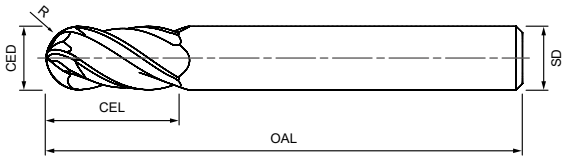
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

S500JI2+-81354TN

- Ball Nose - 4-Flute x 2D
- Uneven Flute / Helix 35°

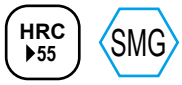




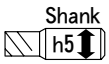


Best Seller IE Series





CED	Tolerance
R	±0.02

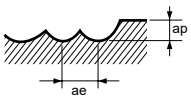


(unit : mm)

Code No.	R	CEL	SD	OAL	Flute
S500JI2+-81354TN	0.5R	2	4	50	4
	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	
	8R	32	16	100	
	10R	40	20	100	

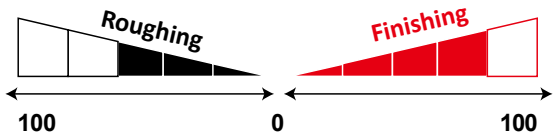
※ **Customized Special sizes, Coating type and Inches are available to order.**

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
0.5R	30,400	920	27,600	750	22,000	570	30,400	920	22,000	570
1R	23,000	1,400	21,600	1,150	17,300	800	23,000	1,400	17,300	800
1.5R	16,000	2,000	14,400	1,250	11,500	850	16,000	2,000	11,500	850
2R	12,000	2,000	10,800	1,280	8,600	880	12,200	2,000	8,600	880
2.5R	9,600	1,800	8,600	1,280	6,900	880	9,600	1,800	6,900	880
3R	8,000	1,500	7,200	1,120	5,700	800	8,000	1,500	5,700	800
4R	6,000	1,520	5,400	1,120	4,300	800	6,000	1,520	4,300	800
5R	4,800	1,450	4,300	1,120	3,400	800	4,800	1,450	3,400	800
6R	4,000	1,450	3,600	1,120	2,900	800	4,000	1,450	2,900	800
8R	3,000	1,450	2,600	1,120	2,100	800	3,000	1,450	2,100	800
10R	2,400	1,320	2,100	1,000	1,700	670	2,400	1,320	1,700	670
Depth of cut										
	ap: 0.1D, ae: 0.2D		ap: 0.08D, ae: 0.2D		ap: 0.05D, ae: 0.1D		ap: 0.1D, ae: 0.2D		ap: 0.05D, ae: 0.1D	

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○

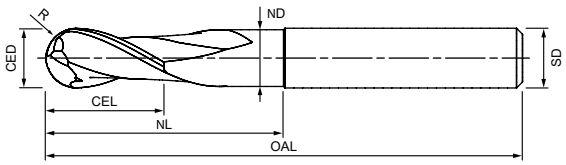


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

S500J+-83302TN

- Ball Nose - 2-Flute x 2D / Long Reduced Neck
- Helix 30°







CED	Tolerance
R	±0.02

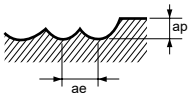
Shank h5

(unit : mm)

Code No.	R	CEL	NL	ND	SD	OAL	Flute
S500J+-83302TN	0.5R	2	5	0.95	4	75	2
	1R	6	10	1.95	4	75	
	1.5R	4	15	2.85	4	75	
	2R	8	20	3.85	4	75	
	2.5R	10	25	4.85	6	75	
	3R	12	30	5.7	6	75	
	4R	16	35	7.6	8	100	
	5R	20	40	9.5	10	100	
	6R	24	45	11.4	12	100	

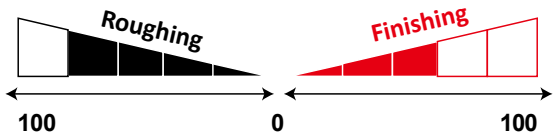
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
0.5R	20,000	380	17,000	300	15,300	240	20,000	380	15,300	240
1R	12,000	480	10,800	370	9,720	295	12,000	480	9,720	295
1.5R	8,500	530	7,650	420	6,890	335	8,500	530	6,890	335
2R	6,500	530	5,850	425	5,250	340	6,500	530	5,250	340
2.5R	5,160	520	4,600	430	4,140	345	5,160	520	4,140	345
3R	4,320	520	3,900	430	3,510	345	4,320	520	3,510	345
4R	3,240	510	2,900	420	2,610	335	3,240	510	2,610	335
5R	2,580	510	2,300	420	2,070	335	2,580	510	2,070	335
6R	2,160	510	1,900	410	1,710	330	2,160	510	1,710	330
Depth of cut	 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 0.1D, a_e 0.2D		a_p 0.05D, a_e 0.1D	

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



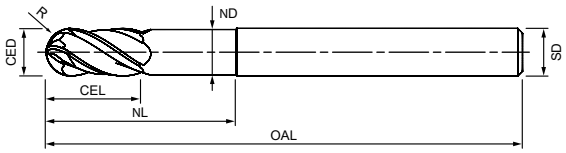
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

S500JI2+-83354TN

- Ball Nose - 4-Flute x 2D / Long Reduced Neck
- Uneven Flute / Helix 35°





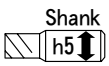


Best Seller IE Series





CED	Tolerance
R	±0.02

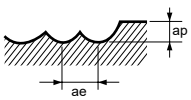


(unit : mm)

Code No.	R	CEL	NL	ND	SD	OAL	Flute
S500JI2+-83354TN	3R	12	18	5.7	6	75	4
	4R	16	32	7.6	8	100	
	5R	20	40	9.5	10	100	
	6R	24	48	11.4	12	100	
	8R	32	64	15.5	16	150	
	10R	40	80	19.5	20	150	

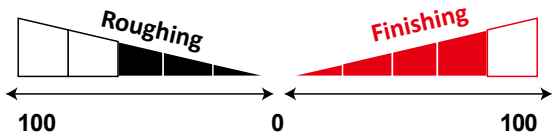
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
3R	6,000	1,530	5,400	1,250	5,000	980	6,000	1,530	5,000	980
4R	4,500	1,480	4,050	1,190	3,650	950	4,500	1,480	3,650	950
5R	3,600	1,450	3,240	1,160	2,900	930	3,600	1,450	2,900	930
6R	3,000	1,400	2,700	1,120	2,430	895	3,000	1,400	2,430	895
8R	2,200	1,400	2,000	1,120	1,800	890	2,200	1,400	1,800	890
10R	1,800	1,280	1,620	1,030	1,460	825	1,800	1,280	1,460	825
Depth of cut	 ap: 0.1D, ae: 0.2D		ap: 0.08D, ae: 0.2D		ap: 0.05D, ae: 0.1D		ap: 0.1D, ae: 0.2D		ap: 0.05D, ae: 0.1D	

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



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

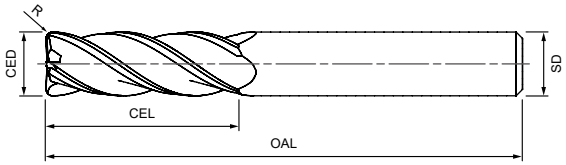
S500I4+-21354TN

- Corner Radius - 4-Flute x 3D
- Uneven Flute / Helix 35°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | R | R | 35° | TN | HRC ▶55 | SMG

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

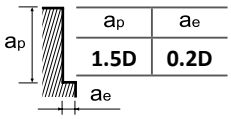
Shank h5

(unit : mm)

Code No.	CED	R	CEL	SD	OAL	Flute
S500I4+-21354TN	1	0.2R	3	4	50	4
	2	0.2R	6	4	50	
	3	0.2R	9	4	50	
	4	0.2R	12	4	50	
	5	0.2R	15	6	50	
	6	0.2R	18	6	50	
	8	0.2R	24	8	100	
		0.5R				
	10	0.2R	30	10	100	
		0.5R				
	12	0.2R	36	12	100	
		0.5R				

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	470	27,000	360	21,600	250	30,000	470	21,600	250
2	15,600	580	16,000	440	12,240	210	15,600	580	12,240	210
3	12,700	690	12,300	520	9,270	240	12,300	690	9,240	240
4	10,300	740	9,270	560	6,900	360	10,300	740	6,900	360
5	8,200	790	7,380	600	5,670	400	8,200	790	5,670	400
6	6,600	820	8,940	720	4,700	480	6,600	820	4,700	480
8	5,100	870	4,590	750	3,600	470	5,100	870	3,600	470
10	4,100	880	3,690	670	2,880	450	4,100	880	2,880	450
12	3,400	820	3,060	620	2,430	420	3,400	820	2,430	420
Depth of cut										

ap	ae
1.5D	0.2D

ap	ae
1.5D	0.1D

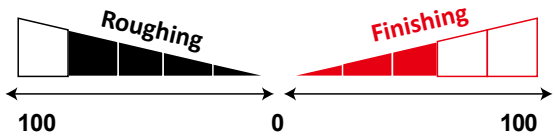
ap	ae
1.5D	0.05D

ap	ae
1.5D	0.2D

ap	ae
1.5D	0.05D

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



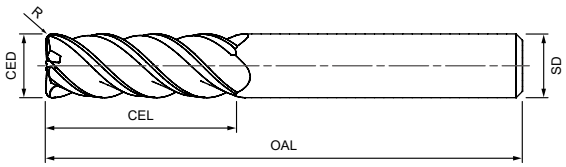
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

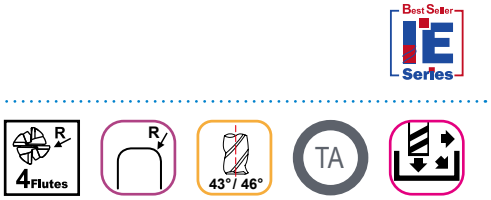
S500IE2+-21434TA

- Corner Radius - 4-Flute x 3D
- Uneven Flute / Variable Helix 43° /46°

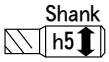








CED	Tolerance
1~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

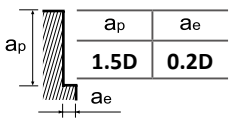
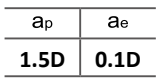
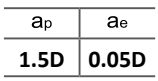
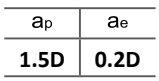


(unit : mm)

Code No.	CED	R	CEL	SD	OAL	Flute
S500IE2+-21434TA	1	0.2R	3	4	50	4
	2	0.2R	6	4	50	
	3	0.2R	9	4	50	
	4	0.2R	12	4	50	
	5	0.2R	15	6	50	
	6	0.2R	18	6	50	
	8	0.2R	24	8	100	
		0.5R				
	10	0.2R	30	10	100	
		0.5R				
	12	0.2R	36	12	100	
		0.5R				

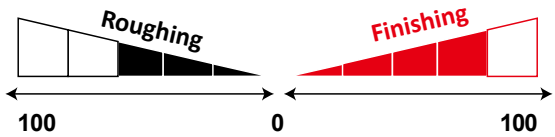
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	30,000	450	29,000	400	22,700	280	31,000	450
2	16,000	500	15,200	470	12,800	305	16,000	500
3	12,800	646	12,000	510	9,700	430	12,800	646
4	10,350	820	9,300	650	7,200	510	10,350	820
5	8,300	920	7,500	730	6,000	550	8,300	920
6	6,900	950	6,200	760	4,900	560	6,900	950
8	5,300	960	4,770	760	3,780	570	5,300	960
10	4,140	910	3,700	735	3,000	575	4,140	910
12	3,450	800	3,100	700	2,500	530	3,450	880
Depth of cut								

Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	●



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

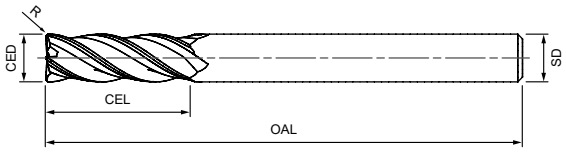
S500IE4+-23354TA

- Corner Radius - 4-Flute x 3D / Long Shank
- Uneven Flute / Variable Helix 35° /38°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | R | R | 35° / 38° | TA

HRC ▶55 | SMG

CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

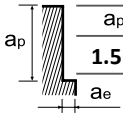
Shank h5

(unit : mm)

Code No.	CED	R	CEL	SD	OAL	Flute
S500IE4+-23354TA	6	0.2R	18	6	75	4
	8	0.2R	24	8	100	
		0.5R				
	10	0.2R	30	10	100	
		0.5R				
	12	0.2R	36	12	100	
		0.5R				
	16	0.5R	48	16	150	
		1R				
	20	0.5R	60	20	150	
		1R				

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	5,300	650	3,700	405	3,200	340	5,300	650	3,200	340
8	4,000	670	2,800	420	2,390	360	4,000	670	2,390	360
10	3,100	680	2,200	430	1,900	380	3,100	680	1,900	380
12	2,600	695	1,860	435	1,600	380	2,600	695	1,600	380
16	1,920	670	1,400	440	1,200	370	1,920	670	1,200	370
20	1,500	670	1,100	440	960	375	1,500	670	960	375
Depth of cut										

a_p	a_e
1.5D	0.1D

a_p	a_e
1.5D	0.1D

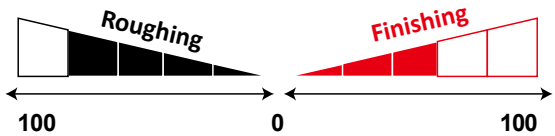
a_p	a_e
1.5D	0.05D

a_p	a_e
1.5D	0.1D

a_p	a_e
1.5D	0.05D

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



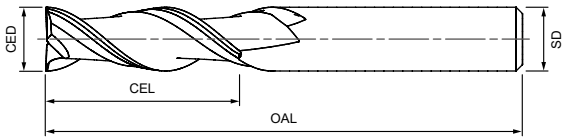
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

S500I2+-11402TN

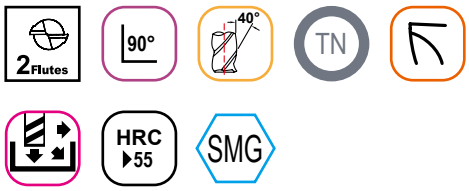
- Square - 2-Flute x 3D
- Uneven Flute / Helix 40°



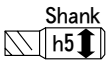








CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

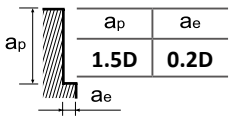


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500I2+-11402TN	3	9	4	50	2
	4	12	4	50	
	5	15	6	50	
	6	18	6	50	
	8	24	8	65	
	10	30	10	75	
	12	36	12	80	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
3	10,600	370	6,500	160	5,600	100	10,600	370
4	8,000	370	4,900	170	4,200	110	8,000	370
5	6,350	380	4,300	180	3,300	120	6,350	380
6	5,300	385	3,840	185	2,800	120	5,300	385
8	4,000	385	2,880	185	2,100	120	4,000	385
10	3,120	375	2,280	180	1,700	110	3,120	375
12	2,600	360	1,870	175	1,400	110	2,600	360
Depth of cut								

ap	ae
1.5D	0.2D

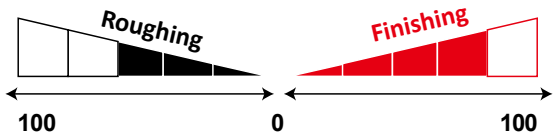
ap	ae
1.5D	0.1D

ap	ae
1.5D	0.05D

ap	ae
1.5D	0.2D

Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	○



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

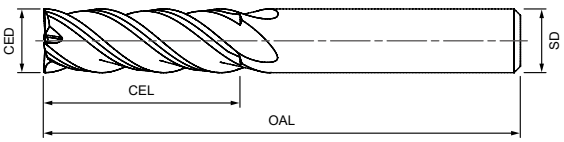
S500I4+-11404TN

- Square - 4-Flute x 3D
- Uneven Flute / Helix 40°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4Flutes | 90° | 40° | TN

HRC 55 | SMG

CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

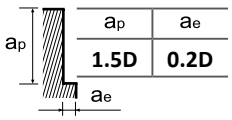
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
S500I4+-11404TN	3	9	4	50	4
	4	12	4	50	
	5	15	6	50	
	6	18	6	50	
	8	24	8	65	
	10	30	10	75	
	12	36	12	80	

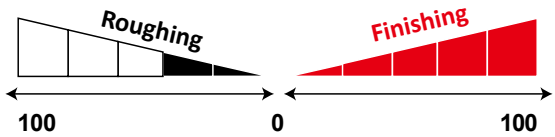
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
3	10,000	550	8,560	470	7,400	240	10,000	550
4	7,600	590	6,460	500	5,500	360	7,600	590
5	6,000	630	5,100	520	4,500	400	6,000	630
6	5,000	655	4,300	550	3,760	450	5,000	655
8	3,800	695	3,200	550	2,880	460	3,800	695
10	3,000	690	2,550	535	2,300	460	3,000	690
12	2,470	655	2,100	530	1,950	420	2,470	655
Depth of cut			ap ae 1.5D 0.1D		ap ae 1.5D 0.05D		ap ae 1.5D 0.2D	

Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	●

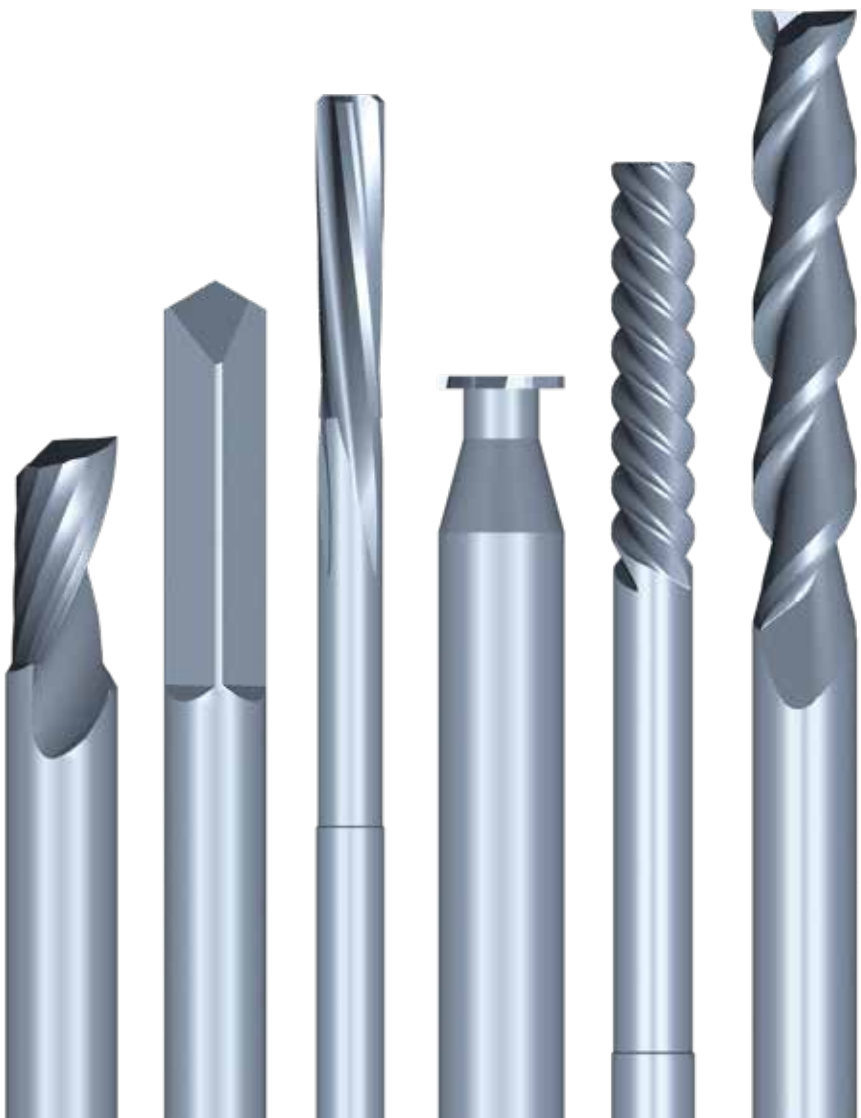


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
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3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.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

SPECIAL PURPOSE MILLING CUTTER

Engineered for Every Material. Optimized for Every Cut.

Engineered for unique applications, our special purpose milling cutters deliver precision, efficiency and reliability in a wide range of machining operations.



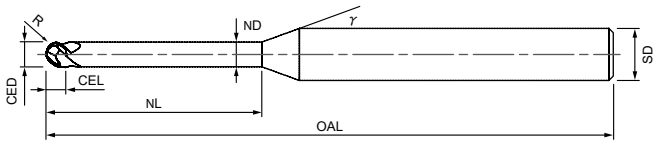
Special Purpose Milling Cutter

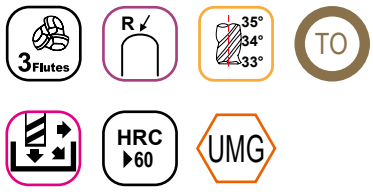
Product Series	Pg
Rib Processing End Mill	146
Spherical Ball End Mill	194
Roughing End Mill	198
Chipbreaker End Mill	208
Aluminium Series	216
Copper Series	230
Stainless Steel Series	234
Titanium Series	240
Flat Drill	250
Carbide Drill	254
Hard Cut Drill	286
Corner Radius End Mill	288
Chamfering End Mill	290
Carbide Spiral Cutter	306
Engraving End Mill	308
Special Custom Tools	309
CNC Lathe Machine End Mill	314
Taper End Mill	322
HPC End Mill for Mold Machining (Torus End Mill)	328
Oval Ball Nose End Mill	332
Carbide Keyway End Mill	336
End Mill for Dental	338
Carbide Reamers	346
Carbide T-Slot Cutter	354

RPX600E3+-84333TO

- Ball Nose - 3-Flute x 1D - Long Neck
- Variable Helix 33° /34° /35°







CED	Tolerance
R	±0.02

Shank h5

(unit : mm)

Code No.	R	CED	CEL	NL	ND	γ °	SD	OAL	Flute
RPX600E3+-84333TO	0.5R	1	0.8	5	0.95	15°	6	60	3
	0.5R	1	0.8	10	0.95	15°	6	60	
	0.5R	1	0.8	15	0.95	15°	6	60	
	0.5R	1	0.8	20	0.95	15°	6	60	
	0.75R	1.5	1.2	5	1.45	15°	6	60	
	0.75R	1.5	1.2	10	1.45	15°	6	60	
	0.75R	1.5	1.2	15	1.45	15°	6	60	
	0.75R	1.5	1.2	20	1.45	15°	6	60	
	1R	2	1.6	5	1.95	15°	6	60	
	1R	2	1.6	10	1.95	15°	6	60	
	1R	2	1.6	15	1.95	15°	6	60	
	1R	2	1.6	20	1.95	15°	6	60	
	1R	2	1.6	25	1.95	15°	6	65	
	1R	2	1.6	30	1.95	15°	6	75	
	1R	2	1.6	35	1.95	15°	6	75	
	1.5R	3	2.4	10	2.85	15°	6	60	
	1.5R	3	2.4	15	2.85	15°	6	60	
	1.5R	3	2.4	20	2.85	15°	6	60	
	1.5R	3	2.4	25	2.85	15°	6	65	
	1.5R	3	2.4	30	2.85	15°	6	75	
	1.5R	3	2.4	35	2.85	15°	6	75	
	1.5R	3	2.4	40	2.85	15°	6	100	

Code No.	R	CED	CEL	NL	ND	γ°	SD	OAL	Flute
RPX600E3+-84333TO	1.75R	3.5	2.8	10	3.35	15°	6	60	3
	1.75R	3.5	2.8	15	3.35	15°	6	60	
	1.75R	3.5	2.8	20	3.35	15°	6	60	
	1.75R	3.5	2.8	25	3.35	15°	6	65	
	1.75R	3.5	2.8	30	3.35	15°	6	75	
	1.75R	3.5	2.8	35	3.35	15°	6	75	
	1.75R	3.5	2.8	40	3.35	15°	6	100	
	1.75R	3.5	2.8	45	3.35	15°	6	100	
	2R	4	3.2	10	3.85	15°	6	60	
	2R	4	3.2	15	3.85	15°	6	60	
	2R	4	3.2	20	3.85	15°	6	60	
	2R	4	3.2	25	3.85	15°	6	65	
	2R	4	3.2	30	3.85	15°	6	75	
	2R	4	3.2	35	3.85	15°	6	75	
	2R	4	3.2	40	3.85	15°	6	100	
	2R	4	3.2	45	3.85	15°	6	100	
	2R	4	3.2	50	3.85	15°	6	100	
	2.5R	5	5	10	4.85	15°	6	60	
	2.5R	5	5	15	4.85	15°	6	60	
	2.5R	5	5	20	4.85	15°	6	60	
	2.5R	5	5	25	4.85	15°	6	65	
	2.5R	5	5	30	4.85	15°	6	75	
	2.5R	5	5	35	4.85	15°	6	75	
	2.5R	5	5	40	4.85	15°	6	100	
	2.5R	5	5	45	4.85	15°	6	100	
	2.5R	5	5	50	4.85	15°	6	100	
	3R	6	6	10	5.8	15°	6	60	
	3R	6	6	15	5.8	15°	6	60	
	3R	6	6	20	5.8	15°	6	60	
	3R	6	6	25	5.8	15°	6	65	
	3R	6	6	30	5.8	15°	6	75	
	3R	6	6	35	5.8	15°	6	75	
	3R	6	6	40	5.8	15°	6	100	
	3R	6	6	45	5.8	15°	6	100	
	3R	6	6	50	5.8	15°	6	100	

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

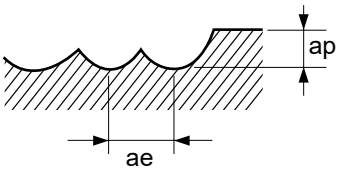
General Milling

Work Material			Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition			Speed (min^{-1})	Feed (mm/min)	a_p	a_e	Speed (min^{-1})	Feed (mm/min)	a_p	a_e	Speed (min^{-1})	Feed (mm/min)	a_p	a_e
CED	R	NL												
1	0.5R	5	18,000	1,000	0.05	0.16	18,000	900	0.05	0.16	18,000	800	0.03	0.03
1	0.5R	10	16,000	800	0.04	0.16	16,000	700	0.04	0.16	16,000	700	0.03	0.03
1	0.5R	15	8,000	420	0.03	0.16	8,000	400	0.03	0.16	8,000	400	0.03	0.03
1	0.5R	20	6,000	300	0.02	0.12	6,000	280	0.02	0.12	7,000	280	0.03	0.03
1.5	0.75R	5	18,000	1,500	0.1	0.3	16,000	1,300	0.1	0.3	18,000	1,300	0.04	0.04
1.5	0.75R	10	15,000	1,100	0.06	0.25	15,000	950	0.06	0.25	16,000	1,000	0.04	0.04
1.5	0.75R	15	7,500	550	0.02	0.2	7,500	500	0.02	0.2	7,500	400	0.04	0.04
1.5	0.75R	20	5,300	380	0.02	0.2	5,300	350	0.02	0.2	5,300	250	0.04	0.04
2	1R	5	18,000	1,600	0.2	0.6	15,000	1,400	0.2	0.4	18,000	1,600	0.06	0.05
2	1R	10	12,000	1,250	0.14	0.4	11,000	1,100	0.14	0.4	12,000	1,200	0.06	0.05
2	1R	15	7,800	820	0.14	0.4	7,800	780	0.14	0.4	7,800	780	0.06	0.05
2	1R	20	6,200	650	0.13	0.4	6,200	600	0.13	0.4	6,200	600	0.06	0.05
2	1R	25	4,700	500	0.12	0.3	4,700	470	0.12	0.3	4,700	470	0.06	0.05
2	1R	30	3,800	400	0.1	0.3	3,500	380	0.1	0.3	3,500	380	0.06	0.05
2	1R	35	3,500	380	0.07	0.3	3,500	350	0.07	0.3	3,400	350	0.06	0.05
3	1.5R	10	12,000	1,900	0.21	0.5	8,000	1,200	0.21	0.5	11,000	1,700	0.09	0.08
3	1.5R	15	12,000	1,900	0.2	0.5	8,000	1,200	0.2	0.5	10,000	1,500	0.09	0.08
3	1.5R	20	7,500	1,150	0.19	0.5	7,200	1,000	0.19	0.5	7,500	1,000	0.09	0.08
3	1.5R	25	4,800	750	0.19	0.5	4,600	700	0.19	0.5	5,500	800	0.09	0.08
3	1.5R	30	4,000	630	0.16	0.4	3,400	500	0.16	0.4	5,000	680	0.09	0.08
3	1.5R	35	3,400	530	0.14	0.4	3,000	450	0.14	0.4	4,000	550	0.09	0.08
3	1.5R	40	2,800	440	0.13	0.4	2,600	400	0.13	0.4	3,500	500	0.09	0.08
3.5	1.75R	10	12,000	1,900	0.23	0.55	9,000	1,330	0.23	0.55	10,600	1,500	0.1	0.09
3.5	1.75R	15	12,000	1,900	0.23	0.55	9,000	1,330	0.23	0.55	10,000	1,200	0.1	0.09
3.5	1.75R	20	7,280	1,310	0.22	0.5	5,500	920	0.22	0.5	9,000	1,100	0.1	0.09
3.5	1.75R	25	4,800	850	0.19	0.5	3,600	600	0.19	0.5	7,500	950	0.1	0.09
3.5	1.75R	30	4,550	820	0.18	0.5	3,400	570	0.18	0.5	5,000	700	0.1	0.09
3.5	1.75R	35	3,600	650	0.15	0.5	2,700	460	0.15	0.5	4,000	600	0.1	0.09
3.5	1.75R	40	3,180	570	0.13	0.5	2,400	400	0.13	0.5	3,500	570	0.1	0.09
3.5	1.75R	45	3,000	550	0.12	0.4	2,250	385	0.12	0.4	3,000	500	0.1	0.09
4	2R	10	9,600	2,000	0.3	0.6	7,200	1,300	0.3	0.6	9,500	1,600	0.13	0.1
4	2R	15	9,300	1,900	0.27	0.6	6,900	1,200	0.27	0.6	9,000	1,520	0.13	0.1
4	2R	20	7,600	1,550	0.25	0.6	6,000	1,150	0.25	0.6	8,200	1,240	0.13	0.1
4	2R	25	6,100	1,250	0.23	0.6	5,500	1,100	0.23	0.6	5,500	1,000	0.13	0.1
4	2R	30	5,000	1,050	0.2	0.6	4,500	800	0.2	0.6	4,500	750	0.13	0.1
4	2R	35	3,600	750	0.16	0.5	3,500	650	0.16	0.5	3,600	590	0.13	0.09

General Milling

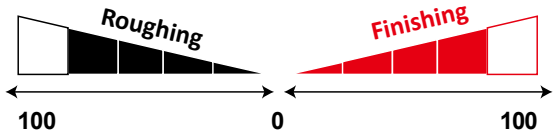
Work Material			Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition			Speed (min^{-1})	Feed (mm/min)	a_p	a_e	Speed (min^{-1})	Feed (mm/min)	a_p	a_e	Speed (min^{-1})	Feed (mm/min)	a_p	a_e
CED	R	NL												
4	2R	40	3,000	630	0.12	0.5	3,000	550	0.12	0.5	3,000	500	0.13	0.09
4	2R	45	2,700	550	0.1	0.4	2,700	500	0.1	0.4	2,700	450	0.13	0.08
4	2R	50	2,500	520	0.1	0.4	2,500	450	0.1	0.4	2,500	400	0.13	0.08
5	2.5R	10	7,700	1,900	0.35	0.8	4,800	1,100	0.35	0.8	7,700	1,520	0.15	0.25
5	2.5R	15	7,700	1,900	0.3	0.8	4,800	1,000	0.3	0.8	7,700	1,520	0.15	0.25
5	2.5R	20	7,700	1,800	0.3	0.8	4,800	950	0.3	0.8	6,500	1,400	0.15	0.25
5	2.5R	25	5,100	1,300	0.25	0.8	4,800	900	0.25	0.8	5,100	1,040	0.15	0.25
5	2.5R	30	4,800	1,200	0.2	0.8	4,800	850	0.2	0.8	5,100	960	0.15	0.25
5	2.5R	35	4,400	1,100	0.14	0.8	4,400	750	0.14	0.8	5,100	880	0.1	0.25
5	2.5R	40	3,100	750	0.1	0.6	3,100	650	0.1	0.6	4,000	750	0.1	0.2
5	2.5R	45	2,700	600	0.1	0.6	2,700	550	0.1	0.6	3,000	600	0.1	0.1
5	2.5R	50	2,500	550	0.1	0.6	2,500	500	0.1	0.6	2,500	480	0.1	0.1
6	3R	10	7,700	2,000	0.45	1.2	4,800	1,100	0.35	1	7,700	1,600	0.18	0.3
6	3R	15	7,700	2,000	0.45	1.2	4,800	1,000	0.35	1	7,700	1,600	0.18	0.3
6	3R	20	7,400	1,900	0.45	1.2	4,800	950	0.35	1	7,700	1,520	0.18	0.3
6	3R	25	5,100	1,300	0.43	1.2	4,000	900	0.3	1	5,100	1,040	0.18	0.25
6	3R	30	5,100	1,200	0.34	1.2	4,000	850	0.3	1	5,100	960	0.18	0.25
6	3R	35	4,200	950	0.3	1.2	4,000	800	0.3	1	4,200	760	0.18	0.25
6	3R	40	3,700	820	0.2	1	3,600	690	0.2	1	3,700	670	0.15	0.16
6	3R	45	3,600	750	0.15	0.9	3,100	630	0.15	0.8	3,000	560	0.1	0.12
6	3R	50	3,000	620	0.1	0.8	2,600	520	0.1	0.8	2,600	480	0.1	0.1

Depth of cut



Work Material

H			
G14	G15	G16	G17
●	●	●	○



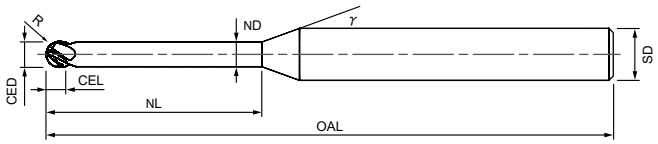
1. **These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.**
2. **Please select high rigid tool holder and collet chuck during machining.**
3. **Please select the suitable coolant fluid.**
4. **For dry cutting, please use air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

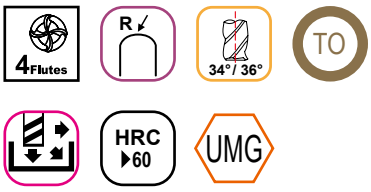
RPX600IE2+-84344TO

- Ball Nose - 4-Flute x 1D - Long Neck
- Uneven Flute / Variable Helix 34° /36°









CED	Tolerance
R	±0.02

Shank h5

(unit : mm)

Code No.	R	CED	CEL	NL	ND	γ °	SD	OAL	Flute
RPX600IE2+-84344TO	0.5R	1	0.8	5	0.95	15°	6	60	4
	0.5R	1	0.8	10	0.95	15°	6	60	
	0.5R	1	0.8	15	0.95	15°	6	60	
	0.5R	1	0.8	20	0.95	15°	6	60	
	0.75R	1.5	1.2	5	1.45	15°	6	60	
	0.75R	1.5	1.2	10	1.45	15°	6	60	
	0.75R	1.5	1.2	15	1.45	15°	6	60	
	0.75R	1.5	1.2	20	1.45	15°	6	60	
	1R	2	1.6	5	1.95	15°	6	60	
	1R	2	1.6	10	1.95	15°	6	60	
	1R	2	1.6	15	1.95	15°	6	60	
	1R	2	1.6	20	1.95	15°	6	60	
	1R	2	1.6	25	1.95	15°	6	65	
	1R	2	1.6	30	1.95	15°	6	75	
	1R	2	1.6	35	1.95	15°	6	75	
	1.5R	3	2.4	10	2.85	15°	6	60	
	1.5R	3	2.4	15	2.85	15°	6	60	
	1.5R	3	2.4	20	2.85	15°	6	60	
	1.5R	3	2.4	25	2.85	15°	6	65	
	1.5R	3	2.4	30	2.85	15°	6	75	
	1.5R	3	2.4	35	2.85	15°	6	75	
	1.5R	3	2.4	40	2.85	15°	6	100	

Code No.	R	CED	CEL	NL	ND	γ°	SD	OAL	Flute
RPX600IE2+-84344TO	1.75R	3.5	2.8	10	3.35	15°	6	60	4
	1.75R	3.5	2.8	15	3.35	15°	6	60	
	1.75R	3.5	2.8	20	3.35	15°	6	60	
	1.75R	3.5	2.8	25	3.35	15°	6	65	
	1.75R	3.5	2.8	30	3.35	15°	6	75	
	1.75R	3.5	2.8	35	3.35	15°	6	75	
	1.75R	3.5	2.8	40	3.35	15°	6	100	
	1.75R	3.5	2.8	45	3.35	15°	6	100	
	2R	4	3.2	10	3.85	15°	6	60	
	2R	4	3.2	15	3.85	15°	6	60	
	2R	4	3.2	20	3.85	15°	6	60	
	2R	4	3.2	25	3.85	15°	6	65	
	2R	4	3.2	30	3.85	15°	6	75	
	2R	4	3.2	35	3.85	15°	6	75	
	2R	4	3.2	40	3.85	15°	6	100	
	2R	4	3.2	45	3.85	15°	6	100	
	2R	4	3.2	50	3.85	15°	6	100	
	2.5R	5	5	10	4.85	15°	6	60	
	2.5R	5	5	15	4.85	15°	6	60	
	2.5R	5	5	20	4.85	15°	6	60	
	2.5R	5	5	25	4.85	15°	6	65	
	2.5R	5	5	30	4.85	15°	6	75	
	2.5R	5	5	35	4.85	15°	6	75	
	2.5R	5	5	40	4.85	15°	6	100	
	2.5R	5	5	45	4.85	15°	6	100	
	2.5R	5	5	50	4.85	15°	6	100	
	3R	6	6	10	5.8	15°	6	60	
	3R	6	6	15	5.8	15°	6	60	
	3R	6	6	20	5.8	15°	6	60	
	3R	6	6	25	5.8	15°	6	65	
	3R	6	6	30	5.8	15°	6	75	
	3R	6	6	35	5.8	15°	6	75	
	3R	6	6	40	5.8	15°	6	100	
	3R	6	6	45	5.8	15°	6	100	
	3R	6	6	50	5.8	15°	6	100	

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

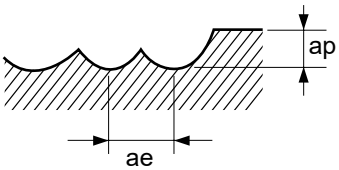
General Milling

Work Material			Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition			Speed (min^{-1})	Feed (mm/min)	a_p	a_e	Speed (min^{-1})	Feed (mm/min)	a_p	a_e	Speed (min^{-1})	Feed (mm/min)	a_p	a_e
CED	R	NL												
1	0.5R	5	18,000	1,200	0.05	0.13	18,000	1,080	0.05	0.13	18,000	960	0.03	0.02
1	0.5R	10	16,000	960	0.04	0.13	16,000	840	0.04	0.13	16,000	840	0.03	0.02
1	0.5R	15	8,000	500	0.03	0.13	8,000	500	0.03	0.13	8,000	500	0.03	0.02
1	0.5R	20	6,000	360	0.02	0.09	6,000	340	0.02	0.09	7,000	340	0.03	0.02
1.5	0.75R	5	18,000	1,800	0.1	0.3	16,000	1,560	0.1	0.24	18,000	1,560	0.04	0.03
1.5	0.75R	10	15,000	1,320	0.06	0.24	15,000	1,140	0.06	0.2	16,000	1,200	0.04	0.03
1.5	0.75R	15	7,500	660	0.02	0.16	7,500	600	0.02	0.16	7,500	480	0.04	0.03
1.5	0.75R	20	5,300	450	0.02	0.16	5,300	450	0.02	0.16	5,300	450	0.04	0.03
2	1R	5	18,000	1,920	0.2	0.49	15,000	1,680	0.2	0.47	18,000	1,920	0.06	0.04
2	1R	10	12,000	1,500	0.14	0.33	11,000	1,320	0.14	0.33	12,000	1,440	0.06	0.04
2	1R	15	7,800	980	0.14	0.33	7,800	980	0.14	0.33	7,800	980	0.06	0.04
2	1R	20	6,200	780	0.13	0.33	6,200	720	0.13	0.33	6,200	720	0.06	0.04
2	1R	25	4,700	600	0.12	0.24	4,700	570	0.12	0.24	4,700	570	0.06	0.04
2	1R	30	3,800	480	0.1	0.24	3,500	460	0.1	0.24	3,500	460	0.06	0.04
2	1R	35	3,500	450	0.07	0.24	3,500	450	0.07	0.24	3,400	450	0.06	0.04
3	1.5R	10	12,000	2,280	0.21	0.41	8,000	1,440	0.21	0.41	11,000	2,040	0.09	0.06
3	1.5R	15	12,000	2,280	0.2	0.41	8,000	1,440	0.2	0.41	10,000	1,800	0.09	0.06
3	1.5R	20	7,500	1,380	0.19	0.41	7,200	1,200	0.19	0.41	7,500	1,200	0.09	0.06
3	1.5R	25	4,800	900	0.19	0.41	4,600	840	0.19	0.41	5,500	960	0.09	0.06
3	1.5R	30	4,000	760	0.16	0.33	3,400	600	0.16	0.33	5,000	820	0.09	0.06
3	1.5R	35	3,400	640	0.14	0.33	3,000	540	0.14	0.33	4,000	660	0.09	0.06
3	1.5R	40	2,800	530	0.13	0.33	2,600	480	0.13	0.33	3,500	600	0.09	0.06
3.5	1.75R	10	12,000	2,280	0.23	0.45	9,000	1,920	0.23	0.45	10,600	1,800	0.1	0.07
3.5	1.75R	15	12,000	2,280	0.23	0.45	9,000	1,920	0.23	0.45	10,000	1,440	0.1	0.07
3.5	1.75R	20	7,280	1,580	0.22	0.41	5,500	1,110	0.22	0.41	9,000	1,320	0.1	0.07
3.5	1.75R	25	4,800	1,020	0.19	0.41	3,600	720	0.19	0.41	7,500	1,140	0.1	0.07
3.5	1.75R	30	4,550	990	0.18	0.41	3,400	690	0.18	0.41	5,000	840	0.1	0.07
3.5	1.75R	35	3,600	780	0.15	0.41	2,700	560	0.15	0.41	4,000	720	0.1	0.07
3.5	1.75R	40	3,180	690	0.13	0.41	2,400	480	0.13	0.41	3,500	690	0.1	0.07
3.5	1.75R	45	3,000	660	0.12	0.33	2,250	560	0.12	0.33	3,000	600	0.1	0.07
4	2R	10	9,600	2,400	0.3	0.49	7,200	1,560	0.3	0.49	9,500	2,310	0.13	0.08
4	2R	15	9,300	2,280	0.27	0.49	6,900	1,440	0.27	0.49	9,000	2,190	0.13	0.08
4	2R	20	7,600	1,860	0.25	0.49	6,000	1,380	0.25	0.49	8,200	1,790	0.13	0.08
4	2R	25	6,100	1,500	0.23	0.49	5,500	1,320	0.23	0.49	5,500	1,440	0.13	0.08
4	2R	30	5,000	1,260	0.2	0.49	4,500	960	0.2	0.49	4,500	900	0.13	0.08
4	2R	35	3,600	900	0.16	0.41	3,600	780	0.16	0.41	3,600	710	0.13	0.08

General Milling

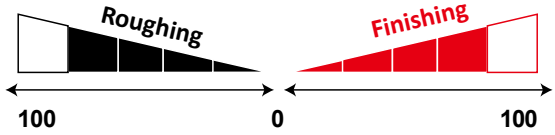
Work Material			Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition			Speed (min^{-1})	Feed (mm/min)	a_p	a_e	Speed (min^{-1})	Feed (mm/min)	a_p	a_e	Speed (min^{-1})	Feed (mm/min)	a_p	a_e
CED	R	NL												
4	2R	40	3,000	760	0.12	0.41	3,000	660	0.12	0.41	3,000	600	0.13	0.08
4	2R	45	2,700	660	0.1	0.33	2,700	600	0.1	0.33	2,700	650	0.13	0.08
4	2R	50	2,500	630	0.1	0.33	2,500	540	0.1	0.33	2,500	480	0.13	0.08
5	2.5R	10	7,700	2,280	0.35	0.66	4,800	1,320	0.35	0.66	7,700	2,190	0.15	0.12
5	2.5R	15	7,700	2,280	0.3	0.66	4,800	1,200	0.3	0.66	7,700	2,190	0.15	0.12
5	2.5R	20	7,700	2,160	0.3	0.66	4,800	1,140	0.3	0.66	6,500	1,680	0.15	0.12
5	2.5R	25	5,100	1,560	0.25	0.66	4,800	1,080	0.25	0.66	5,100	1,500	0.15	0.12
5	2.5R	30	4,800	1,440	0.2	0.66	4,800	1,020	0.2	0.66	5,100	1,390	0.15	0.12
5	2.5R	35	4,400	1,320	0.14	0.66	4,400	900	0.14	0.66	5,100	1,270	0.1	0.12
5	2.5R	40	3,100	900	0.1	0.49	3,100	780	0.1	0.49	4,000	900	0.1	0.12
5	2.5R	45	2,700	720	0.1	0.49	2,700	660	0.1	0.49	3,000	720	0.1	0.12
5	2.5R	50	2,500	660	0.1	0.49	2,500	600	0.1	0.49	2,500	580	0.1	0.12
6	3R	10	7,700	2,400	0.45	0.99	4,800	1,320	0.35	0.83	7,700	2,310	0.18	0.16
6	3R	15	7,700	2,400	0.45	0.99	4,800	1,200	0.35	0.83	7,700	2,310	0.18	0.16
6	3R	20	7,400	2,280	0.45	0.99	4,800	1,140	0.35	0.83	7,700	2,190	0.18	0.16
6	3R	25	5,100	1,560	0.43	0.99	4,000	1,080	0.3	0.83	5,100	1,500	0.18	0.16
6	3R	30	5,100	1,440	0.34	0.99	4,000	1,020	0.3	0.83	5,100	1,390	0.18	0.16
6	3R	35	4,200	1,140	0.3	0.99	4,000	960	0.3	0.83	4,200	1,100	0.18	0.16
6	3R	40	3,700	990	0.2	0.83	3,600	830	0.2	0.83	3,700	810	0.15	0.16
6	3R	45	3,600	900	0.15	0.74	3,100	760	0.15	0.66	3,000	680	0.1	0.16
6	3R	50	3,000	750	0.1	0.66	2,600	630	0.1	0.66	2,600	580	0.1	0.16

Depth of cut



Work Material

H			
G14	G15	G16	G17
●	●	●	○



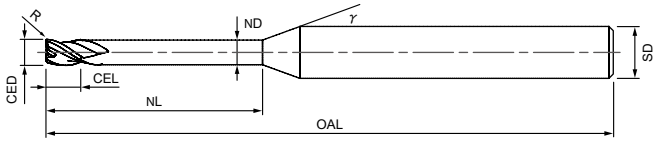
1. **These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.**
2. **Please select high rigid tool holder and collet chuck during machining.**
3. **Please select the suitable coolant fluid.**
4. **For dry cutting, please use air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

RPX600IE3^{+}-24333TO

- Corner Radius - 3-Flute x 1.2D - Long Neck
- Uneven Flute / Variable Helix 33° /34° /35°











CED	Tolerance
2~3	0~-0.014
3~6	0~-0.018

Shank h5

(unit : mm)

Code No.	CED	R	CEL	NL	ND	γ °	SD	OAL	Flute
RPX600IE3^{+}-24333TO	2	0.2R	2.5	5	1.95	15°	6	60	3
	2	0.2R	2.5	10	1.95	15°	6	60	
	2	0.2R	2.5	15	1.95	15°	6	60	
	2	0.2R	2.5	20	1.95	15°	6	60	
	2	0.2R	2.5	25	1.95	15°	6	60	
	2	0.2R	2.5	30	1.95	15°	6	75	
	2	0.2R	2.5	35	1.95	15°	6	75	
	2.5	0.2R	3	15	2.45	15°	6	60	
	2.5	0.2R	3	20	2.45	15°	6	60	
	2.5	0.2R	3	25	2.45	15°	6	65	
	2.5	0.2R	3	30	2.45	15°	6	75	
	2.5	0.2R	3	40	2.45	15°	6	100	
	2.5	0.2R	3	50	2.45	15°	6	100	
	3	0.2R	4	20	2.85	15°	6	60	
	3	0.2R	4	25	2.85	15°	6	65	
	3	0.2R	4	30	2.85	15°	6	75	
	3	0.2R	4	40	2.85	15°	6	100	
	3	0.2R	4	50	2.85	15°	6	100	

Code No.	CED	R	CEL	NL	ND	γ °	SD	OAL	Flute
RPX600IE3+-24333TO	4	0.3R	5	10	3.85	15°	6	60	3
	4	0.3R	5	15	3.85	15°	6	60	
	4	0.3R	5	20	3.85	15°	6	60	
	4	0.3R	5	25	3.85	15°	6	65	
	4	0.3R	5	30	3.85	15°	6	75	
	4	0.3R	5	35	3.85	15°	6	75	
	4	0.3R	5	40	3.85	15°	6	100	
	4	0.3R	5	45	3.85	15°	6	100	
	4	0.3R	5	50	3.85	15°	6	100	
	6	0.3R	7	10	5.8	15°	6	60	
	6	0.3R	7	15	5.8	15°	6	60	
	6	0.3R	7	20	5.8	15°	6	60	
	6	0.3R	7	25	5.8	15°	6	65	
	6	0.3R	7	30	5.8	15°	6	75	
	6	0.3R	7	35	5.8	15°	6	75	
	6	0.3R	7	40	5.8	15°	6	100	
	6	0.3R	7	45	5.8	15°	6	100	
	6	0.3R	7	50	5.8	15°	6	100	

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

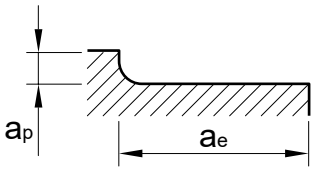
Side Milling

Work Material			Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition			Speed (min^{-1})	Feed (mm/min)	a_p	a_e	Speed (min^{-1})	Feed (mm/min)	a_p	a_e	Speed (min^{-1})	Feed (mm/min)	a_p	a_e
CED	R	NL												
2	0.2R	5	18,000	1,600	0.15	0.4	18,000	1,360	0.13	0.4	18,000	1,150	0.06	0.4
2	0.2R	10	12,000	1,050	0.15	0.4	12,000	1,000	0.13	0.4	12,000	850	0.06	0.4
2	0.2R	15	7,800	780	0.12	0.4	7,800	740	0.1	0.4	7,800	650	0.06	0.4
2	0.2R	20	6,200	620	0.1	0.3	6,200	600	0.07	0.3	6,200	550	0.06	0.3
2	0.2R	25	4,700	470	0.07	0.3	4,700	450	0.06	0.3	4,700	380	0.06	0.3
2	0.2R	30	3,500	350	0.07	0.3	3,500	300	0.05	0.3	3,500	300	0.05	0.3
2	0.2R	35	3,500	350	0.07	0.2	3,500	280	0.04	0.2	3,500	280	0.04	0.2
2.5	0.2R	15	8,900	800	0.15	0.4	8,900	680	0.15	0.4	8,900	610	0.08	0.4
2.5	0.2R	20	6,300	570	0.15	0.4	6,300	490	0.15	0.4	6,300	440	0.08	0.4
2.5	0.2R	25	5,100	460	0.12	0.3	5,100	390	0.12	0.3	5,100	350	0.08	0.3
2.5	0.2R	30	3,800	340	0.12	0.3	3,800	290	0.12	0.3	3,800	260	0.08	0.3
2.5	0.2R	40	2,800	250	0.1	0.3	2,800	210	0.1	0.3	2,800	190	0.08	0.3
2.5	0.2R	50	2,800	250	0.08	0.2	2,800	210	0.08	0.2	2,800	190	0.07	0.2
3	0.2R	20	7,500	1,100	0.12	0.5	7,500	940	0.12	0.5	7,500	800	0.1	0.5
3	0.2R	25	4,800	700	0.12	0.4	4,800	600	0.12	0.4	4,800	510	0.1	0.4
3	0.2R	30	3,800	550	0.1	0.4	3,800	480	0.1	0.4	3,800	400	0.08	0.4
3	0.2R	40	2,600	420	0.08	0.3	2,600	380	0.08	0.3	2,600	320	0.07	0.3
3	0.2R	50	2,200	350	0.08	0.3	2,200	300	0.08	0.3	2,200	260	0.07	0.3
4	0.3R	10	9,500	2,100	0.2	0.9	9,500	1,800	0.2	0.9	9,500	1,530	0.12	0.8
4	0.3R	15	9,000	2,000	0.2	0.8	9,000	1,700	0.2	0.8	9,000	1,440	0.12	0.8
4	0.3R	20	8,200	1,700	0.2	0.7	8,200	1,450	0.14	0.7	8,200	1,230	0.12	0.7
4	0.3R	25	5,500	1,150	0.15	0.7	5,500	980	0.11	0.7	5,500	830	0.09	0.7
4	0.3R	30	4,500	960	0.15	0.7	4,500	850	0.09	0.7	4,500	800	0.07	0.7
4	0.3R	35	3,600	750	0.12	0.6	3,600	680	0.09	0.6	3,600	650	0.07	0.6
4	0.3R	40	3,000	620	0.12	0.6	3,000	580	0.09	0.6	3,000	560	0.07	0.6
4	0.3R	45	2,700	560	0.1	0.5	2,700	500	0.08	0.5	2,700	480	0.06	0.5

Side Milling

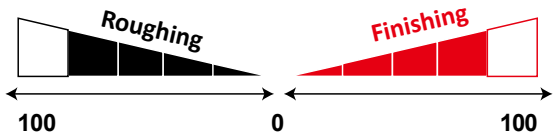
Work Material			Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition			Speed (min^{-1})	Feed (mm/min)	a_p	a_e	Speed (min^{-1})	Feed (mm/min)	a_p	a_e	Speed (min^{-1})	Feed (mm/min)	a_p	a_e
CED	R	NL												
4	0.3R	45	2,500	510	0.1	0.5	2,500	450	0.08	0.5	2,500	430	0.06	0.5
6	0.3R	10	7,200	2,100	0.35	1.3	7,200	1,800	0.24	1.3	7,200	1,530	0.15	1.1
6	0.3R	15	7,000	2,000	0.35	1.3	7,000	1,700	0.24	1.3	7,000	1,440	0.15	1.1
6	0.3R	20	6,800	1,800	0.24	1.2	6,800	1,530	0.2	1.2	6,800	1,300	0.15	1
6	0.3R	25	6,500	1,300	0.24	1.2	6,500	1,100	0.2	1.2	6,500	930	0.15	1
6	0.3R	30	5,100	1,000	0.2	1.2	5,100	850	0.18	1.2	5,100	720	0.16	1
6	0.3R	35	4,200	800	0.2	1	4,200	680	0.18	1	4,200	580	0.16	0.8
6	0.3R	40	3,700	700	0.15	1	3,700	600	0.13	1	3,700	510	0.11	0.8
6	0.3R	45	2,600	480	0.13	1	2,600	400	0.1	1	2,600	340	0.08	0.8
6	0.3R	50	2,300	420	0.1	0.9	2,300	360	0.08	0.9	2,300	300	0.06	0.7

Depth of cut



Work Material

H			
G14	G15	G16	G17
●	●	●	○



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

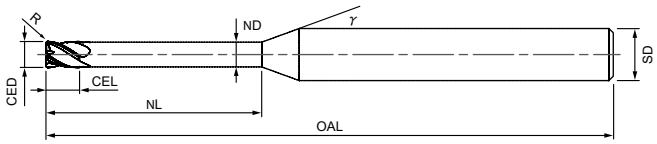
RPX600IE4+-24344TO

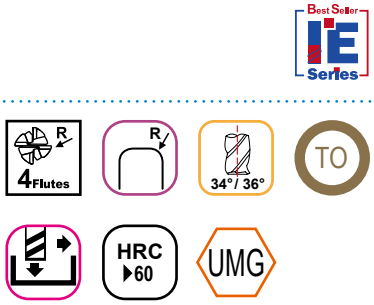
- Corner Radius - 4-Flute x 1.5D - Long Neck
- Uneven Flute / Variable Helix 34° /36°



$a_1 \neq a_2 \neq a_3 \neq a_4$







CED	Tolerance
2~3	0~-0.014
3~6	0~-0.018

Shank h5

(unit : mm)

Code No.	CED	R	CEL	NL	ND	γ °	SD	OAL	Flute
RPX600IE4+-24344TO	2	0.2R	3	5	1.95	15°	6	60	4
	2	0.2R	3	10	1.95	15°	6	60	
	2	0.2R	3	15	1.95	15°	6	60	
	2	0.2R	3	20	1.95	15°	6	60	
	2	0.2R	3	25	1.95	15°	6	60	
	2	0.2R	3	30	1.95	15°	6	75	
	2	0.2R	3	35	1.95	15°	6	75	
	2.5	0.2R	3.8	15	2.45	15°	6	60	
	2.5	0.2R	3.8	20	2.45	15°	6	60	
	2.5	0.2R	3.8	25	2.45	15°	6	65	
	2.5	0.2R	3.8	30	2.45	15°	6	75	
	2.5	0.2R	3.8	40	2.45	15°	6	100	
	2.5	0.2R	3.8	50	2.45	15°	6	100	
	3	0.2R	4.5	20	2.85	15°	6	60	
	3	0.2R	4.5	25	2.85	15°	6	65	
	3	0.2R	4.5	30	2.85	15°	6	75	
	3	0.2R	4.5	40	2.85	15°	6	100	
	3	0.2R	4.5	50	2.85	15°	6	100	

Code No.	CED	R	CEL	NL	ND	γ °	SD	OAL	Flute
RPX600IE4+-24344TO	4	0.3R	6	10	3.85	15°	6	60	4
	4	0.3R	6	15	3.85	15°	6	60	
	4	0.3R	6	20	3.85	15°	6	60	
	4	0.3R	6	25	3.85	15°	6	65	
	4	0.3R	6	30	3.85	15°	6	75	
	4	0.3R	6	35	3.85	15°	6	75	
	4	0.3R	6	40	3.85	15°	6	100	
	4	0.3R	6	45	3.85	15°	6	100	
	4	0.3R	6	50	3.85	15°	6	100	
	6	0.3R	9	10	5.8	15°	6	60	
	6	0.3R	9	15	5.8	15°	6	60	
	6	0.3R	9	20	5.8	15°	6	60	
	6	0.3R	9	25	5.8	15°	6	65	
	6	0.3R	9	30	5.8	15°	6	75	
	6	0.3R	9	35	5.8	15°	6	75	
	6	0.3R	9	40	5.8	15°	6	100	
	6	0.3R	9	45	5.8	15°	6	100	
	6	0.3R	9	50	5.8	15°	6	100	

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

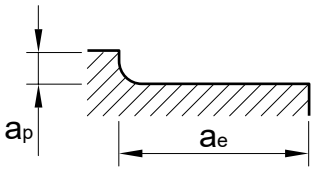
Side Milling

Work Material			Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition			Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e
CED	R	NL												
2	0.2R	5	18,000	1,920	0.15	0.33	18,000	1,960	0.13	0.33	18,000	1,380	0.06	0.33
2	0.2R	10	12,000	1,260	0.15	0.33	12,000	1,200	0.13	0.33	12,000	1,230	0.06	0.33
2	0.2R	15	7,800	940	0.12	0.33	7,800	890	0.1	0.33	7,800	780	0.06	0.33
2	0.2R	20	6,200	750	0.1	0.24	6,200	720	0.07	0.24	6,200	660	0.06	0.19
2	0.2R	25	4,700	570	0.07	0.24	4,700	540	0.06	0.24	4,700	460	0.06	0.19
2	0.2R	30	3,500	420	0.07	0.24	3,500	360	0.05	0.24	3,500	360	0.05	0.19
2	0.2R	35	3,500	400	0.07	0.16	3,500	340	0.04	0.16	3,500	340	0.04	0.13
2.5	0.2R	15	8,900	960	0.15	0.33	8,900	980	0.15	0.33	8,900	740	0.08	0.27
2.5	0.2R	20	6,300	690	0.15	0.33	6,300	590	0.15	0.33	6,300	530	0.08	0.27
2.5	0.2R	25	5,100	560	0.12	0.24	5,100	470	0.12	0.24	5,100	420	0.08	0.19
2.5	0.2R	30	3,800	410	0.12	0.24	3,800	350	0.12	0.24	3,800	320	0.08	0.19
2.5	0.2R	40	2,800	300	0.1	0.24	2,800	260	0.1	0.24	2,800	230	0.08	0.19
2.5	0.2R	50	2,800	300	0.08	0.16	2,800	260	0.08	0.16	2,800	230	0.07	0.13
3	0.2R	20	7,500	1,320	0.12	0.41	7,500	1,130	0.12	0.41	7,500	960	0.1	0.34
3	0.2R	25	4,800	840	0.12	0.33	4,800	720	0.12	0.33	4,800	740	0.1	0.27
3	0.2R	30	3,800	660	0.1	0.33	3,800	570	0.1	0.33	3,800	590	0.08	0.27
3	0.2R	40	2,600	510	0.08	0.24	2,600	460	0.08	0.24	2,600	390	0.07	0.19
3	0.2R	50	2,200	420	0.08	0.24	2,200	360	0.08	0.24	2,200	320	0.07	0.19
4	0.3R	10	9,500	2,520	0.2	0.74	9,500	2,160	0.2	0.74	9,500	2,000	0.12	0.66
4	0.3R	15	9,000	2,400	0.2	0.66	9,000	2,000	0.2	0.66	9,000	1,730	0.12	0.54
4	0.3R	20	8,200	2,040	0.2	0.58	8,200	1,740	0.14	0.58	8,200	1,480	0.12	0.48
4	0.3R	25	5,500	1,380	0.15	0.58	5,500	1,180	0.11	0.58	5,500	1,000	0.09	0.48
4	0.3R	30	4,500	1,160	0.15	0.58	4,500	1,020	0.09	0.58	4,500	960	0.07	0.48
4	0.3R	35	3,600	900	0.12	0.49	3,600	820	0.09	0.49	3,600	780	0.07	0.4
4	0.3R	40	3,000	750	0.12	0.49	3,000	700	0.09	0.49	3,000	680	0.07	0.4
4	0.3R	45	2,700	680	0.1	0.41	2,700	600	0.08	0.41	2,700	580	0.06	0.34

Side Milling

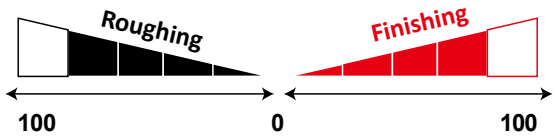
Work Material			Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition			Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e
CED	R	NL												
4	0.3R	50	2,500	620	0.1	0.41	2,500	540	0.08	0.41	2,500	5520	0.06	0.34
6	0.3R	10	7,200	2,520	0.35	1.08	7,200	2,160	0.24	1.08	7,200	2,210	0.15	0.73
6	0.3R	15	7,000	2,400	0.35	1.08	7,000	2,450	0.24	1.08	7,000	1,730	0.15	0.73
6	0.3R	20	6,800	2,160	0.24	0.99	6,800	2,210	0.2	0.99	6,800	1,560	0.15	0.65
6	0.3R	25	6,500	1,560	0.24	0.99	6,500	1,320	0.2	0.99	6,500	1,120	0.15	0.65
6	0.3R	30	5,100	1,200	0.2	0.99	5,100	1,230	0.18	0.99	5,100	870	0.16	0.65
6	0.3R	35	4,200	960	0.2	0.83	4,200	980	0.18	0.83	4,200	700	0.16	0.52
6	0.3R	40	3,700	840	0.15	0.83	3,700	720	0.13	0.83	3,700	740	0.11	0.52
6	0.3R	45	2,600	580	0.13	0.83	2,600	480	0.1	0.83	2,600	490	0.08	0.52
6	0.3R	50	2,300	510	0.1	0.74	2,300	440	0.08	0.74	2,300	360	0.06	0.44

Depth of cut



Work Material

H			
G14	G15	G16	G17
●	●	●	○



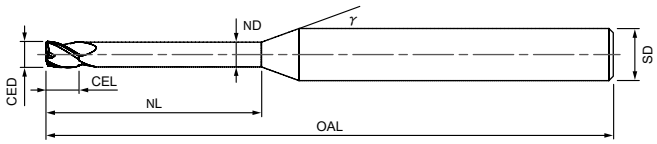
1. **These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.**
2. **Please select high rigid tool holder and collet chuck during machining.**
3. **Please select the suitable coolant fluid.**
4. **For dry cutting, please use air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

RPX600IE3^{+}-14333TO

- Square - 3-Flute x 1.2D - Long Neck
- Uneven Flute / Variable Helix 33° /34° /35°



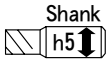




Best Seller IE Series



CED	Tolerance
2~3	0~-0.014
3~6	0~-0.018



(unit : mm)

Code No.	CED	CEL	NL	ND	γ °	SD	OAL	Flute
RPX600IE3^{+}-14333TO	2	2.5	5	1.95	15°	6	60	3
	2	2.5	10	1.95	15°	6	60	
	2	2.5	15	1.95	15°	6	60	
	2	2.5	20	1.95	15°	6	60	
	2	2.5	25	1.95	15°	6	60	
	2	2.5	30	1.95	15°	6	75	
	2	2.5	35	1.95	15°	6	75	
	2.5	3	15	2.45	15°	6	60	
	2.5	3	20	2.45	15°	6	60	
	2.5	3	25	2.45	15°	6	65	
	2.5	3	30	2.45	15°	6	75	
	2.5	3	40	2.45	15°	6	100	
	2.5	3	50	2.45	15°	6	100	
	3	4	20	2.85	15°	6	60	
	3	4	25	2.85	15°	6	65	
	3	4	30	2.85	15°	6	75	
	3	4	40	2.85	15°	6	100	
	3	4	50	2.85	15°	6	100	

Code No.	CED	CEL	NL	ND	γ °	SD	OAL	Flute
RPX600IE3+-14333TO	4	5	10	3.85	15°	6	60	3
	4	5	15	3.85	15°	6	60	
	4	5	20	3.85	15°	6	60	
	4	5	25	3.85	15°	6	65	
	4	5	30	3.85	15°	6	75	
	4	5	35	3.85	15°	6	75	
	4	5	40	3.85	15°	6	100	
	4	5	45	3.85	15°	6	100	
	4	5	50	3.85	15°	6	100	
	6	7	10	5.8	15°	6	60	
	6	7	15	5.8	15°	6	60	
	6	7	20	5.8	15°	6	60	
	6	7	25	5.8	15°	6	65	
	6	7	30	5.8	15°	6	75	
	6	7	35	5.8	15°	6	75	
	6	7	40	5.8	15°	6	100	
	6	7	45	5.8	15°	6	100	
	6	7	50	5.8	15°	6	100	

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

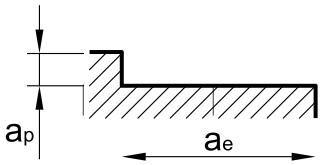
Side Milling

Work Material		Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition		Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e
CED	NL												
2	5	18,000	1,600	0.15	0.4	18,000	1,360	0.13	0.4	18,000	1,150	0.06	0.4
2	10	12,000	1,050	0.15	0.4	12,000	1,000	0.13	0.4	12,000	850	0.06	0.4
2	15	7,800	780	0.12	0.4	7,800	740	0.1	0.4	7,800	650	0.06	0.4
2	20	6,200	620	0.1	0.3	6,200	600	0.07	0.3	6,200	550	0.06	0.3
2	25	4,700	470	0.07	0.3	4,700	450	0.06	0.3	4,700	380	0.06	0.3
2	30	3,500	350	0.07	0.3	3,500	300	0.05	0.3	3,500	300	0.05	0.3
2	35	3,500	330	0.07	0.2	3,500	280	0.04	0.2	3,500	280	0.04	0.2
2.5	15	8,900	800	0.15	0.4	8,900	680	0.15	0.4	8,900	610	0.08	0.4
2.5	20	6,300	570	0.15	0.4	6,300	490	0.15	0.4	6,300	440	0.08	0.4
2.5	25	5,100	460	0.12	0.3	5,100	390	0.12	0.3	5,100	350	0.08	0.3
2.5	30	3,800	340	0.12	0.3	3,800	290	0.12	0.3	3,800	260	0.08	0.3
2.5	40	2,800	250	0.1	0.3	2,800	210	0.1	0.3	2,800	190	0.08	0.3
2.5	50	2,800	250	0.08	0.2	2,800	210	0.08	0.2	2,800	190	0.07	0.2
3	20	7,500	1,100	0.12	0.5	7,500	940	0.12	0.5	7,500	800	0.1	0.5
3	25	4,800	700	0.12	0.4	4,800	600	0.12	0.4	4,800	510	0.1	0.4
3	30	3,800	550	0.1	0.4	3,800	470	0.1	0.4	3,800	400	0.08	0.4
3	40	2,600	420	0.08	0.3	2,600	380	0.08	0.3	2,600	320	0.07	0.3
3	50	2,200	350	0.08	0.3	2,200	300	0.08	0.3	2,200	260	0.07	0.3
4	10	9,500	2,100	0.2	0.9	9,500	1,800	0.2	0.9	9,500	1,530	0.12	0.8
4	15	9,000	2,000	0.2	0.8	9,000	1,700	0.2	0.8	9,000	1,440	0.12	0.8
4	20	8,200	1,700	0.2	0.7	8,200	1,450	0.14	0.7	8,200	1,230	0.12	0.7
4	25	5,500	1,150	0.15	0.7	5,500	980	0.11	0.7	5,500	830	0.09	0.7
4	30	4,500	960	0.15	0.7	4,500	820	0.09	0.7	4,500	830	0.07	0.7
4	35	3,600	750	0.12	0.6	3,600	640	0.09	0.6	3,600	800	0.07	0.6
4	40	3,000	620	0.12	0.6	3,000	530	0.09	0.6	3,000	650	0.07	0.6

Side Milling

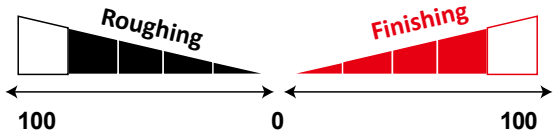
Work Material		Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition		Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e
CED	NL												
4	45	2,700	560	0.1	0.5	2,700	480	0.08	0.5	2,700	610	0.06	0.5
4	45	2,500	510	0.1	0.5	2,500	430	0.08	0.5	2,500	580	0.06	0.5
6	10	8,000	2,100	0.35	1.3	8,000	1,800	0.24	1.3	8,000	1,530	0.15	1.1
6	15	7,800	2,000	0.35	1.3	7,800	1,700	0.24	1.3	7,800	1,440	0.15	1.1
6	20	7,200	1,800	0.24	1.2	7,200	1,530	0.2	1.2	7,200	1,300	0.15	1
6	25	6,500	1,300	0.24	1.2	6,500	1,100	0.2	1.2	6,500	930	0.15	1
6	30	5,100	1,000	0.2	1.2	5,100	850	0.18	1.2	5,100	720	0.16	1
6	35	4,200	800	0.2	1	4,200	680	0.18	1	4,200	580	0.16	0.8
6	40	3,700	700	0.15	1	3,700	600	0.13	1	3,700	510	0.11	0.8
6	45	2,600	480	0.13	1	2,600	400	0.1	1	2,600	340	0.08	0.8
6	50	2,300	420	0.1	0.9	2,300	360	0.08	0.9	2,300	300	0.06	0.7

Depth of cut



Work Material

H			
G14	G15	G16	G17
●	●	●	○



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

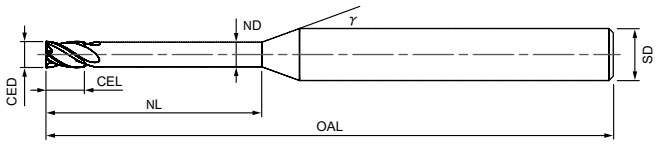
RPX600IE4+-14344TO

- Square - 4-Flute x 1.5D - Long Neck
- Uneven Flute / Variable Helix 34° /36°



$a_1 \neq a_2 \neq a_3 \neq a_4$

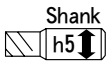




Best Seller IE Series



CED	Tolerance
2~3	0~-0.014
3~6	0~-0.018



(unit : mm)

Code No.	CED	CEL	NL	ND	γ °	SD	OAL	Flute
RPX600IE4+-14344TO	2	3	5	1.95	15°	6	60	4
	2	3	10	1.95	15°	6	60	
	2	3	15	1.95	15°	6	60	
	2	3	20	1.95	15°	6	60	
	2	3	25	1.95	15°	6	60	
	2	3	30	1.95	15°	6	75	
	2	3	35	1.95	15°	6	75	
	2.5	3.8	15	2.45	15°	6	60	
	2.5	3.8	20	2.45	15°	6	60	
	2.5	3.8	25	2.45	15°	6	65	
	2.5	3.8	30	2.45	15°	6	75	
	2.5	3.8	40	2.45	15°	6	100	
	2.5	3.8	50	2.45	15°	6	100	
	3	4.5	20	2.85	15°	6	60	
	3	4.5	25	2.85	15°	6	65	
	3	4.5	30	2.85	15°	6	75	
	3	4.5	40	2.85	15°	6	100	
	3	4.5	50	2.85	15°	6	100	

Code No.	CED	CEL	NL	ND	γ °	SD	OAL	Flute
RPX600IE4+-14344TO	4	6	10	3.85	15°	6	60	4
	4	6	15	3.85	15°	6	60	
	4	6	20	3.85	15°	6	60	
	4	6	25	3.85	15°	6	65	
	4	6	30	3.85	15°	6	75	
	4	6	35	3.85	15°	6	75	
	4	6	40	3.85	15°	6	100	
	4	6	45	3.85	15°	6	100	
	4	6	50	3.85	15°	6	100	
	6	9	10	5.8	15°	6	60	
	6	9	15	5.8	15°	6	60	
	6	9	20	5.8	15°	6	60	
	6	9	25	5.8	15°	6	65	
	6	9	30	5.8	15°	6	75	
	6	9	35	5.8	15°	6	75	
	6	9	40	5.8	15°	6	100	
	6	9	45	5.8	15°	6	100	
	6	9	50	5.8	15°	6	100	

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

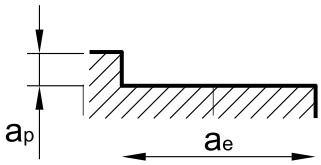
Side Milling

Work Material		Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition		Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e
CED	NL												
2	5	18,000	1,920	0.15	0.33	18,000	1,960	0.13	0.33	18,000	1,380	0.06	0.33
2	10	12,000	1,260	0.15	0.33	12,000	1,200	0.13	0.33	12,000	1,230	0.06	0.33
2	15	7,800	940	0.12	0.33	7,800	890	0.1	0.33	7,800	780	0.06	0.33
2	20	6,200	750	0.1	0.24	6,200	720	0.07	0.24	6,200	660	0.06	0.19
2	25	4,700	570	0.07	0.24	4,700	540	0.06	0.24	4,700	460	0.06	0.19
2	30	3,500	420	0.07	0.24	3,500	430	0.05	0.24	3,500	360	0.05	0.19
2	35	3,500	400	0.07	0.16	3,500	340	0.04	0.16	3,500	360	0.04	0.13
2.5	15	8,900	960	0.15	0.33	8,900	980	0.15	0.33	8,900	740	0.08	0.27
2.5	20	6,300	690	0.15	0.33	6,300	590	0.15	0.33	6,300	530	0.08	0.27
2.5	25	5,100	560	0.12	0.24	5,100	470	0.12	0.24	5,100	420	0.08	0.19
2.5	30	3,800	410	0.12	0.24	3,800	350	0.12	0.24	3,800	320	0.08	0.19
2.5	40	2,800	300	0.1	0.24	2,800	260	0.1	0.24	2,800	230	0.08	0.19
2.5	50	2,800	300	0.08	0.16	2,800	260	0.08	0.16	2,800	230	0.07	0.13
3	20	7,500	1,320	0.12	0.41	7,500	1,130	0.12	0.41	7,500	960	0.1	0.34
3	25	4,800	840	0.12	0.33	4,800	720	0.12	0.33	4,800	740	0.1	0.27
3	30	3,800	660	0.1	0.33	3,800	570	0.1	0.33	3,800	590	0.08	0.27
3	40	2,600	510	0.08	0.24	2,600	460	0.08	0.24	2,600	390	0.07	0.19
3	50	2,200	420	0.08	0.24	2,200	360	0.08	0.24	2,200	320	0.07	0.19
4	10	9,500	2,520	0.2	0.74	9,500	2,160	0.2	0.61	9,500	2,000	0.12	0.66
4	15	9,000	2,400	0.2	0.66	9,000	2,000	0.2	0.54	9,000	1,730	0.12	0.44
4	20	8,200	2,040	0.2	0.58	8,200	1,740	0.14	0.48	8,200	1,480	0.12	0.39
4	25	5,500	1,380	0.15	0.58	5,500	1,180	0.11	0.48	5,500	1,000	0.09	0.39
4	30	4,500	1,160	0.15	0.58	4,500	990	0.09	0.48	4,500	900	0.07	0.39
4	35	3,600	900	0.12	0.49	3,600	770	0.09	0.4	3,600	700	0.07	0.33
4	40	3,000	750	0.12	0.49	3,000	640	0.09	0.4	3,000	560	0.07	0.33

Side Milling

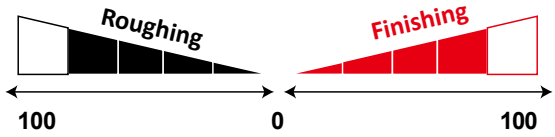
Work Material		Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition		Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e
CED	NL												
4	45	2,700	680	0.1	0.41	2,700	580	0.08	0.34	2,700	520	0.06	0.28
4	45	2,500	620	0.1	0.41	2,500	520	0.08	0.34	2,500	460	0.06	0.28
6	10	8,000	2,520	0.35	1.08	8,000	2,160	0.24	0.89	8,000	2,210	0.15	0.57
6	15	7,800	2,400	0.35	1.08	7,800	2,450	0.24	0.89	7,800	1,730	0.15	0.57
6	20	7,200	2,160	0.24	0.99	7,200	2,210	0.2	0.82	7,200	1,560	0.15	0.51
6	25	6,500	1,560	0.24	0.99	6,500	1,320	0.2	0.82	6,500	1,120	0.15	0.51
6	30	5,100	1,200	0.2	0.99	5,100	1,230	0.18	0.82	5,100	870	0.16	0.51
6	35	4,200	960	0.2	0.83	4,200	980	0.18	0.69	4,200	700	0.16	0.4
6	40	3,700	840	0.15	0.83	3,700	720	0.13	0.69	3,700	740	0.11	0.4
6	45	2,600	580	0.13	0.83	2,600	480	0.1	0.69	2,600	490	0.08	0.4
6	50	2,300	510	0.1	0.74	2,300	440	0.08	0.61	2,300	360	0.06	0.34

Depth of cut



Work Material

H			
G14	G15	G16	G17
●	●	●	○

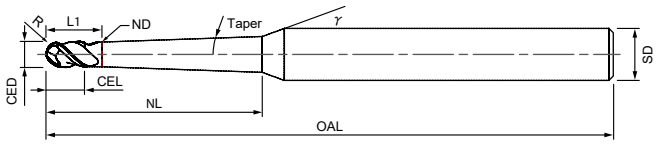


1. **These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.**
2. **Please select high rigid tool holder and collet chuck during machining.**
3. **Please select the suitable coolant fluid.**
4. **For dry cutting, please use air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

RTX600E3+-84333TO

- Ball Nose - 3-Flute x 1D- Taper Neck
- Variable Helix 33° /34° /35°





CED	Tolerance
R	±0.02

Shank h5

(unit : mm)

Code No.	R	CED	CEL	L1	Taper	NL	ND	γ °	SD	OAL	Flute
RTX600E3+-84333TO	0.5R	1	1.5	2.5	1°	5	0.95	15°	6	60	3
	0.5R	1	1.5	2.5	1°	10	0.95	15°	6	60	
	0.5R	1	1.5	2.5	1°	15	0.95	15°	6	60	
	0.5R	1	1.5	2.5	1°	20	0.95	15°	6	60	
	0.75R	1.5	2.25	3.75	1°	5	1.45	15°	6	60	
	0.75R	1.5	2.25	3.75	1°	10	1.45	15°	6	60	
	0.75R	1.5	2.25	3.75	1°	15	1.45	15°	6	60	
	0.75R	1.5	2.25	3.75	1°	20	1.45	15°	6	60	
	0.75R	1.5	2.25	3.75	1°	25	1.45	15°	6	60	
	0.75R	1.5	2.25	3.75	1°	30	1.45	15°	6	75	
	1R	2	3	5	1°	10	1.95	15°	6	60	
	1R	2	3	5	1°	15	1.95	15°	6	60	
	1R	2	3	5	1°	20	1.95	15°	6	60	
	1R	2	3	5	1°	25	1.95	15°	6	65	
	1R	2	3	5	1°	30	1.95	15°	6	75	
	1R	2	3	5	1°	40	1.95	15°	6	100	
	1R	2	3	5	1°	50	1.95	15°	6	100	
	1R	2	3	5	1.5°	20	1.95	15°	6	60	
	1R	2	3	5	1.5°	25	1.95	15°	6	65	
	1R	2	3	5	1.5°	30	1.95	15°	6	75	
	1R	2	3	5	1.5°	40	1.95	15°	6	100	
	1R	2	3	5	1.5°	50	1.95	15°	6	100	

Code No.	R	CED	CEL	L1	Taper	NL	ND	γ °	SD	OAL	Flute
RTX600E3+-84333TO	1R	2	3	5	1.5°	60	1.95	15°	6	110	3
	1.5R	3	4.5	6.5	1°	15	2.9	15°	6	60	
	1.5R	3	4.5	6.5	1°	20	2.9	15°	6	60	
	1.5R	3	4.5	6.5	1°	25	2.9	15°	6	65	
	1.5R	3	4.5	6.5	1°	30	2.9	15°	6	75	
	1.5R	3	4.5	6.5	1°	40	2.9	15°	6	100	
	1.5R	3	4.5	6.5	1°	50	2.9	15°	6	100	
	1.5R	3	4.5	6.5	1°	60	2.9	15°	6	110	
	1.5R	3	4.5	6.5	3°	30	2.9	15°	6	75	
	1.5R	3	4.5	6.5	3°	40	2.9	15°	8	100	
	1.5R	3	4.5	6.5	3°	50	2.9	15°	10	100	
	1.5R	3	4.5	6.5	3°	70	2.9	15°	12	120	
	2R	4	6	9	1°	30	3.9	15°	6	75	
	2R	4	6	9	1°	40	3.9	15°	6	100	
	2R	4	6	9	1°	50	3.9	15°	6	100	
	2R	4	6	9	1°	60	3.9	15°	8	110	
	2R	4	6	9	1°	70	3.9	15°	8	120	
	2R	4	6	9	1°	80	3.9	15°	8	125	
	2R	4	6	9	1.5°	40	3.9	15°	6	100	
	2R	4	6	9	1.5°	60	3.9	15°	8	110	
	2R	4	6	9	1.5°	80	3.9	15°	8	125	
	2.5R	5	7.5	10.5	1°	30	4.9	15°	8	75	
	2.5R	5	7.5	10.5	1°	35	4.9	15°	8	75	
	2.5R	5	7.5	10.5	1°	40	4.9	15°	8	100	
	2.5R	5	7.5	10.5	1°	50	4.9	15°	8	100	
	2.5R	5	7.5	10.5	1°	60	4.9	15°	8	110	
	2.5R	5	7.5	10.5	1°	70	4.9	15°	8	120	
	2.5R	5	7.5	10.5	1°	80	4.9	15°	8	125	
	3R	6	9	12	1°	40	5.8	15°	8	100	
	3R	6	6	12	1°	50	5.8	15°	8	100	
	3R	6	6	12	1°	60	5.8	15°	8	110	
	3R	6	6	12	1°	90	5.8	15°	10	150	

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

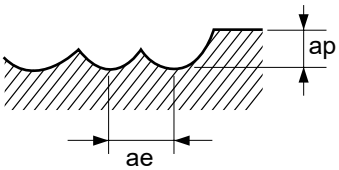
Side Milling

Work Material			Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition			Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e
CED	R	NL												
1	0.5R	5	18,000	900	0.05	0.16	18,000	850	0.05	0.16	18,000	800	0.03	0.03
1	0.5R	10	16,000	800	0.04	0.16	16,000	700	0.04	0.16	16,000	700	0.03	0.03
1	0.5R	15	8,000	420	0.03	0.16	8,000	400	0.03	0.16	8,000	400	0.03	0.03
1	0.5R	20	6,000	300	0.02	0.12	6,000	280	0.02	0.12	7,000	280	0.03	0.03
1.5	0.75R	5	18,000	1,500	0.1	0.3	16,000	1,300	0.1	0.3	18,000	1,300	0.04	0.04
1.5	0.75R	10	15,000	1,100	0.06	0.25	15,000	950	0.06	0.25	16,000	1,000	0.04	0.04
1.5	0.75R	15	7,500	550	0.02	0.2	7,500	500	0.02	0.2	7,500	400	0.04	0.04
1.5	0.75R	20	5,300	380	0.02	0.2	5,300	350	0.02	0.2	5,300	280	0.04	0.04
1.5	0.75R	25	5,000	300	0.02	0.2	5,000	270	0.02	0.2	5,000	250	0.04	0.04
1.5	0.75R	30	4,200	250	0.01	0.15	4,200	230	0.01	0.15	4,200	210	0.04	0.04
2	1R	10	12,000	1,250	0.14	0.4	11,000	1,100	0.14	0.4	12,000	1,200	0.06	0.05
2	1R	15	7,800	820	0.14	0.4	7,800	780	0.14	0.4	7,800	780	0.06	0.05
2	1R	20	6,200	650	0.13	0.4	6,200	600	0.13	0.4	6,200	600	0.06	0.05
2	1R	25	4,700	500	0.12	0.3	4,700	470	0.12	0.3	4,700	470	0.06	0.05
2	1R	30	3,800	400	0.1	0.3	3,500	340	0.1	0.3	3,500	380	0.06	0.05
2	1R	40	3,50 0	360	0.07	0.3	3,500	340	0.07	0.3	3,400	300	0.06	0.05
2	1R	50	3,500	340	0.06	0.1	3,500	310	0.06	0.1	3,500	280	0.06	0.05
2	1R	60	3,200	290	0.05	0.1	3,200	270	0.05	0.1	3,200	250	0.06	0.05
3	1.5R	15	12,000	1,900	0.2	0.5	8,000	1,200	0.2	0.5	10,000	1,500	0.09	0.08
3	1.5R	20	7,500	1,150	0.19	0.5	7,200	1,000	0.19	0.5	7,500	1,000	0.09	0.08
3	1.5R	25	4,800	750	0.19	0.5	4,600	700	0.19	0.5	5,500	800	0.09	0.08
3	1.5R	30	4,000	630	0.16	0.4	3,400	500	0.16	0.4	5,000	680	0.09	0.08
3	1.5R	40	2,800	440	0.13	0.4	2,600	400	0.13	0.4	3,500	500	0.09	0.08
3	1.5R	50	2,200	350	0.1	0.4	2,200	320	0.1	0.4	2,200	320	0.09	0.08
3	1.5R	60	2,200	350	0.07	0.4	2,200	280	0.07	0.4	2,200	260	0.09	0.08
3	1.5R	70	2,100	280	0.07	0.4	2,100	240	0.07	0.4	2,100	230	0.09	0.08
4	2R	30	5,000	1,050	0.2	0.6	4,500	800	0.2	0.6	4,500	750	0.08	0.1
4	2R	40	3,600	750	0.16	0.5	3,600	650	0.16	0.5	3,600	590	0.08	0.1
4	2R	50	3,000	630	0.12	0.5	3,000	550	0.12	0.5	3,000	500	0.08	0.1
4	2R	60	2,700	550	0.1	0.4	2,700	500	0.1	0.4	2,700	450	0.08	0.08

Side Milling

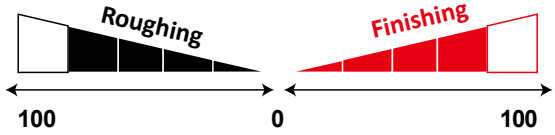
Work Material			Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition			Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e
CED	R	NL												
4	2R	70	2,500	520	0.1	0.4	2,500	450	0.1	0.4	2,500	400	0.08	0.08
4	2R	80	2,300	490	0.1	0.4	2,300	410	0.1	0.4	2,300	350	0.08	0.08
5	2.5R	30	4,800	1,200	0.2	0.8	4,800	850	0.2	0.8	5,100	960	0.15	0.25
5	2.5R	35	4,400	1,100	0.14	0.8	4,400	750	0.14	0.8	5,100	880	0.15	0.25
5	2.5R	40	3,100	750	0.1	0.6	3,100	650	0.1	0.6	4,000	750	0.15	0.2
5	2.5R	50	2,700	600	0.1	0.6	2,700	550	0.1	0.6	3,000	600	0.15	0.1
5	2.5R	60	2,500	550	0.1	0.6	2,500	500	0.1	0.5	2,500	480	0.15	0.1
5	2.5R	70	2,300	500	0.1	0.6	2,300	450	0.08	0.5	2,300	410	0.15	0.08
5	2.5R	80	2,100	450	0.1	0.5	2,100	410	0.08	0.5	2,100	370	0.15	0.08
6	3R	40	3,700	820	0.2	2	3,600	720	0.2	1	3,700	670	0.15	0.16
6	3R	50	3,000	620	0.1	0.8	2,600	520	0.1	0.8	2,600	480	0.1	0.16
6	3R	60	2,800	550	0.1	0.8	2,600	520	0.1	0.8	2,600	480	0.1	0.16
6	3R	90	2,500	500	0.08	0.6	2,500	420	0.08	0.6	2,500	380	0.08	0.16

Depth of cut



Work Material

H			
G14	G15	G16	G17
●	●	●	○



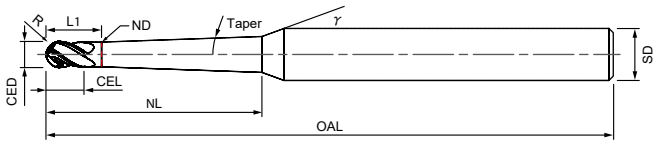
1. **These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.**
2. **Please select high rigid tool holder and collet chuck during machining.**
3. **Please select the suitable coolant fluid.**
4. **For dry cutting, please use air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

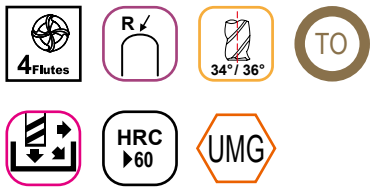
RTX600IE2+-84344TO

- Ball Nose - 4-Flute x 1D - Taper Neck
- Uneven Flute / Variable Helix 34° /36°









CED	Tolerance
R	±0.02

Shank h5

(unit : mm)

Code No.	R	CED	CEL	L1	Taper	NL	ND	γ °	SD	OAL	Flute
RTX600IE2+-84344TO	0.5R	1	1.5	2.5	1°	5	0.95	15°	6	60	4
	0.5R	1	1.5	2.5	1°	10	0.95	15°	6	60	
	0.5R	1	1.5	2.5	1°	15	0.95	15°	6	60	
	0.5R	1	1.5	2.5	1°	20	0.95	15°	6	60	
	0.75R	1.5	2.25	3.75	1°	5	1.45	15°	6	60	
	0.75R	1.5	2.25	3.75	1°	10	1.45	15°	6	60	
	0.75R	1.5	2.25	3.75	1°	15	1.45	15°	6	60	
	0.75R	1.5	2.25	3.75	1°	20	1.45	15°	6	60	
	0.75R	1.5	2.25	3.75	1°	25	1.45	15°	6	60	
	0.75R	1.5	2.25	3.75	1°	30	1.45	15°	6	75	
	1R	2	3	5	1°	10	1.95	15°	6	60	
	1R	2	3	5	1°	15	1.95	15°	6	60	
	1R	2	3	5	1°	20	1.95	15°	6	60	
	1R	2	3	5	1°	25	1.95	15°	6	65	
	1R	2	3	5	1°	30	1.95	15°	6	75	
	1R	2	3	5	1°	40	1.95	15°	6	100	
	1R	2	3	5	1°	50	1.95	15°	6	100	
	1R	2	3	5	1.5°	20	1.95	15°	6	60	
	1R	2	3	5	1.5°	25	1.95	15°	6	65	
	1R	2	3	5	1.5°	30	1.95	15°	6	75	
	1R	2	3	5	1.5°	40	1.95	15°	6	100	
	1R	2	3	5	1.5°	50	1.95	15°	6	100	

Code No.	R	CED	CEL	L1	Taper	NL	ND	γ °	SD	OAL	Flute
RTX600IE2+-84344TO	1R	2	3	5	1.5°	60	1.95	15°	6	110	4
	1.5R	3	4.5	6.5	1°	15	2.9	15°	6	60	
	1.5R	3	4.5	6.5	1°	20	2.9	15°	6	60	
	1.5R	3	4.5	6.5	1°	25	2.9	15°	6	65	
	1.5R	3	4.5	6.5	1°	30	2.9	15°	6	75	
	1.5R	3	4.5	6.5	1°	40	2.9	15°	6	100	
	1.5R	3	4.5	6.5	1°	50	2.9	15°	6	100	
	1.5R	3	4.5	6.5	1°	60	2.9	15°	6	110	
	1.5R	3	4.5	6.5	3°	30	2.9	15°	6	75	
	1.5R	3	4.5	6.5	3°	40	2.9	15°	8	100	
	1.5R	3	4.5	6.5	3°	50	2.9	15°	10	100	
	1.5R	3	4.5	6.5	3°	70	2.9	15°	12	120	
	2R	4	6	9	1°	30	3.9	15°	6	75	
	2R	4	6	9	1°	40	3.9	15°	6	100	
	2R	4	6	9	1°	50	3.9	15°	6	100	
	2R	4	6	9	1°	60	3.9	15°	8	110	
	2R	4	6	9	1°	70	3.9	15°	8	120	
	2R	4	6	9	1°	80	3.9	15°	8	125	
	2R	4	6	9	1.5°	40	3.9	15°	6	100	
	2R	4	6	9	1.5°	60	3.9	15°	8	110	
	2R	4	6	9	1.5°	80	3.9	15°	8	125	
	2.5R	5	7.5	10.5	1°	30	4.9	15°	8	75	
	2.5R	5	7.5	10.5	1°	35	4.9	15°	8	75	
	2.5R	5	7.5	10.5	1°	40	4.9	15°	8	100	
	2.5R	5	7.5	10.5	1°	50	4.9	15°	8	100	
	2.5R	5	7.5	10.5	1°	60	4.9	15°	8	110	
	2.5R	5	7.5	10.5	1°	70	4.9	15°	8	120	
	2.5R	5	7.5	10.5	1°	80	4.9	15°	8	125	
	3R	6	9	12	1°	40	5.8	15°	8	100	
	3R	6	6	12	1°	50	5.8	15°	8	100	
	3R	6	6	12	1°	60	5.8	15°	8	110	
	3R	6	6	12	1°	90	5.8	15°	10	150	

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

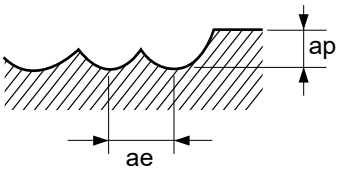
General Milling

Work Material			Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition			Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e
CED	R	NL												
1	0.5R	5	18,000	1,080	0.05	0.13	18,000	1,020	0.05	0.13	18,000	960	0.03	0.02
1	0.5R	10	16,000	960	0.04	0.13	16,000	840	0.04	0.13	16,000	840	0.03	0.02
1	0.5R	15	8,000	510	0.03	0.13	8,000	480	0.03	0.13	8,000	4480	0.03	0.02
1	0.5R	20	6,000	360	0.02	0.09	6,000	340	0.02	0.09	7,000	340	0.03	0.02
1.5	0.75R	5	18,000	1,800	0.1	0.24	16,000	1,560	0.1	0.24	18,000	1,560	0.04	0.03
1.5	0.75R	10	15,000	1,320	0.06	0.2	15,000	1,140	0.06	0.2	16,000	1,200	0.04	0.03
1.5	0.75R	15	7,500	660	0.02	0.16	7,500	600	0.02	0.16	7,500	480	0.04	0.03
1.5	0.75R	20	5,300	460	0.02	0.16	5,300	420	0.02	0.16	5,300	340	0.04	0.03
1.5	0.75R	25	5,000	360	0.02	0.16	5,000	390	0.02	0.16	5,000	300	0.04	0.03
1.5	0.75R	30	4,200	300	0.01	0.12	4,200	280	0.01	0.12	4,200	260	0.04	0.03
2	1R	10	12,000	1,500	0.14	0.33	11,000	1,320	0.14	0.33	12,000	1,440	0.06	0.04
2	1R	15	7,800	990	0.14	0.33	7,800	940	0.14	0.33	7,800	940	0.06	0.04
2	1R	20	6,200	780	0.13	0.33	6,200	720	0.13	0.33	6,200	720	0.06	0.04
2	1R	25	4,700	600	0.12	0.24	4,700	570	0.12	0.24	4,700	570	0.06	0.04
2	1R	30	3,800	480	0.1	0.24	3,500	490	0.1	0.24	3,500	460	0.06	0.04
2	1R	40	3,50 0	440	0.07	0.24	3,500	410	0.07	0.24	3,400	360	0.06	0.04
2	1R	50	3,500	410	0.06	0.08	3,500	380	0.06	0.08	3,500	340	0.06	0.04
2	1R	60	3,200	350	0.05	0.08	3,200	330	0.05	0.08	3,200	300	0.06	0.04
3	1.5R	15	12,000	2,800	0.2	0.41	8,000	1,440	0.2	0.41	10,000	1,800	0.09	0.06
3	1.5R	20	7,500	1,380	0.19	0.41	7,200	1,200	0.19	0.41	7,500	1,200	0.09	0.06
3	1.5R	25	4,800	900	0.19	0.41	4,600	840	0.19	0.41	5,500	960	0.09	0.06
3	1.5R	30	4,000	760	0.16	0.33	3,400	600	0.16	0.33	5,000	820	0.09	0.06
3	1.5R	40	2,800	530	0.13	0.33	2,600	480	0.13	0.33	3,500	600	0.09	0.06
3	1.5R	50	2,200	420	0.1	0.33	2,200	390	0.1	0.33	2,200	470	0.09	0.06
3	1.5R	60	2,200	420	0.07	0.33	2,200	340	0.07	0.33	2,200	320	0.09	0.06
3	1.5R	70	2,100	340	0.07	0.33	2,100	290	0.07	0.33	2,100	280	0.09	0.06
4	2R	30	5,000	1,260	0.2	0.49	4,500	960	0.2	0.49	4,500	900	0.08	0.16
4	2R	40	3,600	900	0.16	0.41	3,600	780	0.16	0.41	3,600	710	0.08	0.16
4	2R	50	3,000	760	0.12	0.41	3,000	660	0.12	0.41	3,000	600	0.08	0.16
4	2R	60	2,700	660	0.1	0.33	2,700	600	0.1	0.33	2,700	650	0.08	0.19

General Milling

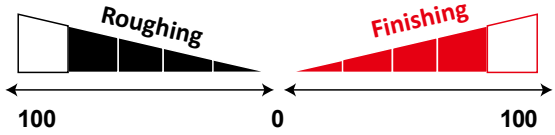
Work Material			Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition			Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e
CED	R	NL												
4	2R	70	2,500	630	0.1	0.33	2,500	540	0.1	0.33	2,500	480	0.08	0.16
4	2R	80	2,300	590	0.1	0.33	2,300	500	0.1	0.33	2,300	420	0.08	0.16
5	2.5R	30	4,800	1,440	0.2	0.66	4,800	1,020	0.2	0.66	5,100	1,390	0.15	0.2
5	2.5R	35	4,400	1,320	0.14	0.66	4,400	900	0.14	0.66	5,100	1,270	0.15	0.2
5	2.5R	40	3,100	900	0.1	0.49	3,100	780	0.1	0.49	4,000	900	0.15	0.16
5	2.5R	50	2,700	720	0.1	0.49	2,700	660	0.1	0.49	3,000	720	0.15	0.08
5	2.5R	60	2,500	660	0.1	0.49	2,500	600	0.08	0.49	2,500	580	0.15	0.08
5	2.5R	70	2,300	600	0.1	0.49	2,300	650	0.08	0.49	2,300	500	0.15	0.06
5	2.5R	80	2,100	540	0.1	0.41	2,100	500	0.08	0.41	2,100	430	0.15	0.06
6	3R	40	3,700	990	0.2	0.83	3,600	870	0.2	0.83	3,700	810	0.15	0.13
6	3R	50	3,000	750	0.1	0.66	2,600	630	0.1	0.66	2,600	580	0.1	0.13
6	3R	60	2,800	660	0.1	0.66	2,600	630	0.1	0.66	2,600	580	0.1	0.13
6	3R	90	2,500	600	0.08	0.49	2,500	510	0.08	0.49	2,500	460	0.08	0.13

Depth of cut



Work Material

H			
G14	G15	G16	G17
●	●	●	○



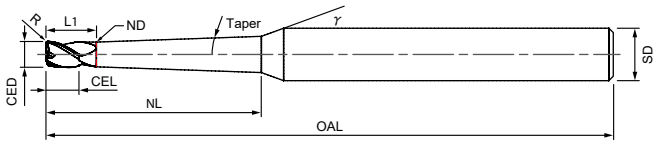
1. **These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.**
2. **Please select high rigid tool holder and collet chuck during machining.**
3. **Please select the suitable coolant fluid.**
4. **For dry cutting, please use air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

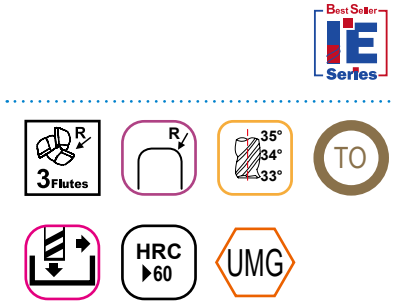
RTX600IE3+-24333TO

- Corner Radius - 3-Flute x 1.2D - Taper Neck
- Uneven Flute / Variable Helix 33° /34° /35°









CED	Tolerance
2~3	0~-0.014
3~6	0~-0.018

Shank h5

(unit : mm)

Code No.	CED	R	CEL	L1	Taper	NL	ND	γ °	SD	OAL	Flute
RTX600IE3+-24333TO	2	0.2R	2.5	4.5	1°	10	1.95	15°	6	60	3
	2	0.2R	2.5	4.5	1°	15	1.95	15°	6	60	
	2	0.2R	2.5	4.5	1°	20	1.95	15°	6	60	
	2	0.2R	2.5	4.5	1°	25	1.95	15°	6	65	
	2	0.2R	2.5	4.5	1°	30	1.95	15°	6	75	
	2	0.2R	2.5	4.5	1°	40	1.95	15°	6	100	
	2	0.2R	2.5	4.5	1°	50	1.95	15°	6	100	
	2.5	0.2R	3	6	1.5°	15	2.45	15°	6	60	
	2.5	0.2R	3	6	1.5°	20	2.45	15°	6	60	
	2.5	0.2R	3	6	1.5°	25	2.45	15°	6	65	
	2.5	0.2R	3	6	1.5°	30	2.45	15°	6	75	
	2.5	0.2R	3	6	1.5°	40	2.45	15°	6	100	
	2.5	0.2R	3	6	1.5°	50	2.45	15°	6	100	

Code No.	CED	R	CEL	L1	Taper	NL	ND	γ °	SD	OAL	Flute
RTX600IE3+-24333TO	3	0.2R	4	6.5	1°	20	2.85	15°	6	60	3
	3	0.2R	4	6.5	1°	25	2.85	15°	6	65	
	3	0.2R	4	6.5	1°	30	2.85	15°	6	75	
	3	0.2R	4	6.5	1°	40	2.85	15°	6	100	
	3	0.2R	4	6.5	1°	50	2.85	15°	6	100	
	4	0.3R	5	8	1°	30	3.9	15°	6	75	
	4	0.3R	5	8	1°	40	3.9	15°	6	100	
	4	0.3R	5	8	1°	50	3.9	15°	6	100	
	4	0.3R	5	8	1°	60	3.9	15°	6	110	
	4	0.3R	5	8	1°	80	3.9	15°	8	125	
	6	0.3R	7	10	1°	40	5.8	15°	8	100	
	6	0.3R	7	10	1°	50	5.8	15°	8	100	
	6	0.3R	7	10	1°	60	5.8	15°	8	110	
	6	0.3R	7	10	1°	80	5.8	15°	10	125	
	6	0.3R	7	10	1°	100	5.8	15°	10	150	

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

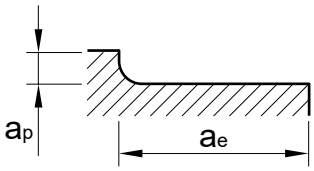
Side Milling

Work Material			Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition			Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e
CED	R	NL												
2	0.2R	10	12,000	1,050	0.15	0.4	12,000	1,000	0.13	0.4	12,000	950	0.06	0.4
2	0.2R	15	7,800	780	0.12	0.4	7,800	740	0.1	0.4	7,800	650	0.06	0.4
2	0.2R	20	6,200	620	0.1	0.3	6,200	600	0.07	0.3	6,200	550	0.06	0.3
2	0.2R	25	4,700	470	0.07	0.3	4,700	450	0.06	0.3	4,700	380	0.06	0.3
2	0.2R	30	3,500	350	0.07	0.3	3,500	300	0.05	0.3	3,500	300	0.05	0.3
2	0.2R	40	3,500	300	0.07	0.2	3,500	260	0.04	0.2	3,500	260	0.04	0.2
2	0.2R	50	3,000	220	0.06	0.1	3,000	200	0.03	0.1	3,000	180	0.03	0.1
2.5	0.2R	15	8,900	800	0.15	0.4	8,900	680	0.15	0.4	8,900	610	0.08	0.4
2.5	0.2R	20	6,300	570	0.15	0.4	6,300	490	0.15	0.4	6,300	440	0.08	0.4
2.5	0.2R	25	5,100	460	0.12	0.3	5,100	390	0.12	0.3	5,100	350	0.08	0.3
2.5	0.2R	30	3,800	340	0.12	0.3	3,800	290	0.12	0.3	3,800	260	0.08	0.3
2.5	0.2R	40	2,800	250	0.1	0.3	2,800	210	0.1	0.3	2,800	190	0.08	0.3
2.5	0.2R	50	2,800	250	0.08	0.2	2,800	210	0.08	0.2	2,800	190	0.07	0.2
3	0.2R	20	7,500	1,100	0.12	0.5	7,500	940	0.12	0.5	7,500	800	0.1	0.5
3	0.2R	25	4,800	700	0.12	0.4	4,800	600	0.12	0.4	4,800	510	0.1	0.4
3	0.2R	30	3,800	550	0.1	0.4	3,800	470	0.1	0.4	3,800	400	0.08	0.4
3	0.2R	40	3,000	420	0.08	0.3	3,000	380	0.08	0.3	3,000	320	0.07	0.3
3	0.2R	50	2,500	350	0.06	0.3	2,500	300	0.06	0.3	2,500	280	0.07	0.3
4	0.3R	30	5,500	1,150	0.15	0.7	5,500	980	0.11	0.7	5,500	830	0.09	0.7
4	0.3R	40	4,500	960	0.15	0.7	4,500	820	0.09	0.7	4,500	700	0.07	0.7
4	0.3R	50	3,600	750	0.12	0.6	3,600	640	0.09	0.6	3,600	540	0.07	0.6
4	0.3R	60	2,600	500	0.1	0.5	2,600	450	0.08	0.5	2,600	380	0.06	0.5
4	0.3R	80	2,000	400	0.08	0.4	2,000	340	0.06	0.4	2,000	320	0.05	0.4

Side Milling

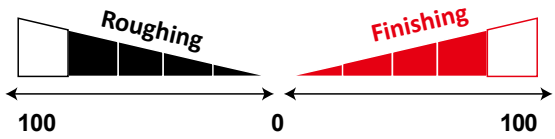
Work Material			Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition			Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e
CED	R	NL												
6	0.3R	40	4,200	1,300	0.2	1	4,200	1,000	0.18	1	4,200	800	0.16	0.8
6	0.3R	50	3,600	1,000	0.13	1	3,600	850	0.1	1	3,600	680	0.08	0.8
6	0.3R	60	2,800	720	0.1	0.9	2,800	610	0.08	0.9	2,800	540	0.06	0.7
6	0.3R	80	1,700	500	0.05	0.9	1,700	500	0.05	0.9	1,700	400	0.04	0.7
6	0.3R	100	1,200	330	0.04	0.7	1,200	280	0.04	0.7	1,200	220	0.03	0.6

Depth of cut



Work Material

H			
G14	G15	G16	G17
●	●	●	○



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

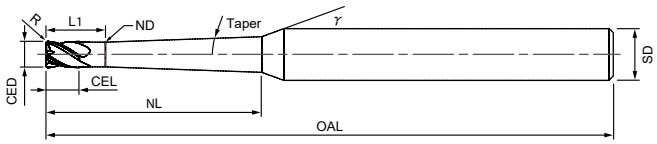
RTX600IE4+-24344TO

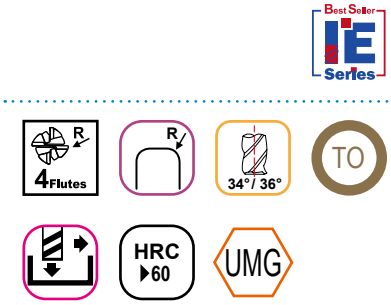
- Corner Radius - 4-Flute x 1.5D - Taper Neck
- Uneven Flute / Variable Helix 34° /36°



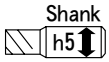
$a_1 \neq a_2 \neq a_3 \neq a_4$







CED	Tolerance
2~3	0~-0.014
3~6	0~-0.018



(unit : mm)

Code No.	CED	R	CEL	L1	Taper	NL	ND	γ °	SD	OAL	Flute
RTX600IE4+-24344TO	2	0.2R	3	5	1°	10	1.95	15°	6	60	4
	2	0.2R	3	5	1°	15	1.95	15°	6	60	
	2	0.2R	3	5	1°	20	1.95	15°	6	60	
	2	0.2R	3	5	1°	25	1.95	15°	6	65	
	2	0.2R	3	5	1°	30	1.95	15°	6	75	
	2	0.2R	3	5	1°	40	1.95	15°	6	100	
	2	0.2R	3	5	1°	50	1.95	15°	6	100	
	2.5	0.2R	3.8	6	1.5°	15	2.45	15°	6	60	
	2.5	0.2R	3.8	6	1.5°	20	2.45	15°	6	60	
	2.5	0.2R	3.8	6	1.5°	25	2.45	15°	6	65	
	2.5	0.2R	3.8	6	1.5°	30	2.45	15°	6	75	
	2.5	0.2R	3.8	6	1.5°	40	2.45	15°	6	100	
	2.5	0.2R	3.8	6	1.5°	50	2.45	15°	6	100	

Code No.	CED	R	CEL	L1	Taper	NL	ND	γ °	SD	OAL	Flute
RTX600IE4+-24344TO	3	0.2R	4.5	7	1°	20	2.9	15°	6	60	4
	3	0.2R	4.5	7	1°	25	2.9	15°	6	65	
	3	0.2R	4.5	7	1°	30	2.9	15°	6	75	
	3	0.2R	4.5	7	1°	40	2.9	15°	6	100	
	3	0.2R	4.5	7	1°	50	2.9	15°	6	100	
	4	0.3R	6	9	1°	30	3.9	15°	6	75	
	4	0.3R	6	9	1°	40	3.9	15°	6	100	
	4	0.3R	6	9	1°	50	3.9	15°	6	100	
	4	0.3R	6	9	1°	60	3.9	15°	6	110	
	4	0.3R	6	9	1°	80	3.9	15°	8	125	
	6	0.3R	9	12	1°	40	5.8	15°	8	100	
	6	0.3R	9	12	1°	50	5.8	15°	8	100	
	6	0.3R	9	12	1°	60	5.8	15°	8	110	
	6	0.3R	9	12	1°	80	5.8	15°	10	125	
	6	0.3R	9	12	1°	100	5.8	15°	10	150	

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

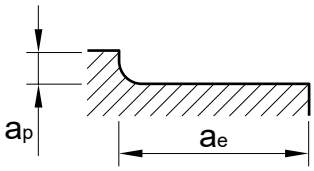
Side Milling

Work Material			Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition			Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e
CED	R	NL												
2	0.2R	10	12,000	1,260	0.15	0.33	12,000	1,200	0.13	0.4	12,000	1,150	0.06	0.33
2	0.2R	15	7,800	940	0.12	0.33	7,800	890	0.1	0.4	7,800	780	0.06	0.33
2	0.2R	20	6,200	750	0.1	0.24	6,200	720	0.07	0.3	6,200	660	0.06	0.24
2	0.2R	25	4,700	570	0.07	0.24	4,700	540	0.06	0.3	4,700	460	0.06	0.24
2	0.2R	30	3,500	420	0.07	0.24	3,500	360	0.05	0.3	3,500	360	0.05	0.24
2	0.2R	40	3,500	360	0.07	0.16	3,500	320	0.04	0.2	3,500	320	0.04	0.16
2	0.2R	50	3,000	270	0.06	0.08	3,000	240	0.03	0.1	3,000	220	0.03	0.08
2.5	0.2R	15	8,900	960	0.15	0.33	8,900	980	0.15	0.33	8,900	740	0.08	0.27
2.5	0.2R	20	6,300	690	0.15	0.33	6,300	590	0.15	0.33	6,300	530	0.08	0.27
2.5	0.2R	25	5,100	560	0.12	0.24	5,100	470	0.12	0.24	5,100	420	0.08	0.19
2.5	0.2R	30	3,800	410	0.12	0.24	3,800	350	0.12	0.24	3,800	320	0.08	0.19
2.5	0.2R	40	2,800	300	0.1	0.24	2,800	260	0.1	0.24	2,800	230	0.08	0.19
2.5	0.2R	50	2,800	300	0.08	0.16	2,800	260	0.08	0.16	2,800	230	0.07	0.13
3	0.2R	20	7,500	1,320	0.12	0.41	7,500	1,130	0.12	0.41	7,500	960	0.1	0.34
3	0.2R	25	4,800	840	0.12	0.33	4,800	720	0.12	0.33	4,800	740	0.1	0.27
3	0.2R	30	3,800	660	0.1	0.33	3,800	570	0.1	0.33	3,800	590	0.08	0.27
3	0.2R	40	3,000	510	0.08	0.24	3,000	460	0.08	0.24	3,000	390	0.07	0.19
3	0.2R	50	2,500	420	0.06	0.24	2,500	360	0.06	0.24	2,500	340	0.06	0.19
4	0.3R	30	5,500	1,380	0.15	0.58	5,500	1,180	0.11	0.58	5,500	1,000	0.09	0.48
4	0.3R	40	4,500	1,160	0.15	0.58	4,500	990	0.09	0.58	4,500	840	0.07	0.48
4	0.3R	50	3,600	900	0.12	0.49	3,600	770	0.09	0.49	3,600	650	0.07	0.4
4	0.3R	60	2,600	600	0.1	0.41	2,600	540	0.08	0.41	2,600	460	0.06	0.34
4	0.3R	80	2,000	480	0.08	0.33	2,000	410	0.06	0.33	2,000	390	0.05	0.27

Side Milling

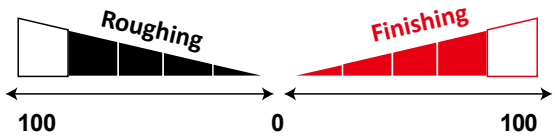
Work Material			Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition			Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e
CED	R	NL												
6	0.3R	40	4,200	1,560	0.2	0.83	4,200	1,200	0.18	0.83	4,200	1,160	0.16	0.52
6	0.3R	50	3,600	1,200	0.13	0.83	3,600	1,230	0.1	0.83	3,600	1,190	0.08	0.52
6	0.3R	60	2,800	870	0.1	0.74	2,800	740	0.08	0.74	2,800	650	0.06	0.44
6	0.3R	80	1,700	600	0.05	0.74	1,700	600	0.05	0.9	1,700	580	0.04	0.58
6	0.3R	100	1,200	400	0.04	0.58	1,200	340	0.04	0.7	1,200	270	0.03	0.49

Depth of cut



Work Material

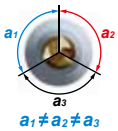
H			
G14	G15	G16	G17
●	●	●	○



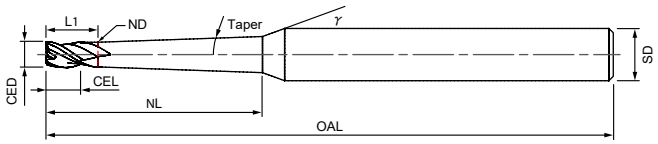
1. **These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.**
2. **Please select high rigid tool holder and collet chuck during machining.**
3. **Please select the suitable coolant fluid.**
4. **For dry cutting, please use air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

RTX600IE3+-14333TO

- Square - 3-Flute x 1.2D - Taper Neck
- Uneven Flute / Variable Helix 33° /34° /35°



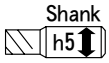




Best Seller IE Series



CED	Tolerance
2~3	0~-0.014
3~6	0~-0.018



(unit : mm)

Code No.	CED	CEL	L1	Taper	NL	ND	γ °	SD	OAL	Flute
RTX600IE3+-14333TO	2	2.5	4.5	1°	10	1.95	15°	6	60	3
	2	2.5	4.5	1°	15	1.95	15°	6	60	
	2	2.5	4.5	1°	20	1.95	15°	6	60	
	2	2.5	4.5	1°	25	1.95	15°	6	65	
	2	2.5	4.5	1°	30	1.95	15°	6	75	
	2	2.5	4.5	1°	40	1.95	15°	6	100	
	2	2.5	4.5	1°	50	1.95	15°	6	100	
	2.5	3	6	1.5°	15	2.45	15°	6	60	
	2.5	3	6	1.5°	20	2.45	15°	6	60	
	2.5	3	6	1.5°	25	2.45	15°	6	65	
	2.5	3	6	1.5°	30	2.45	15°	6	75	
	2.5	3	6	1.5°	40	2.45	15°	6	100	
	2.5	3	6	1.5°	50	2.45	15°	6	100	

Code No.	CED	CEL	L1	Taper	NL	ND	γ °	SD	OAL	Flute
RTX600IE3^{+}-14333TO	3	4	6.5	1°	20	2.9	15°	6	60	3
	3	4	6.5	1°	25	2.9	15°	6	65	
	3	4	6.5	1°	30	2.9	15°	6	75	
	3	4	6.5	1°	40	2.9	15°	6	100	
	3	4	6.5	1°	50	2.9	15°	6	100	
	4	5	8	1°	30	3.9	15°	6	75	
	4	5	8	1°	40	3.9	15°	6	100	
	4	5	8	1°	50	3.9	15°	6	100	
	4	5	8	1°	60	3.9	15°	6	110	
	4	5	8	1°	80	3.9	15°	8	125	
	6	7	10	1°	40	5.8	15°	8	100	
	6	7	10	1°	50	5.8	15°	8	100	
	6	7	10	1°	60	5.8	15°	8	110	
	6	7	10	1°	80	5.8	15°	10	125	
	6	7	10	1°	100	5.8	15°	10	150	

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

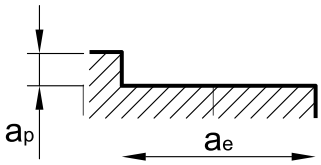
Side Milling

Work Material		Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition		Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e
CED	NL												
2	10	12,000	1,050	0.15	0.4	12,000	1,000	0.13	0.4	12,000	850	0.06	0.4
2	15	7,800	780	0.12	0.4	7,800	740	0.1	0.4	7,800	650	0.06	0.4
2	20	6,200	620	0.1	0.3	6,200	600	0.07	0.3	6,200	550	0.06	0.3
2	25	4,700	470	0.07	0.3	4,700	450	0.06	0.3	4,700	380	0.06	0.3
2	30	3,500	350	0.07	0.3	3,500	300	0.05	0.3	3,500	300	0.05	0.3
2	40	3,500	300	0.07	0.2	3,500	260	0.04	0.2	3,500	260	0.04	0.2
2	50	3,000	220	0.06	0.1	3,000	200	0.03	0.1	3,000	180	0.03	0.1
2.5	15	8,900	800	0.15	0.4	8,900	680	0.15	0.4	8,900	610	0.08	0.4
2.5	20	6,300	570	0.15	0.4	6,300	490	0.15	0.4	6,300	440	0.08	0.4
2.5	25	5,100	460	0.12	0.3	5,100	390	0.12	0.3	5,100	350	0.08	0.3
2.5	30	3,800	340	0.12	0.3	3,800	290	0.12	0.3	3,800	260	0.08	0.3
2.5	40	2,800	250	0.1	0.3	2,800	210	0.1	0.3	2,800	190	0.08	0.3
2.5	50	2,800	250	0.08	0.2	2,800	210	0.08	0.2	2,800	190	0.07	0.2
3	20	7,500	1,100	0.12	0.5	7,500	940	0.12	0.5	7,500	800	0.1	0.5
3	25	4,800	700	0.12	0.4	4,800	600	0.12	0.4	4,800	510	0.1	0.4
3	30	3,800	550	0.1	0.4	3,800	470	0.1	0.4	3,800	400	0.08	0.4
3	40	3,000	420	0.08	0.3	3,000	380	0.08	0.3	3,000	320	0.07	0.3
3	50	2,500	350	0.06	0.3	2,500	300	0.06	0.3	2,500	280	0.06	0.3
4	30	5,500	1,150	0.15	0.7	5,500	980	0.11	0.7	5,500	830	0.09	0.7
4	40	4,500	960	0.15	0.7	4,500	820	0.09	0.7	4,500	700	0.07	0.7
4	50	3,600	750	0.12	0.6	3,600	640	0.09	0.6	3,600	540	0.07	0.6
4	60	2,600	500	0.1	0.5	2,600	450	0.08	0.5	2,600	380	0.06	0.5
4	80	2,000	400	0.08	0.4	2,000	340	0.06	0.4	2,000	320	0.05	0.4

Side Milling

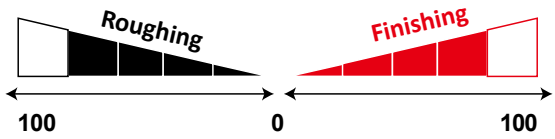
Work Material		Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition		Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e	Speed (RPM/min)	Feed (mm/min)	a_p	a_e
CED	NL												
6	40	4,200	1,300	0.2	1	4,200	1,000	0.18	1	4,200	800	0.16	0.8
6	50	3,600	1,000	0.13	1	3,600	850	0.1	1	3,600	680	0.08	0.8
6	60	2,800	720	0.1	0.9	2,800	610	0.08	0.9	2,800	540	0.06	0.7
6	80	1,700	500	0.05	0.9	1,700	500	0.05	0.9	1,700	400	0.04	0.7
6	100	1,200	330	0.04	0.7	1,200	280	0.04	0.7	1,200	220	0.03	0.6

Depth of cut



Work Material

H			
G14	G15	G16	G17
●	●	●	○



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

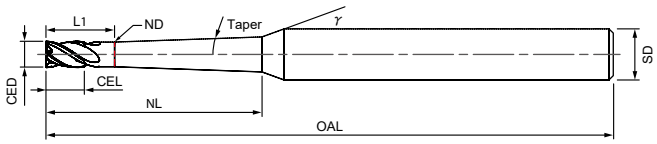
RTX600IE4+-14344TO

- Square - 4-Flute x 1.5D- Taper Neck
- Uneven Flute / Variable Helix 34° /36°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | 90° | 34°/ 36° | TO

HRC 60 | UMG

CED	Tolerance
2~3	0~-0.014
3~6	0~-0.018

Shank h5

(unit : mm)

Code No.	CED	CEL	L1	Taper	NL	ND	γ °	SD	OAL	Flute
RTX600IE4+-14344TO	2	3	5	1°	10	1.95	15°	6	60	4
	2	3	5	1°	15	1.95	15°	6	60	
	2	3	5	1°	20	1.95	15°	6	60	
	2	3	5	1°	25	1.95	15°	6	65	
	2	3	5	1°	30	1.95	15°	6	75	
	2	3	5	1°	40	1.95	15°	6	100	
	2	3	5	1°	50	1.95	15°	6	100	
	2.5	3.8	6	1.5°	15	2.45	15°	6	60	
	2.5	3.8	6	1.5°	20	2.45	15°	6	60	
	2.5	3.8	6	1.5°	25	2.45	15°	6	65	
	2.5	3.8	6	1.5°	30	2.45	15°	6	75	
	2.5	3.8	6	1.5°	40	2.45	15°	6	100	
	2.5	3.8	6	1.5°	50	2.45	15°	6	100	

Code No.	CED	CEL	L1	Taper	NL	ND	γ °	SD	OAL	Flute
RTX600IE4^{+}-14344TO	3	4.5	7	1°	20	2.9	15°	6	60	4
	3	4.5	7	1°	25	2.9	15°	6	65	
	3	4.5	7	1°	30	2.9	15°	6	75	
	3	4.5	7	1°	40	2.9	15°	6	100	
	3	4.5	7	1°	50	2.9	15°	6	100	
	4	6	9	1°	30	3.9	15°	6	75	
	4	6	9	1°	40	3.9	15°	6	100	
	4	6	9	1°	50	3.9	15°	6	100	
	4	6	9	1°	60	3.9	15°	6	110	
	4	6	9	1°	80	3.9	15°	8	125	
	6	9	12	1°	40	5.8	15°	8	100	
	6	9	12	1°	50	5.8	15°	8	100	
	6	9	12	1°	60	5.8	15°	8	110	
	6	9	12	1°	80	5.8	15°	10	125	
	6	9	12	1°	100	5.8	15°	10	150	

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

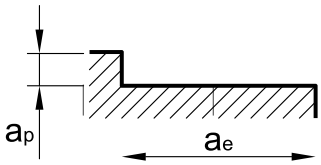
Side Milling

Work Material		Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition		Speed (min^{-1})	Feed (mm/min)	a_p	a_e	Speed (min^{-1})	Feed (mm/min)	a_p	a_e	Speed (min^{-1})	Feed (mm/min)	a_p	a_e
CED	NL												
2	10	12,000	1,260	0.15	0.33	12,000	1,200	0.13	0.33	12,000	1,230	0.06	0.33
2	15	7,800	940	0.12	0.33	7,800	890	0.1	0.33	7,800	780	0.06	0.33
2	20	6,200	750	0.1	0.24	6,200	720	0.07	0.24	6,200	660	0.06	0.19
2	25	4,700	570	0.07	0.24	4,700	540	0.06	0.24	4,700	460	0.06	0.19
2	30	3,500	420	0.07	0.24	3,500	360	0.05	0.24	3,500	360	0.05	0.19
2	40	3,500	360	0.07	0.16	3,500	320	0.04	0.16	3,500	320	0.04	0.13
2	50	3,000	270	0.06	0.08	3,000	240	0.03	0.08	3,000	220	0.03	0.06
2.5	15	8,900	960	0.15	0.33	8,900	980	0.15	0.27	8,900	740	0.08	0.22
2.5	20	6,300	690	0.15	0.33	6,300	590	0.15	0.27	6,300	530	0.08	0.22
2.5	25	5,100	560	0.12	0.24	5,100	470	0.12	0.19	5,100	420	0.08	0.15
2.5	30	3,800	410	0.12	0.24	3,800	350	0.12	0.19	3,800	320	0.08	0.15
2.5	40	2,800	300	0.1	0.24	2,800	260	0.1	0.19	2,800	230	0.08	0.15
2.5	50	2,800	300	0.08	0.16	2,800	260	0.08	0.13	2,800	230	0.07	0.1
3	20	7,500	1,320	0.12	0.41	7,500	1,130	0.12	0.34	7,500	960	0.1	0.28
3	25	4,800	840	0.12	0.33	4,800	720	0.12	0.27	4,800	740	0.1	0.22
3	30	3,800	660	0.1	0.33	3,800	570	0.1	0.27	3,800	590	0.08	0.22
3	40	3,000	510	0.08	0.24	3,000	460	0.08	0.19	3,000	390	0.07	0.15
3	50	2,500	420	0.06	0.24	2,500	360	0.06	0.19	2,500	340	0.06	0.15
4	30	5,500	1,380	0.15	0.58	5,500	1,180	0.11	0.48	5,500	1,000	0.09	0.39
4	40	4,500	1,160	0.15	0.58	4,500	990	0.09	0.48	4,500	840	0.07	0.39
4	50	3,600	900	0.12	0.49	3,600	770	0.09	0.4	3,600	650	0.07	0.33
4	60	2,600	600	0.1	0.41	2,600	540	0.08	0.34	2,600	460	0.06	0.28
4	80	2,000	480	0.08	0.33	2,000	410	0.06	0.27	2,000	390	0.05	0.22

Side Milling

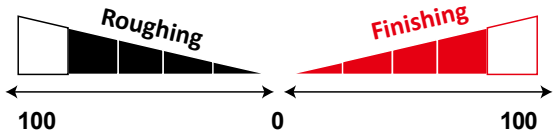
Work Material		Alloyed Steel / Prehardened Steel ~40HRC for High Speed Roughing				Hardened Steel 40~50HRC for Semi-roughing Process				Hardened Steel 50~60HRC for Finishing Process			
Cutting Condition		Speed (min^{-1})	Feed (mm/min)	a_p	a_e	Speed (min^{-1})	Feed (mm/min)	a_p	a_e	Speed (min^{-1})	Feed (mm/min)	a_p	a_e
CED	NL												
6	40	4,200	1,560	0.2	0.83	4,200	1,200	0.18	0.69	4,200	1,160	0.16	0.4
6	50	3,600	1,200	0.13	0.83	3,600	1,230	0.1	0.69	3,600	1,190	0.08	0.4
6	60	2,800	870	0.1	0.74	2,800	740	0.08	0.61	2,800	650	0.06	0.34
6	80	1,700	600	0.05	0.74	1,700	600	0.05	0.74	1,700	580	0.04	0.44
6	100	1,200	400	0.04	0.58	1,200	340	0.04	0.58	1,200	270	0.03	0.49

Depth of cut



Work Material

H			
G14	G15	G16	G17
●	●	●	○

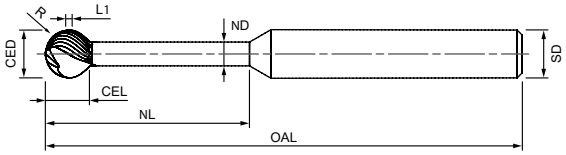


1. **These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.**
2. **Please select high rigid tool holder and collet chuck during machining.**
3. **Please select the suitable coolant fluid.**
4. **For dry cutting, please use air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

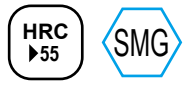
SS100+-84302TN

- Spherical Ball End Mill - 2-Flute / Long Shank with Neck
- Helix 30°

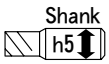








CED	Tolerance
R	±0.02

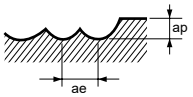


(unit : mm)

Code No.	R	L1	CEL	NL	ND	SD	OAL	Flute
SS100+-84302TN	1.5R	1.5	4	30	2.5	6	80	2
		-	2.3					
	2R	2	5	30	3.3	6	80	
		-	3.1					
	2.5R	2	6	43	4.1	6	80	
		-	3.9	38				
	3R	3	7	30	4.7	6	100	
		-	4.9	28				
	4R	3	9	36	6.5	8	100	
		-	6.3	33				
	5R	3	11	43	8.2	10	100	
		-	7.9	40				
	6R	3	13	52	9.8	12	120	
		-	9.5	49				
	8R	3	15	61	13.4	16	150	
		-	12.4	59				

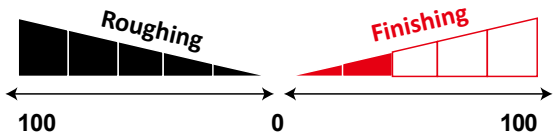
※ **Customized Special sizes, Coating type and Inches are available to order.**

General Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1.5R	14,000	840	11,700	540	10,100	432	14,000	840	10,100	432
2R	10,800	840	9,000	520	7,700	410	10,800	840	7,700	410
2.5R	8,600	830	7,200	510	6,100	430	8,600	830	6,100	430
3R	7,200	830	5,800	490	5,100	460	7,200	830	5,100	460
4R	5,400	810	5,000	560	4,200	500	5,400	810	4,200	500
5R	4,300	810	3,500	560	3,200	500	4,300	810	3,200	500
6R	3,600	810	2,900	510	2,500	390	3,600	810	2,500	390
8R	2,700	800	2,200	490	1,900	360	2,700	800	1,900	360
Depth of cut	 ap: 0.1D, ae: 0.2D		ap: 0.08D, ae: 0.1D		ap: 0.05D, ae: 0.1D		ap: 0.1D, ae: 0.2D		ap: 0.05D, ae: 0.1D	

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	●	●	●	○

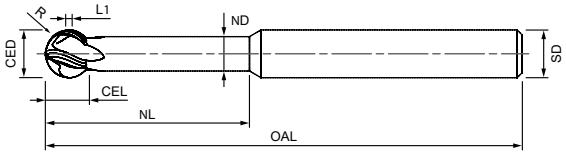


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

SS100+-84304TN

- Spherical Ball End Mill - 4-Flute / Long Shank with Neck
- Helix 30°







CED	Tolerance
R	±0.02

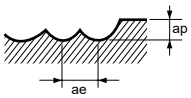
Shank h5

(unit : mm)

Code No.	R	L1	CEL	NL	ND	SD	OAL	Flute
SS100+-84304TN	2.5R	2	6	43	4.1	6	80	4
		-	3.9	38				
	3R	2	7	30	4.7	6	100	
		-	4.9	28				
	4R	3	9	36	6.5	8	100	
		-	6.3	33				
	5R	3	11	43	8.2	10	100	
		-	7.9	40				
	6R	3	13	52	9.8	12	120	
		-	9.5	49				
	8R	3	15	61	13.4	16	150	
		-	12.4	59				

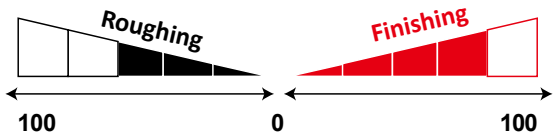
※ **Customized Special sizes, Coating type and Inches are available to order.**

General Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
2.5R	9,000	1,140	8,550	918	6,800	550	9,000	1,140	6,800	550
3R	7,560	1,260	7,155	1,000	5,700	600	7,560	1,260	5,700	600
4R	5,670	1,290	5,355	1,020	7,300	610	5,670	1,290	7,300	610
5R	4,600	1,300	4,320	1,200	3,420	720	4,600	1,300	3,420	720
6R	3,780	1,140	3,600	1,140	2,880	680	3,780	1,140	2,880	680
8R	2,800	860	2,700	918	2,160	550	2,800	860	2,160	550
Depth of cut	 ap: 0.05D, ae: 0.1D		ap: 0.03D, ae: 0.1D		ap: 0.03D, ae: 0.05D		ap: 0.1D, ae: 0.2D		ap: 0.05D, ae: 0.1D	

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	●	●	●	○



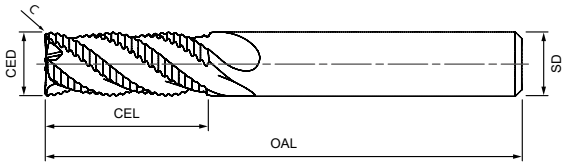
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

RF100IE2^{+}-11394TN

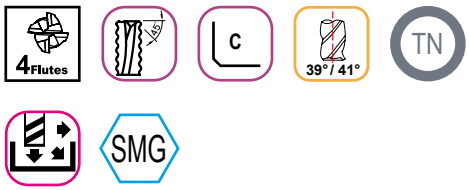
- Square - 4-Flute / Roughing x 3D
- Uneven Flute / Variable Helix 39° /41°



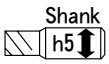








CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

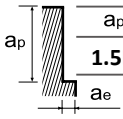


(unit : mm)

Code No.	CED	C	CEL	SD	OAL	Flute
RF100IE2^{+}-11394TN	6	0.3C	18	6	50	4
	8	0.3C	24	8	65	
	10	0.4C	30	10	75	
	12	0.4C	36	12	80	
	16	0.6C	48	16	100	
	20	0.6C	60	20	125	

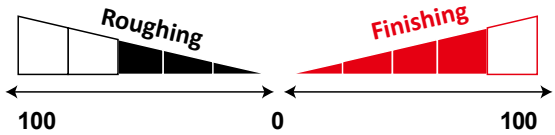
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	5,400	650	3,450	280	2,410	190	5,400	650	2,410	190
8	4,050	640	2,600	310	1,820	210	4,050	640	1,820	210
10	3,200	640	2,050	330	1,435	225	3,200	640	1,435	225
12	2,650	640	1,700	340	1,190	230	2,650	640	1,190	230
16	2,020	630	1,290	360	900	250	2,020	630	900	250
20	1,620	620	1,030	360	720	250	1,620	620	720	250
Depth of cut	 a_p 1.5D, a_e 0.3D		a_p 1.5D, a_e 0.2D		a_p 1.5D, a_e 0.1D		a_p 1.5D, a_e 0.3D		a_p 1.5D, a_e 0.1D	

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	●	●	●	○

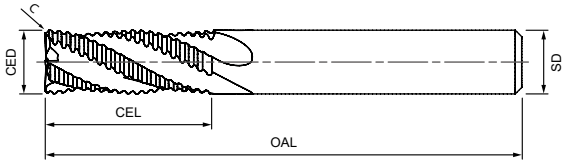


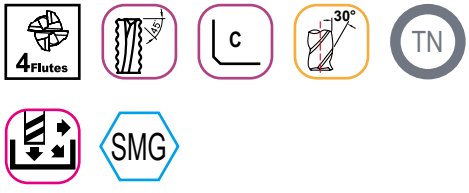
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

RF100+-11304TN

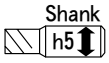
- Square - 4-Flute / Roughing x 3D
- Helix 30°







CED	Tolerance
5~6	0~-0.018
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

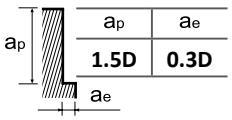


(unit : mm)

Code No.	CED	C	CEL	SD	OAL	Flute
RF100+-11304TN	5	0.3C	13	6	50	4
	6	0.3C	16	6	50	
	8	0.3C	20	8	65	
	10	0.4C	25	10	75	
	12	0.4C	30	12	80	
	14	0.4C	35	16	100	
	16	0.6C	40	16	100	
	18	0.6C	40	20	100	
	20	0.6C	45	20	100	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
5	6,350	660	4,100	280	2,870	190	6,350	660	2,870	190
6	5,400	650	3,450	280	2,410	190	5,400	650	2,410	190
8	4,050	640	2,600	310	1,820	210	4,050	640	1,820	210
10	3,200	640	2,050	330	1,435	225	3,200	640	1,435	220
12	2,650	640	1,700	340	1,190	230	2,650	640	1,190	230
14	2,340	640	1,498	350	1,050	240	2,340	640	1,050	240
16	1,980	630	1,290	360	900	250	1,980	630	900	250
18	1,780	630	1,150	360	805	250	1,780	630	805	250
20	1,620	620	1,030	360	720	250	1,620	620	720	250
Depth of cut										

ap	ae
1.5D	0.3D

ap	ae
1.5D	0.2D

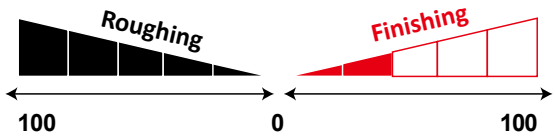
ap	ae
1.5D	0.1D

ap	ae
1.5D	0.3D

ap	ae
1.5D	0.1D

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	●	●	●	○



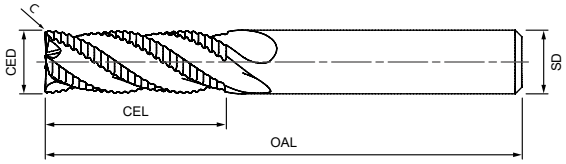
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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

RF100IE2+-11354TO

- Square - 4-Flute / Roughing x 3D
- Uneven Flute / Variable Helix 35° /38°







Best Seller IE Series

4Flutes | 35°/38° | C | TO | SMG

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

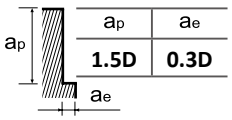
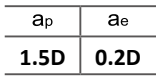
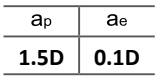
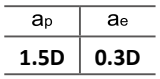
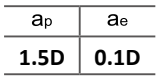
Shank h5

(unit : mm)

Code No.	CED	C	CEL	SD	OAL	Flute
RF100IE2+-11354TO	1	0.3C	3	4	50	4
	2	0.3C	6	4	50	
	3	0.3C	9	4	50	
	4	0.3C	12	4	50	
	5	0.3C	15	6	50	
	6	0.3C	18	6	50	
	8	0.3C	24	8	65	
	10	0.4C	30	10	75	
	12	0.4C	36	12	80	

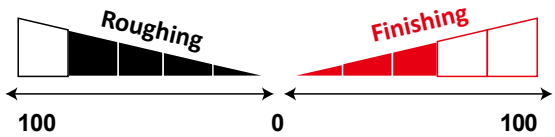
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	22,300	500	15,600	240	14,300	200	22,300	500	14,300	200
2	13,500	580	9,450	270	7,150	200	13,500	580	7,150	200
3	10,100	620	6,800	290	4,760	200	10,100	620	4,760	200
4	7,962	650	5,100	290	3,570	200	7,962	650	3,570	200
5	6,350	660	4,100	300	2,870	190	6,350	660	2,870	190
6	5,400	650	3,450	310	2,410	190	5,400	650	2,410	190
8	4,050	640	2,600	320	1,820	210	4,050	640	1,820	210
10	3,200	640	2,050	330	1,435	225	3,200	640	1,435	225
12	2,650	640	1,700	340	1,190	230	2,650	640	1,190	230
Depth of cut										

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	●	●	●	○



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

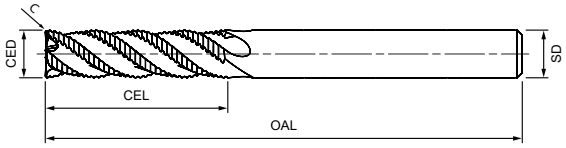
RF100IE4^{+}-12354TO

- Square - 4-Flute / Roughing x 4D / Long Flute
- Uneven Flute / Variable Helix 35° /38°

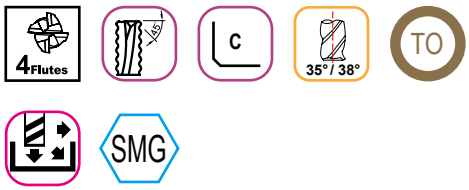


$a_1 \neq a_2 \neq a_3 \neq a_4$

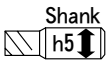








CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

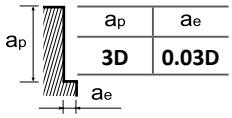


(unit : mm)

Code No.	CED	C	CEL	SD	OAL	Flute
RF100IE4^{+}-12354TO	6	0.3C	24	6	65	4
	8	0.3C	32	8	90	
	10	0.4C	40	10	100	
	12	0.4C	48	12	110	
	16	0.6C	64	16	125	
	20	0.6C	80	20	150	
	25	0.6C	100	25	200	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	4,920	620	3,450	280	2,410	180	4,920	620	2,410	180
8	3,690	610	2,600	310	1,820	200	3,690	610	1,820	200
10	2,950	610	2,050	330	1,440	215	2,950	610	1,445	215
12	2,460	610	1,700	340	1,190	220	2,460	610	1,190	220
16	1,850	600	1,290	360	900	240	1,850	600	900	240
20	1,480	590	1,030	360	720	240	1,480	590	720	240
25	1,180	590	820	360	580	240	1,180	590	580	240
Depth of cut										

ap	ae
3D	0.03D

ap	ae
3D	0.02D

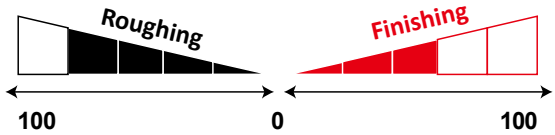
ap	ae
3D	0.01D

ap	ae
3D	0.03D

ap	ae
3D	0.01D

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	●	●	●	○



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

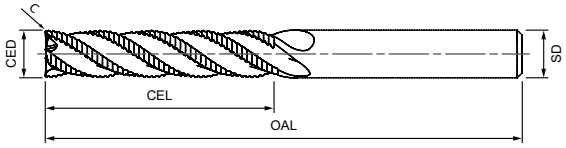
RF100IE4^{+}-12354TO

- Square - 4-Flute / Roughing x 5D / Long Flute
- Uneven Flute / Variable Helix 35° /38°

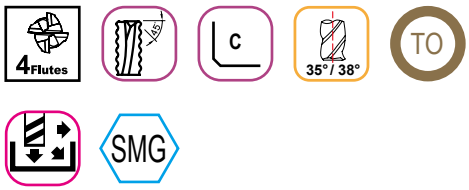


$a_1 \neq a_2 \neq a_3 \neq a_4$

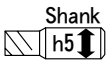








CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

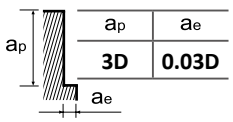


(unit : mm)

Code No.	CED	C	CEL	SD	OAL	Flute
RF100IE4^{+}-12354TO	6	0.3C	30	6	75	4
	8	0.3C	40	8	90	
	10	0.4C	50	10	100	
	12	0.4C	60	12	110	
	16	0.6C	80	16	150	
	20	0.6C	100	20	200	
	25	0.6C	125	25	200	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	4,350	555	3,100	250	2,170	160	4,430	555	2,170	160
8	3,320	550	2,340	280	1,640	180	3,320	550	1,640	180
10	2,660	550	1,850	295	1,290	195	2,660	550	1,290	195
12	2,210	550	1,530	305	1,070	200	2,210	550	1,070	200
16	1,670	540	1,160	325	810	215	1,670	540	810	215
20	1,330	530	930	325	650	215	1,330	530	650	215
25	1,060	530	740	325	520	215	1,060	530	520	215
Depth of cut										

ap	ae
3D	0.03D

ap	ae
3D	0.02D

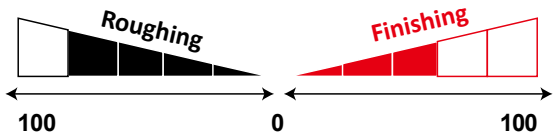
ap	ae
3D	0.01D

ap	ae
3D	0.03D

ap	ae
3D	0.01D

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	●	●	●	○



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

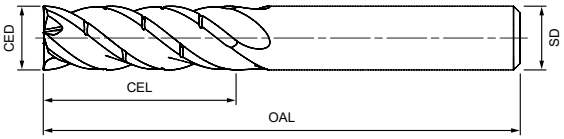
RF300IE4+-11384TN

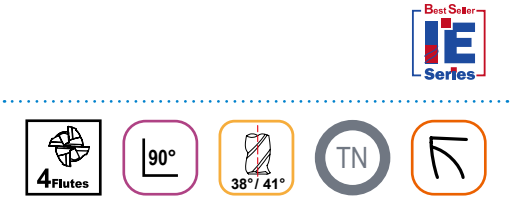
- Square - 4-Flute / Chipbreaker x 3D
- Uneven Flute / Variable Helix 38° /41°



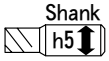
$a_1 \neq a_2 \neq a_3 \neq a_4$







CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

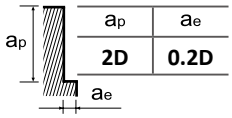


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
RF300IE4+-11384TN	3	9	4	50	4
	4	12	4	50	
	5	15	6	50	
	6	18	6	50	
	8	24	8	65	
	10	30	10	75	
	12	36	12	80	

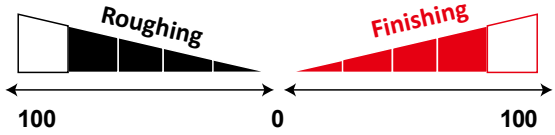
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
3	16,000	1,300	13,500	860	9,500	470	16,000	1,300	9,500	470
4	12,000	1,350	10,000	890	7,100	480	12,000	1,350	7,100	480
5	9,600	1,400	8,000	900	5,700	490	9,600	1,400	5,700	490
6	8,000	1,400	6,700	900	4,700	490	8,000	1,400	4,700	490
8	6,000	1,430	5,300	920	3,580	500	6,000	1,430	3,580	500
10	4,800	1,430	4,100	910	2,850	490	4,800	1,430	2,850	490
12	4,000	1,410	3,370	900	2,400	480	4,000	1,410	2,400	480
Depth of cut	 ap: 2D, ae: 0.2D		ap: 1.5D, ae: 0.1D		ap: 1.5D, ae: 0.05D		ap: 1.5D, ae: 0.2D		ap: 1.5D, ae: 0.05D	

Work Material

P			M	K	N		S		H	
G1	G2	G3	G4	G5	G6	G7	G11	G13	G14	G15
●	●	●	●	●	○	○	○	○	●	○



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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

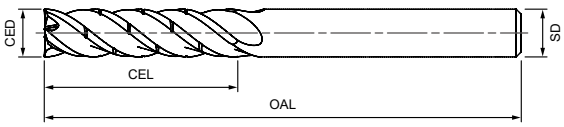
RF300IE4^{+}-12384TN

- Square - 4-Flute / Chipbreaker x 4D / Long Flute
- Uneven Flute / Variable Helix 38° /41°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | 90° | 38°/41° | TN

SMG

CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

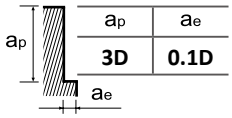
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
RF300IE4^{+}-12384TN	6	24	6	65	4
	8	32	8	90	
	10	40	10	100	
	12	48	12	110	
	16	64	16	125	
	20	80	20	150	
	25	100	25	200	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	5,800	815	4,500	525	3,180	300	5,800	815	3,180	300
8	4,400	845	3,380	540	2,400	310	4,400	845	2,400	310
10	3,500	880	2,700	560	1,900	320	3,500	880	1,900	320
12	2,900	850	2,250	540	1,600	310	2,900	850	1,600	310
16	2,200	815	1,700	520	1,200	300	2,200	815	1,200	300
20	1,750	780	1,350	500	960	290	1,750	780	960	290
25	1,400	770	1,080	490	760	280	1,400	770	760	280
Depth of cut										

a_p	a_e
3D	0.1D

a_p	a_e
3D	0.05D

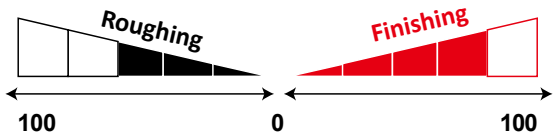
a_p	a_e
3D	0.03D

a_p	a_e
1.5D	0.2D

a_p	a_e
1.5D	0.05D

Work Material

P			M	K	N		S		H	
G1	G2	G3	G4	G5	G6	G7	G11	G13	G14	G15
●	●	●	●	●	○	○	○	○	●	○



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

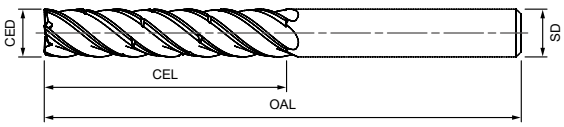
RF300IE4^{+}-12384TN

- Square - 4-Flute / Chipbreaker x 5D / Long Flute
- Uneven Flute / Variable Helix 38° /41°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | 90° | 38°/41° | TN

SMG

CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

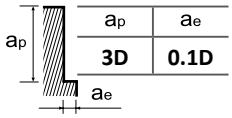
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
RF300IE4^{+}-12384TN	6	30	6	75	4
	8	40	8	90	
	10	50	10	100	
	12	60	12	110	
	16	80	16	150	
	20	100	20	200	
	25	125	25	200	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	5,800	815	4,500	525	3,180	300	5,800	815	3,180	300
8	4,400	845	3,380	540	2,400	310	4,400	845	2,400	310
10	3,500	880	2,700	560	1,900	320	3,500	880	1,900	320
12	2,900	850	2,250	540	1,600	310	2,900	850	1,600	310
16	2,200	815	1,700	520	1,200	300	2,200	815	1,200	300
20	1,750	780	1,350	500	960	290	1,750	780	960	290
25	1,400	770	1,080	490	760	280	1,400	770	760	280
Depth of cut										

ap	ae
3D	0.1D

ap	ae
3D	0.05D

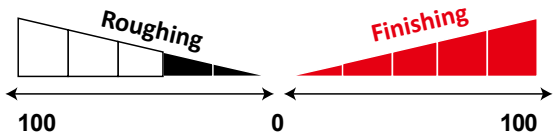
ap	ae
3D	0.03D

ap	ae
1.5D	0.2D

ap	ae
1.5D	0.05D

Work Material

P			M	K	N		S		H	
G1	G2	G3	G4	G5	G6	G7	G11	G13	G14	G15
●	●	●	●	●	○	○	○	○	●	○



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

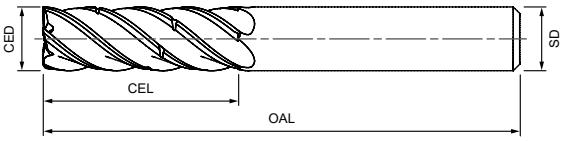
RF300IE5+-12385TN

- Square - 5-Flute / Chipbreaker x 3D
- Uneven Flute / Variable Helix 38° /42°



$a_1 \neq a_2 \neq a_3 \neq a_4 \neq a_5$





Best Seller IE Series

5 Flutes | 90° | 38°/42° | TN

SMG

CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

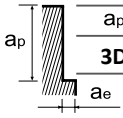
Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
RF300IE5+-12385TN	6	18	6	50	5
	8	24	8	65	
	10	30	10	75	
	12	36	12	80	
	16	48	16	100	
	20	60	20	125	

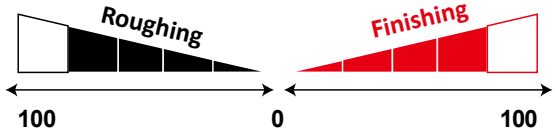
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	5,800	815	4,500	525	3,180	300	5,800	815	3,180	300
8	4,400	845	3,380	540	2,400	310	4,400	845	2,400	310
10	3,500	880	2,700	560	1,900	320	3,500	880	1,900	320
12	2,900	850	2,250	540	1,600	310	2,900	850	1,600	310
16	2,200	815	1,700	520	1,200	300	2,200	815	1,200	300
20	1,750	780	1,350	500	960	290	1,750	780	960	290
Depth of cut	 ap: 3D, ae: 0.1D		ap: 3D, ae: 0.05D		ap: 3D, ae: 0.03D		ap: 1.5D, ae: 0.2D		ap: 1.5D, ae: 0.05D	

Work Material

P			M	K	N		S		H	
G1	G2	G3	G4	G5	G6	G7	G11	G13	G14	G15
●	●	●	●	●	○	○	○	○	●	○



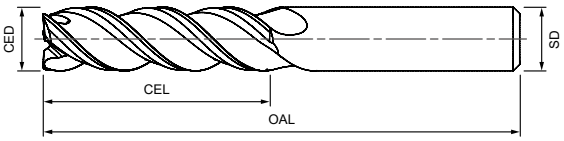
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

AC100IE3R+-11433TS

- Square Aluminium - 3-Flute x 3D / Superb Chip Ejection
- Uneven Flute / Variable Helix 43° /44° /45°





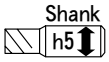


Best Seller IE Series





CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

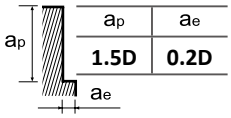
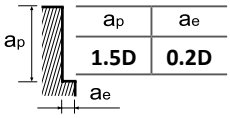
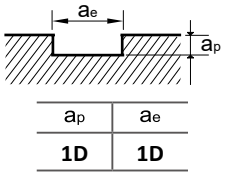


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
AC100IE3R+-11433TS	3	9	4	50	3
	4	12	4	50	
	5	15	6	50	
	6	18	6	50	
	8	24	8	65	
	10	30	10	75	
	12	36	12	80	

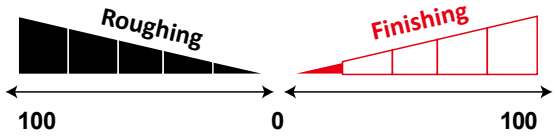
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Aluminium Alloy Side Milling		Copper Alloy Side Milling		Aluminium Alloy Slotting	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
3	21,000	1,700	10,400	900	18,900	1,530
4	15,500	1,780	7,800	910	13,950	1,600
5	12,500	1,800	6,240	910	11,250	1,620
6	10,500	1,820	5,200	920	9,450	1,640
8	7,950	1,820	3,900	930	7,155	1,640
10	6,350	1,810	3,120	930	5,715	1,630
12	5,300	1,800	2,600	920	4,770	1,620
Depth of cut						

Work Material

N		
G6	G7	G8
●	○	○



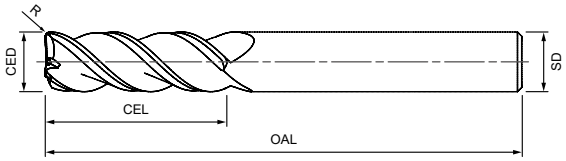
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

AC100IE3+-21433TS

- Corner Radius Aluminium - 3-Flute x 3D
- Uneven Flute / Variable Helix 43° /44° /45°





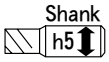


Best Seller IE Series



SMG

CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

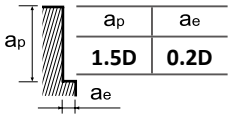
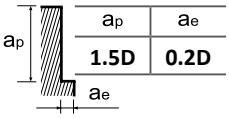
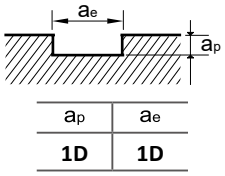


(unit : mm)

Code No.	CED	R	CEL	SD	OAL	Flute
AC100IE3+-21433TS	3	0.2R	9	4	50	3
	4	0.2R	12	4	50	
	5	0.2R	15	6	50	
	6	0.2R	18	6	50	
	8	0.2R	24	8	100	
		0.5R				
	10	0.2R	30	10	100	
		0.5R				
	12	0.2R	36	12	100	
		0.5R				

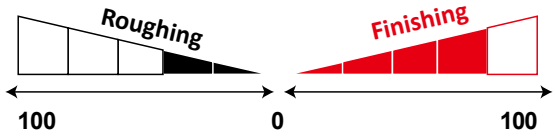
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Aluminium Alloy Side Milling		Copper Alloy Side Milling		Aluminium Alloy Slotting	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
3	21,000	1,700	10,400	900	18,900	1,530
4	15,500	1,780	7,800	910	13,950	1,600
5	12,500	1,800	6,240	910	11,250	1,620
6	10,500	1,820	5,200	920	9,450	1,640
8	7,950	1,820	3,900	930	7,155	1,640
10	6,350	1,810	3,120	930	5,715	1,630
12	5,300	1,800	2,600	920	4,770	1,620
Depth of cut						

Work Material

N		
G6	G7	G8
●	○	○

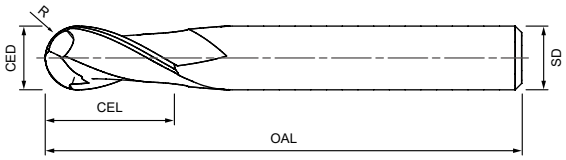


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

AC100J+-81302TD

- Ball Nose Aluminium - 2-Flute x 2D
- Helix 30°

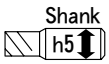








CED	Tolerance
R	0~+/-0.02

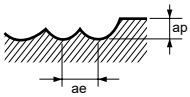


(unit : mm)

Code No.	R	CEL	SD	OAL	Flute
AC100J+-81302TD	1.5R	6	4	20	2
	2R	8	4	20	
	2.5R	10	6	20	
	3R	12	6	20	
	4R	16	8	60	
	5R	20	10	75	
	6R	24	12	75	

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

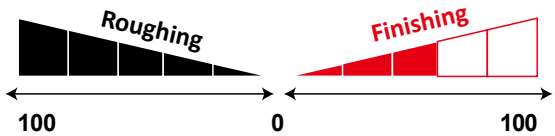
General Milling

Work Material	Aluminium Alloy General Milling		Copper Alloy General Milling	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1.5R	21,000	1,550	18,900	1,240
2R	16,000	1,440	14,400	1,150
2.5R	12,800	1,440	11,520	1,150
3R	10,600	1,440	9,540	1,150
4R	8,000	1,485	7,200	1,190
5R	6,400	1,500	5,760	1,200
6R	5,300	1,485	4,770	1,190
Depth of cut				

a_p	a_e
0.1D	0.2D

Work Material

N		
G6	G7	G8
●	○	○



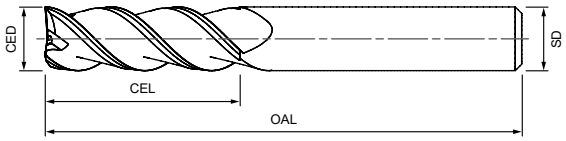
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

AC100IE3^{+}-11433TD

- Square Aluminium - 3-Flute x 3D
- Uneven Flute / Variable Helix 43° /44° /45°





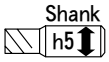


Best Seller IE Series





CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

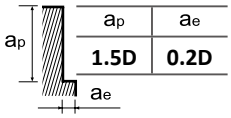
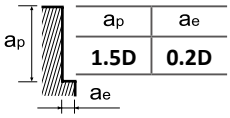
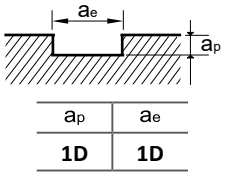


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
AC100IE3^{+}-11433TD	3	9	4	50	3
	4	12	4	50	
	5	15	6	50	
	6	18	6	50	
	8	24	8	65	
	10	30	10	75	
	12	36	12	80	

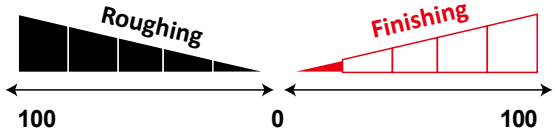
※ **Customized Special sizes, Coating type and Inches are available to order.**

Side Milling

Work Material	Aluminium Alloy Side Milling		Copper Alloy Side Milling		Aluminium Alloy Slotting	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
3	21,000	1,700	10,400	900	18,900	1,530
4	15,500	1,780	7,800	910	13,950	1,600
5	12,500	1,800	6,240	910	11,250	1,620
6	10,500	1,820	5,200	920	9,450	1,640
8	7,950	1,820	3,900	930	7,155	1,640
10	6,350	1,810	3,120	930	5,715	1,630
12	5,300	1,800	2,600	920	4,770	1,620
Depth of cut						

Work Material

N		
G6	G7	G8
●	○	○



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

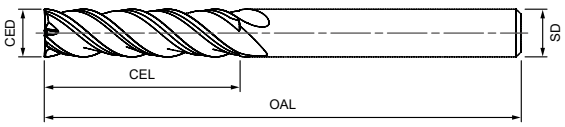
AC100IE4^{+}-12404TD

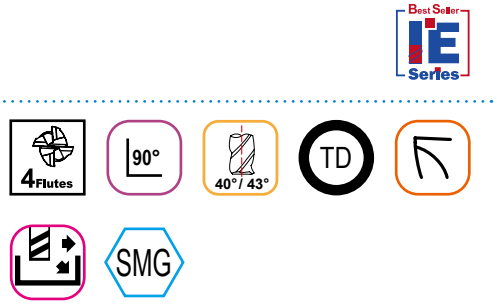
- Square Aluminium - 4-Flute x 4D / Long Flute
- Uneven Flute / Variable Helix 40° /43°



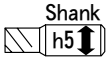
$a_1 \neq a_2 \neq a_3 \neq a_4$







CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

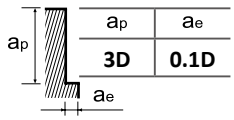
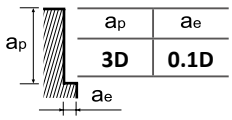


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
AC100IE4^{+}-12404TD	6	24	6	65	4
	8	32	8	90	
	10	40	10	100	
	12	48	12	110	
	16	64	16	125	
	20	80	20	150	
	25	100	25	200	

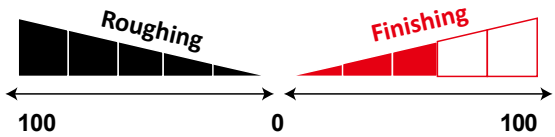
※ **Customized Special sizes, Coating type and Inches are available to order.**

Side Milling

Work Material	Aluminium Alloy General Milling		Copper Alloy General Milling	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	8,300	1,200	5,200	735
8	6,250	1,200	3,900	740
10	5,000	1,195	3,120	740
12	4,200	1,190	2,600	740
16	3,150	1,195	1,950	745
20	2,500	1,195	1,560	740
25	2,000	1,190	1,250	735
Depth of cut				

Work Material

N		
G6	G7	G8
●	○	○

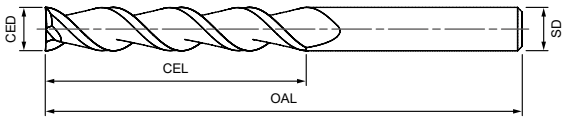


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

AC100NP+-12452

- Square Aluminium - 2-Flute x 6D Flute / Sharp Edge
- Polished Flute / Helix 45°

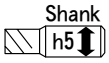






SMG

CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

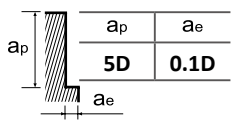
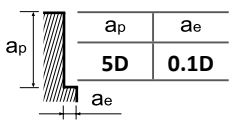


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
AC100NP+-12452	3	18	6	70	2
	4	24	6	70	
	5	30	6	80	
	6	36	6	80	
	8	48	8	100	
	10	60	10	110	
	12	72	12	120	
	16	96	16	160	
	20	120	20	200	

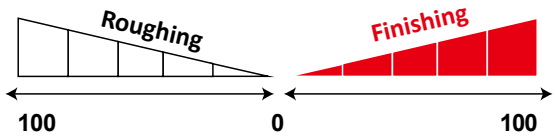
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Aluminium Alloy General Milling		Copper Alloy General Milling	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
3	10,100	770	5,100	350
4	7,560	780	3,800	360
5	6,050	785	3,060	365
6	5,050	785	2,550	365
8	3,780	785	1,900	365
10	3,025	785	1,530	365
12	2,520	785	1,275	365
16	1,950	790	955	365
20	1,560	790	765	365
Depth of cut				

Work Material

N		
G6	G7	G8
●	○	○

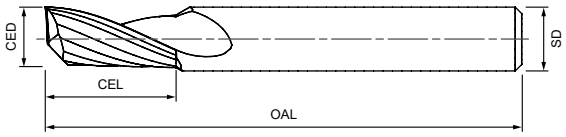


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

AC100NP+-11251

- Square Aluminium - Single Flute x 2D / Sharp Edge
- Polished Flute / Helix 25°

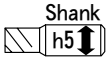






SMG

CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

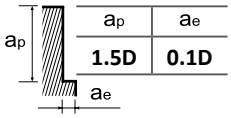
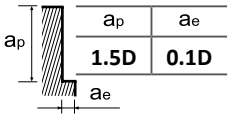
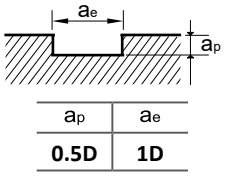


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
AC100NP+-11251	3	6	4	50	1
	4	8	4	50	
	5	10	6	50	
	6	12	6	50	
	8	16	8	60	
	10	20	10	75	
	12	24	12	75	

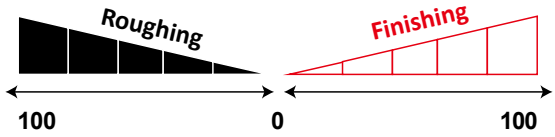
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Aluminium Alloy Side Milling		Copper Alloy Side Milling		Aluminium Alloy Slotting	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
3	21,000	1,350	10,400	630	18,900	1,080
4	15,500	1,365	7,800	635	13,950	1,090
5	12,500	1,380	6,240	635	11,250	1,100
6	10,500	1,395	5,200	645	9,450	1,100
8	7,950	1,395	3,900	650	7,155	1,100
10	6,350	1,390	3,120	650	5,715	1,100
12	5,300	1,380	2,600	645	4,770	1,100
Depth of cut						

Work Material

N		
G6	G7	G8
●	○	○

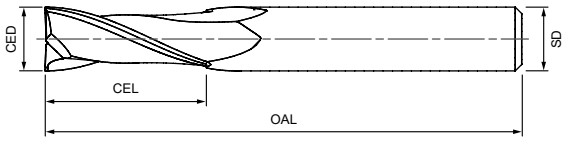


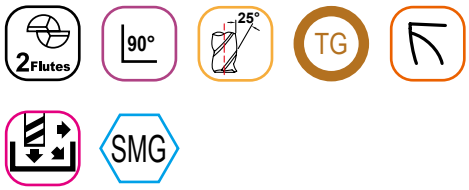
1. **These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.**
2. **Please select high rigid tool holder and collet chuck during machining.**
3. **Please select the suitable coolant fluid.**
4. **For dry cutting, please use air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

CP100+-11252TG

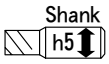
- Square Copper - 2-Flute x 2.5D
- Helix 25°







CED	Tolerance
1~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

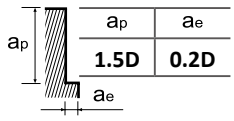
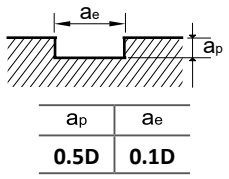


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
CP100+-11252TG	1	3	4	50	2
	2	5	4	50	
	3	8	4	50	
	4	10	4	50	
	5	13	6	50	
	6	15	6	50	
	8	20	8	60	
	10	25	10	75	
	12	30	12	75	
	16	40	16	100	
	20	50	20	110	

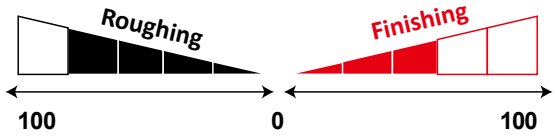
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Copper Alloy Side Milling		Copper Alloy Slotting	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	31,000	420	27,900	335
2	29,000	800	26,100	640
3	19,950	810	17,955	650
4	15,200	825	13,680	660
5	12,160	825	10,944	660
6	10,070	830	9,063	665
8	7,600	850	6,840	670
10	6,080	860	5,472	680
12	5,035	850	4,532	680
16	3,800	850	3,420	680
20	3,040	840	2,736	670
Depth of cut				

Work Material

N		
G6	G7	G8
○	●	○

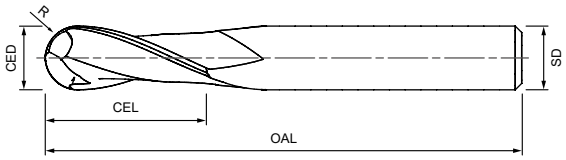


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

CP100+-81252TG

- Ball Nose Copper - 2-Flute x 2.5D
- Helix 25°

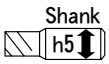








CED	Tolerance
R	0~+/-0.02

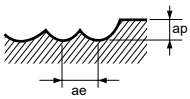


(unit : mm)

Code No.	R	CEL	SD	OAL	Flute
CP100+-81252TG	0.5R	3	4	50	2
	1R	5	4	50	
	1.5R	8	4	50	
	2R	10	4	50	
	2.5R	13	6	50	
	3R	15	6	50	
	4R	20	8	60	
	5R	25	10	75	
	6R	30	12	75	
	8R	40	16	100	
	10R	50	20	110	

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

General Milling

Work Material	Copper Alloy	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)
0.5R	32,000	750
1R	31,800	1,400
1.5R	21,000	1,420
2R	16,000	1,440
2.5R	12,800	1,440
3R	10,600	1,440
4R	8,000	1,485
5R	6,400	1,500
6R	5,300	1,485
8R	4,000	1,450
10R	3,200	1,420
Depth of cut		

a_p	a_e
0.1D	0.2D

Work Material

N		
G6	G7	G8
○	●	○

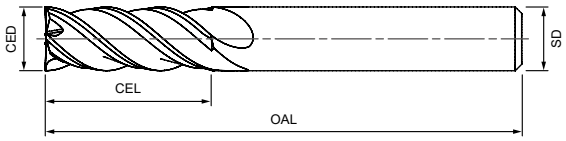
1. **These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.**
2. **Please select high rigid tool holder and collet chuck during machining.**
3. **Please select the suitable coolant fluid.**
4. **For dry cutting, please use air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

CS100IE4^{+}-11404Z3

- Square Stainless Steel - 4-Flute x 2.5D
- Uneven Flute / Variable Helix 40° /43°



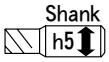








CED	Tolerance
4~6	0~-0.018
6~10	0~-0.02
10~16	0~-0.025

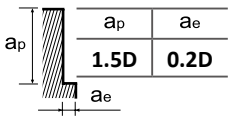


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
CS100IE4^{+}-11404Z3	4	10	4	50	4
	5	13	6	50	
	6	15	6	50	
	8	20	8	60	
	10	25	10	75	
	12	30	12	75	
	16	40	16	100	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Stainless Steel SUS304 / SUS420	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
4	8,370	700	7,100	530	6,250	530
5	6,700	730	5,700	540	5,000	540
6	5,580	750	4,700	550	4,170	550
8	4,230	770	3,600	550	3,125	570
10	3,330	730	2,800	560	2,500	580
12	2,790	700	2,300	550	2,080	540
16	2,070	710	1,760	540	1,560	550
Depth of cut						

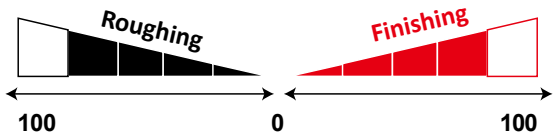
a_p	a_e
1.5D	0.2D

a_p	a_e
1.5D	0.1D

a_p	a_e
1.5D	0.1D

Work Material

P			M	K	N		S		H	
G1	G2	G3	G4	G5	G6	G7	G11	G13	G14	G15
●	●	●	●	●	○	○	○	○	●	○



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

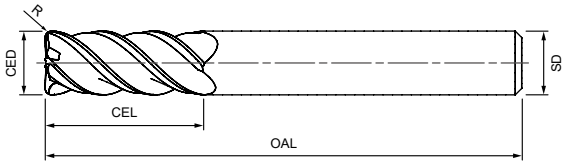
CS100IE4+-21404Z3

- Corner Radius Stainless Steel - 4-Flute x 2.5D
- Uneven Flute / Variable Helix 40° /43°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | R | 40°/43° | Z3

SMG

CED	Tolerance
4~6	0~-0.018
6~10	0~-0.02
10~16	0~-0.025

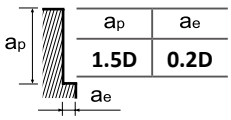
Shank h5

(unit : mm)

Code No.	CED	R	CEL	SD	OAL	Flute
CS100IE4+-21404Z3	4	0.2R	10	4	50	4
	5	0.2R	13	6	50	
	6	0.2R	15	6	50	
	8	0.2R	20	8	60	
		0.5R				
	10	0.2R	25	10	75	
		0.5R				
	12	0.2R	30	12	75	
		0.5R				
	16	0.2R	40	16	100	
		0.5R				

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Stainless Steel SUS304 / SUS420	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
4	8,700	735	7,300	530	6,250	530
5	7,000	765	5,800	540	5,000	540
6	5,800	790	4,800	550	4,170	550
8	4,400	810	3,700	550	3,125	570
10	3,450	765	2,800	560	2,500	580
12	2,930	750	2,350	550	2,080	540
16	2,170	740	1,750	540	1,560	550
Depth of cut						

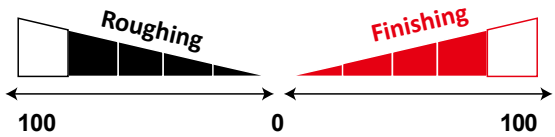
a_p	a_e
1.5D	0.2D

a_p	a_e
1.5D	0.1D

a_p	a_e
1.5D	0.1D

Work Material

P			M	K	N		S		H	
G1	G2	G3	G4	G5	G6	G7	G11	G13	G14	G15
●	●	●	●	●	○	○	○	○	●	○

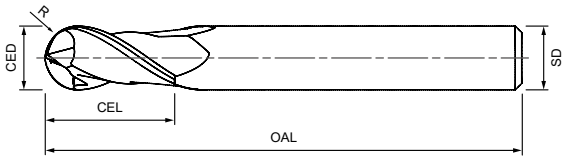


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

CS100J+-81352Z3

- Ball Nose Stainless Steel - 2-Flute x 2D
- Helix 35°

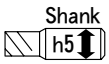








CED	Tolerance
R	0~+/-0.02

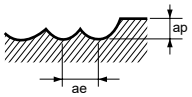


(unit : mm)

Code No.	R	CEL	SD	OAL	Flute
CS100J+-81352Z3	2R	8	4	50	2
	2.5R	10	6	50	
	3R	12	6	50	
	4R	16	8	60	
	5R	20	10	75	
	6R	24	12	75	
	8R	32	16	100	

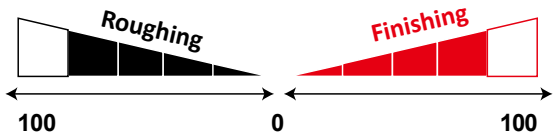
※ **Customized Special sizes, Coating type and Inches are available to order.**

General Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Stainless Steel SUS304 / SUS420	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
2R	8,950	705	8,500	620	7,188	510
2.5R	7,350	705	7,000	625	5,750	515
3R	6,200	710	5,800	630	4,796	520
4R	4,600	710	4,400	635	3,594	535
5R	3,700	715	3,500	640	2,875	540
6R	3,100	710	2,900	635	2,392	520
8R	2,300	700	2,200	635	1,794	520
Depth of cut	 ap: 0.1D, ae: 0.2D		ap: 0.08D, ae: 0.2D		ap: 0.08D, ae: 0.2D	

Work Material

P			M	K	N		S		H	
G1	G2	G3	G4	G5	G6	G7	G11	G13	G14	G15
●	●	●	●	●	○	○	○	○	●	○



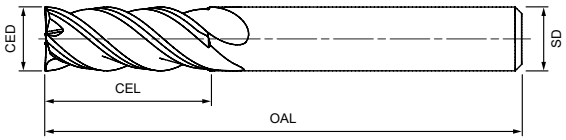
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

TI100IE4^{+}-11404Z3

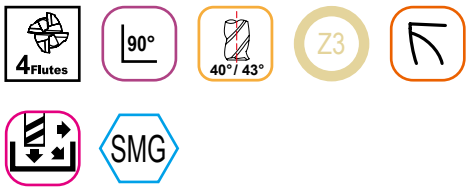
- Square Titanium - 4-Flute x 2.5D
- Uneven Flute / Variable Helix 40° /43°



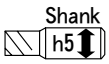








CED	Tolerance
4~6	0~-0.018
6~10	0~-0.02
10~16	0~-0.025

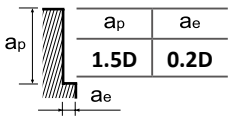


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
TI100IE4^{+}-11404Z3	4	10	4	50	4
	5	13	6	50	
	6	15	6	50	
	8	20	8	60	
	10	25	10	75	
	12	30	12	75	
	16	40	16	100	

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Titanium Alloy Steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
4	8,000	620	5,600	390	4,800	320
5	6,500	635	4,600	400	3,800	320
6	5,300	650	3,700	405	3,200	340
8	4,000	670	2,800	420	2,390	360
10	3,100	680	2,200	430	1,900	380
12	2,600	695	1,860	435	1,600	375
16	1,920	670	1,400	440	1,200	370
Depth of cut						

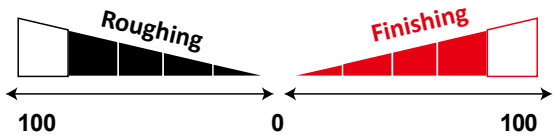
ap	ae
1.5D	0.2D

ap	ae
1.5D	0.1D

ap	ae
1.5D	0.05D

Work Material

P			M	K	N		S		H	
G1	G2	G3	G4	G5	G6	G7	G11	G13	G14	G15
●	●	●	●	●	○	○	●	●	●	○



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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

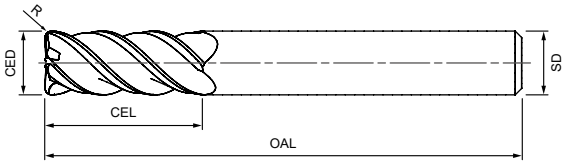
TI100IE4+-21404Z3

- Corner Radius Titanium - 4-Flute x 2.5D
- Uneven Flute / Variable Helix 40° /43°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4 Flutes | R | 40°/43° | Z3

SMG

CED	Tolerance
4~6	0~-0.018
6~10	0~-0.02
10~16	0~-0.025

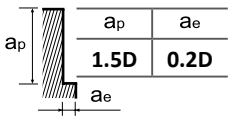
Shank h5

(unit : mm)

Code No.	CED	R	CEL	SD	OAL	Flute
TI100IE4+-21404Z3	4	0.2R	10	4	50	4
	5	0.2R	13	6	50	
	6	0.2R	15	6	50	
	8	0.2R	20	8	60	
		0.5R				
	10	0.2R	25	10	75	
		0.5R				
	12	0.2R	30	12	75	
		0.5R				
	16	0.2R	40	16	100	
		0.5R				

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

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Titanium Alloy Steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
4	8,000	620	5,600	390	4,800	320
5	6,500	635	4,600	400	3,800	320
6	5,300	650	3,700	405	3,200	340
8	4,000	670	2,800	420	2,390	360
10	3,100	680	2,200	430	1,900	380
12	2,600	695	1,860	435	1,600	375
16	1,920	670	1,400	440	1,200	370
Depth of cut						

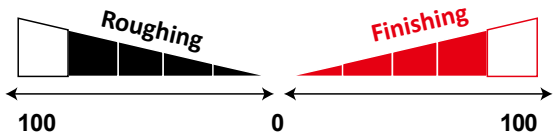
ap	ae
1.5D	0.2D

ap	ae
1.5D	0.1D

ap	ae
1.5D	0.05D

Work Material

P			M	K	N		S		H	
G1	G2	G3	G4	G5	G6	G7	G11	G13	G14	G15
●	●	●	●	●	○	○	●	●	●	○

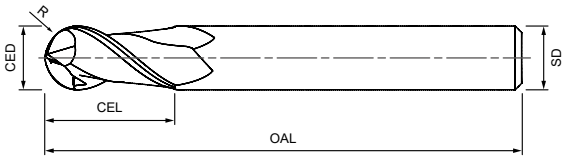


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

TI100J+-8140Z3

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







SMG

CED	Tolerance
R	0~+/-0.02

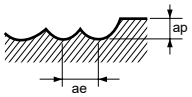
Shank h5

(unit : mm)

Code No.	R	CEL	SD	OAL	Flute
TI100J+-81402Z3	2R	8	4	50	2
	2.5R	10	6	50	
	3R	12	6	50	
	4R	16	8	60	
	5R	20	10	75	
	6R	24	12	75	
	8R	32	16	100	

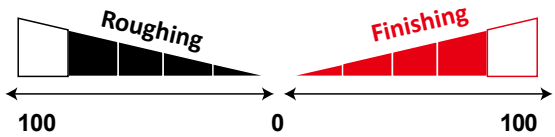
※ Customized Special sizes, Coating type and Inches are available to order.

General Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Titanium Alloy Steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
2R	8,450	705	7,300	470	5,800	355
2.5R	7,000	705	6,000	480	4,600	360
3R	5,900	710	4,950	485	3,850	365
4R	4,370	710	3,800	490	2,900	375
5R	3,515	715	3,000	495	2,300	375
6R	2,945	710	2,500	490	1,900	370
8R	2,185	700	1,870	490	1,435	365
Depth of cut	 ap: 0.1D, ae: 0.2D		ap: 0.08D, ae: 0.2D		ap: 0.05D, ae: 0.1D	

Work Material

P			M	K	N		S		H	
G1	G2	G3	G4	G5	G6	G7	G11	G13	G14	G15
●	●	●	●	●	○	○	●	●	●	○



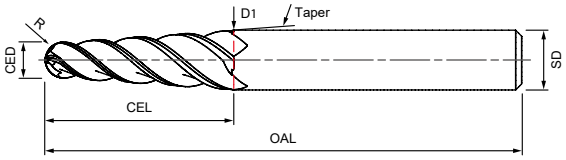
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

TI200I2+-8140AZ3

- Tapered Ball Nose Titanium - 4-Flute
- Uneven Flute / Helix 40°







Best Seller IE Series



SMG

CED	Tolerance
R	0~+/-0.02

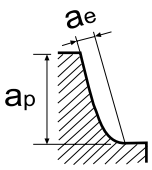
Shank h5

(unit : mm)

Code No.	R	D1	CEL	Taper	SD	OAL	Flute
TI200I2+-8140AZ3	0.5R	3.73	20	4°	6	65	4
	1R	4.66	20	4°	6	65	
	1.5R	6	22.9	4°	6	65	
	2R	8	30.5	4°	8	75	
	3R	10	31.5	4°	10	80	

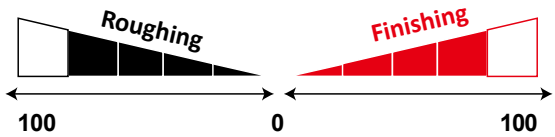
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Stainless Steel SUS630				Titanium Alloy Ti-6Al-4V				Heat Resistance Alloy Inconel			
Cutting Condition	Speed (min^{-1})	Feed (mm/min)	Depth of Cut (mm)		Speed (min^{-1})	Feed (mm/min)	Depth of Cut (mm)		Speed (min^{-1})	Feed (mm/min)	Depth of Cut (mm)	
CED	Vc: 65~90m/min		a_p	a_e	Vc: 50~70m/min		a_p	a_e	Vc: 20~40m/min		a_p	a_e
0.5R	19,800	530	16	0.1D	16,200	330	16	0.1D	6,300	120	16	0.05D
1R	10,400	550	16	0.1D	8,500	350	16	0.1D	3,500	135	16	0.05D
1.5R	7,600	600	18	0.1D	6,000	365	18	0.1D	2,500	150	18	0.05D
2R	5,900	600	25	0.1D	4,700	382	25	0.1D	2,000	153	25	0.05D
3R	4,200	670	25	0.1D	3,400	410	25	0.1D	1,600	175	25	0.05D
Depth of cut												

Work Material

P			M	K	N		S		H
G1	G2	G3	G4	G5	G6	G7	G11	G13	G14
●	●	●	●	●	○	○	●	●	○



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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.

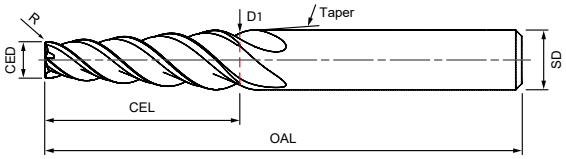
TI200IE4+-21404Z3

- Tapered Corner Radius Titanium - 4-Flute
- Uneven Flute / Variable Helix 40° /43°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4Flutes | R | 40°/43° | Z3

SMG

CED	Tolerance
1~3	0~-0.014
3~6	0~-0.018

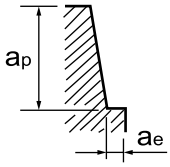
Shank h5

(unit : mm)

Code No.	CED	R	D1	CEL	Taper	SD	OAL	Flute
TI200IE4+-21404Z3	1	0.2R	3.73	20	4°	6	65	4
	2	0.2R	4.66	20	4°	6	65	
	3	0.2R	6	22.9	4°	6	65	
	4	0.2R	8	30.5	4°	8	75	
	6	0.2R	10	31.5	4°	10	80	

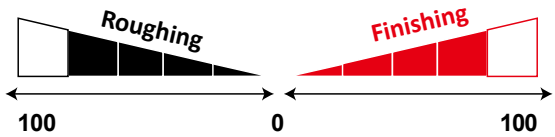
※ Customized Special sizes, Coating type and Inches are available to order.

Side Milling

Work Material	Stainless Steel SUS630				Titanium Alloy Ti-6Al-4V				Heat Resistance Alloy Inconel			
Cutting Condition	Speed (min^{-1})	Feed (mm/min)	Depth of Cut (mm)		Speed (min^{-1})	Feed (mm/min)	Depth of Cut (mm)		Speed (min^{-1})	Feed (mm/min)	Depth of Cut (mm)	
CED	Vc: 65~90m/min		a_p	a_e	Vc: 50~70m/min		a_p	a_e	Vc: 20~40m/min		a_p	a_e
1	19,000	500	16	0.1	12,500	255	16	0.1	6,300	110	16	0.05D
2	10,000	520	16	0.1	7,000	285	16	0.1	3,500	125	16	0.05D
3	7,400	570	18	0.15	5,180	320	18	0.15	2,300	128	18	0.05D
4	5,700	570	25	0.2	3,500	290	25	0.2	1,750	130	25	0.05D
6	4,000	600	25	0.2	2,500	320	25	0.2	1,300	145	25	0.05D
Depth of cut												

Work Material

P			M	K	N		S		H
G1	G2	G3	G4	G5	G6	G7	G11	G13	G14
●	●	●	●	●	○	○	●	●	○

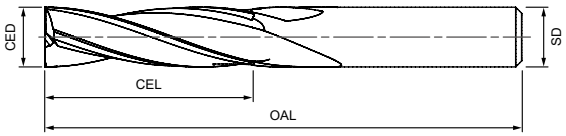


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
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3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.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

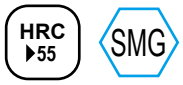
DR360+-41202TN

- Flat Drill - 2-Flute x 3D
- Helix 20°

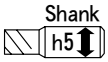








CED	Tolerance
6~10	-0.009~-0.015
10~16	-0.011~-0.018



(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
DR360+-41202TN	6	21	6	60	2
	8	28	8	70	
	10	35	10	80	
	12	42	12	90	
	16	56	16	115	

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

Drilling

Work Material	Mild Steel Carbon Steel			Alloyed Steel 25~35HRC			Hardened Steel 35~45HRC		
Cutting Condition	Speed (min^{-1})	Feed (mm/min)	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Feed Rate (mm/rev)
CED	Vc: 80~120 m/min			Vc: 60~90 m/min			Vc: 30~60 m/min		
6	4,000	360	0.06~0.1	3,200	290	0.06~0.1	2,100	155	0.05~0.08
8	3,000	360	0.08~0.13	2,450	290	0.08~0.13	1,600	155	0.07~0.11
10	2,400	360	0.1~0.15	1,900	290	0.1~0.15	1,250	155	0.9~0.12
12	2,000	360	0.13~0.18	1,600	280	0.13~0.18	1,050	155	0.11~0.15
16	1,500	360	0.17~0.22	1,200	270	0.17~0.22	800	155	0.15~0.2

Work Material

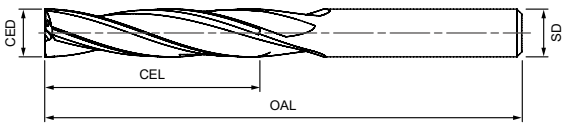
P			M	K	H	
G1	G2	G3	G4	G5	G14	G15
●	●	●	○	●	●	●

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

DR365+-41202TN

- Flat Drill - 2-Flute x 3D / Coolant-Holes
- Helix 20°





Best Seller IE Series

2 Flutes | Flat | 20° | TN | h7 CED Tolerance | HRC ▶55 | SMG

CED	Tolerance
6~10	0~-0.015
10~16	0~-0.018

Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
DR365+-41202TN	6	27	6	80	2
	8	36	8	80	
	10	45	10	100	
	12	54	12	120	
	16	72	16	140	

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

Drilling

Work Material	Mild Steel Carbon Steel			Alloyed Steel 25~35HRC			Hardened Steel 35~45HRC		
Cutting Condition	Speed (min^{-1})	Feed (mm/min)	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Feed Rate (mm/rev)
CED	Vc: 80~120 m/min			Vc: 60~90 m/min			Vc: 30~60 m/min		
6	4,400	395	0.06~0.1	3,520	320	0.06~0.1	2,100	155	0.05~0.08
8	3,300	395	0.08~0.13	2,695	320	0.08~0.13	1,600	155	0.07~0.11
10	2,640	395	0.1~0.15	2,090	320	0.1~0.15	1,250	155	0.9~0.12
12	2,200	390	0.13~0.18	1,760	310	0.13~0.18	1,050	155	0.11~0.15
16	1,650	395	0.17~0.22	1,320	300	0.17~0.22	800	155	0.15~0.2

Work Material

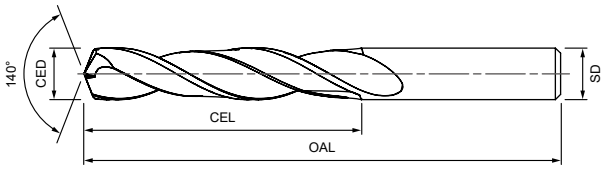
P			M	K	H	
G1	G2	G3	G4	G5	G14	G15
●	●	●	○	●	●	●

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

DR300+-41302TN

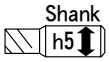
- Carbide Drill - 2-Flute x 3D
- Helix 30° / Drill Point 140°







CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~13	0~-0.025



(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
DR300+-41302TN	3	16	3	60	2
	3.1	16	4	60	
	3.2	17	4	60	
	3.3	17	4	60	
	3.4	18	4	60	
	3.5	18	4	60	
	3.6	19	4	60	
	3.7	19	4	60	
	3.8	20	4	60	
	3.9	20	4	60	
	4	20	4	60	
	4.1	21	5	60	
	4.2	21	5	65	
	4.3	22	5	65	
	4.4	22	5	65	
	4.5	23	5	65	
	4.6	23	5	65	
	4.7	24	5	65	
	4.8	24	5	65	
	4.9	25	5	65	

Code No.	CED	CEL	SD	OAL	Flute
DR300+-41302TN	5	25	5	65	2
	5.1	25	6	65	
	5.2	26	6	69	
	5.3	26	6	69	
	5.4	27	6	69	
	5.5	27	6	69	
	5.6	28	6	69	
	5.7	28	6	69	
	5.8	29	6	69	
	5.9	29	6	69	
	6	29	6	69	
	6.1	30	7	69	
	6.2	30	7	76	
	6.3	31	7	76	
	6.4	31	7	76	
	6.5	32	7	76	
	6.6	32	7	76	
	6.7	33	7	76	
	6.8	33	7	76	
	6.9	34	7	76	
	7	34	7	76	
	7.1	34	8	76	
	7.2	35	8	80	
	7.3	35	8	80	
	7.4	36	8	80	
	7.5	36	8	80	
	7.6	37	8	80	
	7.7	37	8	80	
	7.8	38	8	80	
	7.9	38	8	80	
	8	38	8	80	
	8.1	39	9	80	
	8.2	39	9	85	
	8.3	40	9	85	
	8.4	40	9	85	
	8.5	41	9	85	
	8.6	41	9	85	
	8.7	42	9	85	
	8.8	42	9	85	
	8.9	43	9	85	

Code No.	CED	CEL	SD	OAL	Flute
DR300+-41302TN	9	43	9	85	2
	9.1	43	10	85	
	9.2	44	10	93	
	9.3	44	10	93	
	9.4	45	10	93	
	9.5	45	10	93	
	9.6	46	10	93	
	9.7	46	10	93	
	9.8	47	10	93	
	9.9	47	10	93	
	10	47	10	93	
	10.1	48	11	93	
	10.2	48	11	97	
	10.3	49	11	97	
	10.4	49	11	97	
	10.5	50	11	97	
	10.6	50	11	97	
	10.7	51	11	97	
	10.8	51	11	97	
	10.9	52	11	97	
	11	52	11	97	
	11.1	52	12	97	
	11.2	53	12	102	
	11.3	53	12	102	
	11.4	54	12	102	
	11.5	54	12	102	
	11.6	55	12	102	
	11.7	55	12	102	
	11.8	56	12	102	
	11.9	56	12	102	
	12	56	12	102	
	12.1	57	13	102	
	12.2	57	13	106	
	12.3	58	13	106	
	12.4	58	13	106	
	12.5	59	13	106	
	12.6	59	13	106	
	12.7	60	13	106	
	12.8	60	13	106	
	12.9	61	13	106	
	13	61	13	106	

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

Drilling

Work Material	Mild Steel Carbon Steel		Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
CED	Vc: 60~120 m/min		Vc: 50~70 m/min		Vc: 30~50 m/min		Vc: 60~120 m/min		Vc: 30~50 m/min	
3	8,500	0.05~0.1	6,800	0.05~0.1	4,250	0.04~0.08	8,500	0.05~0.1	4,250	0.04~0.08
4	6,400	0.07~0.14	5,120	0.07~0.14	3,420	0.07~0.12	6,400	0.07~0.14	3,420	0.07~.12
5	5,100	0.09~0.16	4,080	0.09~0.16	2,760	0.08~0.15	5,100	0.09~.16	2,760	0.08~0.15
6	4,250	0.11~0.18	3,400	0.11~0.18	2,280	0.09~0.17	4,250	0.11~0.18	2,280	0.09~0.17
7	3,650	0.13~0.2	3,650	0.13~0.2	1,950	0.11~0.19	3,650	0.13~0.2	1,950	0.11~0.19
8	3,200	0.15~0.22	3,200	0.15~0.22	1,740	0.14~0.2	3,200	0.15~0.22	1,740	0.14~0.2
9	2,830	0.16~0.25	2,830	0.16~0.25	1,500	0.15~0.22	2,830	0.16~0.25	1,500	0.15~0.22
10	2,500	0.18~0.28	2,500	0.18~0.28	1,380	0.18~0.25	2,500	0.18~0.28	1,380	0.18~0.25
11	2,300	0.18~0.3	2,300	0.18~0.3	1,250	0.18~0.29	2,300	0.18~0.3	1,250	0.18~0.29
12	2,100	0.19~0.32	1,680	0.19~0.32	1,140	0.19~0.3	2,100	0.19~0.32	1,140	0.19~0.3
13	1,960	0.19~0.33	1,570	0.19~0.33	980	0.19~0.3	1,960	0.19~0.33	980	0.19~0.3

Work Material

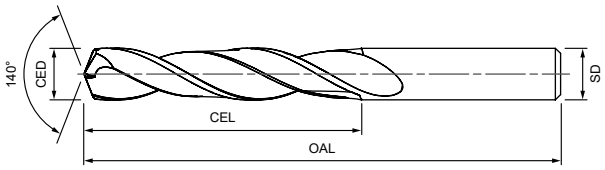
P			M	K	H	
G1	G2	G3	G4	G5	G14	G15
●	●	●	○	●	●	●

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

DR300+-42302TN

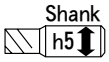
- Carbide Drill - 2-Flute x 5D
- Helix 30° / Drill Point 140°







CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~13	0~-0.025



(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
DR300+-42302TN	3	22	3	68	2
	3.1	23	4	68	
	3.2	23	4	68	
	3.3	24	4	68	
	3.4	25	4	68	
	3.5	25	4	68	
	3.6	26	4	68	
	3.7	27	4	68	
	3.8	27	4	68	
	3.9	28	4	68	
	4	28	4	68	
	4.1	29	5	68	
	4.2	30	5	75	
	4.3	30	5	75	
	4.4	31	5	75	
	4.5	32	5	75	
	4.6	32	5	75	
	4.7	33	5	75	
	4.8	34	5	75	
	4.9	34	5	75	

Code No.	CED	CEL	SD	OAL	Flute
DR300+-42302TN	5	35	5	75	2
	5.1	36	6	75	
	5.2	36	6	80	
	5.3	37	6	80	
	5.4	38	6	80	
	5.5	38	6	80	
	5.6	39	6	80	
	5.7	40	6	80	
	5.8	40	6	80	
	5.9	41	6	80	
	6	41	6	80	
	6.1	42	7	80	
	6.2	43	7	89	
	6.3	43	7	89	
	6.4	44	7	89	
	6.5	45	7	89	
	6.6	45	7	89	
	6.7	46	7	89	
	6.8	47	7	89	
	6.9	47	7	89	
	7	48	7	89	
	7.1	49	8	89	
	7.2	49	8	96	
	7.3	50	8	96	
	7.4	51	8	96	
	7.5	51	8	96	
	7.6	52	8	96	
	7.7	53	8	96	
	7.8	53	8	96	
	7.9	54	8	96	
	8	54	8	96	
	8.1	55	9	96	
	8.2	56	9	102	
	8.3	56	9	102	
	8.4	57	9	102	
	8.5	58	9	102	
	8.6	58	9	102	
	8.7	59	9	102	
	8.8	60	9	102	
	8.9	60	9	102	

Code No.	CED	CEL	SD	OAL	Flute
DR300+-42302TN	9	61	9	102	2
	9.1	62	10	102	
	9.2	62	10	110	
	9.3	63	10	110	
	9.4	64	10	110	
	9.5	64	10	110	
	9.6	65	10	110	
	9.7	66	10	110	
	9.8	66	10	110	
	9.9	67	10	110	
	10	67	10	110	
	10.1	68	11	110	
	10.2	69	11	120	
	10.3	69	11	120	
	10.4	70	11	120	
	10.5	71	11	120	
	10.6	71	11	120	
	10.7	72	11	120	
	10.8	73	11	120	
	10.9	73	11	120	
	11	74	11	120	
	11.1	75	12	120	
	11.2	75	12	125	
	11.3	76	12	125	
	11.4	77	12	125	
	11.5	77	12	125	
	11.6	78	12	125	
	11.7	79	12	125	
	11.8	79	12	125	
	11.9	80	12	125	
	12	80	12	125	
	12.1	81	13	125	
	12.2	82	13	132	
	12.3	82	13	132	
	12.4	83	13	132	
	12.5	84	13	132	
	12.6	84	13	132	
	12.7	85	13	132	
	12.8	86	13	132	
	12.9	86	13	132	
	13	87	13	132	

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

Drilling

Work Material	Mild Steel Carbon Steel		Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
CED	Vc: 60~120 m/min		Vc: 50~70 m/min		Vc: 30~50 m/min		Vc: 60~120 m/min		Vc: 30~50 m/min	
3	8,500	0.05~0.1	6,800	0.05~0.1	4,250	0.04~0.08	8,500	0.05~0.1	4,250	0.04~0.08
4	6,400	0.07~0.14	5,120	0.07~0.14	3,420	0.07~0.12	6,400	0.07~0.14	3,420	0.07~.12
5	5,100	0.09~0.16	4,080	0.09~0.16	2,760	0.08~0.15	5,100	0.09~.16	2,760	0.08~0.15
6	4,250	0.11~0.18	3,400	0.11~0.18	2,280	0.09~0.17	4,250	0.11~0.18	2,280	0.09~0.17
7	3,650	0.13~0.2	3,650	0.13~0.2	1,950	0.11~0.19	3,650	0.13~0.2	1,950	0.11~0.19
8	3,200	0.15~0.22	3,200	0.15~0.22	1,740	0.14~0.2	3,200	0.15~0.22	1,740	0.14~0.2
9	2,830	0.16~0.25	2,830	0.16~0.25	1,500	0.15~0.22	2,830	0.16~0.25	1,500	0.15~0.22
10	2,500	0.18~0.28	2,500	0.18~0.28	1,380	0.18~0.25	2,500	0.18~0.28	1,380	0.18~0.25
11	2,300	0.18~0.3	2,300	0.18~0.3	1,250	0.18~0.29	2,300	0.18~0.3	1,250	0.18~0.29
12	2,100	0.19~0.32	1,680	0.19~0.32	1,140	0.19~0.3	2,100	0.19~0.32	1,140	0.19~0.3
13	1,960	0.19~0.33	1,570	0.19~0.33	980	0.19~0.3	1,960	0.19~0.33	980	0.19~0.3

Work Material

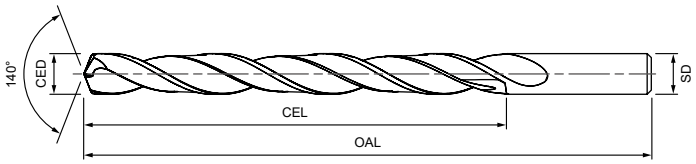
P			M	K	H	
G1	G2	G3	G4	G5	G14	G15
●	●	●	○	●	●	●

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

DR300+-42302TN

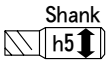
- Carbide Drill - 2-Flute x 8D
- Helix 30° / Drill Point 140°







CED	Tolerance
3~6	-0.008~-0.012
6~10	-0.009~-0.015
10~13	-0.011~-0.018



(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
DR300+-42302TN	3	31	3	80	2
	3.1	32	4	80	
	3.2	33	4	80	
	3.3	34	4	80	
	3.4	35	4	80	
	3.5	36	4	80	
	3.6	37	4	80	
	3.7	38	4	80	
	3.8	39	4	80	
	3.9	40	4	80	
	4	40	4	80	
	4.1	41	5	80	
	4.2	42	5	89	
	4.3	43	5	89	
	4.4	44	5	89	
	4.5	45	5	89	
	4.6	46	5	89	
	4.7	47	5	89	
	4.8	48	5	89	
	4.9	49	5	89	

Code No.	CED	CEL	SD	OAL	Flute
DR300+-42302TN	5	50	5	89	2
	5.1	51	6	89	
	5.2	52	6	101	
	5.3	53	6	101	
	5.4	54	6	101	
	5.5	55	6	101	
	5.6	56	6	101	
	5.7	57	6	101	
	5.8	58	6	101	
	5.9	59	6	101	
	6	59	6	101	
	6.1	60	7	101	
	6.2	61	7	110	
	6.3	62	7	110	
	6.4	63	7	110	
	6.5	64	7	110	
	6.6	65	7	110	
	6.7	66	7	110	
	6.8	67	7	110	
	6.9	68	7	110	
	7	69	7	110	
	7.1	70	8	110	
	7.2	71	8	120	
	7.3	72	8	120	
	7.4	73	8	120	
	7.5	74	8	120	
	7.6	75	8	120	
	7.7	76	8	120	
	7.8	77	8	120	
	7.9	78	8	120	
	8	78	8	120	
	8.1	79	9	120	
	8.2	80	9	130	
	8.3	81	9	130	
	8.4	82	9	130	
	8.5	83	9	130	
	8.6	84	9	130	
	8.7	85	9	130	
	8.8	86	9	130	
	8.9	87	9	130	

Code No.	CED	CEL	SD	OAL	Flute
DR300+-42302TN	9	88	9	130	2
	9.1	89	10	130	
	9.2	90	10	140	
	9.3	91	10	140	
	9.4	92	10	140	
	9.5	93	10	140	
	9.6	94	10	140	
	9.7	95	10	140	
	9.8	96	10	140	
	9.9	97	10	140	
	10	97	10	140	
	10.1	98	11	140	
	10.2	99	11	153	
	10.3	100	11	153	
	10.4	101	11	153	
	10.5	102	11	153	
	10.6	103	11	153	
	10.7	104	11	153	
	10.8	104	11	153	
	10.9	106	11	153	
	11	107	11	153	
	11.1	108	12	153	
	11.2	109	12	160	
	11.3	110	12	160	
	11.4	111	12	160	
	11.5	112	12	160	
	11.6	113	12	160	
	11.7	114	12	160	
	11.8	115	12	160	
	11.9	116	12	160	
	12	116	12	160	
	12.1	117	13	160	
	12.2	118	13	170	
	12.3	119	13	170	
	12.4	120	13	170	
	12.5	121	13	170	
	12.6	122	13	170	
	12.7	123	13	170	
	12.8	124	13	170	
	12.9	125	13	170	
	13	126	13	170	

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

Drilling

Work Material	Mild Steel Carbon Steel		Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
CED	Vc: 60~120 m/min		Vc: 50~70 m/min		Vc: 30~50 m/min		Vc: 60~120 m/min		Vc: 30~50 m/min	
3	8,500	0.05~0.1	6,800	0.05~0.1	4,250	0.04~0.08	8,500	0.05~0.1	4,250	0.04~0.08
4	6,400	0.07~0.14	5,120	0.07~0.14	3,420	0.07~0.12	6,400	0.07~0.14	3,420	0.07~.12
5	5,100	0.09~0.16	4,080	0.09~0.16	2,760	0.08~0.15	5,100	0.09~.16	2,760	0.08~0.15
6	4,250	0.11~0.18	3,400	0.11~0.18	2,280	0.09~0.17	4,250	0.11~0.18	2,280	0.09~0.17
7	3,650	0.13~0.2	3,650	0.13~0.2	1,950	0.11~0.19	3,650	0.13~0.2	1,950	0.11~0.19
8	3,200	0.15~0.22	3,200	0.15~0.22	1,740	0.14~0.2	3,200	0.15~0.22	1,740	0.14~0.2
9	2,830	0.16~0.25	2,830	0.16~0.25	1,500	0.15~0.22	2,830	0.16~0.25	1,500	0.15~0.22
10	2,500	0.18~0.28	2,500	0.18~0.28	1,380	0.18~0.25	2,500	0.18~0.28	1,380	0.18~0.25
11	2,300	0.18~0.3	2,300	0.18~0.3	1,250	0.18~0.29	2,300	0.18~0.3	1,250	0.18~0.29
12	2,100	0.19~0.32	1,680	0.19~0.32	1,140	0.19~0.3	2,100	0.19~0.32	1,140	0.19~0.3
13	1,960	0.19~0.33	1,570	0.19~0.33	980	0.19~0.3	1,960	0.19~0.33	980	0.19~0.3

Work Material

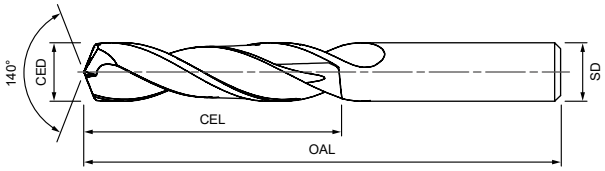
P			M	K	H	
G1	G2	G3	G4	G5	G14	G15
●	●	●	○	●	●	●

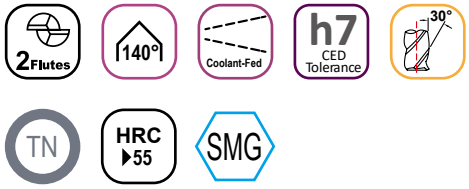
1. **These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.**
2. **Please select high rigid tool holder and collet chuck during machining.**
3. **Please select the suitable coolant fluid.**
4. **For dry cutting, please use air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

DR350+-41302TN

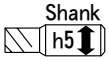
- Carbide Drill - 2-Flute x 3D / Coolant-Holes
- Helix 30° / Drill Point 140°







CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~13	0~-0.025



(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
DR350+-41302TN	3	16	3	60	2
	3.1	16	4	60	
	3.2	17	4	60	
	3.3	17	4	60	
	3.4	18	4	60	
	3.5	18	4	60	
	3.6	19	4	60	
	3.7	19	4	60	
	3.8	20	4	60	
	3.9	20	4	60	
	4	20	4	60	
	4.1	21	5	60	
	4.2	21	5	65	
	4.3	22	5	65	
	4.4	22	5	65	
	4.5	23	5	65	
	4.6	23	5	65	
	4.7	24	5	65	
	4.8	24	5	65	
	4.9	25	5	65	

Code No.	CED	CEL	SD	OAL	Flute
DR350+-41302TN	5	25	5	65	2
	5.1	25	6	65	
	5.2	26	6	69	
	5.3	26	6	69	
	5.4	27	6	69	
	5.5	27	6	69	
	5.6	28	6	69	
	5.7	28	6	69	
	5.8	29	6	69	
	5.9	29	6	69	
	6	29	6	69	
	6.1	30	7	69	
	6.2	30	7	76	
	6.3	31	7	76	
	6.4	31	7	76	
	6.5	32	7	76	
	6.6	32	7	76	
	6.7	33	7	76	
	6.8	33	7	76	
	6.9	34	7	76	
	7	34	7	76	
	7.1	34	8	76	
	7.2	35	8	80	
	7.3	35	8	80	
	7.4	36	8	80	
	7.5	36	8	80	
	7.6	37	8	80	
	7.7	37	8	80	
	7.8	38	8	80	
	7.9	38	8	80	
	8	38	8	80	
	8.1	39	9	80	
	8.2	39	9	85	
	8.3	40	9	85	
	8.4	40	9	85	
	8.5	41	9	85	
	8.6	41	9	85	
	8.7	42	9	85	
	8.8	42	9	85	
	8.9	43	9	85	

Code No.	CED	CEL	SD	OAL	Flute
DR350+-41302TN	9	43	9	85	2
	9.1	43	10	85	
	9.2	44	10	93	
	9.3	44	10	93	
	9.4	45	10	93	
	9.5	45	10	93	
	9.6	46	10	93	
	9.7	46	10	93	
	9.8	47	10	93	
	9.9	47	10	93	
	10	47	10	93	
	10.1	48	11	93	
	10.2	48	11	97	
	10.3	49	11	97	
	10.4	49	11	97	
	10.5	50	11	97	
	10.6	50	11	97	
	10.7	51	11	97	
	10.8	51	11	97	
	10.9	52	11	97	
	11	52	11	97	
	11.1	52	12	97	
	11.2	53	12	102	
	11.3	53	12	102	
	11.4	54	12	102	
	11.5	54	12	102	
	11.6	55	12	102	
	11.7	55	12	102	
	11.8	56	12	102	
	11.9	56	12	102	
	12	56	12	102	
	12.1	57	13	102	
	12.2	57	13	106	
	12.3	58	13	106	
	12.4	58	13	106	
	12.5	59	13	106	
	12.6	59	13	106	
	12.7	60	13	106	
	12.8	60	13	106	
	12.9	61	13	106	
	13	61	13	106	

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

Drilling

Work Material	Mild Steel Carbon Steel		Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
CED	Vc: 60~120 m/min		Vc: 50~70 m/min		Vc: 30~50 m/min		Vc: 60~120 m/min		Vc: 30~50 m/min	
3	10,600	0.05~0.1	7,430	0.05~0.1	5,300	0.04~0.08	10,600	0.05~0.1	5,300	0.04~0.08
4	7,900	0.07~0.14	5,570	0.07~0.14	4,000	0.07~0.12	7,900	0.07~0.14	4,000	0.07~.12
5	6,300	0.09~0.16	4,460	0.09~0.16	3,200	0.08~0.15	6,300	0.09~.16	3,200	0.08~0.15
6	5,300	0.11~0.18	3,700	0.11~0.18	2,650	0.09~0.17	5,300	0.11~0.18	2,650	0.09~0.17
7	4,550	0.13~0.2	3,200	0.13~0.2	2,400	0.11~0.19	4,550	0.13~0.2	2,400	0.11~0.19
8	3,900	0.15~0.22	2,800	0.15~0.22	2,250	0.14~0.2	3,900	0.15~0.22	2,250	0.14~0.2
9	3,500	0.16~0.25	2,500	0.16~0.25	1,770	0.15~0.22	3,500	0.16~0.25	1,770	0.15~0.22
10	3,500	0.18~0.28	2,230	0.18~0.28	1,600	0.18~0.25	3,200	0.18~0.28	1,600	0.18~0.25
11	2,900	0.18~0.3	2,030	0.18~0.3	1,450	0.18~0.29	2,900	0.18~0.3	1,450	0.18~0.29
12	2,700	0.19~0.32	1,860	0.19~0.32	1,350	0.19~0.3	2,700	0.19~0.32	1,350	0.19~0.3
13	2,450	0.19~0.33	1,700	0.19~0.33	1,230	0.19~0.3	2,450	0.19~0.33	1,230	0.19~0.3

Work Material

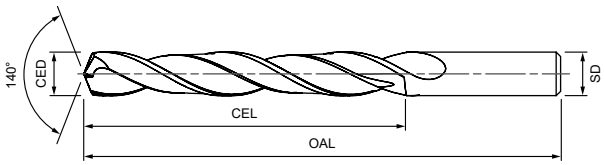
P			M	K	H	
G1	G2	G3	G4	G5	G14	G15
●	●	●	○	●	●	●

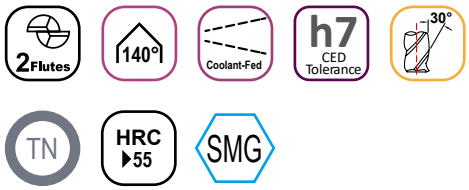
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

DR350+-42302TN

- Carbide Drill - 2-Flute x 5D / Coolant-Holes
- Helix 30° / Drill Point 140°







CED	Tolerance
3~6	-0.008~-0.012
6~10	-0.009~-0.015
10~13	-0.011~-0.018

Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
DR350+-42302TN	3	22	3	68	2
	3.1	23	4	68	
	3.2	23	4	68	
	3.3	24	4	68	
	3.4	25	4	68	
	3.5	25	4	68	
	3.6	26	4	68	
	3.7	27	4	68	
	3.8	27	4	68	
	3.9	28	4	68	
	4	28	4	68	
	4.1	29	5	68	
	4.2	30	5	75	
	4.3	30	5	75	
	4.4	31	5	75	
	4.5	32	5	75	
	4.6	32	5	75	
	4.7	33	5	75	
	4.8	34	5	75	
	4.9	34	5	75	

Code No.	CED	CEL	SD	OAL	Flute
DR350+-42302TN	5	35	5	75	2
	5.1	36	6	75	
	5.2	36	6	80	
	5.3	37	6	80	
	5.4	38	6	80	
	5.5	38	6	80	
	5.6	39	6	80	
	5.7	40	6	80	
	5.8	40	6	80	
	5.9	41	6	80	
	6	41	6	80	
	6.1	42	7	80	
	6.2	43	7	89	
	6.3	43	7	89	
	6.4	44	7	89	
	6.5	45	7	89	
	6.6	45	7	89	
	6.7	46	7	89	
	6.8	47	7	89	
	6.9	47	7	89	
	7	48	7	89	
	7.1	49	8	89	
	7.2	49	8	96	
	7.3	50	8	96	
	7.4	51	8	96	
	7.5	51	8	96	
	7.6	52	8	96	
	7.7	53	8	96	
	7.8	53	8	96	
	7.9	54	8	96	
	8	54	8	96	
	8.1	55	9	96	
	8.2	56	9	102	
	8.3	56	9	102	
	8.4	57	9	102	
	8.5	58	9	102	
	8.6	58	9	102	
	8.7	59	9	102	
	8.8	60	9	102	
	8.9	60	9	102	

Code No.	CED	CEL	SD	OAL	Flute
DR350+-42302TN	9	61	9	102	2
	9.1	62	10	102	
	9.2	62	10	110	
	9.3	63	10	110	
	9.4	64	10	110	
	9.5	64	10	110	
	9.6	65	10	110	
	9.7	66	10	110	
	9.8	66	10	110	
	9.9	67	10	110	
	10	67	10	110	
	10.1	68	11	110	
	10.2	69	11	120	
	10.3	69	11	120	
	10.4	70	11	120	
	10.5	71	11	120	
	10.6	71	11	120	
	10.7	72	11	120	
	10.8	73	11	120	
	10.9	73	11	120	
	11	74	11	120	
	11.1	75	12	120	
	11.2	75	12	125	
	11.3	76	12	125	
	11.4	77	12	125	
	11.5	77	12	125	
	11.6	78	12	125	
	11.7	79	12	125	
	11.8	79	12	125	
	11.9	80	12	125	
	12	80	12	125	
	12.1	81	13	125	
	12.2	82	13	132	
	12.3	82	13	132	
	12.4	83	13	132	
	12.5	84	13	132	
	12.6	84	13	132	
	12.7	85	13	132	
	12.8	86	13	132	
	12.9	86	13	132	
	13	87	13	132	

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

Drilling

Work Material	Mild Steel Carbon Steel		Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
CED	Vc: 80~120 m/min		Vc: 60~90 m/min		Vc: 30~60 m/min		Vc: 80~120 m/min		Vc: 30~60 m/min	
3	10,600	0.05~0.1	7,430	0.05~0.1	5,300	0.04~0.08	10,600	0.05~0.1	5,300	0.04~0.08
4	7,900	0.07~0.14	5,570	0.07~0.14	4,000	0.07~0.12	7,900	0.07~0.14	4,000	0.07~.12
5	6,300	0.09~0.16	4,460	0.09~0.16	3,200	0.08~0.15	6,300	0.09~.16	3,200	0.08~0.15
6	5,300	0.11~0.18	3,700	0.11~0.18	2,650	0.09~0.17	5,300	0.11~0.18	2,650	0.09~0.17
7	4,550	0.13~0.2	3,200	0.13~0.2	2,400	0.11~0.19	4,550	0.13~0.2	2,400	0.11~0.19
8	3,900	0.15~0.22	2,800	0.15~0.22	2,250	0.14~0.2	3,900	0.15~0.22	2,250	0.14~0.2
9	3,500	0.16~0.25	2,500	0.16~0.25	1,770	0.15~0.22	3,500	0.16~0.25	1,770	0.15~0.22
10	3,500	0.18~0.28	2,230	0.18~0.28	1,600	0.18~0.25	3,200	0.18~0.28	1,600	0.18~0.25
11	2,900	0.18~0.3	2,030	0.18~0.3	1,450	0.18~0.29	2,900	0.18~0.3	1,450	0.18~0.29
12	2,700	0.19~0.32	1,860	0.19~0.32	1,350	0.19~0.3	2,700	0.19~0.32	1,350	0.19~0.3
13	2,450	0.19~0.33	1,700	0.19~0.33	1,230	0.19~0.3	2,450	0.19~0.33	1,230	0.19~0.3

Work Material

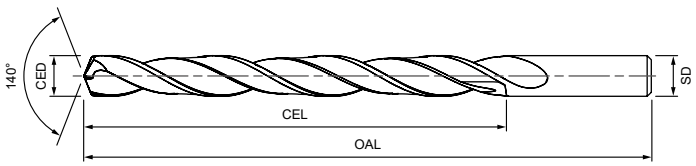
P			M	K	H	
G1	G2	G3	G4	G5	G14	G15
●	●	●	○	●	●	●

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

DR350+-42302TN

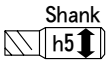
- Carbide Drill - 2-Flute x 8D / Coolant-Holes
- Helix 30° / Drill Point 140°







CED	Tolerance
3~6	-0.008~-0.012
6~10	-0.009~-0.015
10~13	-0.011~-0.018



(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
DR350+-42302TN	3	31	3	80	2
	3.1	32	4	80	
	3.2	33	4	80	
	3.3	34	4	80	
	3.4	35	4	80	
	3.5	36	4	80	
	3.6	37	4	80	
	3.7	38	4	80	
	3.8	39	4	80	
	3.9	40	4	80	
	4	40	4	80	
	4.1	41	5	80	
	4.2	42	5	89	
	4.3	43	5	89	
	4.4	44	5	89	
	4.5	45	5	89	
	4.6	46	5	89	
	4.7	47	5	89	
	4.8	48	5	89	
	4.9	49	5	89	

Code No.	CED	CEL	SD	OAL	Flute
DR350+-42302TN	5	50	5	89	2
	5.1	51	6	89	
	5.2	52	6	101	
	5.3	53	6	101	
	5.4	54	6	101	
	5.5	55	6	101	
	5.6	56	6	101	
	5.7	57	6	101	
	5.8	58	6	101	
	5.9	59	6	101	
	6	59	6	101	
	6.1	60	7	101	
	6.2	61	7	110	
	6.3	62	7	110	
	6.4	63	7	110	
	6.5	64	7	110	
	6.6	65	7	110	
	6.7	66	7	110	
	6.8	67	7	110	
	6.9	68	7	110	
	7	69	7	110	
	7.1	70	8	110	
	7.2	71	8	120	
	7.3	72	8	120	
	7.4	73	8	120	
	7.5	74	8	120	
	7.6	75	8	120	
	7.7	76	8	120	
	7.8	77	8	120	
	7.9	78	8	120	
	8	78	8	120	
	8.1	79	9	120	
	8.2	80	9	130	
	8.3	81	9	130	
	8.4	82	9	130	
	8.5	83	9	130	
	8.6	84	9	130	
	8.7	85	9	130	
	8.8	86	9	130	
	8.9	87	9	130	

Code No.	CED	CEL	SD	OAL	Flute
DR350+-42302TN	9	88	9	130	2
	9.1	89	10	130	
	9.2	90	10	140	
	9.3	91	10	140	
	9.4	92	10	140	
	9.5	93	10	140	
	9.6	94	10	140	
	9.7	95	10	140	
	9.8	96	10	140	
	9.9	97	10	140	
	10	97	10	140	
	10.1	98	11	140	
	10.2	99	11	153	
	10.3	100	11	153	
	10.4	101	11	153	
	10.5	102	11	153	
	10.6	103	11	153	
	10.7	104	11	153	
	10.8	104	11	153	
	10.9	106	11	153	
	11	107	11	153	
	11.1	108	12	153	
	11.2	109	12	160	
	11.3	110	12	160	
	11.4	111	12	160	
	11.5	112	12	160	
	11.6	113	12	160	
	11.7	114	12	160	
	11.8	115	12	160	
	11.9	116	12	160	
	12	116	12	160	
	12.1	117	13	160	
	12.2	118	13	170	
	12.3	119	13	170	
	12.4	120	13	170	
	12.5	121	13	170	
	12.6	122	13	170	
	12.7	123	13	170	
	12.8	124	13	170	
	12.9	125	13	170	
	13	126	13	170	

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

Drilling

Work Material	Mild Steel Carbon Steel		Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
CED	Vc: 60~120 m/min		Vc: 50~70 m/min		Vc: 30~50 m/min		Vc: 60~120 m/min		Vc: 30~50 m/min	
3	10,600	0.05~0.1	7,430	0.05~0.1	5,300	0.04~0.08	10,600	0.05~0.1	5,300	0.04~0.08
4	7,900	0.07~0.14	5,570	0.07~0.14	4,000	0.07~0.12	7,900	0.07~0.14	4,000	0.07~.12
5	6,300	0.09~0.16	4,460	0.09~0.16	3,200	0.08~0.15	6,300	0.09~.16	3,200	0.08~0.15
6	5,300	0.11~0.18	3,700	0.11~0.18	2,650	0.09~0.17	5,300	0.11~0.18	2,650	0.09~0.17
7	4,550	0.13~0.2	3,200	0.13~0.2	2,400	0.11~0.19	4,550	0.13~0.2	2,400	0.11~0.19
8	3,900	0.15~0.22	2,800	0.15~0.22	2,250	0.14~0.2	3,900	0.15~0.22	2,250	0.14~0.2
9	3,500	0.16~0.25	2,500	0.16~0.25	1,770	0.15~0.22	3,500	0.16~0.25	1,770	0.15~0.22
10	3,500	0.18~0.28	2,230	0.18~0.28	1,600	0.18~0.25	3,200	0.18~0.28	1,600	0.18~0.25
11	2,900	0.18~0.3	2,030	0.18~0.3	1,450	0.18~0.29	2,900	0.18~0.3	1,450	0.18~0.29
12	2,700	0.19~0.32	1,860	0.19~0.32	1,350	0.19~0.3	2,700	0.19~0.32	1,350	0.19~0.3
13	2,450	0.19~0.33	1,700	0.19~0.33	1,230	0.19~0.3	2,450	0.19~0.33	1,230	0.19~0.3

Work Material

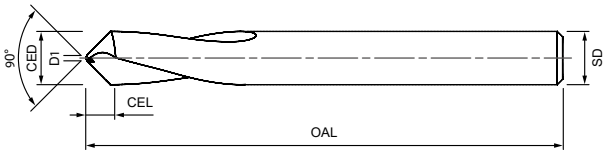
P			M	K	H	
G1	G2	G3	G4	G5	G14	G15
●	●	●	○	●	●	●

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

DR100+-40902TN

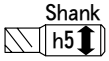
- Carbide Spot Drill - 2-Flute / 90°
- Helix 15°







CED	Tolerance
4~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025



(unit : mm)

Code No.	CED	D1	CEL	SD	OAL	Flute
DR100+-40902TN	4	0.4	8	4	50	2
	6	0.6	12	6	70	
	8	0.8	16	8	80	
	10	1	20	10	90	
	12	1.2	24	12	110	

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

Drilling

Work Material	Mild Steel Carbon Steel		Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
CED	Vc: 40~60 m/min		Vc: 20~30 m/min		Vc: 16~22 m/min		Vc: 40~60 m/min		Vc: 16~22 m/min	
4	4,370	0.05~0.08	1,990	0.05~0.08	1,470	0.05~0.08	4,370	0.05~0.08	1,470	0.05~0.08
6	2,900	0.6~0.11	1,320	0.6~0.11	980	0.6~0.11	2,900	0.6~0.11	980	0.6~0.11
8	2,100	0.08~0.14	995	0.08~0.14	735	0.08~0.14	2,100	0.08~0.14	735	0.08~0.14
10	1,700	0.1~0.17	790	0.1~0.17	590	0.1~0.17	1,700	0.1~0.17	590	0.1~0.17
12	1,460	0.11~0.2	660	0.11~0.2	490	0.11~0.2	1,460	0.11~0.2	490	0.11~0.2

Work Material

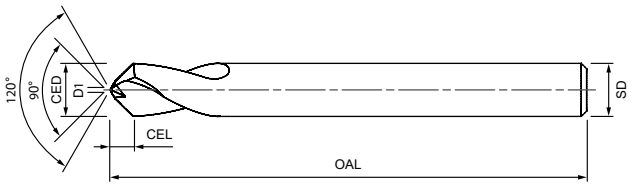
P			M	K	H	
G1	G2	G3	G4	G5	G14	G15
●	●	●	○	●	●	●

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

DR100+-90120TN

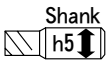
- Carbide Spot Drill - 2-Flute / 120° /90°
- Helix 20°







CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025



(unit : mm)

Code No.	CED	D1	CEL	SD	OAL	Flute
DR100+-90120TN	3	1	6	3	45	2
	4	1.5	8	4	50	
	6	2	12	6	70	
	8	2.5	16	8	80	
	10	3	20	10	90	
	12	4	24	12	110	

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

Drilling

Work Material	Mild Steel Carbon Steel		Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
CED	Vc: 30~60 m/min		Vc: 20~35 m/min		Vc: 22~35 m/min		Vc: 30~60 m/min		Vc: 22~35 m/min	
3	5,840	0.04~0.07	2,650	0.04~0.07	1,960	0.04~0.07	5,840	0.04~0.07	1,960	0.04~0.07
4	4,370	0.05~0.08	1,990	0.05~0.08	1,470	0.05~0.08	4,370	0.05~0.08	1,470	0.05~0.08
6	2,900	0.6~0.11	1,320	0.6~0.11	980	0.6~0.11	2,900	0.6~0.11	980	0.6~0.11
8	2,100	0.08~0.14	995	0.08~0.14	735	0.08~0.14	2,100	0.08~0.14	735	0.08~0.14
10	1,700	0.1~0.17	790	0.1~0.17	590	0.1~0.17	1,700	0.1~0.17	590	0.1~0.17
12	1,460	0.11~0.2	660	0.11~0.2	490	0.11~0.2	1,460	0.11~0.2	490	0.11~0.2

Work Material

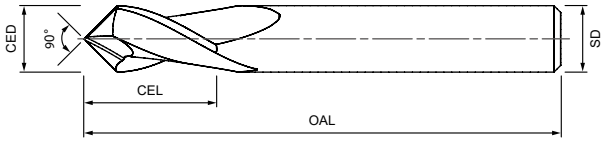
P			M	K	H	
G1	G2	G3	G4	G5	G14	G15
●	●	●	○	●	●	●

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

DR500+-40902TN

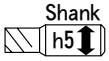
- Carbide Drill Point End Mill - 2-Flute / 90°
- Helix 30°







CED	Tolerance
4~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025



(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
DR500+-40902TN	4	8	4	50	2
	6	12	6	50	
	8	16	8	60	
	10	20	10	72	
	12	24	12	75	

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

Drilling

Work Material	Mild Steel Carbon Steel		Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
CED	Vc: 40~60 m/min		Vc: 20~30 m/min		Vc: 16~22 m/min		Vc: 40~60 m/min		Vc: 16~22 m/min	
4	4,370	0.05~0.08	1,990	0.05~0.08	1,470	0.05~0.08	4,370	0.05~0.08	1,470	0.05~0.08
6	2,900	0.6~0.11	1,320	0.6~0.11	980	0.6~0.11	2,900	0.6~0.11	980	0.6~0.11
8	2,100	0.08~0.14	995	0.08~0.14	735	0.08~0.14	2,100	0.08~0.14	735	0.08~0.14
10	1,700	0.1~0.17	790	0.1~0.17	590	0.1~0.17	1,700	0.1~0.17	590	0.1~0.17
12	1,460	0.11~0.2	660	0.11~0.2	490	0.11~0.2	1,460	0.11~0.2	490	0.11~0.2

Work Material

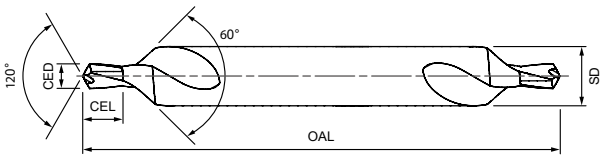
P			M	K	H	
G1	G2	G3	G4	G5	G14	G15
●	●	●	○	●	●	●

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

DR200+-40602TN

- Carbide Center Drill - 2-Flute / 60°
- Helix 25°

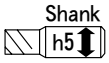








CED	Tolerance
1~3	0~-0.014
3~5	0~-0.018



(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
DR200+-40602TN	1	1.5	3	50	2
	2	3	5	50	
	2.5	3.8	6	50	
	3	4.8	8	60	
	4	6	10	60	
	5	7.5	12	75	

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

Drilling

Work Material	Mild Steel Carbon Steel		Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
CED	Vc: 30~60 m/min		Vc: 20~35 m/min		Vc: 22~35 m/min		Vc: 30~60 m/min		Vc: 22~35 m/min	
1	14,300	0.01~0.05	1,990	0.01~0.05	1,470	0.01~0.05	4,370	0.01~0.05	1,470	0.01~0.05
2	7,100	0.012~0.035	1,320	0.012~0.035	980	0.012~0.035	2,900	0.012~0.035	980	0.012~0.035
2.5	5,700	0.025~0.05	995	0.025~0.05	735	0.025~0.05	2,100	0.025~0.05	735	0.025~0.05
3	4,780	0.04~0.06	790	0.04~0.06	590	0.04~0.06	1,700	0.04~0.06	590	0.04~0.06
4	3,580	0.05~0.08	660	0.05~0.08	490	0.05~0.08	1,460	0.05~0.08	490	0.05~0.08
5	2,870	0.06~0.09	790	0.06~0.09	590	0.06~0.09	1,700	0.06~0.09	590	0.06~0.09

Work Material

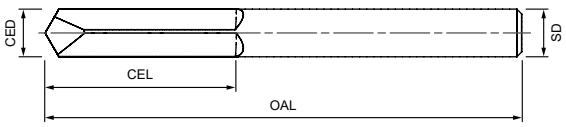
P			M	K	H	
G1	G2	G3	G4	G5	G14	G15
●	●	●	○	●	●	●

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

HCD-Drill

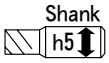
- Broken Tap Removal Drill / Tap Extractor
- Trigon Flute Form - V 60°







CED	Tolerance
2~3	0~-0.014
3~6	0~-0.018

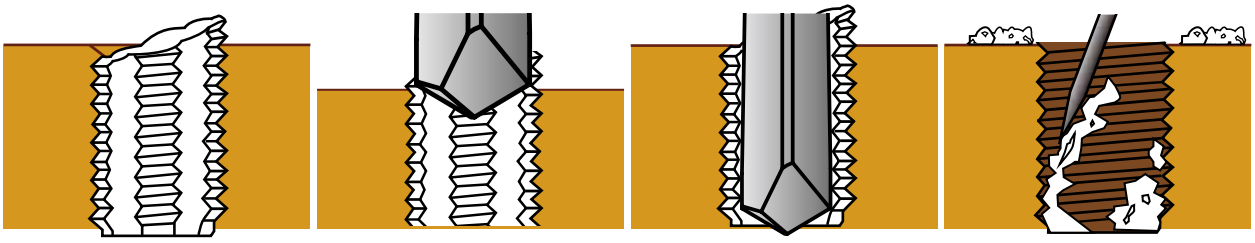


(unit : mm)

Code No.	CED	CEL	SD	OAL
HCD-Drill	2	10	2	30
	3	14	3	40
	4	18	4	45
	5	20	5	50
	6	28	6	60

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

Instruction of removing broken taps/drill bit by hard cut drill.



Remove or grind the taps/ drill to create a flat surface as possible.

Place the HCD drill with the correct size in the centre of the broken tap.

Drill the tap remover through the end and applying cutting fluids all the times.

Clean and remove the remaining chip by scriber.

Drilling

Work Material	Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)
2	3,000	Manual Feed	2,500	Manual Feed	2,000	Manual Feed
3	3,000	Manual Feed	2,500	Manual Feed	2,000	Manual Feed
4	3,000	Manual Feed	2,500	Manual Feed	2,000	Manual Feed
5	3,000	Manual Feed	2,500	Manual Feed	2,000	Manual Feed
6	3,000	Manual Feed	2,500	Manual Feed	2,000	Manual Feed

Work Material

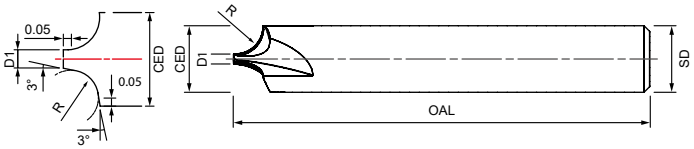
P			M	K	H	
G1	G2	G3	G4	G5	G14	G15
●	●	●	○	●	●	●

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

IR100+-81003TN

- Corner Radius End Mill - 3-Flute
- 3-Flute Inner Corner Radius

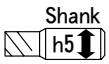








CED	Tolerance
R	±0.02



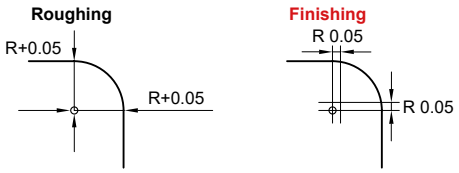
(unit : mm)

Code No.	R	D1	CED	SD	OAL	Flute
IR100+-81003TN	0.5R	1	2.1	4	49	3
	1R	3.9	6	6	59	
	1.5R	2.9	6	6	59	
	2R	1.9	6	6	59	
	2.5R	3	8	8	59	
	3R	2.2	8	8	59	
	3.5R	2.9	10	10	59	
	4R	2.2	10	10	59	
	4.5R	2.9	12	12	75	
	5R	1.8	12	12	75	

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

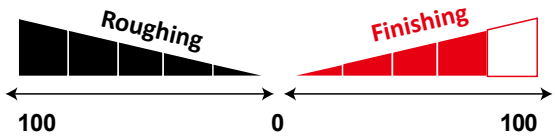
Drilling

Work Material	Mild Steel Carbon Steel		Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition / CED	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
0.5R	6500	54	5100	38	4240	28	6500	54	4240	28
1R	2300	54	1850	38	1495	28	2300	54	1495	28
1.5R	2250	54	1830	38	1490	28	2250	54	1490	28
2R	2220	54	1800	38	1480	28	2220	54	1480	28
2.5R	1690	54	1380	38	1120	28	1690	54	1120	28
3R	1670	54	1350	38	1110	28	1670	54	1110	28
3.5R	1350	54	1090	38	895	28	1350	54	895	28
4R	1330	54	1080	38	890	28	1330	54	890	28
4.5R	1120	54	910	38	745	28	1120	54	745	28
5R	1110	54	900	38	740	28	1110	54	740	28



Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○

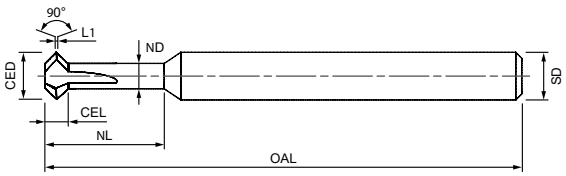


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

VF100+-11903TN

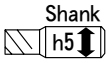
- V-Groove Chamfer Mill - 3-Flute / Short Neck
- 45° Chamfering / V 90°







CED	Tolerance
1.5~3	0~-0.014
3~6	0~-0.018

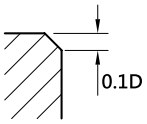


(unit : mm)

Code No.	CED	L1	CEL	NL	ND	SD	OAL	Flute
VF100+-11903TN	1.5	0.03	0.63	4	0.9	3	45	3
	2	0.03	0.83	5	1.2	3	45	
	2.5	0.03	1.03	6.5	1.5	3	45	
	3	0.03	1.23	7.5	1.8	3	45	
	3.5	0.1	1.5	8.5	2.1	4	53	
	4	0.1	1.7	10	2.4	4	53	
	4.5	0.1	2.1	11.5	2.5	5	53	
	5	0.1	2.3	12.5	2.8	5	53	
	5.5	0.1	2.5	13.5	3.1	6	53	
	6	0.1	2.9	15	3.2	6	53	

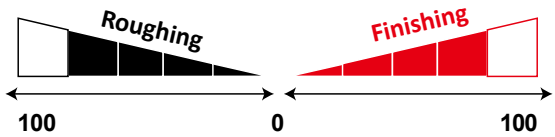
※ Customized Special sizes, Coating type and Inches are available to order.

Chamfering

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
Vc	Vc: 70~100 m/min		Vc: 60~80 m/min		Vc: 35~55 m/min		Vc: 70~100 m/min		Vc: 35~55 m/min	
CED	0.1D		0.1D		0.1D		0.1D		0.1D	
1.5R	17,000	480	13,600	380	8,500	205	17,000	480	8,500	205
2R	12,700	500	10,160	390	6,350	208	12,700	500	6,350	208
2.5R	10,100	550	8,080	400	5,000	210	10,100	550	5,000	210
3R	8,500	650	6,800	410	4,200	215	8,500	650	4,200	215
3.5R	7,200	620	5,800	420	3,600	220	7,200	620	3,600	220
4R	6,400	650	5,120	450	3,100	225	6,400	650	3,100	225
4.5R	5,600	660	4,480	440	2,800	230	5,600	660	2,800	230
5R	5,100	650	4,080	430	2,500	220	5,100	650	2,500	220
5.5R	4,600	620	3,680	420	2,300	210	4,600	620	2,300	210
6R	4,250	600	3,400	410	2,100	200	4,250	600	2,100	200
Depth of cut										

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○

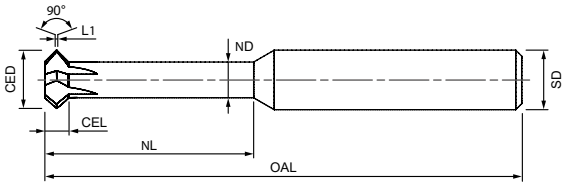


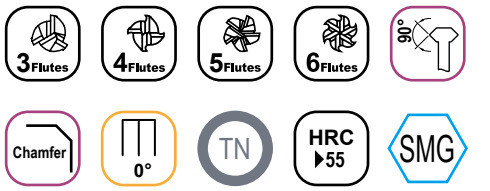
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

VF100+ -11903TN / 11904TN / 11905TN / 11906TN

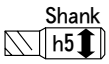
- V-Groove Chamfer Mill - 3 / 4 / 5 / 6-Flute / Long Neck
- 45° Chamfering / V 90°







CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

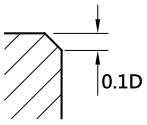


(unit : mm)

Code No.	CED	L1	CEL	NL	ND	SD	OAL	Flute
VF100+-11903TN	3	0.03	1.23	12	1.8	3	45	3
	3.4	0.1	1.5	14	2	4	53	
	3.5	0.1	1.5	14	2.1	4	53	
	4	0.1	1.7	16	2.4	4	53	
	4.4	0.1	2.1	18	2.4	5	53	
	4.5	0.1	2.1	18	2.5	5	53	
	5	0.1	2.3	20	2.8	5	53	
	5.5	0.1	2.5	22	3.1	6	65	
	6	0.1	2.9	24	3.2	6	65	
VF100+-11904TN	8	0.1	3.4	28	4.8	8	65	4
VF100+-11905TN	10	0.1	3.8	35	6.4	10	80	5
VF100+-11906TN	12	0.1	4.4	42	7.8	12	80	6

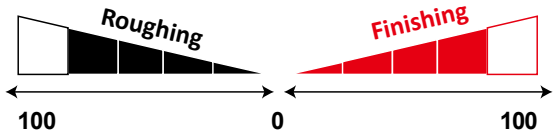
※ Customized Special sizes, Coating type and Inches are available to order.

Chamfering

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
Vc	Vc: 70~100 m/min		Vc: 60~80 m/min		Vc: 35~55 m/min		Vc: 70~100 m/min		Vc: 35~55 m/min	
CED	0.1D		0.1D		0.1D		0.1D		0.1D	
3	16,000	455	12,900	320	8,000	170	16,000	455	8,000	170
3.4	12,000	475	9,700	322	6,000	172	12,000	475	6,000	172
3.5	9,600	520	7,770	325	4,800	175	9,600	520	4,800	175
4	8,000	620	6,480	325	4,000	175	8,000	620	4,000	175
4.4	7,100	600	5,700	328	3,560	178	7,100	600	3,560	178
4.5	6,900	590	5,550	328	3,450	178	6,900	590	3,450	178
5	6,000	620	4,860	330	3,025	180	6,000	620	3,025	180
5.5	5,500	625	4,400	330	2,750	180	5,500	625	2,750	180
6	5,300	615	4,300	330	2,690	180	5,300	615	2,690	180
8	4,800	590	3,900	328	2,420	188	4,800	590	2,420	188
10	3,000	600	2,430	390	1,500	210	3,000	600	1,500	210
12	2,420	750	1,950	490	1,210	260	2,420	750	1,210	260
Depth of cut										

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○

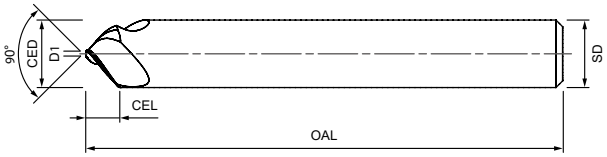


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

CF400+-40903TN

- Spiral Chamfer Mill - 3-Flute
- 45° Chamfering / V 90°

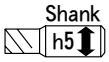








CED	Tolerance
4~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

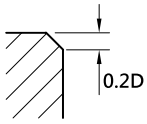
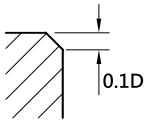


(unit : mm)

Code No.	CED	D1	CEL	SD	OAL	Flute
CF400+-40903TN	4	0.4	1.8	4	50	3
	6	0.6	2.7	6	50	
	8	0.8	3.6	8	60	
	10	1	4.5	10	72	
	12	1.2	5.4	12	75	

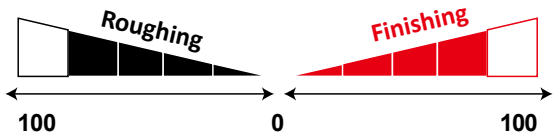
※ Customized Special sizes, Coating type and Inches are available to order.

Chamfering

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
Vc	Vc: 70~100 m/min		Vc: 60~80 m/min		Vc: 35~55 m/min		Vc: 70~100 m/min		Vc: 35~55 m/min	
CED	0.1D		0.1D		0.1D		0.1D		0.1D	
4	6,400	400	3,900	200	3,025	145	6,400	400	3,025	145
6	4,250	420	2,600	210	2,010	150	4,250	420	2,010	150
8	3,200	430	1,990	220	1,510	153	3,200	430	1,510	153
10	2,550	435	1,590	225	1,210	155	2,550	435	1,210	155
12	2,100	430	1,320	220	1,005	150	2,100	430	1,005	150
Depth of cut										

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○

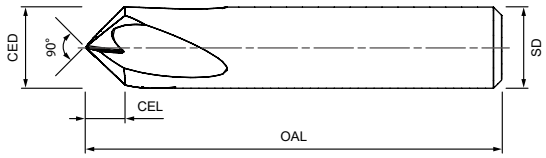


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

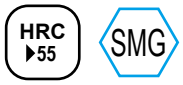
CF300+-40903TN

- Chamfer Mill - 3-Flute
- 45° Chamfering / V 90°

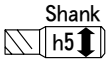








CED	Tolerance
4~6	0~-0.018
6~10	0~-0.02

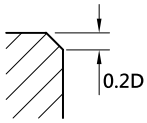
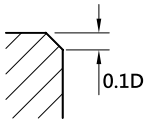


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
CF300+-40903TN	4	10	4	45	3
	6	10	6	45	
	8	15	8	52	
	10	15	10	52	

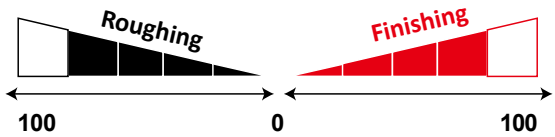
※ Customized Special sizes, Coating type and Inches are available to order.

Chamfering

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
Vc	Vc: 70~100 m/min		Vc: 60~80 m/min		Vc: 35~55 m/min		Vc: 70~100 m/min		Vc: 35~55 m/min	
CED	0.1D		0.1D		0.1D		0.1D		0.1D	
4	6,080	250	4,900	180	2,400	95	6,080	250	2,400	95
6	4,100	300	3,200	210	2,000	105	4,100	300	2,000	105
8	3,100	310	2,400	240	2,500	120	3,100	310	2,500	120
10	2,400	250	2,000	245	1,200	110	2,400	250	1,200	110
Depth of cut										

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○

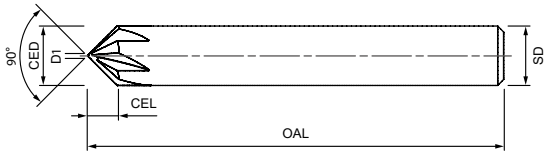


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

CF300+-40906TN

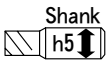
- Chamfer Mill - 6-Flute
- 45° Chamfering / V 90°







CED	Tolerance
4~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

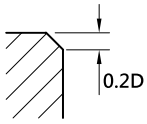
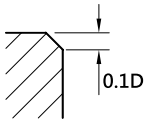


(unit : mm)

Code No.	CED	D1	CEL	SD	OAL	Flute
CF300+-40906TN	4	0.2	1.9	4	50	6
	6	0.2	2.5	6	50	
	8	0.2	3.5	8	60	
	10	0.2	4	10	70	
	12	0.2	5	12	75	

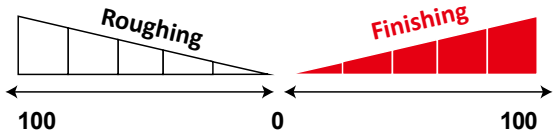
※ Customized Special sizes, Coating type and Inches are available to order.

Chamfering

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
Vc	Vc: 70~100 m/min		Vc: 60~80 m/min		Vc: 35~55 m/min		Vc: 70~100 m/min		Vc: 35~55 m/min	
CED	0.1D		0.1D		0.1D		0.1D		0.1D	
4	6,400	550	3,900	280	3,025	180	6,400	400	3,025	145
6	4,250	600	2,600	290	2,010	185	4,250	420	2,010	150
8	3,200	600	1,990	300	1,510	190	3,200	430	1,510	153
10	2,550	500	1,590	290	1,210	185	2,550	435	1,210	155
12	2,100	450	1,320	280	1,005	180	2,100	430	1,005	150
Depth of cut										

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○

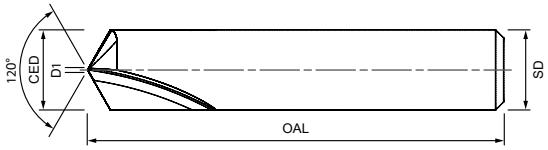


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

CF300+-41202TN

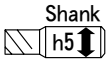
- Chamfer Mill - 2-Flute
- 30° Chamfering / V 120°







CED	Tolerance
4~6	0~-0.018
6~10	0~-0.02

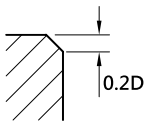
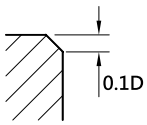


(unit : mm)

Code No.	CED	D1	SD	OAL	Flute
CF300+-41202TN	4	0.2	4	45	2
	6	0.2	6	45	
	8	0.2	8	52	
	10	0.2	10	52	

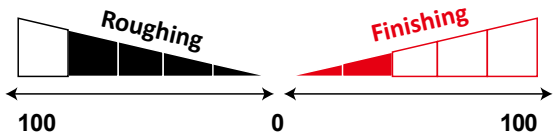
※ Customized Special sizes, Coating type and Inches are available to order.

Chamfering

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
Vc	Vc: 70~100 m/min		Vc: 60~80 m/min		Vc: 35~55 m/min		Vc: 70~100 m/min		Vc: 35~55 m/min	
CED	0.1D		0.1D		0.1D		0.1D		0.1D	
4	6,900	290	5,508	210	3,840	120	6,900	290	3,840	120
6	4,590	300	3,672	220	2,520	130	4,590	300	2,520	130
8	3,450	295	2,790	215	1,920	135	3,450	295	1,920	135
10	2,750	290	2,250	210	1,500	130	2,750	290	1,500	130
Depth of cut										

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○

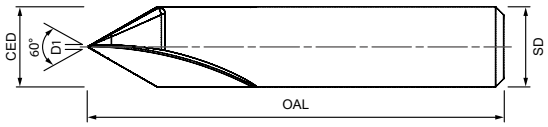


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

CF300+-40602TN

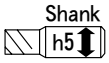
- Chamfer Mill - 2-Flute
- 60° Chamfering / V 60°







CED	Tolerance
4~6	0~-0.018
6~10	0~-0.02

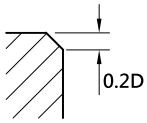
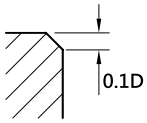


(unit : mm)

Code No.	CED	D1	SD	OAL	Flute
CF300+-40602TN	4	0.2	4	45	2
	6	0.2	6	45	
	8	0.2	8	52	
	10	0.2	10	52	

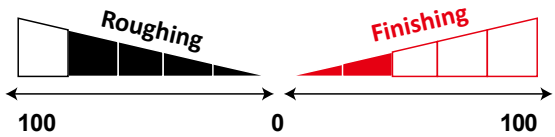
※ Customized Special sizes, Coating type and Inches are available to order.

Chamfering

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
Vc	Vc: 70~100 m/min		Vc: 60~80 m/min		Vc: 35~55 m/min		Vc: 70~100 m/min		Vc: 35~55 m/min	
CED	0.1D		0.1D		0.1D		0.1D		0.1D	
4	6,080	250	4,900	180	2,400	95	6,080	250	2,400	95
6	4,100	300	3,200	210	2,000	105	4,100	300	2,000	105
8	3,100	310	2,400	240	2,500	120	3,100	310	2,500	120
10	2,400	250	2,000	245	1,200	110	2,400	250	1,200	110
Depth of cut										

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○

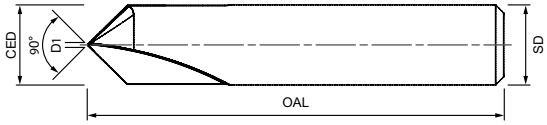


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

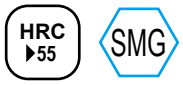
CF300+-40902TN

- Chamfer Mill - 2-Flute
- 45° Chamfering / V 90°

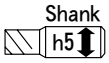








CED	Tolerance
4~6	0~-0.018
6~10	0~-0.02

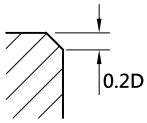
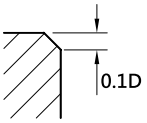


(unit : mm)

Code No.	CED	D1	SD	OAL	Flute
CF300+-40902TN	4	0.2	4	45	2
	6	0.2	6	45	
	8	0.2	8	52	
	10	0.2	10	52	

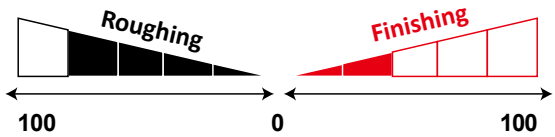
※ Customized Special sizes, Coating type and Inches are available to order.

Chamfering

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron		Stainless Steel Cast steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
Vc	Vc: 70~100 m/min		Vc: 60~80 m/min		Vc: 35~55 m/min		Vc: 70~100 m/min		Vc: 35~55 m/min	
CED	0.1D		0.1D		0.1D		0.1D		0.1D	
4	6,080	250	4,900	180	2,400	95	6,080	250	2,400	95
6	4,100	300	3,200	210	2,000	105	4,100	300	2,000	105
8	3,100	310	2,400	240	2,500	120	3,100	310	2,500	120
10	2,400	250	2,000	245	1,200	110	2,400	250	1,200	110
Depth of cut										

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



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

CC100+

- Carbide Spiral Cutter for Chamfering Machine
- 36-Flute / Helix 20°


Non-Coated


TA


TO


TD







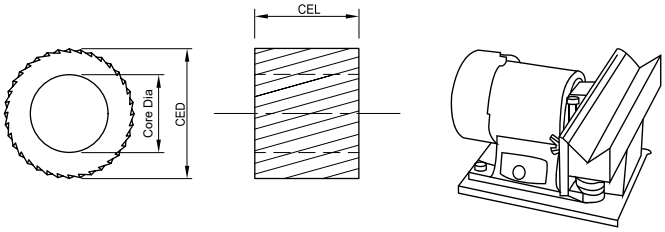












(unit : mm)

Code No.	CED	CEL	Core Dia	Flute
CC100+	25	20	15	36
CC100+-TA				
CC100+-TO				
CC100+-TD				

※ Shell Milling Spiral Cutter
※ Compatible with Chamfering Machine JAM CC02
※ Excellent surface finish for grinding and chamfering, with long-lasting durability
※ Suitable for use on Carbon Steel, Hardened Steel, Stainless Steel and Non-ferrous metals

Work Material

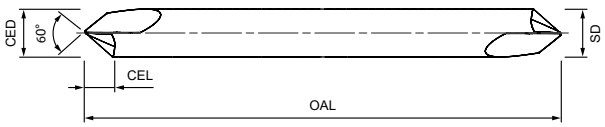
P			M	K	N		H		
G1	G2	G3	G4	G5	G6	G7	G14	G15	G16
●	●	●	●	●	●	●	●	●	●

NOTES

CF500+-40601TN /40601

- Engraving End Mill - Single Flute
- Double Ended / V 60°





60° TN SMG

CED	Tolerance
6	0~-0.02

Shank h5

(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute	Coating
CF500+-40601TN	6	5.2	6	60	1	TN
CF500+-40601 (Bright/Uncoated)						Uncoated

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

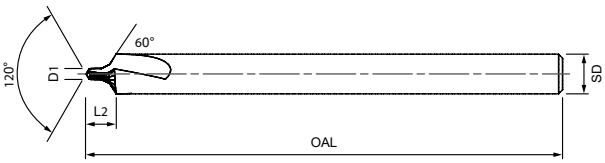
Work Material

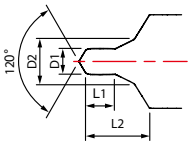
P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○

DR600+-41202

- Custom Stepped Drill - 2-Flute /60° /120°
- Helix 10° / V 120°

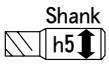








CED	Tolerance
1~3	0~-0.014



(unit : mm)

Code No.	D1	L1	D2	L2	SD	OAL	Flute
DR600+-41202	1.6	1.574	2.75	2.75	5	60	2

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

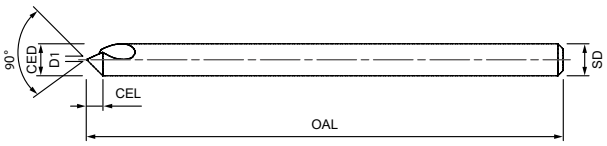
Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	●	●	●	○

DR700+-40901

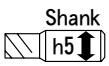
- Custom Spot Drill - Single Flute
- V 90°







CED	Tolerance
1~3	0~-0.014



(unit : mm)

Code No.	CED	D1	CEL	SD	OAL	Flute
DR700+-40901	3	0.05	1.5	3	45	1

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

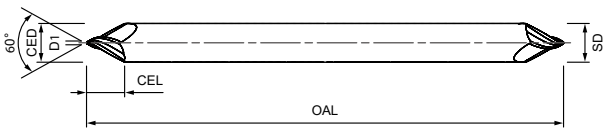
Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○

CF500+-40602TN

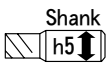
- Custom Spiral Chamfer Mill - 2-Flute
- Double Ended / V 60° / Helix 25°







CED	Tolerance
6	0~-0.02



(unit : mm)

Code No.	CED	D1	CEL	SD	OAL	Flute
CF500+-40602TN	6	0.3	4.92	6	75	2

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

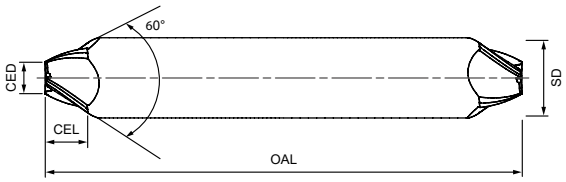
Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○

TA400+-11254TN

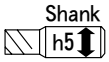
- Square- Custom Tapered End Mill - 4-Flute
- Double Ended / V 60° / Helix 25°







CED	Tolerance
1~3	0~-0.014
4	0~-0.018

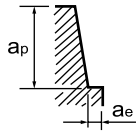


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
TA400+-11254TN	1	7.79	10	60	4
	2	6.93	10	60	
	3	6.06	10	60	
	4	5.2	10	60	

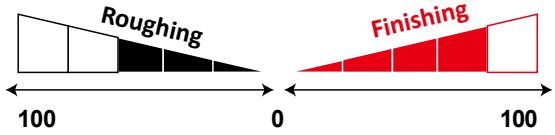
※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Chamfering

Work Material			Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition			Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)
Vc			Vc: 70~100 m/min		Vc: 60~80 m/min		Vc: 35~55 m/min		Vc: 70~100 m/min	
CED	ap	ae	0.1D		0.1D		0.1D		0.1D	
1	7	0.1D	24,800	470	19,000	280	12,700	170	24,800	470
2	6.2	0.1D	12,400	480	9,500	288	6,370	173	12,400	480
3	5.5	0.1D	8,280	480	6,370	288	2,450	173	8,280	480
4	4.7	0.1D	6,210	470	4,800	280	3,200	170	6,210	470
Depth of cut										

Work Material

P			M	K	H		
G1	G2	G3	G4	G5	G14	G15	G16
●	●	●	○	○	●	●	○



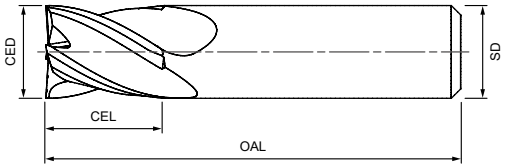
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

SL100IE2^{+}-14304TN

- Square Lathe Machine End Mill - 4-Flute x 1.2D Stub Flute
- Uneven Flute / Variable Helix 30° /33°





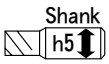


Best Seller IE Series





CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

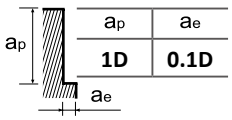


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
SL100IE2^{+}-14304TN	3	4	6	45	4
	4	5	6	45	
	5	6	6	45	
	6	8	6	45	
	8	10	8	45	
	10	12	10	45	
	12	15	10	50	

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
3	8,400	300	5,300	190	4,050	155	8,400	300
4	6,400	310	4,000	195	3,100	160	6,400	310
5	5,200	320	3,300	200	2,500	160	5,200	320
6	4,500	360	2,700	200	2,000	170	4,500	360
8	3,200	370	2,000	210	1,550	180	3,200	370
10	2,500	420	1,600	215	1,300	160	2,600	420
12	2,250	450	1,330	220	1,100	170	2,250	450
Depth of cut								

ap	ae
1D	0.1D

ap	ae
1D	0.05D

ap	ae
1D	0.02D

ap	ae
1D	0.1D

Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	○

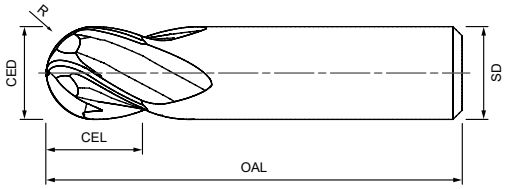
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

SL100IE2^{+}-84304TN

- Ball Nose Lathe Machine End Mill - 4-Flute x 1.2D Stub Flute
- Uneven Flute / Variable Helix 30° /33°







Best Seller IE Series

4 Flutes | R | 30°/ 33° | TN

HRC ▶55 | SMG

CED	Tolerance
R	0~+/-0.02

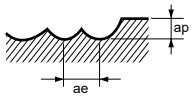
Shank h5

(unit : mm)

Code No.	R	CEL	SD	OAL	Flute
SL100IE2^{+}-84304TN	1.5R	4	6	45	4
	2R	5	6	45	
	2.5R	6	6	45	
	3R	8	6	45	
	4R	10	8	45	
	5R	12	10	45	
	6R	15	10	50	

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

General Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1.5R	10,400	1,170	8,500	870	6,900	390	10,400	1,170
2R	7,800	1,170	6,400	880	5,175	390	7,800	1,170
2.5R	6,200	1,200	5,100	900	4,140	400	6,200	1,200
3R	5,200	1,200	4,250	900	3,450	400	5,200	1,200
4R	3,900	1,230	3,200	945	2,600	420	3,900	1,230
5R	3,200	1,260	2,550	945	2,070	420	3,200	1,260
6R	2,600	1,200	2,100	940	1,725	410	2,600	1,200
Depth of cut	 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: 0.1D / 0.2D	

Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	○

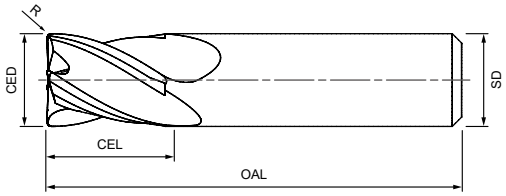
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

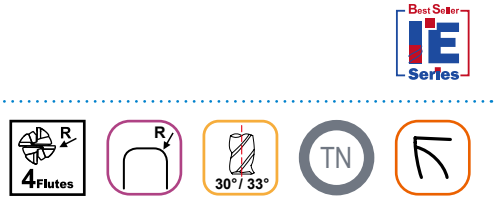
SL100IE2+-24304TN

- Corner Radius Lathe Machine End Mill - 4-Flute x 1.2D Stub Flute
- Uneven Flute / Variable Helix 30° /33°

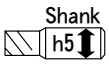








CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

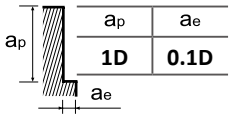


(unit : mm)

Code No.	CED	R	CEL	SD	OAL	Flute
SL100IE2+-24304TN	3	0.2R	4	6	45	4
	4	0.2R	5	6	45	
	5	0.2R	6	6	45	
	6	0.2R	8	6	45	
	8	0.2R	10	8	45	
		0.5R				
	10	0.2R	12	10	45	
		0.5R				
	12	0.2R	15	10	50	
		0.5R				

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
3	8,400	300	5,300	190	4,050	155	8,400	300
4	6,400	310	4,000	195	3,100	160	6,400	310
5	5,200	320	3,300	200	2,500	160	5,200	320
6	4,500	360	2,700	200	2,000	170	4,500	360
8	3,200	370	2,000	210	1,550	180	3,200	370
10	2,500	420	1,600	215	1,300	160	2,600	420
12	2,250	450	1,330	220	1,100	170	2,250	450
Depth of cut			ap ae 1D 0.05D		ap ae 1D 0.02D		ap ae 1D 0.1D	

Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	○

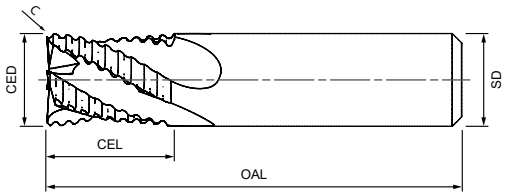
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

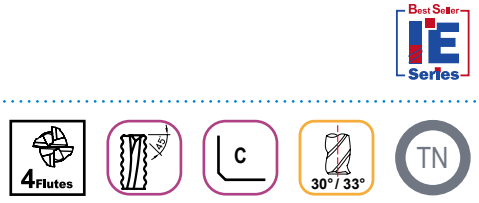
SLRF100IE2^{+}-14304TN

- Square Fine Pitch Lathe Machine End Mill x 1.2D Stub Flute
- Uneven Flute / Variable Helix 30° /33°

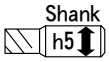








CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

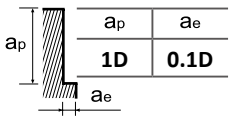


(unit : mm)

Code No.	CED	C	CEL	SD	OAL	Flute
SLRF100IE2^{+}-14304TN	3	0.3C	4	6	45	4
	4	0.3C	5	6	45	
	5	0.3C	6	6	45	
	6	0.3C	8	6	45	
	8	0.3C	10	8	45	
	10	0.4C	12	10	45	
	12	0.4C	15	10	50	

※ **Customized sizes, coating types, and inch-based dimensions are available upon request.**

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
3	8,700	390	5,300	230	4,460	195	8,700	390
4	6,500	390	4,000	230	3,340	195	6,500	390
5	5,200	400	3,200	235	2,675	200	5,200	400
6	4,350	400	2,650	235	2,230	200	4,350	400
8	3,260	410	1,990	240	1,670	210	3,260	410
10	2,600	420	1,590	245	1,340	210	2,600	420
12	2,170	420	1,330	245	1,115	210	2,170	420
Depth of cut			ap ae 1D 0.05D		ap ae 1D 0.02D		ap ae 1D 0.1D	

Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	○

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

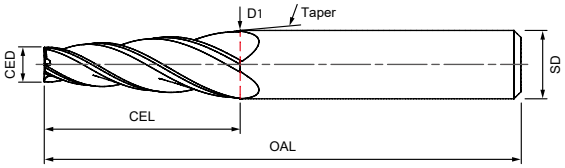
TA100IE4+-11304TN

- Taper Square - 4-Flute
- Uneven Flute / Variable Helix 30° /33°



$a_1 \neq a_2 \neq a_3 \neq a_4$





4 Flutes | 90° | 30° / 33° | TN | SMG

CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

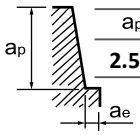
Shank h5

(unit : mm)

Code No.	CED	D1	CEL	Taper	SD	OAL	Flute
TA100IE4+-11304TN	1	1.24	7	1°	4	50	4
		1.63	9	2°			
		1.94	9	3°			
	2	2.38	11	1°	4	50	
		3.57	15	3°		50	
		4.63	15	5°		50	
		6.91	20	7°		70	
	3	3.38	11	1°	4	50	
		4.57	15	3°	6	50	
		5.63	15	5°	6	50	
		7.91	20	7°	8	70	
	4	4.45	13	1°	6	50	
		5.89	18	3°	6	60	
		7.15	18	5°	8	60	
		9.9	24	7°	10	70	
	5	5.56	16	1°	6	50	
		7.2	21	3°	8	70	
		8.68	21	5°	10	70	
		11.88	28	7°	12	90	
	6	6.56	16	1°	8	60	
		8.2	21	3°	10	70	
		9.68	21	5°	10	70	
		12.88	28	7°	12	90	

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	9,550	100	6,300	50	12,700	245
2	4,750	100	3,200	50	6,300	245
3	3,150	115	2,100	55	4,250	255
4	2,350	115	1,600	55	3,300	275
5	1,910	120	1,275	55	2,675	280
6	1,650	130	1,050	60	2,300	295
Depth of cut						

a_p	a_e
2.5D	0.05D

a_p	a_e
2.5D	0.05D

a_p	a_e
2.5D	0.05D

Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	○

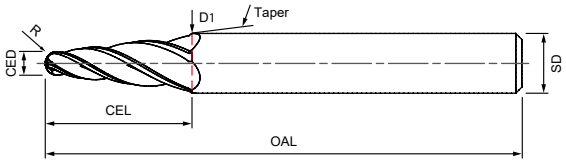
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

TA200I2+-81304TN

- Taper Ball Nose - 4-Flute
- Uneven Flute / Helix 30°







Best Seller IE Series



SMG

CED	Tolerance
R	0~+/-0.02

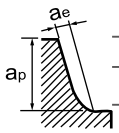
Shank h5

(unit : mm)

Code No.	R	D1	CEL	Taper	SD	OAL	Flute
TA200I2+-81304TN	1R	2.35	11	1°	4	50	4
		3.47	15	3°		50	
		4.46	15	5°		50	
		6.68	20	7°		70	
	1.5R	3.33	11	1°	4	50	
		4.42	15	3°	6	50	
		5.37	15	5°	6	50	
		7.57	20	7°	8	70	
	2R	4.38	13	1°	6	50	
		5.68	18	3°	6	60	
		6.81	18	5°	8	60	
		9.43	24	7°	10	70	
	2.5R	5.47	16	1°	6	50	
		6.95	21	3°	8	70	
		8.26	21	5°	10	70	
		11.3	28	7°	12	90	
	3R	6.45	16	1°	8	60	
		7.89	21	3°	10	70	
		9.17	21	5°	10	70	
		12.18	28	7°	12	90	

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1R	5,100	110	3,500	53	6,690	260
1.5R	3,400	125	2,335	58	4,460	270
2R	2,550	125	1,750	58	3,350	285
2.5R	2,040	130	1,400	60	2,680	290
3R	1700	140	1,170	63	2,300	300
Depth of cut						

a_p	a_e
2.5D	0.05D

a_p	a_e
2.5D	0.05D

a_p	a_e
2.5D	0.05D

Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	○

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

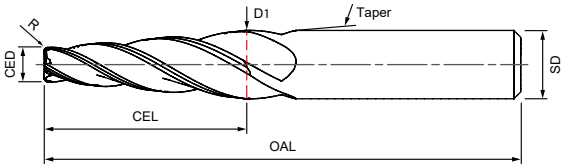
TA300IE4^{+}-21304TN

- Taper Corner Radius - 4-Flute
- Uneven Flute / Variable Helix 30° /33°



$a_1 \neq a_2 \neq a_3 \neq a_4$

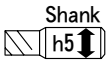






SMG

CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

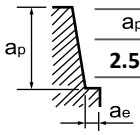


(unit : mm)

Code No.	CED	R	D1	CEL	Taper	SD	OAL	Flute
TA300IE4^{+}-21304TN	1	0.2R	1.24	7	1°	4	50	4
			1.63	9	2°			
			1.94	9	3°			
	2	0.5R	2.38	11	1°	4	50	
			3.57	15	3°		50	
			4.63	15	5°		50	
			4.91	20	7°		70	
	3	0.5R	3.38	11	1°	4	50	
			4.57	15	3°	6	50	
			5.63	15	5°	6	50	
			7.91	20	7°	8	70	
	4	0.5R	4.45	13	1°	6	50	
			5.89	18	3°	6	60	
			7.15	18	5°	8	60	
			9.9	24	7°	10	70	
	5	0.5R	5.56	16	1°	6	50	
			7.2	21	3°	8	70	
			8.68	21	5°	10	70	
			11.88	28	7°	12	90	
	6	0.5R	6.56	16	1°	8	60	
			8.2	21	3°	10	70	
			9.68	21	5°	10	70	
			12.88	28	7°	12	90	

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	9,550	100	6,300	50	12,700	245
2	4,750	100	3,200	50	6,300	245
3	3,150	115	2,100	55	4,250	255
4	2,350	115	1,600	55	3,300	275
5	1,910	120	1,275	55	2,675	280
6	1,650	130	1,050	60	2,300	295
Depth of cut						

ap	ae
2.5D	0.05D

ap	ae
2.5D	0.05D

ap	ae
2.5D	0.05D

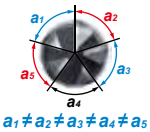
Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	○

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

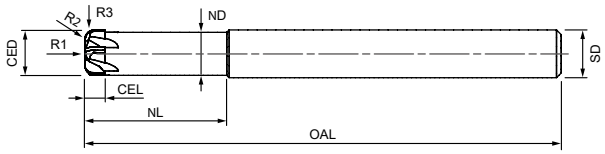
RS100I4+-23004TN
RS100I5+-23005TN

- Torus End / Radius End Mill for Hard Material
- 4 / 5-Flute / Uneven-Straight Flute



$a_1 \neq a_2 \neq a_3 \neq a_4 \neq a_5$



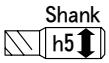


Best Seller IE Series





CED	Tolerance
R	+/-0.02
2~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

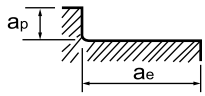


(unit : mm)

Code No.	CED	R1	R2	R3	CEL	NL	ND	SD	OAL	Flute
RS100I4+-23004TN	2	0.3	0.2	1.95	0.8	6	1.8	6	60	4
RS100I5+-23005TN	3	0.4	0.3	2.872	1.3	9	2.7	6	60	5
	4	0.4	0.35	3.9	1.6	12	3.6	6	70	
	5	0.4	0.4	4.876	2	15	4.5	6	80	
	6	0.4	0.45	5.85	2.5	18	5.4	6	90	
	8	0.6	0.65	7.8	3.5	24	7.2	8	100	
	10	0.6	0.7	9.75	4.5	30	9	10	110	
	12	0.6	0.8	11.7	5	36	11	12	135	

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition / CED	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
2	22,000	5,400	20,500	4,800	17,500	2,200	12,500	1,450	22,000	5,400
3	14,600	7,820	13,500	6,800	11,500	2,700	8,400	1,800	14,600	7,820
4	11,000	8,000	10,000	6,900	8,600	2,800	6,300	1,900	11,000	8,000
5	8,900	8,100	8,250	7,100	7,000	2,900	5,000	1,900	8,900	8,100
6	7,500	8,100	6,900	7,200	8,500	2,900	4,200	1,900	7,500	8,100
8	5,500	8,200	5,150	7,300	4,400	2,850	3,140	1,900	5,500	8,200
10	4,500	8,200	4,100	7,250	3,500	2,850	2,500	1,900	4,500	8,200
12	3,700	8,160	3,450	7,250	2,900	2,850	2,100	1,900	3,700	8,160
Depth of cut	 ap: 0.04D, ae: 0.6D		ap: 0.04D, ae: 0.6D		ap: 0.03D, ae: 0.5D		ap: 0.02D, ae: 0.5D		ap: 1.5D, ae: 0.2D	

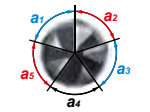
Work Material

P			K	H			
G1	G2	G3	G5	G14	G15	G16	G17
●	●	●	●	●	●	●	○

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

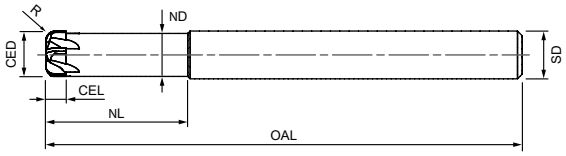
RS100I4+-24004TN
RS100I5+-24005TN

- Torus End - Corner Radius End Mill for Hard Material
- 4 / 5-Flute / Uneven-Straight Flute



$a_1 \neq a_2 \neq a_3 \neq a_4 \neq a_5$





Best Seller IE Series

4 Flutes | 5 Flutes | R | 0° | TN | HRC ▶65 | SMG

CED	Tolerance
R	+/-0.02
2~3	0~-0.014
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

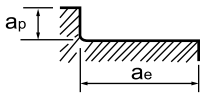
Shank h5

(unit : mm)

Code No.	CED	R	CEL	NL	ND	SD	OAL	Flute
RS100I4+-24004TN	2	0.5	0.8	6	1.8	6	60	4
RS100I5+-24005TN	3	0.75	1.3	9	2.7	6	60	5
	4	1	1.6	12	3.6	6	70	
	5	1.2	2	15	4.5	8	80	
	6	1.5	2.5	18	5.4	6	90	
	8	2	3.5	24	7.2	8	100	
	10	2	5	30	9	10	100	
	12	3	5	36	11	12	110	

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Hardened Steel 55~65HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition / CED	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
2	24,000	6,200	20,000	5,200	17,500	2,200	13,000	1,500	24,000	6,200
3	16,300	8,200	14,600	6,460	11,500	2,700	8,700	1,890	16,300	8,200
4	12,300	8,500	11,000	6,555	8,700	2,800	6,500	1,900	12,300	8,500
5	10,000	8,700	8,900	6,745	7,000	2,900	5,300	1,900	10,000	8,700
6	8,400	8,800	7,500	6,840	6,000	2,900	4,400	1,950	8,400	8,800
8	6,200	8,700	5,600	6,935	4,400	2,850	3,300	1,950	6,200	8,700
10	4,900	8,700	4,500	6,888	3,600	2,850	2,600	1,900	4,900	8,700
12	4,100	8,700	3,700	6,888	2,900	2,850	2,200	1,900	4,100	8,700
Depth of cut	 ap: 0.04D, ae: 0.6D		ap: 0.04D, ae: 0.6D		ap: 0.03D, ae: 0.5D		ap: 0.02D, ae: 0.5D		ap: 1.5D, ae: 0.2D	

Work Material

P			K	H			
G1	G2	G3	G5	G14	G15	G16	G17
●	●	●	●	●	●	●	○

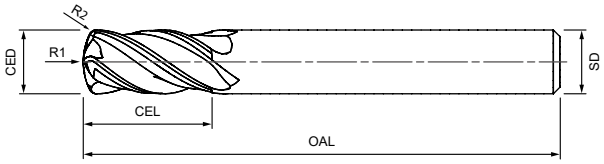
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

OV100I2+-84354TN

- Oval Ball Nose - 4-Flute x 2D Stub Flute
- Uneven Flute / Helix 35°





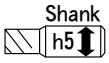


Best Seller IE Series



SMG

CED	Tolerance
R	+/-0.02
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

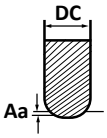


(unit : mm)

Code No.	CED	R1	R2	CEL	SD	OAL	Flute
OV100I2+-84354TN	6	R8.16x0.42	R0.61x0.58	12	6	100	4
	8	R9.64x0.61	R0.95x0.89	16	8	100	
	10	R15.17x0.64	R0.9x0.86	20	10	100	
	12	R13.0x1.0	R1.63x1.5	24	12	100	
	16	R16.51x1.38	R2.31x2.12	32	16	150	
	20	R25.87x1.45	R2.17x2.05	40	20	150	

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	6,900	1,000	5,580	680	4,800	475	6,900	1,000
8	5,175	1,020	4,180	700	3,600	490	5,175	1,020
10	4,140	1,050	3,350	720	2,900	505	4,140	1,050
12	3,450	1,100	2,790	750	2,400	525	3,450	1,100
16	2,600	1,050	2,090	720	1,800	505	2,600	1,050
20	2,070	1,050	1,670	700	1,420	490	2,070	1050
Depth of cut	 a_p : 0.1D		a_p : 1D		a_p : 0.5D		a_p : 0.1D	

Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	○

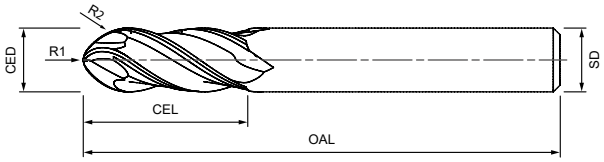
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

OV200I2+-84354TN

- Oval Ball Nose - 4-Flute x 2D Stub Flute
- Uneven Flute / Helix 35°







Best Seller IE Series



SMG

CED	Tolerance
R	+/-0.02
12~16	0~-0.025

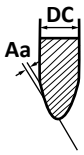
Shank h5

(unit : mm)

Code No.	CED	R1	R2	CEL	SD	OAL	Flute
OV200I2+-84354TN	12	R4.15x2.29	R21.71x9.71	24	12	100	4
		R3.69x2.51	R48.97x15.49	30	12	100	
		R3.47x2.63	R88.11x21.37	36	12	100	
	16	R4.9x3.35	R65.3x20.65	40	16	150	
		R4.63x3.51	R117.48x28.49	48	16	150	

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Hardened Steel 45~55HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	6,800	902	5,414	645	4,800	465	6,900	1,000
8	5,100	903	4,061	650	3,600	480	5,175	1,020
10	4,080	904	3,248	660	2,900	495	4,140	1,050
12	3,400	935	2,707	655	2,400	515	3,450	1,100
16	2,550	935	2,030	655	1,800	495	2,600	1,050
20	2,040	930	1,624	650	1,420	480	2,070	1050
Depth of cut	 a_p : 0.1D		a_p : 1D		a_p : 0.5D		a_p : 0.1D	

Work Material

P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	○

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

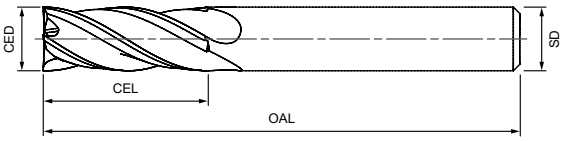
KE100NIE4^{+}-11304TN

- Carbide Keyway End Mill - 4-Flute x 2.5D / Sharp Edge
- Uneven Flute / Variable Helix 30° /33°



$a_1 \neq a_2 \neq a_3 \neq a_4$





Best Seller IE Series

4Flutes | 90° | 30°/ 33° | TN

SMG

CED	Tolerance
3~6	0~-0.018
6~10	0~-0.02
10~12	0~-0.025

Shank h5

(unit : mm)

Code No.	CED	CED Tolerance	CEL	SD	OAL	Flute
KE100NIE4^{+}-11304TN	3	+0.025 +0.005	8	4	50	4
	4	+0.025 +0.005	10	4	50	
	5	+0.025 +0.005	13	6	50	
	6	+0.025 +0.005	15	6	50	
	7	+0.025 +0.005	18	8	60	
	8	+0.025 +0.005	20	8	60	
	9	+0.025 +0.005	23	10	75	
	10	+0.025 +0.005	25	10	75	
	11	+0.025 +0.005	28	12	75	
	12	+0.025 +0.005	30	12	75	

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
3	3,400	85	2,100	35	4,000	180
4	2,550	85	1,600	35	3,000	185
5	2,050	88	1,280	38	2,420	185
6	1,700	88	1,060	38	2,000	185
7	1,450	90	910	40	1,730	190
8	1,270	90	800	40	1,500	190
9	1,130	90	710	40	1,345	188
10	1,020	88	640	38	1,210	188
11	925	88	580	38	1,100	185
12	850	85	530	35	1,010	185
Depth of cut	a_p 0.5D, a_e 1D		a_p 0.5D, a_e 1D		a_p 1.5D, a_e 1D	

Work Material

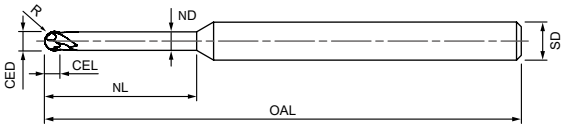
P			K	H		
G1	G2	G3	G5	G14	G15	G16
●	●	●	○	●	●	○

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

DT100+-81302TN

- Dental Ball Nose - 2-Flute / 4mm Shank
- Helix 30°

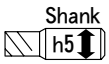






SMG

CED	Tolerance
R	±0.02

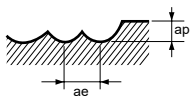


(unit : mm)

Code No.	R	CEL	NL	ND	SD	OAL	Flute
DT100+-81302TN	0.3R	0.5	6	0.55	4	50	2
	0.5R	0.8	12	0.95	4	50	
	1R	1.6	16	1.95	4	50	

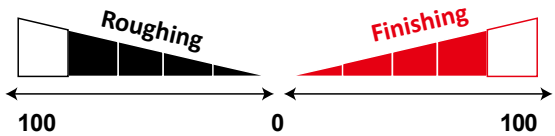
※ Customized sizes, coating types, and inch-based dimensions are available upon request.

General Milling

Work Material	Titanium		Cobalt Chromium (Co-Cr) alloys		PMMA / WAX	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
0.3R	29,000	280	29,000	280	29,000	280
0.5R	29,000	550	29,000	550	29,000	550
1R	18,000	680	18,000	680	18,000	680
	(Small Desk Top Machine)		(Small Desk Top Machine)		(Small Desk Top Machine)	
Depth of cut	 ap: 0.05D, ae: 0.2D		ap: 0.05D, ae: 0.2D		ap: 0.05D, ae: 0.2D	

Work Material

G	S		
G8	G11	G12	G13
○	●	●	●

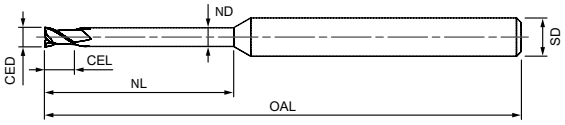


1. **These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.**
2. **Please select high rigid tool holder and collet chuck during machining.**
3. **Please select the suitable coolant fluid.**
4. **For dry cutting, please use air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

DT100+-11302TN

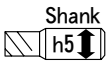
- Dental Square - 2-Flute / 4mm Shank
- Helix 30°







CED	Tolerance
0.5~2	±0.02

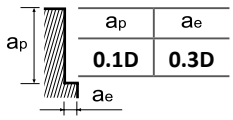


(unit : mm)

Code No.	CED	CEL	NL	ND	SD	OAL	Flute
DT100+-11302TN	0.5	0.7	4	0.45	4	50	2
	1	1.5	12	0.95	4	50	
	1.5	2.3	16	1.45	4	50	
	2	2	20	1.95	4	50	

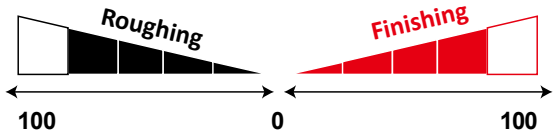
※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Titanium		Cobalt Chromium (Co-Cr) alloys	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
0.5	22,000	140	20,000	125
1	11,400	170	10,300	150
1.5	9,900	220	9,000	200
2	7,600	225	7,300	220
	(Small Desk Top Machine)		(Small Desk Top Machine)	
Depth of cut	 ap: 0.1D, ae: 0.3D		ap: 0.1D, ae: 0.3D	

Work Material

S		
G11	G12	G13
●	●	●

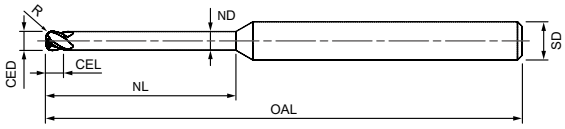


1. **These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.**
2. **Please select high rigid tool holder and collet chuck during machining.**
3. **Please select the suitable coolant fluid.**
4. **For dry cutting, please use air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

DT100+-21304TN

- Dental Corner Radius - 4-Flute / 4mm Shank
- Helix 30°

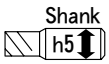






SMG

CED	Tolerance
1~2	0~-0.014

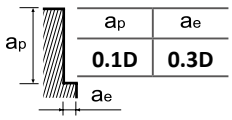
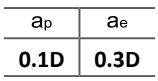


(unit : mm)

Code No.	CED	R	CEL	NL	ND	SD	OAL	Flute
DT100+-21304TN	1	0.2R	1	12	0.95	4	50	4
	1.5	0.2R	1.5	16	1.45	4	50	
	2	0.2R	2	20	1.95	4	50	

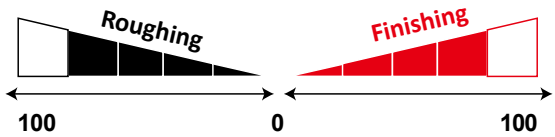
※ **Customized sizes, coating types, and inch-based dimensions are available upon request.**

Side Milling

Work Material	Titanium		Cobalt Chromium (Co-Cr) alloys	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
1	12,000	310	10,800	280
1.5	10,500	410	9,450	370
2	8,000	425	7,600	400
	(Small Desk Top Machine)		(Small Desk Top Machine)	
Depth of cut				

Work Material

S		
G11	G12	G13
●	●	●

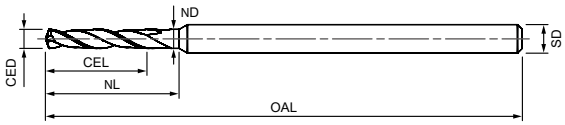


1. **These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.**
2. **Please select high rigid tool holder and collet chuck during machining.**
3. **Please select the suitable coolant fluid.**
4. **For dry cutting, please use air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

DT100+-41302TN

- Dental Drill Bits - 2-Flute / 3mm Shank
- Helix 30° / Drill Point 140°

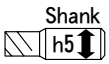






SMG

CED	Tolerance
0.5~3	0~-0.01

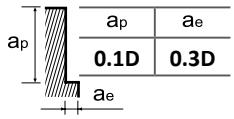
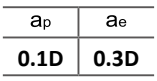


(unit : mm)

Code No.	CED	CEL	NL	ND	SD	OAL	Flute
DT100+-41302TN	0.5	5	6	0.5	3	38	2
	1	6	7	1	3	38	
	1.5	9	11	1.5	3	42	
	2	12	14	2	3	50	
	2.5	14	17	2.5	3	50	
	3	16	20	3	3	50	

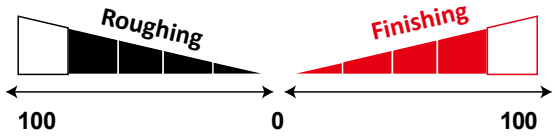
※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Titanium		Cobalt Chromium (Co-Cr) alloys	
Cutting Condition CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
0.5	8,000	0.01	7,900	0.009
1	4,800	0.021	4,560	0.019
1.1	4,300	0.023	4,085	0.022
1.2	4,000	0.025	3,800	0.023
1.3	3,700	0.027	3,500	0.025
1.4	3,400	0.029	3,230	0.027
1.5	3,200	0.031	3,040	0.029
1.6	3,000	0.033	2,850	0.031
1.7	2,800	0.036	2,660	0.033
1.8	2,700	0.037	2,500	0.035
1.9	2,500	0.04	2,300	0.038
2	2,400	0.042	2,280	0.039
2.5	1,900	0.053	1,800	0.049
3	1,600	0.063	1,520	0.058
Depth of cut				

Work Material

S		
G11	G12	G13
●	●	●

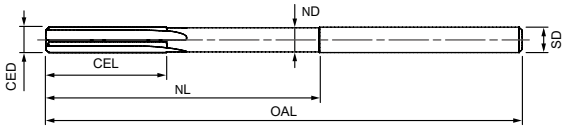


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

CR100+-51004
CR100+-51006

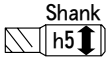
- Carbide Reamer - 4 / 6-Flute
- Straight Cut







CED (H6)	Tolerance	SD (h6)	Tolerance
3~6	0~+0.008	3~6	0~+0.008
6~10	0~+0.009	6~10	0~+0.009
10~12	0~+0.011	10~12	0~+0.011



(unit : mm)

Code No.	CED	CEL	NL	ND	SD	OAL	Flute
CR100+-51004	3	15	35	2.8	3	61	4
	3.5	18	43	3.3	4	70	
	4	19	43	3.8	4	75	
CR100+-51006	4.5	21	47	4.3	5	80	6
	5	23	52	4.8	5	86	
	5.5	26	57	5.3	6	93	
	6	26	57	5.8	6	93	
	6.5	28	63	6.3	8	101	
	7	31	69	6.8	8	109	
	7.5	31	69	7.3	8	109	
	8	33	75	7.7	8	117	
	8.5	33	75	8.2	10	117	
	9	36	81	8.7	10	125	
	9.5	36	81	9.2	10	125	
	10	38	87	9.7	10	133	
	10.5	38	87	10.2	12	133	
	11	41	96	10.7	12	142	
	11.5	41	96	11.2	12	142	
	12	44	105	11.6	12	151	

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Cast Iron		Aluminium Alloy	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/min)	Speed (min^{-1})	Feed Rate (mm/min)	Speed (min^{-1})	Feed Rate (mm/min)	Speed (min^{-1})	Feed (mm/min)
CED	Vc : 8~16 m/min		Vc : 8~16 m/min		Vc : 8~16 m/min		Vc : 8~16 m/min	
3	1,270	30	765	18	1,700	40	2,210	52
4	955	30	590	18	1,275	40	1,660	52
5	795	42	490	26	1,000	59	1,400	78
6	660	44	410	27	890	59	1,160	78
7	590	46	365	28	790	62	1,030	81
8	520	46	320	28	700	62	910	81
9	480	47	290	29	625	65	825	85
10	430	47	265	29	560	64	740	84
11	395	50	250	30	505	64	675	84
12	360	50	230	30	460	64	620	83

Work Material

P			K	N		H	
G1	G2	G3	G5	G6	G7	G14	G15
●	●	●	●	●	○	●	○

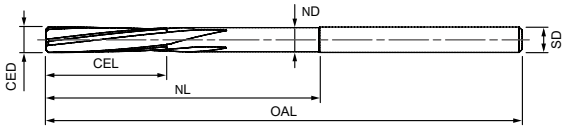
1. **These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.**
2. **Please select high rigid tool holder and collet chuck during machining.**
3. **Please select the suitable coolant fluid.**
4. **For dry cutting, please use air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

CR200IE4+-51074
CR200IE3+-51076

- Carbide Reamer - 4 / 6-Flute / Spiral Flute
- Uneven Flute / Variable Helix 7° /9°

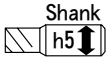








CED (H6)	Tolerance	SD (h6)	Tolerance
3~6	0~+0.008	3~6	0~+0.008
6~10	0~+0.009	6~10	0~+0.009
10~12	0~+0.011	10~12	0~+0.011



(unit : mm)

Code No.	CED	CEL	NL	ND	SD	OAL	Flute
CR200IE4+-51074	3	15	35	2.8	3	61	4
	3.5	18	43	3.3	4	70	
	4	19	43	3.8	4	75	
CR200IE3+-51076	4.5	21	47	4.3	5	80	6
	5	23	52	4.8	5	86	
	5.5	26	57	5.3	6	93	
	6	26	57	5.8	6	93	
	6.5	28	63	6.3	8	101	
	7	31	69	6.8	8	109	
	7.5	31	69	7.3	8	109	
	8	33	75	7.7	8	117	
	8.5	33	75	8.2	10	117	
	9	36	81	8.7	10	125	
	9.5	36	81	9.2	10	125	
	10	38	87	9.7	10	133	
	10.5	38	87	10.2	12	133	
	11	41	96	10.7	12	142	
	11.5	41	96	11.2	12	142	
	12	44	105	11.6	12	151	

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Cast Iron		Aluminium Alloy	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/min)	Speed (min^{-1})	Feed Rate (mm/min)	Speed (min^{-1})	Feed Rate (mm/min)	Speed (min^{-1})	Feed (mm/min)
CED	Vc : 8~16 m/min		Vc : 8~16 m/min		Vc : 8~16 m/min		Vc : 8~16 m/min	
3	1,270	30	765	18	1,700	40	2,210	52
4	955	30	590	18	1,275	40	1,660	52
5	795	42	490	26	1,000	59	1,400	78
6	660	44	410	27	890	59	1,160	78
7	590	46	365	28	790	62	1,030	81
8	520	46	320	28	700	62	910	81
9	480	47	290	29	625	65	825	85
10	430	47	265	29	560	64	740	84
11	395	50	250	30	505	64	675	84
12	360	50	230	30	460	64	620	83

Work Material

P			K	N		H	
G1	G2	G3	G5	G6	G7	G14	G15
●	●	●	●	●	○	●	○

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

CR300IE3^{+}-51553

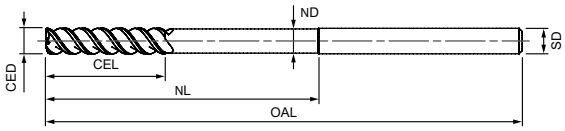
- Carbide Reamer - 3-Flute / Spiral Flute
- Uneven Flute / Variable Helix 55° /56° /57°



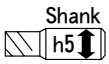


Best Seller IE Series





CED (H6)	Tolerance	SD (h6)	Tolerance
3~5	0~+0.008	3~5	0~+0.008



(unit : mm)

Code No.	CED	CEL	NL	ND	SD	OAL	Flute
CR300IE3^{+}-51553	3	15	35	2.8	3	61	3
	3.5	18	43	3.3	4	70	
	4	19	43	3.8	4	75	
	4.5	21	47	4.3	5	80	
	5	23	52	4.8	5	86	

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Cast Iron		Stainless Steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/min)	Speed (min^{-1})	Feed Rate (mm/min)	Speed (min^{-1})	Feed Rate (mm/min)	Speed (min^{-1})	Feed (mm/min)
CED	Vc : 10~35 m/min		Vc : 10~20 m/min		Vc : 12~20 m/min		Vc : 5~15 m/min	
3	1,330	24	800	15	1,830	32	630	10
4	1,000	24	620	15	1,370	32	480	10
5	835	25	515	16	1,080	33	420	11

Work Material

P			M	K	H	
G1	G2	G3	G4	G5	G14	G15
●	●	●	●	●	●	○

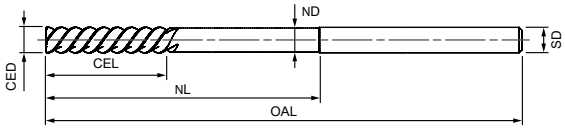
1. **These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.**
2. **Please select high rigid tool holder and collet chuck during machining.**
3. **Please select the suitable coolant fluid.**
4. **For dry cutting, please use air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

CR300IE4+-51554
CR300IE3+-51556

- Carbide Reamer - 4 / 6-Flute / Spiral Flute
- Uneven Flute / Variable Helix 55° /58°

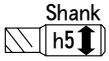








CED (H6)	Tolerance	SD (h6)	Tolerance
3~6	0~+0.008	3~6	0~+0.008
6~10	0~+0.009	6~10	0~+0.009
10~12	0~+0.011	10~12	0~+0.011



(unit : mm)

Code No.	CED	CEL	NL	ND	SD	OAL	Flute
CR300IE4+-51554	3	15	35	2.8	3	61	4
	3.5	18	43	3.3	4	70	
	4	19	43	3.8	4	75	
CR300IE3+-51556	4.5	21	47	4.3	5	80	6
	5	23	52	4.8	5	86	
	5.5	26	57	5.3	6	93	
	6	26	57	5.8	6	93	
	6.5	28	63	6.3	8	101	
	7	31	69	6.8	8	109	
	7.5	31	69	7.3	8	109	
	8	33	75	7.7	8	117	
	8.5	33	75	8.2	10	117	
	9	36	81	8.7	10	125	
	9.5	36	81	9.2	10	125	
	10	38	87	9.7	10	133	
	10.5	38	87	10.2	12	133	
	11	41	96	10.7	12	142	
	11.5	41	96	11.2	12	142	
	12	44	105	11.6	12	151	

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Cast Iron		Stainless Steel	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/min)	Speed (min^{-1})	Feed Rate (mm/min)	Speed (min^{-1})	Feed Rate (mm/min)	Speed (min^{-1})	Feed (mm/min)
CED	Vc : 10~35 m/min		Vc : 10~20 m/min		Vc : 12~20 m/min		Vc : 5~15 m/min	
3	1,330	30	800	18	1,830	40	630	12
4	1,000	30	620	18	1,370	40	480	12
5	835	42	515	26	1,080	59	420	21
6	695	44	430	27	960	59	350	21
7	620	46	380	28	850	62	320	21
8	545	46	335	28	750	62	290	22
9	505	47	305	29	680	65	260	22
10	450	47	280	29	610	64	230	22
11	425	50	260	30	560	64	230	24
12	390	50	240	30	510	64	210	24

Work Material

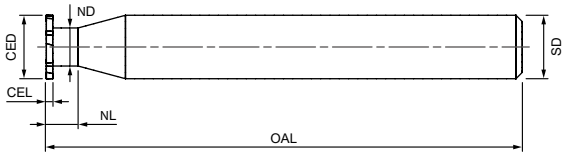
P			M	K	H	
G1	G2	G3	G4	G5	G14	G15
●	●	●	●	●	●	○

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

CK100I

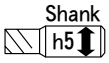
- Carbide T-Slot Cutter
- Uneven Flute







CED	Tolerance
4~6	0~-0.018
6~10	0~-0.02
10~18	0~-0.025
18~30	0~-0.03



(unit : mm)

Code No.	CED	CEL	NL	ND	SD	OAL	Flute
CK100I	4	0.5	3.5	2.5	4	50	4
		1					
		1.5					
		2					
	5	0.5	4	2.5	6	50	4
		1					
		1.5					
		2					
	6	0.5	6	3	6	50	4
		1					
		1.5					
		2					
	8	1	4	4	8	60	6
		1.5					
		2					
	10	1	6	5	10	75	6
		1.5					
		2					

Code No.	CED	CEL	NL	ND	SD	OAL	Flute
CK100I	12	1	7	6	12	75	6
		1.5					
		2					
	16	1	10	6	12	100	8
		1.5					
		2					
		2.5					
		3					
	20	0.5	14	610	12	100	10
		1					
		1.5					
		2					
		2.5					
		3					
		5					
		6					
		7					
		8					
	25	1	16	12	16	100	12
		2					
		2.5					
		3					
		4					
		5					
		6					
		7					
		8					
	30	1	16	15	16	100	12
		2					
		3					
		4					
		5					
		6					
		7					
		8					

※ **Customized sizes, coating types, and inch-based dimensions are available upon request.**

Side Milling

Work Material	Alloyed Steel 25~35HRC		Hardened Steel 35~45HRC		Cast Iron		Aluminium Alloy	
Cutting Condition	Speed (min^{-1})	Feed Rate (mm/min)	Speed (min^{-1})	Feed Rate (mm/min)	Speed (min^{-1})	Feed Rate (mm/min)	Speed (min^{-1})	Feed Rate (mm/min)
CED	Vc : 12~21 m/min		Vc : 8~15 m/min		Vc : 10~16 m/min		Vc : 15~30 m/min	
4	1,600	107	1,115	68	1,275	75	2,230	160
5	1,300	108	890	69	1,020	75	1,785	160
6	1,060	109	745	70	850	76	1,490	162
8	800	120	560	80	640	85	1,115	175
10	640	120	445	80	510	85	895	175
12	530	120	370	80	425	85	745	175
16	400	130	280	90	320	95	560	195
20	320	140	225	100	255	105	445	215
25	255	150	180	110	205	115	360	225
30	215	150	150	110	170	115	300	225

Work Material

P			M	N	H	
G1	G2	G3	G4	G6	G14	G15
●	●	●	●	●	●	○

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

NOTES

HIGH SPEED STEEL SERIES

Premium High Speed Steel

Delivering exceptional toughness, wear resistance, and process stability. Its unequal flute spacing and variable helix angle design effectively minimize chatter, optimize chip clearance, and reduce cycle times—extending tool life and enhancing overall productivity for reliable machining performance.



HSS High Speed Steel Series

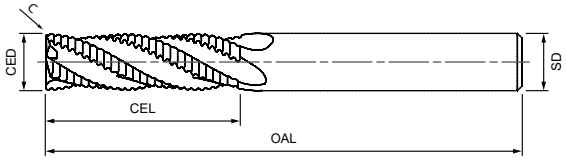
Appearance	Code No	Description	Size	Pg
Roughing				
	HS400IE+-11304TN	HSS-Square - 4-Flute / Roughing / Uneven Flute / Variable Helix 30°/33°	Ø6~Ø25	360
	HS400IE+-11305TN	HSS-Square - 5-Flute /Roughing / Uneven Flute / Variable Helix 30°/33°	Ø6~Ø25	362
	HS400N+-11304TN	HSS-Square - 4-Flute / Roughing / Sharp Edge / Helix 30°	Ø8~Ø14	364
End Mill				
	HS100E+-11302TN	HSS-Square - 2-Flute End Mill / Variable Helix 30°/33°	Ø6~Ø20	366
	HS100IE+-11304TN	HSS-Square - 4-Flute End Mill / Uneven Flute / Variable Helix 30°/33°	Ø6~Ø20	368
Drill				
	HDR300+-41302TN	HSS-Twist Drill - 2-Flute / Helix 30° / 118° Tip	Ø0.2~Ø20	370
	HDR100+-40902TN	HSS-Spot Drill - 2-Flute / V 90° 45° Chamfering	Ø4~Ø20	376
	HPDR100+-90120TN	HSS-Spot Drill - 2-Flute / V 120° /90° / 45° Chamfering	Ø4~Ø20	378
Chamfering				
	HCF100+-40903TN	HSS-Chamfer Mill - 3-Flute / V 90° / 45° Chamfering	Ø6.3~Ø25	380
	HCF100I+-40903TN	HSS-Chamfer Mill - 3-Flute / V 90° / Uneven Flute / 45° Chamfering	Ø4.3~Ø35	382

HS400IE+-11304TN

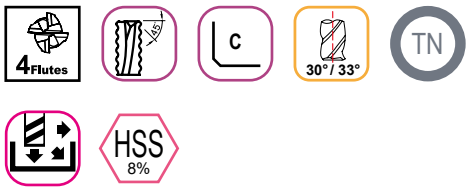
- HSS | Square - 4-Flute / Roughing
- Uneven Flute / Variable Helix 30° /33°



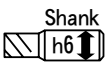




Best Seller IE Series



CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

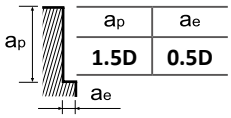


(unit : mm)

Code No.	CED	C	CEL	SD	OAL	Flute
HS400IE+-11304TN	6	0.3C	20	6	60	4
	7	0.3C	20	10	70	
	8	0.3C	25	10	75	
	9	0.45C	30	10	75	
	10	0.5C	35	10	85	
	12	0.5C	40	12	100	
	14	0.5C	40	12	100	
	16	1C	50	16	110	
	18	1C	50	16	110	
	20	1C	60	20	125	
	22	1C	45	20	110	
	25	1C	50	25	120	

※ **Customized sizes, coating types, and inch-based dimensions are available upon request.**

Side Milling

Work Material	Mild Steel Carbon Steel		Alloyed Steel ~30HRC		Stainless Steel	
Cutting Condition CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	2,400	185	1,920	130	1,500	95
7	2,080	185	1,600	130	1,300	95
8	1,800	185	1,440	130	1,000	95
9	1,600	190	1,280	130	960	95
10	1,400	205	1,120	145	900	105
12	1,200	215	960	150	860	110
14	1,020	230	820	160	680	115
16	900	255	725	180	600	130
18	800	265	640	185	550	130
20	720	265	590	185	460	130
22	650	250	520	175	390	125
25	550	220	440	155	330	110
Depth of cut						

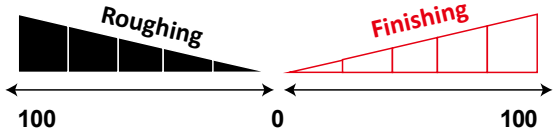
ap	ae
1.5D	0.5D

ap	ae
1.5D	0.3D

ap	ae
1.5D	0.2D

Work Material

P		K
G1	G2	G5
●	○	○



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

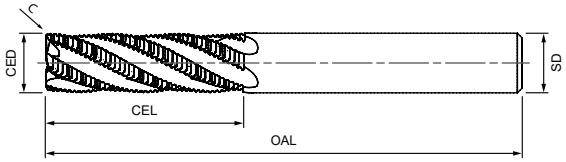
HS400IE+-11305TN

- HSS | Square - 5-Flute / Roughing
- Uneven Flute / Variable Helix 30° /33°

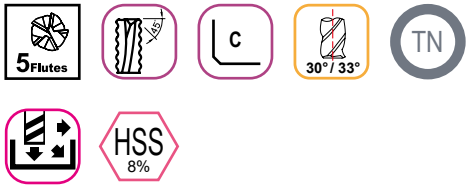


$a_1 \neq a_2 \neq a_3 \neq a_4 \neq a_5$





Best Seller IE Series



CED	Tolerance
8~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

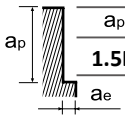
Shank h6

(unit : mm)

Code No.	CED	C	CEL	SD	OAL	Flute
HS400IE+-11305TN	8	0.3C	25	10	75	5
	10	0.5C	35	10	85	
	12	0.5C	40	12	100	
	16	1C	50	16	110	
	18	1C	50	16	110	
	20	1C	60	20	125	
	25	1C	50	25	120	

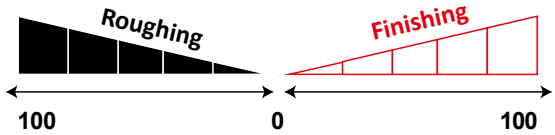
※ **Customized sizes, coating types, and inch-based dimensions are available upon request.**

Side Milling

Work Material	Mild Steel Carbon Steel		Alloyed Steel ~30HRC		Stainless Steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
8	1,800	185	1,440	130	1,000	85
10	1,400	205	1,120	144	900	100
12	1,200	215	960	151	860	110
16	900	255	725	179	600	128
18	800	265	640	186	550	130
20	720	265	590	186	460	130
25	550	220	440	154	330	110
Depth of cut	 ap: 1.5D, ae: 0.5D		ap: 1.5D, ae: 0.3D		ap: 1.5D, ae: 0.2D	

Work Material

P		K
G1	G2	G5
●	○	○

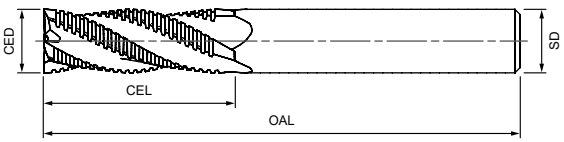


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

HS400N+-11304TN

- HSS | Square - 4-Flute / Roughing / Sharp Edge
- Helix 30°

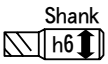








CED	Tolerance
8~10	0~-0.02
10~14	0~-0.025

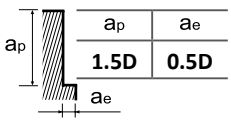
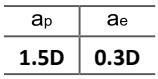
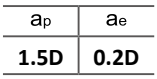


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
HS400N+-11304TN	8	22	10	65	4
	10	28	12	75	
	11	35	12	80	
	12	35	12	80	
	12.5	36	16	90	
	14	42	16	90	

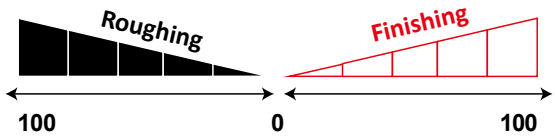
※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Mild Steel Carbon Steel		Alloyed Steel ~30HRC		Stainless Steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
8	1,800	185	1,440	130	1,200	95
10	1,450	190	1,200	130	960	95
11	1,300	205	1,120	145	900	105
12	1,200	215	960	150	860	110
12.5	1,160	215	940	150	850	110
14	1,020	230	820	160	750	115
Depth of cut						

Work Material

P		K
G1	G2	G5
●	○	○

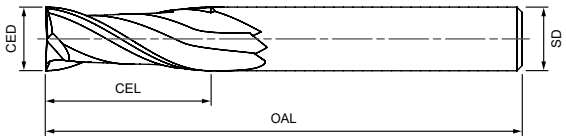


1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

HS100E+-11302TN

- HSS | Square - 2-Flute End Mill
- Variable Helix 30° /33°



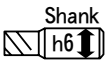


Best Seller IE Series





CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~20	0~-0.03

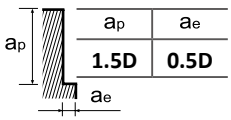
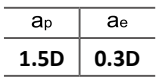
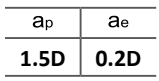


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
HS100E+-11302TN	6	15	8	65	2
	7	20	10	75	
	8	20	10	75	
	9	25	10	80	
	10	25	10	80	
	12	30	12	90	
	14	35	12	95	
	16	40	16	105	
	18	40	16	105	
	20	45	20	115	

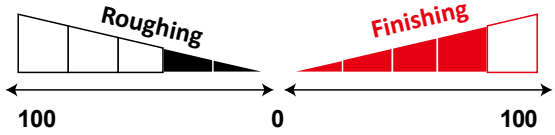
※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Mild Steel Carbon Steel		Alloyed Steel ~30HRC		Stainless Steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	2,160	150	1,720	105	1,350	75
7	1,870	150	1,440	105	1,170	75
8	1,620	150	1,300	105	900	75
9	1,440	155	1,150	105	860	75
10	1,260	165	1,000	115	810	80
12	1,080	170	860	120	770	85
14	920	180	740	130	610	90
16	815	190	650	140	540	100
18	725	200	670	150	495	105
20	650	200	530	150	410	105
Depth of cut						

Work Material

P		K
G1	G2	G5
●	○	○



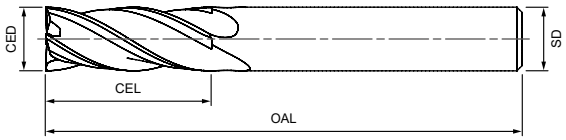
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

HS100IE+-11304TN

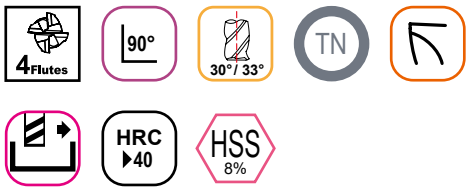
- HSS | Square - 4-Flute End Mill
- Uneven Flute / Variable Helix 30° /33°



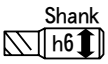








CED	Tolerance
6~10	0~-0.02
10~18	0~-0.025
18~25	0~-0.03

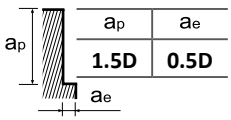
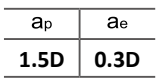
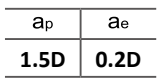


(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
HS100IE+-11304TN	6	15	8	65	4
	7	20	10	75	
	8	20	10	75	
	9	25	10	80	
	10	25	10	80	
	12	30	12	90	
	14	35	12	95	
	16	40	16	105	
	18	40	16	105	
	20	45	20	115	

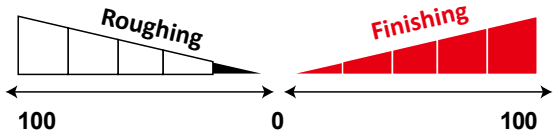
※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Mild Steel Carbon Steel		Alloyed Steel ~30HRC		Stainless Steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6	2,160	165	1,700	120	1,350	85
7	1,870	165	1,440	120	1,170	85
8	1,620	165	1,300	120	900	85
9	1,440	170	1,150	120	860	85
10	1,260	185	1,000	129	810	90
12	1,080	195	860	135	770	100
14	920	210	740	145	610	104
16	815	230	650	160	540	115
18	725	240	570	165	500	119
20	650	240	530	165	415	119
Depth of cut						

Work Material

P		K
G1	G2	G5
●	○	○

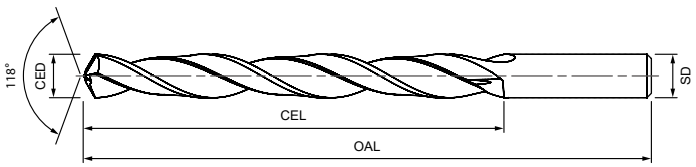


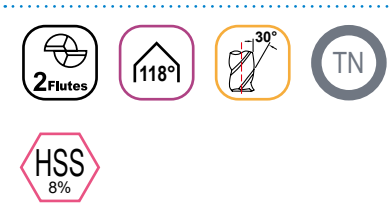
1. These cutting data are for reference only.Please adjust the cutting speed according to machine capability and working conditions.
2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip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

HDR300+-41302TN

- HSS | Twist Drill - 2-Flute
- Helix 30° / 118° Tip







(unit : mm)

Code No.	CED	CEL	SD	OAL	Flute
HDR300+-41302TN	0.2	3	0.2	19	2
	0.3	3.5	0.3	20	
	0.4	5.5	0.4	24	
	0.5	7.5	0.5	27	
	0.6	8.5	0.6	30	
	0.7	10	0.7	32	
	0.8	11	0.8	34	
	0.9	13	0.9	36	
	1	18	1	40	
	1.1	20	1.1	42	
	1.2	20	1.2	42	
	1.3	22	1.3	45	
	1.4	23	1.4	48	
	1.5	23	1.5	48	
	1.6	25	1.6	50	
	1.7	25	1.7	50	
	1.8	28	1.8	52	
	1.9	28	1.9	52	

Code No.	CED	CEL	SD	OAL	Flute
HDR300+-41302TN	2	29	2	55	2
	2.1	29	2.1	55	
	2.2	33	2.2	58	
	2.3	33	2.3	58	
	2.4	35	2.4	61	
	2.5	35	2.5	61	
	2.6	37	2.6	64	
	2.7	37	2.7	64	
	2.8	39	2.8	67	
	2.9	42	2.9	71	
	3	42	3	71	
	3.1	42	3.1	71	
	3.2	42	3.2	71	
	3.3	45	3.3	73	
	3.4	45	3.4	73	
	3.5	48	3.5	73	
	3.6	48	3.6	76	
	3.7	48	3.7	76	
	3.8	51	3.8	76	
	3.9	51	3.9	79	
	4	54	4	83	
	4.1	54	4.1	83	
	4.2	54	4.2	83	
	4.3	54	4.3	83	
	4.4	56	4.4	86	
	4.5	56	4.5	86	
	4.6	56	4.6	86	
	4.7	59	4.7	89	
	4.8	59	4.8	89	
	4.9	62	4.9	92	
	5	62	5	92	
	5.1	62	5.1	92	
	5.2	64	5.2	95	
	5.3	64	5.3	95	
	5.4	64	5.4	95	
	5.5	64	5.5	95	

Code No.	CED	CEL	SD	OAL	Flute
HDR300+-41302TN	5.6	67	5.6	98	2
	5.7	67	5.7	98	
	5.8	67	5.8	98	
	5.9	67	5.9	98	
	6	70	6	102	
	6.1	70	6.1	102	
	6.2	70	6.2	102	
	6.3	70	6.3	102	
	6.4	73	6.4	105	
	6.5	73	6.5	105	
	6.6	73	6.6	105	
	6.7	73	6.7	105	
	6.8	73	6.8	105	
	6.9	73	6.9	105	
	7	73	7	105	
	7.1	75	7.1	108	
	7.2	75	7.2	108	
	7.3	75	7.3	108	
	7.4	78	7.4	111	
	7.5	78	7.5	111	
	7.6	78	7.6	114	
	7.7	81	7.7	114	
	7.8	81	7.8	114	
	7.9	81	7.9	114	
	8	81	8	114	
	8.1	84	8.1	117	
	8.2	84	8.2	117	
	8.3	84	8.3	117	
	8.4	87	8.4	121	
	8.5	87	8.5	121	
	8.6	87	8.6	121	
	8.7	87	8.7	121	
	8.8	89	8.8	124	
	8.9	89	8.9	124	

Code No.	CED	CEL	SD	OAL	Flute
HDR300+-41302TN	9	89	9	124	2
	9.1	89	9.1	124	
	9.2	92	9.2	127	
	9.3	92	9.3	127	
	9.4	92	9.4	127	
	9.5	92	9.5	127	
	9.6	95	9.6	130	
	9.7	95	9.7	130	
	9.8	95	9.8	130	
	9.9	95	9.9	130	
	10	95	10	130	
	10.1	98	10.1	133	
	10.2	98	10.2	133	
	10.3	98	10.3	133	
	10.4	98	10.4	133	
	10.5	100	10.5	137	
	10.6	100	10.6	137	
	10.7	100	10.7	137	
	10.8	103	10.8	140	
	10.9	103	10.9	140	
	11	103	11	140	
	11.1	106	11.1	140	
	11.2	106	11.2	143	
	11.3	106	11.3	143	
	11.4	106	11.4	143	
	11.5	106	11.5	143	
	11.6	109	11.6	143	
	11.7	109	11.7	146	
	11.8	109	11.8	146	
	11.9	109	11.9	146	
	12	111	12	146	
	12.1	111	12.1	149	
	12.2	111	12.2	149	
	12.3	111	12.3	149	
	12.4	114	12.4	149	
	12.5	114	12.5	152	

Code No.	CED	CEL	SD	OAL	Flute
HDR300+-41302TN	12.6	114	12.6	152	2
	12.7	114	12.7	152	
	12.8	114	12.8	152	
	12.9	114	12.9	152	
	13	114	13	152	
	13.5	108	13.5	160	
	14	108	14	160	
	14.5	114	14.5	169	
	15	114	15	169	
	15.5	120	15.5	178	
	16	120	16	178	
	16.5	125	16.5	184	
	17	125	17	184	
	17.5	130	17.5	191	
	18	130	18	191	
	18.5	135	18.5	18	
	19	135	19	198	
	19.5	140	19.5	205	
	20	140	20	205	

※ **Customized sizes, coating types, and inch-based dimensions are available upon request.**

Work Material

P			K
G1	G2	G3	G5
●	●	●	●

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

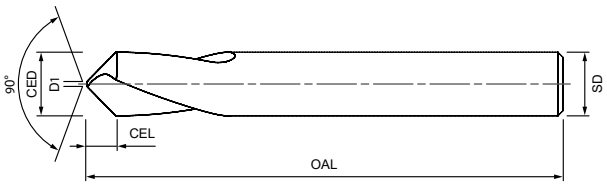
Side Milling

Work Material	Mild Steel Carbon Steel		Alloyed Steel 20~30HRC		Gray Cast Iron Malleable cast iron	
Cutting Condition CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
0.2	23,000	0.002~0.004	18,400	0.002~0.003	23,000	0.002~0.004
0.6	8,000	0.006~0.013	6,400	0.005~0.01	8,000	0.006~0.013
1	4,800	0.01~0.02	3,800	0.009~0.17	4,800	0.01~0.02
2	2,900	0.02~0.04	2,300	0.017~0.34	2,900	0.02~0.04
3	2,100	0.036~0.07	1,700	0.03~0.06	2,100	0.036~0.07
4	1,590	0.04~0.08	1,270	0.04~0.08	1,590	0.04~0.08
5	1,300	0.05~0.1	1,000	0.05~0.09	1,300	0.05~0.1
6	1,060	0.06~0.12	835	0.05~0.11	1,060	0.06~0.12
7	910	0.07~0.14	720	0.06~0.12	910	0.07~0.14
8	800	0.08~0.15	640	0.06~0.13	800	0.08~0.15
9	710	0.08~0.17	570	0.07~0.14	710	0.08~0.17
10	640	0.09~0.17	510	0.07~0.15	640	0.09~0.17
11	580	0.09~0.18	465	0.08~0.16	580	0.09~0.18
12	530	0.09~0.19	420	0.08~0.16	530	0.09~0.19
13	490	0.1~0.2	390	0.09~0.17	490	0.1~0.2
14	455	0.11~0.21	365	0.09~0.18	455	0.11~0.21
15	425	0.11~0.22	340	0.09~0.19	425	0.11~0.22
16	400	0.12~0.23	320	0.1~0.2	400	0.12~0.23
17	375	0.12~0.23	300	0.1~0.21	375	0.12~0.23
18	355	0.12~0.24	280	0.11~0.21	355	0.12~0.24
19	355	0.12~0.25	265	0.11~0.22	355	0.12~0.25
20	320	0.13~0.26	250	0.11~0.22	320	0.13~0.26

HDR100+-40902TN

- HSS | Spot Drill - 2-Flute / V 90°
- 45° Chamfering

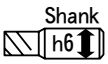








CED	Tolerance
4~6	0~-0.018
6~10	0~-0.02
10~16	0~-0.025
16~20	0~-0.03



(unit : mm)

Code No.	CED	CEL	D1	SD	OAL	Flute
HDR100+-40902TN	4	8	0.4	4	50	2
	5	10	0.5	5	60	
	6	12	0.6	6	70	
	8	16	0.8	8	80	
	10	20	1	10	90	
	12	24	1.2	12	110	
	16	32	1.6	16	120	
	20	40	2	20	120	

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Mild Steel		Carbon Steel		Alloyed Steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
4	3,100	120	3,100	120	2,790	96
5	2,500	120	2,500	120	2,250	96
6	2,090	110	2,090	110	1,880	88
8	1,600	115	1,600	115	1,440	92
10	1,260	115	1,260	115	1,130	92
12	1,050	115	1,050	115	940	92
16	800	100	795	100	720	80
20	635	95	635	95	600	80

Work Material

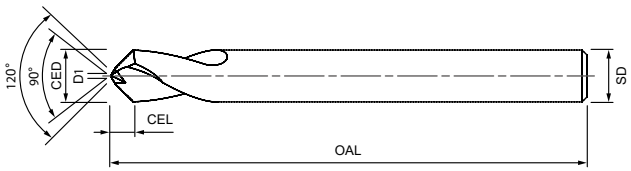
P		K
G1	G2	G5
●	○	○

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

HPDR100+-90120TN

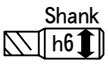
- HSS | Spot Drill - 2-Flute / V 120° /90°
- 45° Chamfering







CED	Tolerance
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	D1	SD	OAL	Flute
HPDR100+-90120TN	4	8	1.5	4	50	2
	6	12	2.	6	70	
	8	16	2.5	8	80	
	10	20	3	10	90	
	12	24	4	12	110	
	16	32	5	16	120	
	20	40	6	20	120	

※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Mild Steel		Carbon Steel		Alloyed Steel	
Cutting Condition / CED	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
4	2,700	115	2,700	115	2,430	90
6	2,100	115	2,100	115	1,900	95
8	1,600	105	1,600	105	1,440	95
10	1,300	110	1,300	110	1,170	90
12	1,130	110	1,130	110	1,010	88
16	800	105	800	105	720	85
20	650	95	650	95	600	76

Work Material

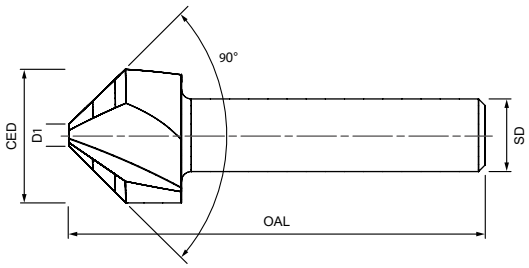
P		K
G1	G2	G5
●	○	○

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

HCF100+-40903TN

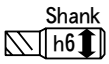
- HSS | Chamfer Mill - 3-Flute / V 90°
- 45° Chamfering







CED	Tolerance
6.3~8.3	0~-0.02
10.4~16.5	0~-0.025
20.5~25	0~-0.03



(unit : mm)

Code No.	CED	D1	SD	OAL	Flute
HCF100+-40903TN	6.3	1.5	5	45	3
	8.3	2	6	50	
	10.4	2.5	6	50	
	14.4	2.8	8	56	
	16.5	3.2	10	60	
	20.5	3.5	10	63	
	25	3.8	10	67	

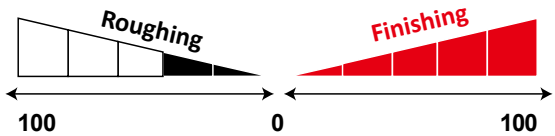
※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Mild Steel		Carbon Steel		Alloyed Steel	
Cutting Condition	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
CED	ap: 0.2D		ap: 0.2D		ap: 0.2D	
6.3	1,950	270	1,950	270	1,560	160
8.3	1,500	265	1,500	265	1,200	160
10.4	1,200	265	1,200	265	960	160
14.4	1,000	265	1,000	265	800	160
16.5	860	320	860	320	680	190
20.5	605	285	605	285	480	170
25	480	225	480	225	380	135

Work Material

P		K
G1	G2	G5
●	○	○



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

HCF100I+-40903TN

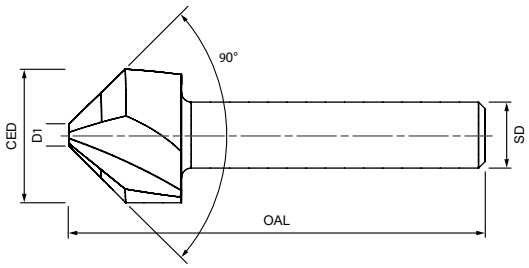
- HSS-Chamfer Mill - 3-Flute / V 90°
- Uneven Flute / 45° Chamfering



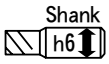


Best Seller IE Series

3 Flutes | Chamfer | 90° | TN | HSS 8%



CED	Tolerance
4.3~5.3	0~-0.018
6.3~8.3	0~-0.02
10.4~16.5	0~-0.025
20.5~30	0~-0.03
30~35	0~-0.039



(unit : mm)

Code No.	CED	D1	SD	OAL	Flute
HCF100I+-40903TN	4.3	1	4	40	3
	5.3	1	4	40	
	6.3	1.5	5	45	
	8.3	2	6	50	
	10.4	2.5	8	50	
	12.4	2.8	10	56	
	16.5	3.2	10	60	
	20.5	3.5	10	63	
	25	3.8	10	67	
	30	4.2	10	70	
	35	4.5	12	70	
	12.4	2.8	8	150	
	16.5	3.2	10	180	
	20.5	3.5	10	200	

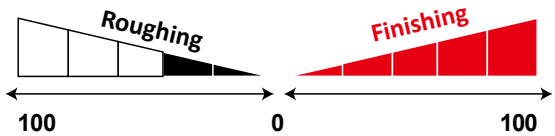
※ Customized sizes, coating types, and inch-based dimensions are available upon request.

Side Milling

Work Material	Mild Steel		Carbon Steel		Alloyed Steel	
Cutting Condition	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
CED	ap: 0.2D		ap: 0.2D		ap: 0.2D	
4.3	2,860	255	2,860	255	2,280	150
5.3	2,340	265	2,340	265	1,870	160
6.3	1,950	270	1,950	270	1,560	160
8.3	1,500	265	1,500	265	1,200	160
10.4	1,200	265	1,200	265	960	160
12.4	1,000	265	1,000	265	800	160
16.5	860	320	860	320	680	190
20.5	600	285	600	285	480	170
25	480	225	480	225	380	135
30	390	220	390	220	310	130
35	340	200	340	200	270	120

Work Material

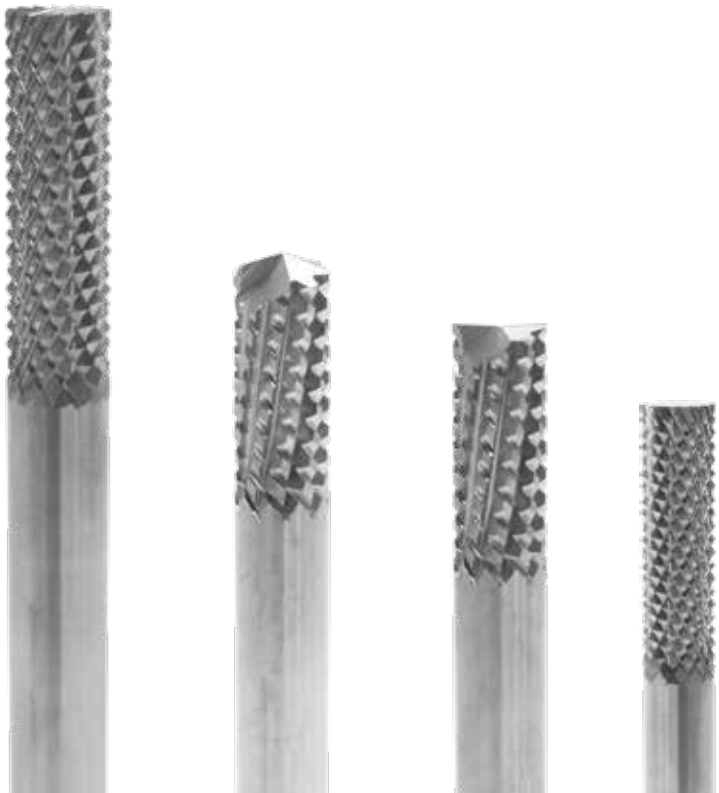
P		K
G1	G2	G5
●	○	○



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2. Please select high rigid tool holder and collet chuck during machining.
3. Please select the suitable coolant fluid.
4. For dry cutting, please use air blow for chip removal and cooling.
5. If vibrations occur during cutting process, adjust and reduce the cutting speed.



COMPOSITE FIBERGLASS



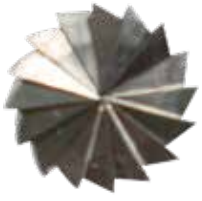
Fiber router burrs

Fiber router burrs incorporate reciprocating diamond-fluted geometry, strong negative rake angles and generous fluting to provide the best cutting action in a wide variety of woven resin bond fiberglass and composite materials

Different End Face

Drill	
	

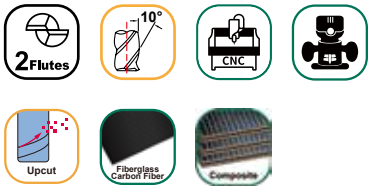
End mill 2 Flutes	
	

Cylinder End mill	
	

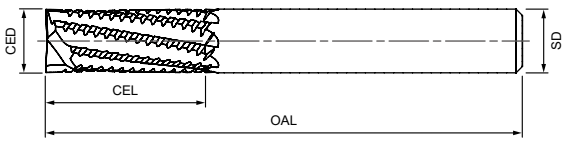
Cylinder	
	

FG10010

- 2-Flute - End Face
- Helix 10







unit:mm

CED	CEL	SD	OAL
4	16	4	50
6	25	6	75
8	25	8	75
10	25	10	75

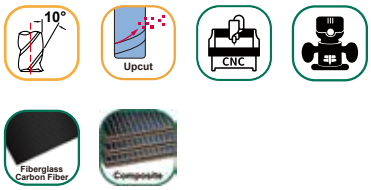
unit: inch

CED	CEL	SD	OAL
1/8	1/2	1/8	1-1/2
3/16	5/8	3/16	2
1/4	1	1/4	3
1/4	1-1/2	1/4	3-1/2
3/8	1	3/8	3

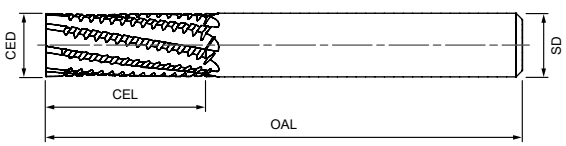
CNC Composite Router Bits

FG20010

- Square type - Blank End Face
- Helix 10







unit:mm

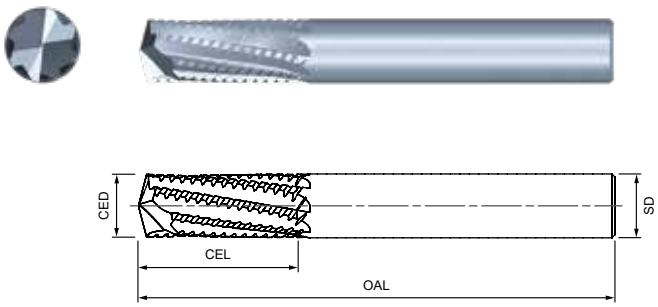
CED	CEL	SD	OAL
4	16	4	50
6	25	6	75
8	25	8	75
10	25	10	75

unit: inch

CED	CEL	SD	OAL
1/8	1/2	1/8	1-1/2
3/16	5/8	3/16	2
1/4	1	1/4	3
1/4	1-1/2	1/4	3-1/2
3/8	1	3/8	3

FG30010

- 2-Flute - Drill
- Helix 10



unit:mm

CED	CEL	SD	OAL
4	16	4	50
6	25	6	75
8	25	8	75
10	25	10	75

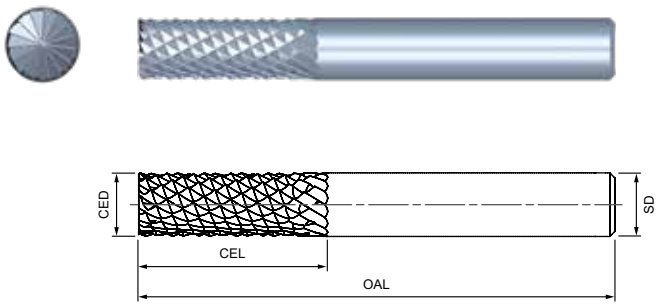
unit: inch

CED	CEL	SD	OAL
1/8	1/2	1/8	1-1/2
3/16	5/8	3/16	2
1/4	1	1/4	3
1/4	1-1/2	1/4	3-1/2
3/8	1	3/8	3

CNC Composite Router Bits

FG40030

- Square type - Burr Face
- Helix 10



unit:mm

CED	CEL	SD	OAL
4	16	4	50
6	25	6	75
8	25	8	75
10	25	10	75

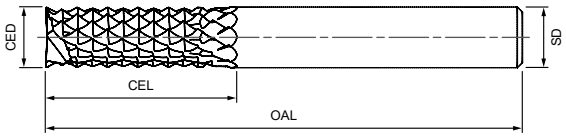
unit: inch

CED	CEL	SD	OAL
1/8	1/2	1/8	1-1/2
3/16	5/8	3/16	2
1/4	1	1/4	3
1/4	1-1/2	1/4	3-1/2
3/8	1	3/8	3

FG10030

- 2-Flute - End Face
- Helix 30





unit:mm

CED	CEL	SD	OAL
4	16	4	50
6	25	6	75
8	25	8	75
10	25	10	75

unit: inch

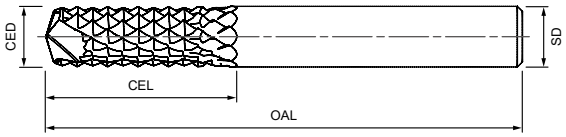
CED	CEL	SD	OAL
1/8	1/2	1/8	1-1/2
3/16	5/8	3/16	2
1/4	1	1/4	3
1/4	1-1/2	1/4	3-1/2
3/8	1	3/8	3

CNC Composite Router Bits

FG30030

- 2-Flute - Drill Point
- Helix 30





unit:mm

CED	CEL	SD	OAL
4	16	4	50
6	25	6	75
8	25	8	75
10	25	10	75

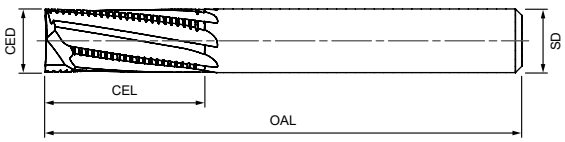
unit: inch

CED	CEL	SD	OAL
1/8	1/2	1/8	1-1/2
3/16	5/8	3/16	2
1/4	1	1/4	3
1/4	1-1/2	1/4	3-1/2
3/8	1	3/8	3

FG500-1108

- 8-Flute - End Face
- Helix 10





unit:mm

CED	CEL	SD	OAL
4	16	4	50
6	25	6	75
8	25	8	75
10	25	10	75

unit: inch

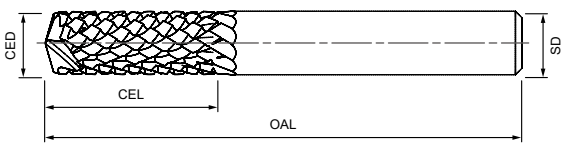
CED	CEL	SD	OAL
1/8	1/2	1/8	1-1/2
3/16	5/8	3/16	2
1/4	1	1/4	3
1/4	1-1/2	1/4	3-1/2
3/8	1	3/8	3

CNC Composite Router Bits

FG600

- 2-Flute - Drill Point
- Helix 30





unit:mm

CED	CEL	SD	OAL
4	16	4	50
6	25	6	75
8	25	8	75
10	25	10	75

unit: inch

CED	CEL	SD	OAL
1/8	1/2	1/8	1-1/2
3/16	5/8	3/16	2
1/4	1	1/4	3
1/4	1-1/2	1/4	3-1/2
3/8	1	3/8	3

Rotary Burrs Series

Appearance	Code No	Description	Size	Pg
	Type-A	Cylinder / Flat End	Ø1.5~Ø25	392
	Type-B	Cylinder / with End Cut	Ø1.5~Ø25	394
	Type-C	Ball Nose Cylinder	Ø2~Ø20	396
	Type-D	Spherical Ball	Ø2~Ø25	398
	Type-E	Oval shape	Ø3~Ø20	400
	Type-F	Ball Nose Tree shape	Ø3~Ø20	402
	Type-G	Tree shape - Flat End	Ø3~Ø20	404
	Type-H	Flame shape	Ø3~Ø20	406
	Type-L	Ball Nose Cone shape	Ø3~Ø20	408
	Type-M	Cone shape - Flat End	Ø3~Ø16	410
	Type-N	Inverted Cone Shape - Flat End	Ø3~Ø20	412
	Type-O	Cylinder Corner Radius End Cut	Ø3~Ø16	412
	Type-J	Countersink deburring - V Shape 60°	Ø3~Ø25	414
	Type-K	Countersink deburring - V Shape 90°	Ø3~Ø20	414

Rotary Burrs

Coding Principle

Series Number

A - 2 1 1 3 3 8 - C R T

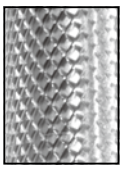
Type Size Design Coating

Optional Coating

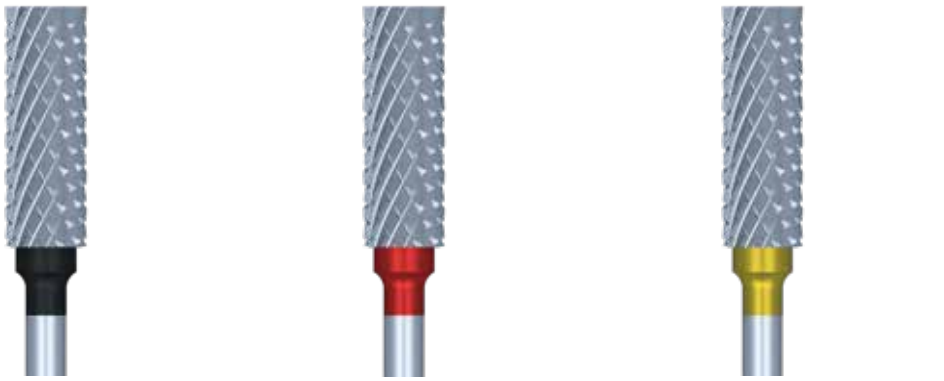
TN

TiAln-NANO

Teeth Type

Double Cut Teeth			
	CR-Rough	**CM-Medium**	**CF-Fine**
Single Cut Teeth			
	SR-Rough	**SM-Medium**	**SF-Fine**

Teeth Type's Colors

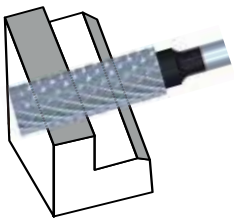


Black	Red	Yellow
Rough	Medium	Fine

Type : A

- Cylinder



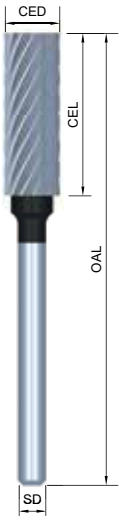


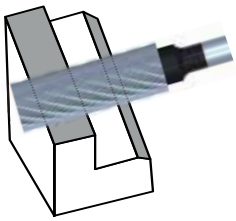


CR

1. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
A-1.56338-CR	1.5	6	3	38	V	
A-211338-CR	2	11	3	38	V	
A-2.511338-CR	2.5	11	3	38	V	
A-314338-CR	3	14	3	38	V	
A-414650-CR	4	14	6	50	V	
A-618650-CR	6	18	6	50	V	
A-820665-CR	8	20	6	65		V
A-1020665-CR	10	20	6	65		V
A-1225670-CR	12	25	6	70		V
A-1625670-CR	16	25	6	70		V
A-2025670-CR	20	25	6	70		V
A-2525670-CR	25	25	6	70		V







SR

1. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
A-314338-SR	3	14	3	38	V	
A-618650-SR	6	18	6	50	V	
A-820665-SR	8	20	6	65		V
A-1020665-SR	10	20	6	65		V
A-1225670-SR	12	25	6	70		V
A-1625670-SR	16	25	6	70		V
A-2025670-SR	20	25	6	70		V



CM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
A-1.56338-CM	1.5	6	3	38	V	
A-211338-CM	2	11	3	38	V	
A-314338-CM	3	14	3	38	V	
A-414650-CM	4	14	6	50	V	
A-618650-CM	6	18	6	50	V	
A-820665-CM	8	20	6	65		V
A-1020665-CM	10	20	6	65		V
A-1225670-CM	12	25	6	70		V
A-1625670-CM	16	25	6	70		V



CF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
A-211338-CF	2	11	3	38	V	
A-314338-CF	3	14	3	38	V	
A-414650-CF	4	14	6	50	V	
A-618650-CF	6	18	6	50	V	
A-820665-CF	8	20	6	65		V
A-1020665-CF	10	20	6	65		V
A-1225670-CF	12	25	6	70		V



SM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
A-14338-SM	1	4	3	38	V	
A-1.56338-SM	1.5	6	3	38	V	
A-211338-SM	2	11	3	38	V	
A-314338-SM	3	14	3	38	V	
A-618650-SM	6	18	6	50	V	
A-820665-SM	8	20	6	65		V
A-1020665-SM	10	20	6	65		V
A-1225670-SM	12	25	6	70		V



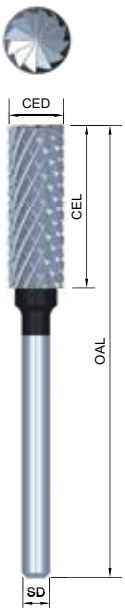
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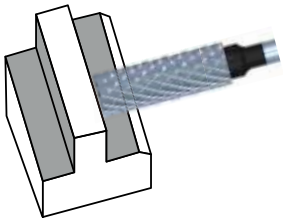
3. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
A-1.56338-SF	1.5	6	3	38	V	
A-211338-SF	2	11	3	38	V	
A-314338-SF	3	14	3	38	V	
A-414650-SF	4	14	6	50	V	
A-618650-SF	6	18	6	50	V	
A-820665-SF	8	20	6	65		V
A-1020665-SF	10	20	6	65		V
A-1225670-SF	12	25	6	70		V
A-1625670-SF	16	25	6	70		V

Type : B

◆Cylinder+End Cut





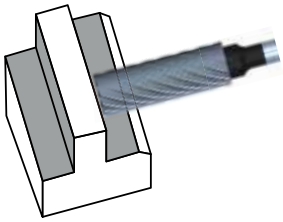


CR

1. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
B-1.56338-CR	1.5	6	3	38	V	
B-211338-CR	2	11	3	38	V	
B-2.511338-CR	2.5	11	3	38	V	
B-314338-CR	3	14	3	38	V	
B-414650-CR	4	14	6	50	V	
B-618650-CR	6	18	6	50	V	
B-820665-CR	8	20	6	65		V
B-1020670-CR	10	20	6	70		V
B-1225670-CR	12	25	6	70		V
B-1625670-CR	16	25	6	70		V
B-2025670-CR	20	25	6	70		V
B-2525670-CR	25	25	6	70		V







SR

1. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
B-314338-SR	3	14	3	38	V	
B-618650-SR	6	18	6	50	V	
B-820665-SR	8	20	6	65		V
B-1020665-SR	10	20	6	65		V
B-1225670-SR	12	25	6	70		V
B-1625670-SR	16	25	6	70		V
B-2025670-SR	20	25	6	70		V
B-2525670-SR	25	25	6	70		V



CM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
B-1.56338-CM	1.5	6	3	38	V	
B-211338-CM	2	11	3	38	V	
B-314338-CM	3	14	3	38	V	
B-414650-CM	4	14	6	50	V	
B-618650-CM	6	18	6	50	V	
B-820665-CM	8	20	6	65		V
B-1020665-CM	10	20	6	65		V
B-1225670-CM	12	25	6	70		V
B-1625670-CM	16	25	6	70		V



CF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
B-618650-CF	6	18	6	50	V	
B-820665-CF	8	20	6	65		V
B-1020665-CF	10	20	6	65		V
B-1225670-CF	12	25	6	70		V



SM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
B-314338-SM	3	14	3	38	V	
B-618650-SM	6	18	6	50	V	
B-820665-SM	8	20	6	65		V
B-1020665-SM	10	20	6	65		V
B-1225670-SM	12	25	6	70		V



SF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
B-1.56338-SF	1.5	6	3	38	V	
B-211338-SF	2	11	3	38	V	
B-314338-SF	3	14	3	38	V	
B-412650-SF	4	12	6	50	V	
B-618650-SF	6	18	6	50	V	
B-820665-SF	8	20	6	65		V
B-1020665-SF	10	20	6	65		V
B-1225670-SF	12	25	6	70		V
B-1625670-SF	16	25	6	70		V

Type : C

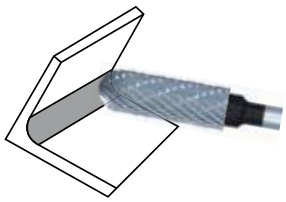
• Ball Nosed Cylinder



CR

1. (unit : mm)





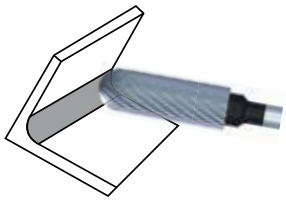
Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
C-211338-CR	2	11	3	38	V	
C-2.511338-CR	2.5	11	3	38	V	
C-314338-CR	3	14	3	38	V	
C-415660-CR	4	15/30	6	60	V	
C-618650-CR	6	18	6	50	V	
C-820665-CR	8	20	6	65		V
C-1020665-CR	10	20	6	65		V
C-1225670-CR	12	25	6	70		V
C-1625670-CR	16	25	6	70		V
C-2025670-CR	20	25	6	70		V



SR

1. (unit : mm)





Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
C-211338-SR	2	11	3	38	V	
C-314338-SR	3	14	3	38	V	
C-618650-SR	6	18	6	50	V	
C-820665-SR	8	20	6	65		V
C-1020665-SR	10	20	6	65		V
C-1225670-SR	12	25	6	70		V
C-1625670-SR	16	25	6	70		V
C-2025670-SR	20	25	6	70		V



CM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
C-211338-CM	2	11	3	38	V	
C-314338-CM	3	14	3	38	V	
C-618650-CM	6	18	6	50	V	
C-820665-CM	8	20	6	65		V
C-1020665-CM	10	20	6	65		V
C-1225670-CM	12	25	6	70		V
C-1625670-CM	16	25	6	70		V



CF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
C-211338-CF	2	11	3	38	V	
C-314338-CF	3	14	3	38	V	
C-618650-CF	6	18	6	50	V	
C-820665-CF	8	20	6	65		V
C-1020665-CF	10	20	6	65		V
C-1225670-CF	12	25	6	70		V



SM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
C-14338-SM	1	4	3	38	V	
C-1.56338-SM	1.5	6	3	38	V	
C-211338-SM	2	11	3	38	V	
C-2.511338-SM	2.5	11	3	38	V	
C-314338-SM	3	14	3	38	V	
C-618650-SM	6	18	6	50	V	
C-820665-SM	8	20	6	65		V
C-1020665-SM	10	20	6	65		V
C-1225670-SM	12	25	6	70		V



SF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
C-211338-SF	2	11	3	38	V	
C-314338-SF	3	14	3	38	V	
C-416650-SF	4	16	6	50	V	
C-618650-SF	6	18	6	50	V	
C-820665-SF	8	20	6	65		V
C-1020665-SF	10	20	6	65		V
C-1225670-SF	12	25	6	70		V
C-1625670-SF	16	25	6	70		V

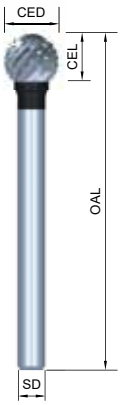
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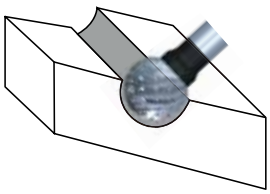
• Ball



CR

1. (unit : mm)



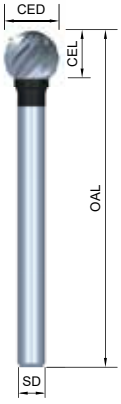


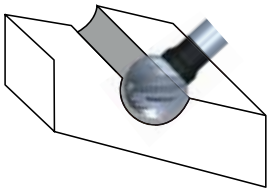
Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
D-21.8338-CR	2	1.8	3	38	V	
D-2.52.3338-CR	2.5	2.3	3	38	V	
D-32.5338-CR	3	2.5	3	38	V	
D-43.4650-CR	4	3.4	6	50	V	
D-64.7650-CR	6	4.7	6	50	V	
D-86665-CR	8	6	6	65		V
D-108665-CR	10	8	6	65		V
D-1211670-CR	12	11	6	70		V
D-1614670-CR	16	14	6	70		V
D-2016.5670-CR	20	16.5	6	70		V
D-2522670-CR	25	22	6	70		V



SR

1. (unit : mm)





Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
D-21.8338-SR	2	1.8	3	38	V	
D-32.5338-SR	3	2.5	3	38	V	
D-43.4650-SR	4	3.4	6	50	V	
D-64.7650-SR	6	4.7	6	50	V	
D-86665-SR	8	6	6	65		V
D-108665-SR	10	8	6	65		V
D-1211670-SR	12	11	6	70		V
D-1614670-SR	16	14	6	70		V
D-2016.5670-SR	20	16.5	6	70		V
D-2522670-SR	25	22	6	70		V



CM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
D-21.8338-CM	2	1.8	3	38	V	
D-32.5338-CM	3	2.5	3	38	V	
D-43.4650-CM	4	3.4	6	50	V	
D-64.7650-CM	6	4.7	6	50	V	
D-86665-CM	8	6	6	65		V
D-108665-CM	10	8	6	65		V
D-1211670-CM	12	11	6	70		V
D-1614670-CM	16	14	6	70		V



CF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
D-21.8338-CF	2	1.8	3	38	V	
D-32.5338-CF	3	2.5	3	38	V	
D-43.4650-CF	4	3.4	6	50	V	
D-64.7650-CF	6	4.7	6	50	V	
D-86665-CF	8	6	6	65		V
D-108665-CF	10	8	6	65		V
D-1211670-CF	12	11	6	70		V



SM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
D-11338-SM	1	1	3	38	V	
D-1.51338-SM	1.5	1	3	38	V	
D-22338-SM	2	2	3	38	V	
D-32.5338-SM	3	2.5	3	38	V	
D-43.4650-SM	4	3.4	6	50	V	
D-54650-SM	5	4	6	50	V	
D-64.7650-SM	6	4.7	6	50	V	
D-86665-SM	8	6	6	65		V
D-108665-SM	10	8	6	65		V
D-1211670-SM	12	11	6	70		V



SF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
D-21.8338-SF	2	1.8	3	38	V	
D-32.5338-SF	3	2.5	3	38	V	
D-43.4650-SF	4	3.4	6	50	V	
D-64.7650-SF	6	4.7	6	50	V	
D-86665-SF	8	6	6	65		V
D-108665-SF	10	8	6	65		V
D-1211670-SF	12	11	6	70		V
D-1614670-SF	16	14	6	70		V

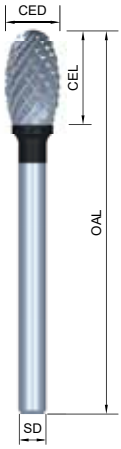
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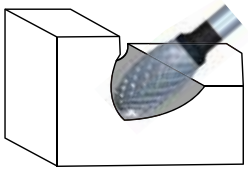
- Oval



CR

1. (unit : mm)



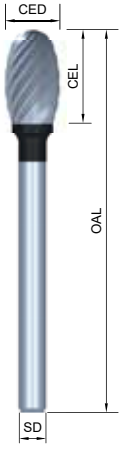


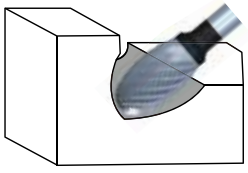
Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
E-36338-CR	3	6	3	38	V	
E-610650-CR	6	10	6	50	V	
E-815665-CR	8	15	6	65		V
E-1016665-CR	10	16	6	65		V
E-1222670-CR	12	22	6	70		V
E-1625670-CR	16	25	6	70		V
E-2025670-CR	20	25	6	70		V



SR

1. (unit : mm)





Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
E-36338-SR	3	6	3	38	V	
E-610650-SR	6	10	6	50	V	
E-815665-SR	8	15	6	65		V
E-1016665-SR	10	16	6	65		V
E-1222670-SR	12	22	6	70		V
E-1625670-SR	16	25	6	70		V
E-2025670-SR	20	25	6	70		V



CM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
E-36338-CM	3	6	3	38	V	
E-610650-CM	6	10	6	50	V	
E-815665-CM	8	15	6	65		V
E-1016665-CM	10	16	6	65		V
E-1222670-CM	12	22	6	70		V
E-1625670-CM	16	25	6	70		V



CF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
E-36338-CF	3	6	3	38	V	
E-610650-CF	6	10	6	50	V	
E-815665-CF	8	15	6	65		V
E-1016665-CF	10	16	6	65		V
E-1222670-CF	12	22	6	70		V
E-1625670-CF	16	25	6	70		V



SM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
E-1.54338-SM	1.5	4	3	38	V	
E-36338-SM	3	6	3	38	V	
E-610650-SM	6	10	6	38	V	
E-815665-SM	8	15	6	38		V
E-1016665-SM	10	16	6	50		V
E-1222670-SM	12	22	6	65		V



SF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
E-36338-SF	3	6	3	38	V	
E-610650-SF	6	10	6	50	V	
E-815665-SF	8	15	6	65		V
E-1016665-SF	10	16	6	65		V
E-1222670-SF	12	22	6	70		V
E-1625670-SF	16	25	6	70		V

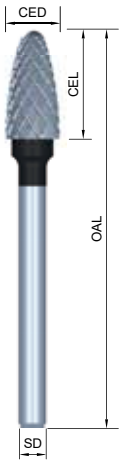
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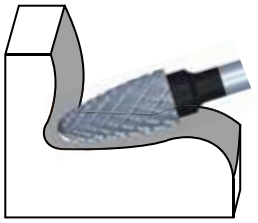
• Ball Nosed Tree



CR

1. (unit : mm)



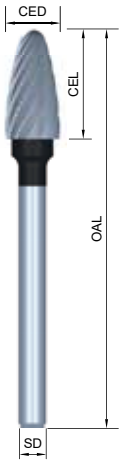


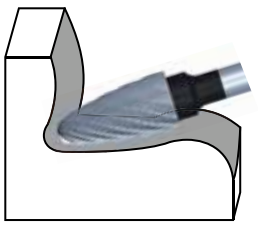
Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
F-314338-CR	3	14	3	38	V	
F-618650-CR	6	18	6	50	V	
F-820665-CR	8	20	6	65		V
F-1020665-CR	10	20	6	65		V
F-1225670-CR	12	25	6	70		V
F-1625670-CR	16	25	6	70		V
F-2025670-CR	20	25	6	70		V



SR

1. (unit : mm)





Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
F-314338-SR	3	14	3	38	V	
F-618650-SR	6	18	6	50	V	
F-820665-SR	8	20	6	65		V
F-1020665-SR	10	20	6	65		V
F-1225670-SR	12	25	6	70		V
F-1625670-SR	16	25	6	70		V
F-2025670-SR	20	25	6	70		V



CM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
F-314338-CM	3	14	3	38	V	
F-618650-CM	6	18	6	50	V	
F-820665-CM	8	20	6	65		V
F-1020665-CM	10	20	6	65		V
F-1225670-CM	12	25	6	70		V
F-1625670-CM	16	25	6	70		V



CF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
F-314338-CF	3	14	3	38	V	
F-618650-CF	6	18	6	50	V	
F-820665-CF	8	20	6	65		V
F-1020665-CF	10	20	6	65		V
F-1225670-CF	12	25	6	70		V



SM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
F-1.54338-SM	1.5	4	3	38	V	
F-314338-SM	3	14	3	38	V	
F-618650-SM	6	18	6	50	V	
F-820665-SM	8	20	6	65		V
F-1020665-SM	10	20	6	65		V
F-1225670-SM	12	25	6	70		V



SF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
F-314338-SF	3	14	3	38	V	
F-618650-SF	6	18	6	50	V	
F-820665-SF	8	20	6	65		V
F-1020665-SF	10	20	6	65		V
F-1225670-SF	12	25	6	70		V
F-1625670-SF	16	25	6	70		V

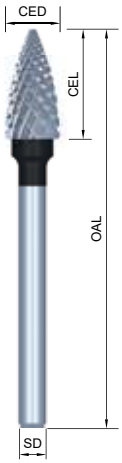
Type : G

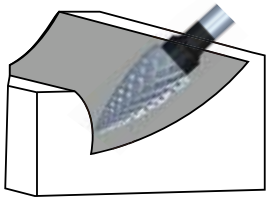
- Tree



CR

1. (unit : mm)



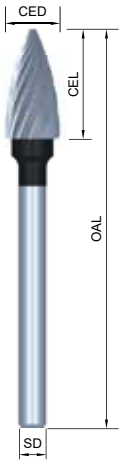


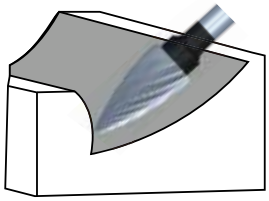
Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
G-314338-CR	3	14	3	38	V	
G-618650-CR	6	18	6	50	V	
G-820665-CR	8	20	6	65		V
G-1020665-CR	10	20	6	65		V
G-1225670-CR	12	25	6	70		V
G-1625670-CR	16	25	6	70		V
G-2025670-CR	20	25	6	70		V



SR

1. (unit : mm)





Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
G-314338-SR	3	14	3	38	V	
G-618650-SR	6	18	6	50	V	
G-820665-SR	8	20	6	65		V
G-1020665-SR	10	20	6	65		V
G-1225670-SR	12	25	6	70		V
G-1625670-SR	16	25	6	70		V



CM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
G-314338-CM	3	14	3	38	V	
G-618650-CM	6	18	6	50	V	
G-820665-CM	8	20	6	65		V
G-1020665-CM	10	20	6	65		V
G-1225670-CM	12	25	6	70		V
G-1625670-CM	16	25	6	70		V



CF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
G-314338-CF	3	14	3	38	V	
G-618650-CF	6	18	6	50	V	
G-820665-CF	8	20	6	65		V
G-1020665-CF	10	20	6	65		V
G-1225670-CF	12	25	6	70		V



SM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
G-1.54338-SM	1.5	4	3	38	V	
G-314338-SM	3	14	3	38	V	
G-618650-SM	6	18	6	50	V	
G-820665-SM	8	20	6	65		V
G-1020665-SM	10	20	6	65		V
G-1225670-SM	12	25	6	70		V



SF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
G-314338-SF	3	14	3	38	V	
G-618650-SF	6	18	6	50	V	
G-820665-SF	8	20	6	65		V
G-1020665-SF	10	20	6	65		V
G-1225670-SF	12	25	6	70		V
G-1625670-SF	16	25	6	70		V

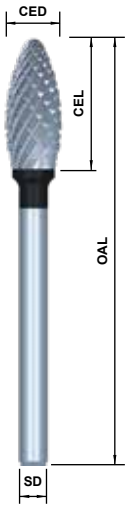
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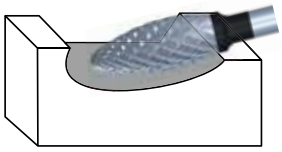
- Flame



CR

1. (unit : mm)



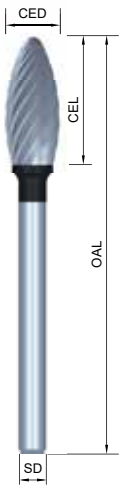


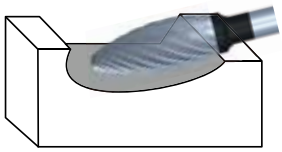
Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
H-36338-CR	3	6	3	38	V	
H-614650-CR	6	14	6	50	V	
H-820665-CR	8	20	6	65		V
H-1020665-CR	10	20	6	65		V
H-1232677-CR	12	32	6	77		V
H-1636681-CR	16	36	6	81		V
H-2041686-CR	20	41	6	86		V



SR

1. (unit : mm)





Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
H-820665-SR	8	20	6	65		V
H-1020665-SR	10	20	6	65		V
H-1232677-SR	12	32	6	77		V
H-1636681-SR	16	36	6	81		V



CM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
H-36338-CM	3	6	3	38	V	
H-614650-CM	6	14	6	50	V	
H-820665-CM	8	20	6	65		V
H-1020665-CM	10	20	6	65		V
H-1232677-CM	12	32	6	77		V
H-1636681-CM	16	36	6	81		V



CF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
H-36338-CF	3	6	3	38	V	
H-614650-CF	6	14	6	50	V	
H-820665-CF	8	20	6	65		V
H-1020665-CF	10	20	6	65		V
H-1232677-CF	12	32	6	77		V
H-1636681-CF	16	36	6	81		V



SM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
H-36338-SM	3	6	3	38	V	
H-820665-SM	8	20	6	65		V
H-1020665-SM	10	20	6	65		V
H-1232677-SM	12	32	6	77		V



SF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
H-36338-SF	3	6	3	38	V	
H-614650-SF	6	14	6	50	V	
H-820665-SF	8	20	6	65		V
H-1020665-SF	10	20	6	65		V
H-1232677-SF	12	32	6	77		V
H-1636681-SF	16	36	6	81		V

Type : L

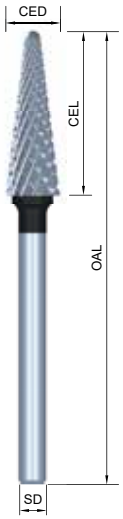
• Ball Nosed Cone

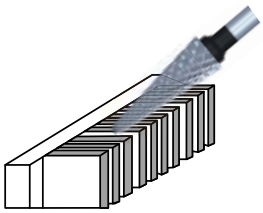


CR

1. (unit : mm)

Product Model	CED	CEL	SD	OAL	a°	Solid Carbide	Brazed
L-314338-8-CR	3	14	3	38	8°	V	
L-618650-14-CR	6	18	6	50	14°	V	
L-825670-14-CR	8	25	6	70	14°		V
L-1020665-14-CR	10	20	6	65	14°		V
L-1232677-14-CR	12	32	6	77	14°		V
L-1633678-14-CR	16	33	6	78	14°		V
L-2041686-14-CR	20	41	6	86	14°		V



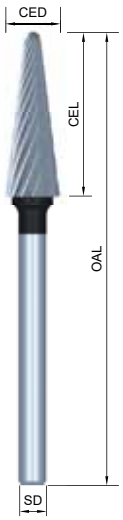


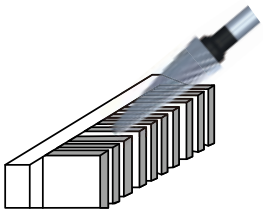


SR

1. (unit : mm)

Product Model	CED	CEL	SD	OAL	a°	Solid Carbide	Brazed
L-314338-8-SR	3	14	3	38	8°	V	
L-618650-14-SR	6	18	6	50	14°	V	
L-825670-14-SR	8	25	6	70	14°		V
L-1020665-14-SR	10	20	6	65	14°		V
L-1232677-14-SR	12	32	6	77	14°		V
L-1633678-14-SR	16	33	6	78	14°		V







CM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	a°	Solid Carbide	Brazed
L-314338-8-CM	3	14	3	38	8°	V	
L-618650-14-CM	6	18	6	50	14°	V	
L-825670-14-CM	8	25	6	70	14°		V
L-1020665-14-CM	10	20	6	65	14°		V
L-1232677-14-CM	12	32	6	77	14°		V
L-1633678-14-CM	16	33	6	78	14°		V



CF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	a°	Solid Carbide	Brazed
L-314338-8-CF	3	14	3	38	8°	V	
L-618650-14-CF	6	18	6	50	14°	V	
L-825670-14-CF	8	25	6	70	14°		V
L-1020665-14-CF	10	20	6	65	14°		V
L-1232677-14-CF	12	32	6	77	14°		V
L-1633678-14-CF	16	33	6	78	14°		V



SM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	a°	Solid Carbide	Brazed
L-314338-8-SM	3	14	3	38	8°	V	
L-618650-14-SM	6	18	6	50	14°	V	
L-825670-14-SM	8	25	6	70	14°		V
L-1020665-14-SM	10	20	6	65	14°		V
L-1232677-14-SM	12	32	6	77	14°		V



SF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	a°	Solid Carbide	Brazed
L-314338-8-SF	3	14	3	38	8°	V	
L-618650-14-SF	6	18	6	50	14°	V	
L-825670-14-SF	8	25	6	70	14°		V
L-1020665-14-SF	10	20	6	65	14°		V
L-1232677-14-SF	12	32	6	77	14°		V
L-1633678-14-SF	16	33	6	78	14°		V

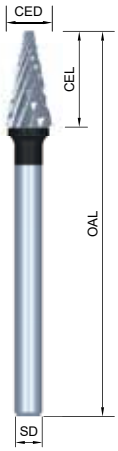
Type : M

- Cone



CR

1. (unit : mm)



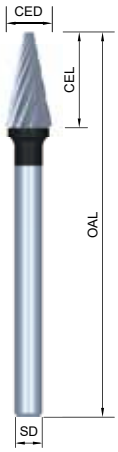


Product Model	CED	CEL	SD	OAL	a°	Solid Carbide	Brazed
M-315338-10-CR	3	15	3	38	10°	V	
M-618650-11-CR	6	18	6	50	11°	V	
M-818665-13-CR	8	18	6	65	13°		V
M-1020665-28-CR	10	20	6	65	28°		V
M-1225670-28-CR	12	25	6	70	28°		V
M-1625670-33-CR	16	25	6	70	33°		V



SR

1. (unit : mm)





Product Model	CED	CEL	SD	OAL	a°	Solid Carbide	Brazed
M-315338-10-SR	3	15	3	38	10°	V	
M-618650-14-SR	6	18	6	50	14°	V	
M-1020665-14-SR	10	20	6	65	14°		V
M-1225670-14-SR	12	25	6	70	14°		V



CM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	a°	Solid Carbide	Brazed
M-315338-10-CM	3	15	3	38	10°	V	
M-618650-14-CM	6	18	6	50	11°	V	
M-818665-13-CM	8	18	6	65	13°		V
M-1020665-28-CM	10	20	6	65	28°		V
M-1225670-28-CM	12	25	6	70	28°		V
M-1625670-33-CM	16	25	6	70	33°		V



CF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	a°	Solid Carbide	Brazed
M-315338-10-CF	3	15	3	38	10°	V	
M-618650-14-CF	6	18	6	50	14°	V	
M-818665-13-CF	8	18	6	65	13°		V
M-1020665-28-CF	10	20	6	65	28°		V
M-1225670-28-CF	12	25	6	70	28°		V
M-1625670-33-CF	16	25	6	70	33°		V



SM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	a°	Solid Carbide	Brazed
M-1.54338-14-SM	1.5	4	3	38	14°	V	
M-315338-14-SM	3	15	3	38	14°	V	
M-618650-14-SM	6	18	6	50	14°	V	
M-1020665-28-SM	10	20	6	65	28°		V
M-1225670-28-SM	12	25	6	70	28°		V



SF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	a°	Solid Carbide	Brazed
M-315338-10-SF	3	15	3	38	10°	V	
M-618650-14-SF	6	18	6	50	14°	V	
M-818665-13-SF	8	18	6	65	13°		V
M-1020665-28-SF	10	20	6	65	28°		V
M-1225670-28-SF	12	25	6	70	28°		V
M-1625670-33-SF	16	25	6	70	33°		V

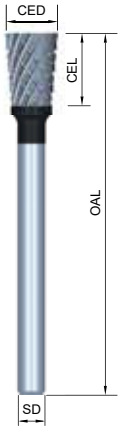
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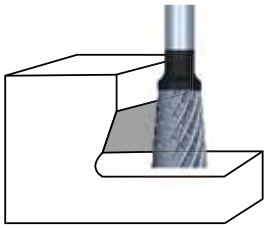
- Inverted Cone



CR

1. (unit : mm)





Product Model	CED	CEL	SD	OAL	a°	Solid Carbide	Brazed
N-35338-10-CR	3	5	3	38	10°	V	
N-68650-10-CR	6	8	6	50	10°	V	
N-1010665-10-CR	10	10	6	65	10°		V
N-1213665-16-CR	12	13	6	65	16°		V
N-1619665-16-CR	16	19	6	65	16°		V
N-2016665-28-CR	20	16	6	65	28°		V

Type : O

- Cylinder-Corner Radius



CR

1. (unit : mm)





Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
O-314338-CR	3	14	3	38	V	
O-618650-CR	6	18	6	50	V	
O-820665-CR	8	20	6	65		V
O-1020665-CR	10	20	6	65		V
O-1225670-CR	12	25	6	70		V
O-1625670-CR	16	25	6	70		V



CM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	a°	Solid Carbide	Brazed
N-68650-10-CM	6	8	6	50	10°	V	
N-1010665-13-CM	10	10	6	65	13°		V
N-1213665-30-CM	12	13	6	65	30°		V



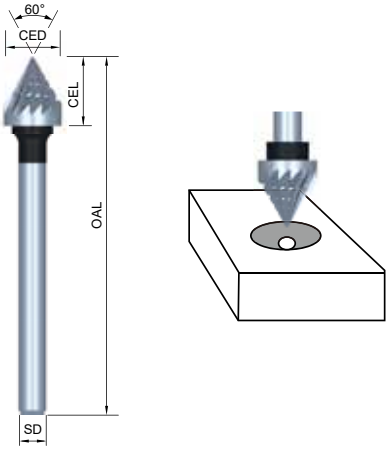
SF

3. (unit : mm)

Product Model	CED	CEL	SD	OAL	a°	Solid Carbide	Brazed
N-35338-10-SF	3	5	3	38	10°	V	
N-68650-10-SF	6	8	6	50	10°	V	
N-1010665-10-SF	10	10	6	65	10°		V
N-1213665-16-SF	12	13	6	65	16°		V

Type : J

- Countersink 60





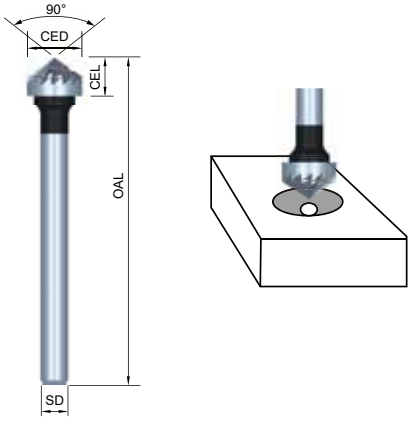
CR

1. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
J-33338-CR	3	3	3	38	V	
J-66650-CR	6	6	6	50	V	
J-1010665-CR	10	10	6	65		V
J-1213665-CR	12	13	6	65		V
J-1615665-CR	16	15	6	65		V
J-2017665-CR	20	17	6	65		V
J-2524.5670-CR	25	24.5	6	70		V

Type : K

- Countersink 90





CR

1. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
K-31.5338-CR	3	1.5	3	38	V	
K-63650-CR	6	3	6	50	V	
K-108665-CR	10	8	6	65		V
K-1211665-CR	12	11	6	65		V
K-1611665-CR	16	11	6	65		V
K-2012665-CR	20	12	6	65		V



SM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
J-33338-SM	3	3	3	38	V	
J-66650-SM	6	6	6	50	V	
J-1010665-SM	10	10	6	65		V
J-1213665-SM	12	13	6	65		V



SM

2. (unit : mm)

Product Model	CED	CEL	SD	OAL	Solid Carbide	Brazed
K-31.5338-SM	3	1.5	3	38	V	
K-63650-SM	6	3	6	50	V	
K-108665-SM	10	8	6	65		V
K-1211665-SM	12	11	6	65		V

Causes and troubleshooting for cutting problem

This table is the guideline for common problems and troubleshooting. In some cases, multiple factors overlap and this is not necessarily the only countermeasure.

Problem	Possible Causes	Solution
Edge Chipping	Cutting speed too fast	Reduce cutting feed per tooth
	Too fast on first entering cut	Reduce initial cut feed rate
	Depth of cut too much	Reduce the speed of feed rate
	Cutting speed too fast	Reduce the spindle speed
	Spindle speed too slow	Increase the spindle speed
	Insufficient mechanical, chuck rigidity	Reduce spindle speed & feed rate, reduce cut per-tooth, use tool with less number flute
	Too much run-out	Check and tighten the tool holder, use shrink fit holder
	Insufficient of machine power	Reduce spindle speed & feed rate, reduce cut per-tooth, use tool with less number flute
	Workpiece fixture rigidity insufficient	Reduce spindle speed & feed rate, reduce cut per-tooth, use tool with less number flute, change direction to upcut.
	Tool overhang	Reduce spindle & feed rate, reduce the cut per-tooth, use shrink fit holder.
Breakage	Feed rate too fast	Adjust and slow down speed
	High amount of chip evacuation	Reduce the feed amount per-tooth
	Chip packing	Reduce speed and feed, increasing cutting fluid or pressure air
	Tooling worn-out	Regularly check tools of wear or re-sharpening in earlier stage
Short tool life	Too much friction on cutting	Re-sharpened in earlier stage
	Tough workpiece material	Select higher grade of tool material
	Cutting rake angle too sharp	Select tool with lower rake angle or negative angle
Burr	Cutting speed too slow	Increase the spindle speed
	Feed rate too fast	Reduce the feeding amount per-tooth
	Too much of depth of cut	Decrease the depth of cut. Separate the cutting processes in roughing and finishing.
	Tool worn-out	Change a new tool or re-sharpening in earlier stage.
	Tool rake angle too small	Use a tool with bigger rake angle
	Cutting direction	Change it to down-cut.
Easy to wear out	Workpiece material too hard	Select higher grade of tool material and coating type
	Chip jamming	Reduce cutting speed or clean chip with cutting fluid or air gun
	Cutting edge too sharp	Select tool with lower rake angle or negative angle

Problem	Possible Causes	Solution
Chattering, noise	Cutting speed too fast	Reduce the spindle speed
	Resonance, vibration	Adjust feed rate to the area that has no resonance.
	Mechanical, chuck rigidity Not enough	Reduce the cutting amount Ae or change tool with less number of flutes
	Insufficient of tool rigidity	Change it to solid carbide tool. Increase the diameter of the tool. Use a short flute length tool.Reduce the overhang length.
	High number of tool flute	Use tool with less number of flutes
	Too long overhang	Increase the tool diameter.Use shrink fit holder. Decrease the spindle speed and depth of cut.
	Too much of cutting resistance	Decrease the depth of cut. Change it to roughing end mill. Use a tool with less flutes.

Formulas for Cutting

Cutting Speed $Vc = \frac{\pi \times CED \times n}{1000}$

Spindle Speed $n = Vc \div \pi \div CED \times 1{,}000$

Feed $Vf = n \times fz \times Z$

Feed per Tooth $Fz = \frac{Vf}{n \times Z}$

Vc = Cutting Speed (m/min)

π = 3.14

CED = Cutting Diameter (mm)

n = Spindle Speed (rpm.)

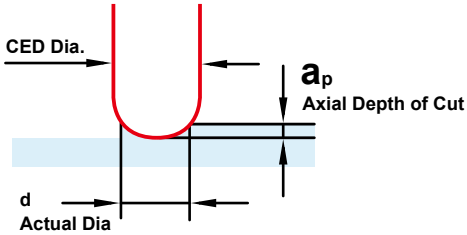
Vf = Feed (mm/min)

fz = Feed per Tooth (mm/tooth)

Z = Number of Flute

Calculation of actual dia. for Ball Nose

$$d = 2\sqrt{a_p\,(CED - a_p)}$$



Provide services other than End Mills



ASR Shrink Chuck Type



ASR Shrink Chuck
Collant Type



ASR Shrink Chuck
Curved Type



ASR Shrink Chuck
Straight Shank Type



SLA End Mill Holder



ER Spring Collet Chuck



QSK Zero Adjustable
Precision Holder



ER Spring Collet



SK High Speed Collet/
Collet Set/Extractor



ER Wrench



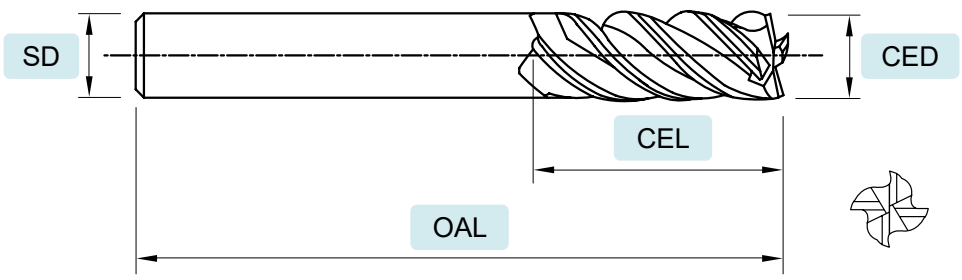
ER Clamping Nut



ASK Nut / Coolant Type

Customization Tools

Dimensions



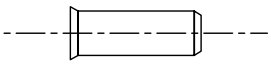
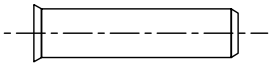
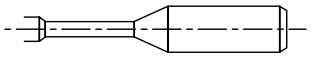
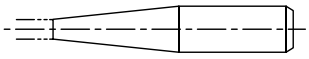
CED : _____

SD : _____

CEL : _____

OAL : _____

Shank Type

Standard	Long Shank	Long Neck	Tapered Neck
			

Tool Type

 Square Type

 Ball Nose Type

 Comer Radius

Material Coating

○ TH ○ TA ○ ____

○ TE ○ TN

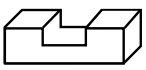
Application

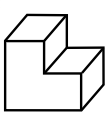
workpiece material

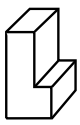
Hardness

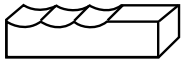
Require quantity

Operation


Slotting


Roughing


Finishing


Tracing

Dapth of cut: _____

Width of cut: _____









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Made in TAIWAN

SYSTEM CERTIFICATION ISO 9001:2008 SGS