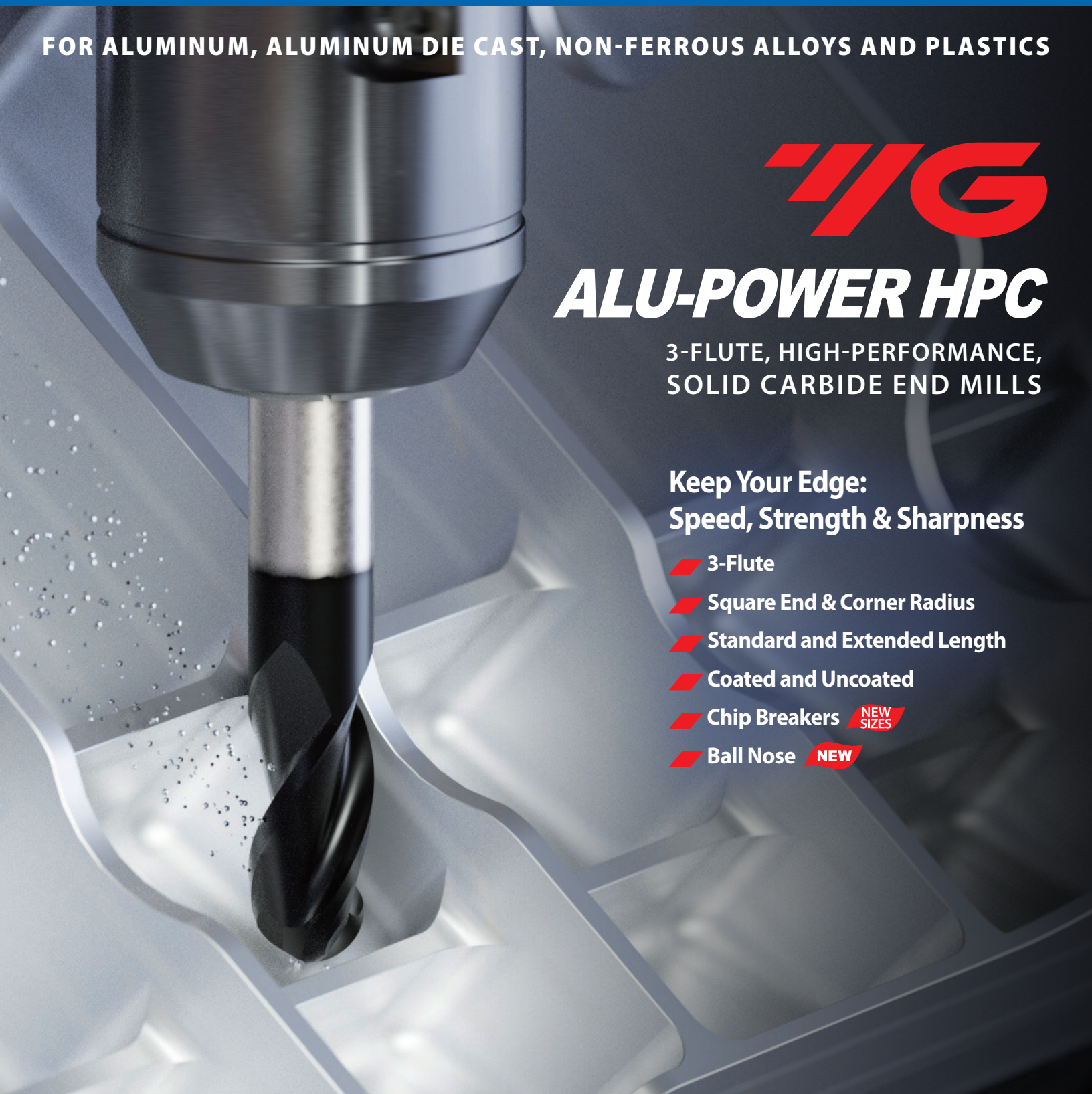
YU-HPC26 **AMERICAS**

BEST VALUE IN THE WORLD OF CUTTING TOOLS

FOR ALUMINUM, ALUMINUM DIE CAST, NON-FERROUS ALLOYS AND PLASTICS



YG

ALU-POWER HPC

3-FLUTE, HIGH-PERFORMANCE, SOLID CARBIDE END MILLS

Keep Your Edge: Speed, Strength & Sharpness

- 3-Flute
- Square End & Corner Radius
- Standard and Extended Length
- Coated and Uncoated
- Chip Breakers NEW SIZES
- Ball Nose NEW

ALU-POWER HPC

Built to Handle High-Speed Cutting Without Buildup.

- Excels in Ultra High-Speed, High HP Applications Up to 35,000 RPM
- Rigid Design for Excellent Ramping
- Reduced Vibration in Heavy Cutting

While other 3-flute End mills can muster up the speed for rough cutting aluminum, few can make it through without melting down the aluminum that surrounds the work itself. That's where the ALU-POWER HPC has a distinct advantage – speed, strength and sharpness.

Why ALU-POWER HPC Keeps Its Edge Under Tough Conditions

ALU-POWER HPC's highly polished 3-flute design provides more balanced cutting performance – without excessive heat buildup. In fact, while other End mills can gum up at surface speeds of 3,000 or less, ALU-POWER HPC keeps its cool by dissipating heat and providing outstanding chip evacuation. Adding it to its ultra-micrograin carbide design, the results are:

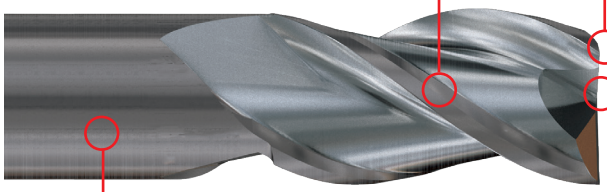
- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life

ALU-POWER HPC
3-FLUTE END MILLS

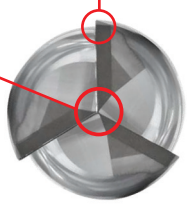
The Anatomy of Efficiency

Specialized Design of Corner Gash
- Unique flute design and superior corner protection enhance both tool life and protection against catastrophic failure in high feed applications
- Polished flutes for excellent chip flow

Cylindrical Land
- Increased performance in a variety of cutting conditions
- Helps reduce vibration and chatter



Available in a Wide Variety of Sizes and Corner Radii



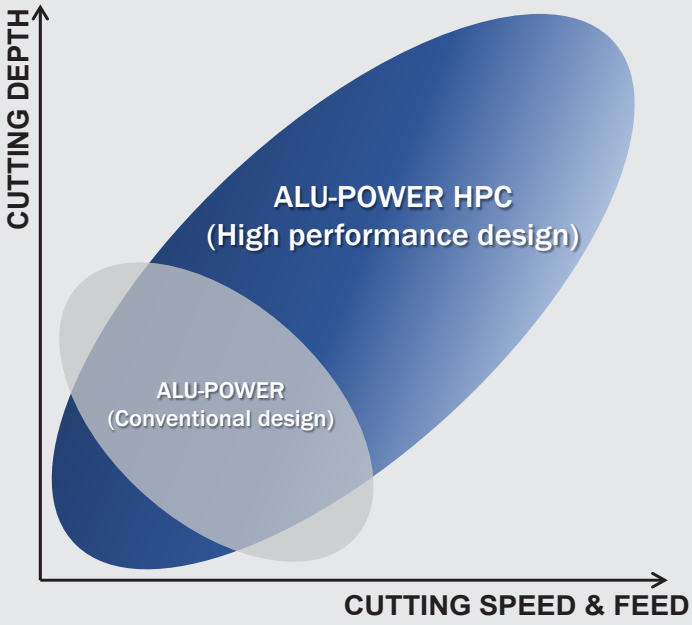
Ideal Symmetrical Shape
- 3-flute design "to the center" (all 3 flutes come to center)
- Designed with high spindle speeds in mind
- Highly effective in vertical ramping up to 20 degrees and step-over plunging applications

DLC Diamond-Like Carbon
- Excels in hard aluminum and high speeds
- Provides edge strength and unsurpassed tool life

Engineered Flute Design
- Effective chip evacuation at high feed rates with lower cutting forces than competitive products

What do you get when you add 3-flute to the center, polished ultra-micrograin carbide, extra-large chip gullets and a razor-sharp cylindrical land design? In technical terms, it's called the ALU-POWER HPC. In a machinist's term, it's called an extremely sharp, highly durable milling monster that won't back down, cut after cut.

Compared to conventional aluminum-specific End mills, the ALU-POWER HPC provides more versatile performance. Its high-performance design allows you to cut deeper and run at both faster and slower cutting speeds and feeds.



From Side Cuts to Rough Cuts to Aggressive Ramping, No One Withstands Extreme Radial Forces Better-or Longer.

Rough Cutting
Ultra-micrograin carbide supplies the rigidity to keep the chips flying. Highly polished 3-flute design ensures they'll keep flying – cut after cut.

Ramping
In steep, aggressive ramping conditions, the ALU-POWER HPC holds its own to resist the torsional stress from extreme helical output.

Side cutting
No one offers a cooler-running super high-speed End mill. While others melt down the materials they're cutting, ALU-POWER HPC keeps machining cool in aluminum and soft alloys, to boot.

The Benefits of Balanced Cutting

When you lock an ALU-POWER HPC into your milling machine, you've unleashed the fastest-running, lowest-heat-producing End mill in the business. And that means you've got the speed and sharpness to take on not only the tough materials but also even more fragile mixed alloy castings with ease. Discover the ALU-POWER HPC and start pushing your productivity higher.

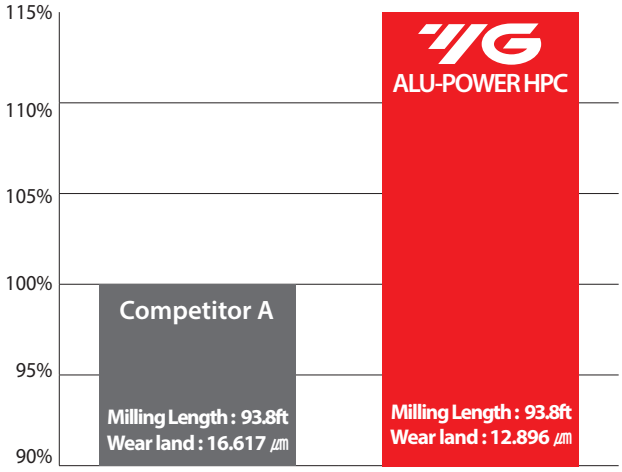
Another Advantage of YG-1's Perfect Geometry and Superior Coating

Whether you're running parts in today's most advanced 5-axis machining centers on the market today, or in machines built decades ago, ALU-POWER HPC makes the most of your manufacturing assets. That's because its unique 3-flute, 37-degree helix design can operate at lower speeds with higher efficiency.

CASE STUDY

TEST I Slotting Application

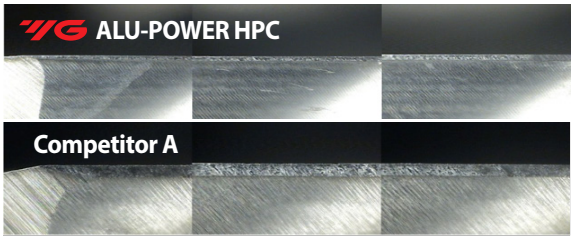
Ø1/2(R.090) 3-Flute Corner radius



Cutting Condition (Slotting)

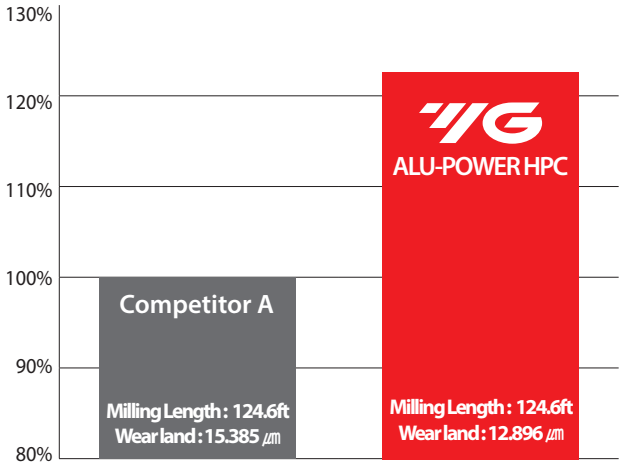
Tool	Ø1/2(R.090) x Ø1/2 x 1-1/4 x 3-1/2
Work Material	AL7075
RPM (rev./min.)	12,224
IPM (Feed, in/min.)	220
Cutting Depth (in)	.5 (Axial)
Coolant	Wet Cut (9% emulsion)
Overhang (in)	1.8898
Milling Method	Slotting
Machine	Machining Center

Total Milling Length : 125ft



TEST II Pocketing Application

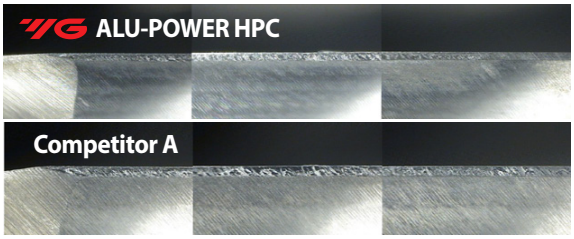
Ø1/2(R.090) 3-Flute Corner radius

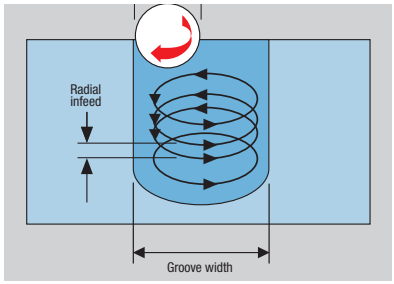


Cutting Condition (Pocketing)

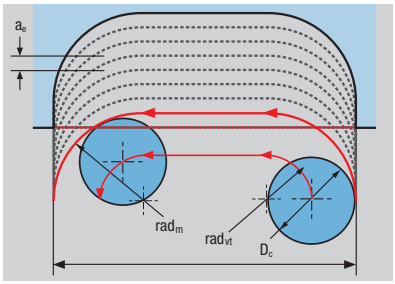
Tool	Ø1/2(R.090) x Ø1/2 x 1-1/4 x 3-1/2
Work Material	AL7075
RPM (rev./min.)	12,224
IPM (Feed, in/min.)	220
Cutting Depth (in)	.5(Axial) / .4803 (Radial)
Coolant	Wet Cut (9% emulsion)
Overhang (in)	1.8898
Milling Method	Pocketing
Machine	Machining Center

Total Milling Length : 125ft

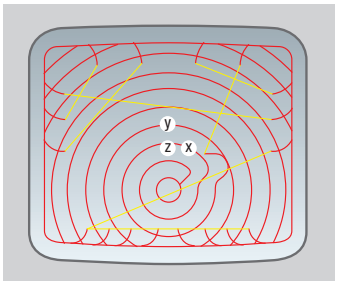




In trochoidal milling applications, the cutter follows a spiral path by moving radially as it rotates providing faster machining times, lower tooling costs and reduced loads on machine components.



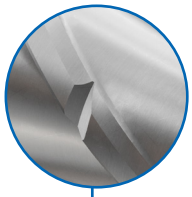
Peel milling applications benefit from ALU-POWER HPC's super sharp high-speed milling ability.



Outstanding chip evacuation through deep gullet design coupled with high speed milling leaves **a well-defined clean cutter path.**

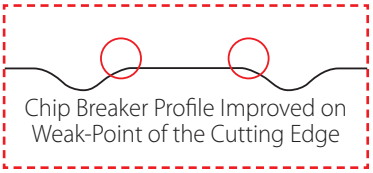
ALU-POWER HPC
CHIP BREAKER
3-FLUTE END MILLS

- Unique Geometry provides the Balance cutting with less vibration during the High Speed Machining.
- Provides long tool life and high productivity on aluminum by Chip breaker releasing stresses on the tool and prevents acceleration rate of wear on the cutting edge.
- Chip Breaker Improves chip evacuation by shortening the chip length during the High Speed Machining.



Chip Breakers

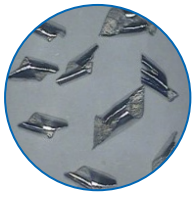
▶ Through Special Chip Breaker Design, the length of the chip is formed short to improve chip evacuation performance.



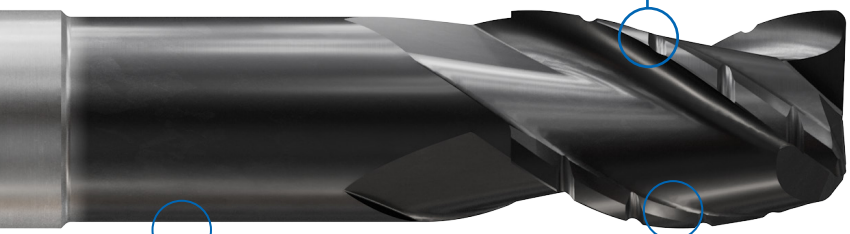
Optimized Chip Breaker Profile Design

▶ Optimized Chip Breaker Profile design boasts the best performance in Aluminum high-speed processing.

General End mill Chip Geometry



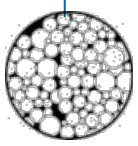
Chip Breaker End mill Chip Geometry



Unique Geometries

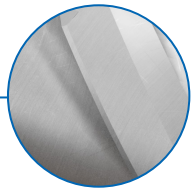
▶ Applied suitable Flute Design for Aluminum high speed machining to have an effective chip evacuation effect.

▶ Excellent Corner Protect Design improves tool life.



Premium Tungsten Carbide

▶ Excellent wear resistance by using Premium Carbide material.



Cylindrical Land

▶ Improves tool performance by reducing vibration and chattering in high-speed processing.

DLC Diamond-Like Carbon

▶ Excellent in high-speed processing in the Aluminum area.

▶ Superior tool life by complementing rigidity to cutting edge.

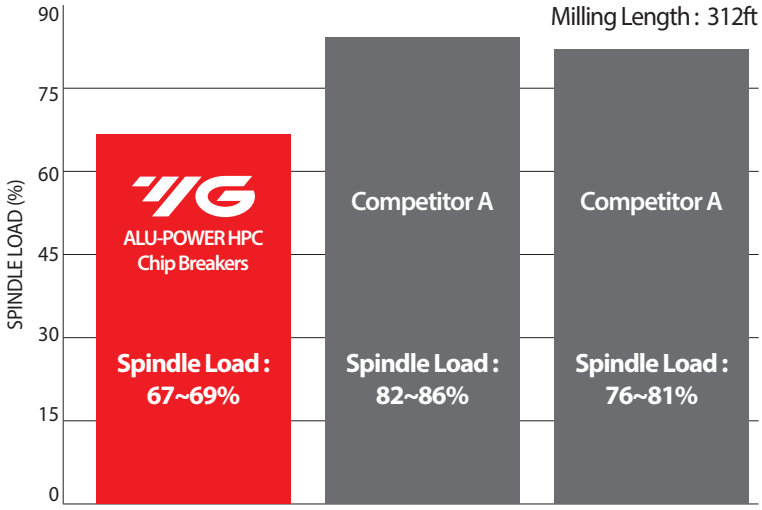
CASE STUDY

TEST Chip Breakers - Side Cutting Application

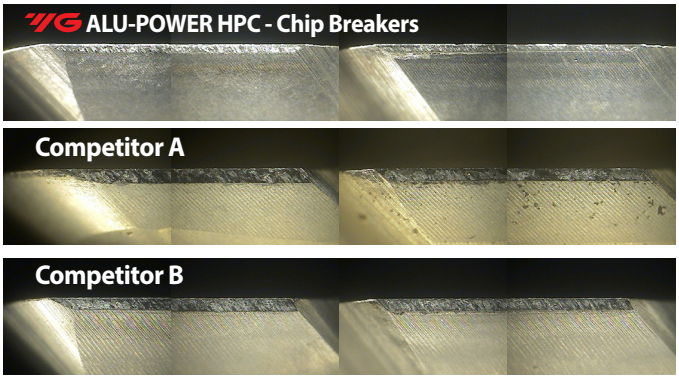
Ø1/2(R.03") 3-Flute Chip Breakers

Cutting Conditions	
Tool	Ø1/2(R.03) x Ø1/2 x 1-1/4 x 3
Work Material	Al7075
RPM (rev./min.)	16,800
IPM (Feed, in/min.)	151
Cutting Depth (in)	.750 (Axial=1.5D) .175 (Radial=0.35D)
Coolant	Wet Cut
Holder	BT40 - High Feed Milling Chuck
Milling Method	Profiling
Machine	Machining Center

Cutting Resistance



Cutting Edge (Total Milling Length : 312ft)



Surface Roughness

ALU-POWER HPC Chip Breakers
Milling Length = 312ft
(Ra : .013 μin)

Competitor A
Milling Length = 312ft
(Ra : .049 μin)

Competitor B
Milling Length = 312ft
(Ra : .026 μin)

GUIDE TO ICONS

The tool is made of micrograin carbide

No. of Flutes

Helix Angle

Tool Ends: Square / Corner Radius

Tolerance of Radius

Type of Shank

Type of Coating


Cutting Conditions

SELECTION GUIDE

INCH

SOLID CARBIDE

ALU-POWER HPC END MILLS

3-Flute, High-Performance,
For Aluminum, Aluminum Die Cast,
Non-Ferrous Alloys And Plastics

Please visit globalyg1.com/mat for material search

Recommended cutting conditions : p.32-34

◎ : Excellent ○ : Good

SERIES	JAG95	JAG97	E5G95	E5G97	JAG96	JAG98
FLUTE	3		3		3	
HELIX ANGLE	37°		37°		37°	
CUTTING EDGE SHAPE	SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS
SIZE MIN	1/8	1/8	1/8	1/8	1/8	1/8
SIZE MAX	1	1	1	1	1	1
PAGE	10-12		13-15		16-17	
	STANDARD LENGTH		STANDARD LENGTH		EXTENDED NECK	
	DLC		Uncoated		DLC	

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	JAG95	JAG97	E5G95	E5G97	JAG96	JAG98
P	1	Non-alloy steel	About 0.15% C	Annealed	125							
	2		About 0.45% C	Annealed	190	13						
	3		About 0.45% C	Quenched & Tempered	250	25						
	4		About 0.75% C	Annealed	270	28						
	5		About 0.75% C	Quenched & Tempered	300	32						
	6	Low alloy steel		Annealed	180	10						
	7			Quenched & Tempered	275	29						
	8			Quenched & Tempered	300	32						
	9			Quenched & Tempered	350	38						
	10	High alloyed steel, and tool steel		Annealed	200	15						
	11			Quenched & Tempered	325	35						
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15						
	13		Martensitic	Quenched & Tempered	240	23						
	14			Austenitic	180	10						
K	15	Grey cast iron	Pearlitic / ferritic		180	10						
	16		Pearlitic (Martensitic)		260	26						
	17	Nodular cast iron	Ferritic		160	3						
	18		Pearlitic		250	25						
	19	Malleable cast iron	Ferritic		130							
	20		Pearlitic		230	21						
N	21	Aluminum-wrought alloy	Not Curable		60		◎	◎	◎	◎	◎	◎
	22		Curable	Hardened	100		◎	◎	◎	◎	◎	◎
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75		◎	◎	◎	◎	◎	◎
	24		≤ 12% Si, Curable	Hardened	90		◎	◎	◎	◎	◎	◎
	25		> 12% Si, Not Curable		130		○	○	○	○	○	○
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110		○	○	○	○	○	○
	27		CuZn, CuSnZn (Brass)		90		○	○	○	○	○	○
	28		CuSn, lead-free copper and electrolytic copper		100		○	○	○	○	○	○
	29.1	Non Metallic Materials	Duroplastic				○	○	○	○	○	○
	29.2		GRAPHITE									
	29.3		CFRP, GFRP									
	30		Rubber, Wood, etc.									
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15						
	32			Cured	280	30						
	33		Ni or Co Based	Annealed	250	25						
	34			Cured	350	38						
	35			Cast	320	34						
	36	Titanium Alloys	Pure Titanium		400 Rm							
	37		Alpha + Beta Alloys	Hardened	1050 Rm							
H	38	Hardened steel		Hardened	550	55						
	39			Hardened	630	60						
	40	Chilled Cast Iron		Cast	400	42						
	41	Hardened Cast Iron		Hardened	550	55						

E5G96	E5G98	JAI58	E5I58	JAI59	E5I59	JAK92	E5K92	JAI38	E5I36	E5I38	JAI39	E5I37	E5I39
3		3		3		3		3	3		3	3	
37°		37°		37°		37°		37°	37°		37°	37°	
SQUARE	CORNER RADIUS	BALL NOSE		BALL NOSE		BALL NOSE		CORNER RADIUS	SQUARE	CORNER RADIUS	CORNER RADIUS	SQUARE	CORNER RADIUS
1/8	1/8	1/8	1/8	1/8	1/8	3/16	3/16	1/8	1/2	1/8	1/8	1/2	1/8
1	1	1	1	1	1	1/2	1/2	1	3/4	1	1		1
18-19		20-21		22-23		24		25-26	27-28		29	30-31	
EXTENDED NECK		STANDARD LENGTH		EXTENDED NECK		EXTENTED TAPER NECK		STANDARD LENGTH			EXTENDED NECK		
Uncoated		DLC	Uncoated	DLC	Uncoated	DLC	Uncoated	DLC	Uncoated		DLC	Uncoated	
								CHIP BREAKER					
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
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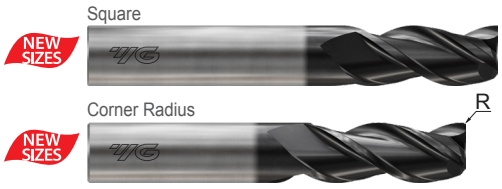
○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○

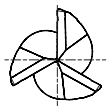
SERIES

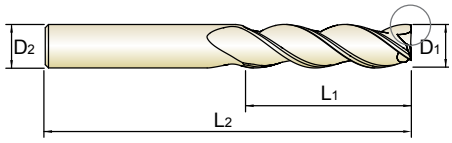
Square **JAG95**
Corner Radius **JAG97**

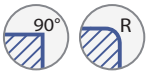
HIGH-PERFORMANCE SOLID CARBIDE END MILLS
3-FLUTE STANDARD LENGTH – COATED

- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life









Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius							
					.010	.020	.030	.060	.090	.120	.190	.250
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/8	1/8	1/4	1-1/2	JAG95008	JAG97008	JAG97899	JAG97901	-	-	-	-	-
		3/8	1-1/2	JAG95901	JAG97902	JAG97701	JAG97903	-	-	-	-	-
		1/2	2	JAG95931	JAG97702	JAG97703	JAG97704	-	-	-	-	-
		5/8	2-1/4	JAG95932	JAG97705	JAG97706	JAG97707	-	-	-	-	-
3/16	3/16	5/16	2	JAG95012	JAG97012	JAG97708	JAG97904	-	-	-	-	-
		9/16	2	JAG95902	JAG97905	JAG97709	JAG97906	-	-	-	-	-
		3/4	2-1/2	JAG95933	JAG97710	JAG97711	JAG97712	-	-	-	-	-
		1	2-1/2	JAG95934	JAG97713	JAG97714	JAG97715	-	-	-	-	-
1/4	1/4	3/8	2	JAG95016	JAG97016	JAG97716	JAG97907	JAG97908	-	-	-	-
		5/8	2-1/2	JAG95903	JAG97909	JAG97717	JAG97910	JAG97911	-	-	-	-
		7/8	3	JAG95929	JAG97892	JAG97718	JAG97893	JAG97894	-	-	-	-
		1-1/4	3	-	-	JAG97719	-	-	-	-	-	-
		1-1/4	3-1/4	JAG95904	JAG97912	-	JAG97913	JAG97914	-	-	-	-
		1-1/2	3	JAG95935	JAG97720	JAG97721	JAG97722	JAG97723	-	-	-	-
5/16	5/16	7/16	2	JAG95020	JAG97020	JAG97724	JAG97915	JAG97916	JAG97917	-	-	-
		5/8	2-1/2	JAG95905	JAG97918	JAG97725	JAG97919	JAG97920	JAG97921	-	-	-
		13/16	3	JAG95930	JAG97895	-	JAG97896	JAG97897	JAG97898	-	-	-
		1	3	JAG95936	JAG97726	JAG97727	JAG97728	JAG97729	JAG97730	-	-	-
		1-1/4	3-1/2	JAG95906	JAG97922	JAG97731	JAG97923	JAG97924	JAG97925	-	-	-

NEXT PAGE ▶

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

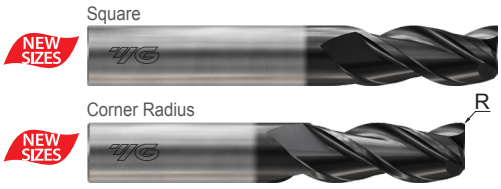
ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

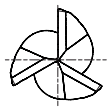
Phone: 800-765-8665 | Technical Support : 888-868-5988 | yg1usa.com

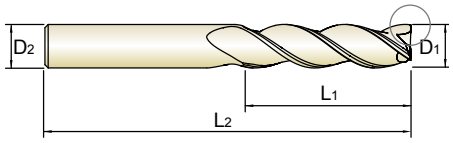
HIGH-PERFORMANCE SOLID CARBIDE END MILLS
3-FLUTE STANDARD LENGTH – COATED

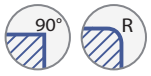
SERIES
Square **JAG95**
Corner Radius **JAG97**

- ▶ Balanced cutting with less vibration
- ▶ Ability to run at higher speeds with less heat in aluminum
- ▶ More efficient chip evacuation
- ▶ Ability to counteract extreme radial forces
- ▶ DLC Coating provides edge strength and unsurpassed tool life









Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius							
					.010	.020	.030	.060	.090	.120	.190	.250
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3/8	3/8	1/2	2	JAG95024	JAG97024	JAG97732	JAG97926	JAG97927	JAG97928	JAG97929	-	-
		1	2-1/2	JAG95907	JAG97930	JAG97733	JAG97931	JAG97932	JAG97933	JAG97934	-	-
		1-1/4	3	JAG95937	JAG97734	JAG97735	JAG97736	JAG97737	JAG97738	JAG97739	-	-
		1-1/2	3-1/2	JAG95908	JAG97935	JAG97740	JAG97936	JAG97937	JAG97938	JAG97939	-	-
		2	4	JAG95909	JAG97940	JAG97741	JAG97941	JAG97942	JAG97943	JAG97944	-	-
7/16	7/16	9/16	2-1/2	JAG95028	JAG97028	JAG97742	JAG97945	JAG97946	JAG97947	JAG97948	-	-
		1-1/4	2-3/4	JAG95910	JAG97949	JAG97743	JAG97950	JAG97951	JAG97952	JAG97953	-	-
		2	4	JAG95911	JAG97954	JAG97744	JAG97955	JAG97956	JAG97957	JAG97958	-	-
1/2	1/2	5/8	2-1/2	JAG95032	JAG97032	JAG97745	JAG97959	JAG97960	JAG97961	JAG97962	JAG97963	-
		1	3	JAG95927	JAG97879	JAG97746	JAG97880	JAG97881	JAG97882	JAG97883	JAG97884	-
		1-1/4	3	JAG95912	JAG97964	JAG97747	JAG97965	JAG97966	JAG97967	JAG97968	JAG97969	-
		1-5/8	4	JAG95913	JAG97970	JAG97748	JAG97971	JAG97972	JAG97973	JAG97974	JAG97975	-
		2	4	JAG95914	JAG97976	JAG97749	JAG97977	JAG97978	JAG97979	JAG97980	JAG97981	-
		2-1/2	5	JAG95915	JAG97982	JAG97750	JAG97983	JAG97984	JAG97985	JAG97986	JAG97987	-
		3	5	JAG95916	JAG97988	JAG97751	JAG97989	JAG97990	JAG97991	JAG97992	JAG97993	-
5/8	5/8	3/4	3	JAG95040	JAG97040	JAG97752	JAG97994	JAG97995	JAG97996	JAG97997	JAG97998	-
		1-1/4	3-1/4	JAG95938	JAG97753	JAG97754	JAG97755	JAG97756	JAG97757	JAG97758	JAG97759	-
		1-5/8	3-1/2	JAG95917	JAG97999	JAG97760	JAG97801	JAG97802	JAG97803	JAG97804	JAG97805	-
		2-1/8	4	JAG95939	JAG97761	JAG97762	JAG97763	JAG97764	JAG97765	JAG97766	JAG97767	-
		2-1/2	5	JAG95918	JAG97806	JAG97768	JAG97807	JAG97808	JAG97809	JAG97810	JAG97811	-
		3	5-1/4	JAG95919	JAG97812	JAG97769	JAG97813	JAG97814	JAG97815	JAG97816	JAG97817	-

NEXT PAGE ▶

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

HIGH-PERFORMANCE SOLID CARBIDE END MILLS

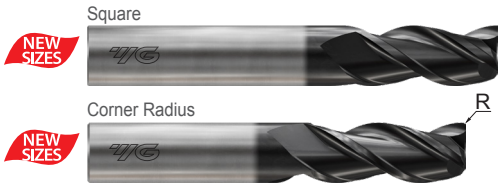
3-FLUTE STANDARD LENGTH – COATED

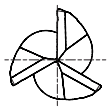
SERIES

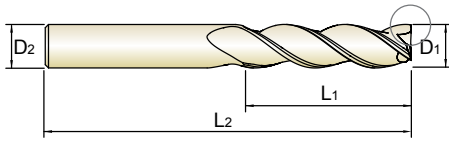
Square **JAG95**

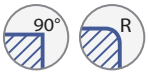
Corner Radius **JAG97**

- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life









Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius							
					.010	.020	.030	.060	.090	.120	.190	.250
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3/4	3/4	1	3	JAG95048	JAG97048	-	JAG97818	JAG97819	JAG97820	JAG97821	JAG97822	JAG97823
		1-5/8	4	JAG95920	JAG97824	-	JAG97825	JAG97826	JAG97827	JAG97828	JAG97829	JAG97830
		2-1/4	5	JAG95921	JAG97831	-	JAG97832	JAG97833	JAG97834	JAG97835	JAG97836	JAG97837
		3-1/4	6	JAG95922	JAG97838	-	JAG97839	JAG97840	JAG97841	JAG97842	JAG97843	JAG97844
		4	6-1/4	JAG95923	JAG97845	-	JAG97846	JAG97847	JAG97848	JAG97849	JAG97850	JAG97851
1	1	1-1/4	3	JAG95064	JAG97064	-	JAG97852	JAG97853	JAG97854	JAG97855	JAG97856	JAG97857
		1-1/4	4	JAG95928	JAG97885	-	JAG97886	JAG97887	JAG97888	JAG97889	JAG97890	JAG97891
		2	5	JAG95924	JAG97858	-	JAG97859	JAG97860	JAG97861	JAG97862	JAG97863	JAG97864
		3-1/4	6	JAG95925	JAG97865	-	JAG97866	JAG97867	JAG97868	JAG97869	JAG97870	JAG97871
		4	7	JAG95926	JAG97872	-	JAG97873	JAG97874	JAG97875	JAG97876	JAG97877	JAG97878

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
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3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
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HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

SERIES

Square **E5G95**
Corner Radius **E5G97**

HIGH-PERFORMANCE SOLID CARBIDE END MILLS
3-FLUTE STANDARD LENGTH – UNCOATED

- ▶ Balanced cutting with less vibration
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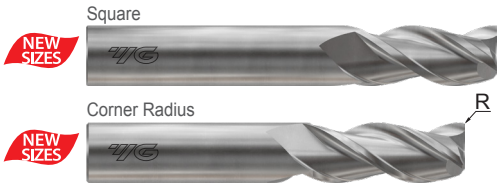

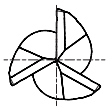

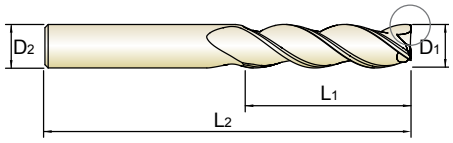

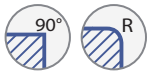

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius							
					.010	.020	.030	.060	.090	.120	.190	.250
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/8	1/8	1/4	1-1/2	E5G95008	E5G97008	E5G97899	E5G97901	-	-	-	-	-
		3/8	1-1/2	E5G95901	E5G97902	E5G97701	E5G97903	-	-	-	-	-
		1/2	2	E5G95931	E5G97702	E5G97703	E5G97704	-	-	-	-	-
		5/8	2-1/4	E5G95932	E5G97705	E5G97706	E5G97707	-	-	-	-	-
3/16	3/16	5/16	2	E5G95012	E5G97012	E5G97708	E5G97904	-	-	-	-	-
		9/16	2	E5G95902	E5G97905	E5G97709	E5G97906	-	-	-	-	-
		3/4	2-1/2	E5G95933	E5G97710	E5G97711	E5G97712	-	-	-	-	-
		1	2-1/2	E5G95934	E5G97713	E5G97714	E5G97715	-	-	-	-	-
1/4	1/4	3/8	2	E5G95016	E5G97016	E5G97716	E5G97907	E5G97908	-	-	-	-
		5/8	2-1/2	E5G95903	E5G97909	E5G97717	E5G97910	E5G97911	-	-	-	-
		7/8	3	E5G95929	E5G97892	E5G97718	E5G97893	E5G97894	-	-	-	-
		1-1/4	3	-	-	E5G97719	-	-	-	-	-	-
		1-1/4	3-1/4	E5G95904	E5G97912	-	E5G97913	E5G97914	-	-	-	-
		1-1/2	3	E5G95935	E5G97720	E5G97721	E5G97722	E5G97723	-	-	-	-
5/16	5/16	7/16	2	E5G95020	E5G97020	E5G97724	E5G97915	E5G97916	E5G97917	-	-	-
		5/8	2-1/2	E5G95905	E5G97918	E5G97725	E5G97919	E5G97920	E5G97921	-	-	-
		13/16	3	E5G95930	E5G97895	-	E5G97896	E5G97897	E5G97898	-	-	-
		1	3	E5G95936	E5G97726	E5G97727	E5G97728	E5G97729	E5G97730	-	-	-
		1-1/4	3-1/2	E5G95906	E5G97922	E5G97731	E5G97923	E5G97924	E5G97925	-	-	-

NEXT PAGE ▶

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
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HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

SERIES

Square **E5G95**
Corner Radius **E5G97**

HIGH-PERFORMANCE SOLID CARBIDE END MILLS
3-FLUTE STANDARD LENGTH – UNCOATED

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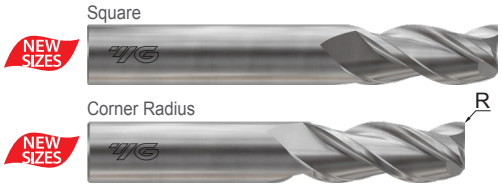

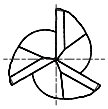

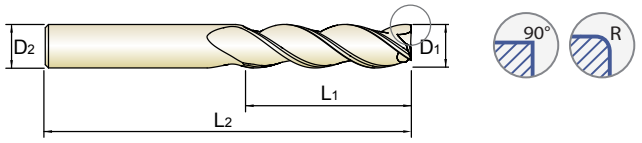

CARBIDE | 3 | 37° | PLAIN | UNCOATED | P.32

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius							
					.010	.020	.030	.060	.090	.120	.190	.250
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3/8	3/8	1/2	2	E5G95024	E5G97024	E5G97732	E5G97926	E5G97927	E5G97928	E5G97929	-	-
		1	2-1/2	E5G95907	E5G97930	E5G97733	E5G97931	E5G97932	E5G97933	E5G97934	-	-
		1-1/4	3	E5G95937	E5G97734	E5G97735	E5G97736	E5G97737	E5G97738	E5G97739	-	-
		1-1/2	3-1/2	E5G95908	E5G97935	E5G97740	E5G97936	E5G97937	E5G97938	E5G97939	-	-
		2	4	E5G95909	E5G97940	E5G97741	E5G97941	E5G97942	E5G97943	E5G97944	-	-
7/16	7/16	9/16	2-1/2	E5G95028	E5G97028	E5G97742	E5G97945	E5G97946	E5G97947	E5G97948	-	-
		1-1/4	2-3/4	E5G95910	E5G97949	E5G97743	E5G97950	E5G97951	E5G97952	E5G97953	-	-
		2	4	E5G95911	E5G97954	E5G97744	E5G97955	E5G97956	E5G97957	E5G97958	-	-
1/2	1/2	5/8	2-1/2	E5G95032	E5G97032	E5G97745	E5G97959	E5G97960	E5G97961	E5G97962	E5G97963	-
		1	3	E5G95927	E5G97879	E5G97746	E5G97880	E5G97881	E5G97882	E5G97883	E5G97884	-
		1-1/4	3	E5G95912	E5G97964	E5G97747	E5G97965	E5G97966	E5G97967	E5G97968	E5G97969	-
		1-5/8	4	E5G95913	E5G97970	E5G97748	E5G97971	E5G97972	E5G97973	E5G97974	E5G97975	-
		2	4	E5G95914	E5G97976	E5G97749	E5G97977	E5G97978	E5G97979	E5G97980	E5G97981	-
		2-1/2	5	E5G95915	E5G97982	E5G97750	E5G97983	E5G97984	E5G97985	E5G97986	E5G97987	-
		3	5	E5G95916	E5G97988	E5G97751	E5G97989	E5G97990	E5G97991	E5G97992	E5G97993	-
5/8	5/8	3/4	3	E5G95040	E5G97040	E5G97752	E5G97994	E5G97995	E5G97996	E5G97997	E5G97998	-
		1-1/4	3-1/4	E5G95938	E5G97753	E5G97754	E5G97755	E5G97756	E5G97757	E5G97758	E5G97759	-
		1-5/8	3-1/2	E5G95917	E5G97999	E5G97760	E5G97801	E5G97802	E5G97803	E5G97804	E5G97805	-
		2-1/8	4	E5G95939	E5G97761	E5G97762	E5G97763	E5G97764	E5G97765	E5G97766	E5G97767	-
		2-1/2	5	E5G95918	E5G97806	E5G97768	E5G97807	E5G97808	E5G97809	E5G97810	E5G97811	-
		3	5-1/4	E5G95919	E5G97812	E5G97769	E5G97813	E5G97814	E5G97815	E5G97816	E5G97817	-

NEXT PAGE ▶

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

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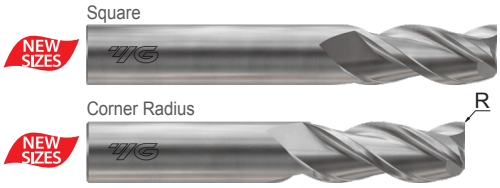
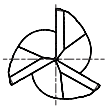
SERIES

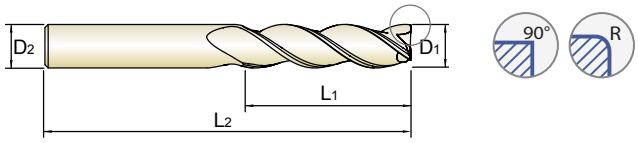
Square **E5G95**
Corner Radius **E5G97**

HIGH-PERFORMANCE SOLID CARBIDE END MILLS
3-FLUTE STANDARD LENGTH – UNCOATED

- ▶ Balanced cutting with less vibration
- ▶ Ability to run at higher speeds with less heat in aluminum
- ▶ More efficient chip evacuation
- ▶ Ability to counteract extreme radial forces







CARBIDE | 3 | 37° | PLAIN | UNCOATED | P.32

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius							
					.010	.020	.030	.060	.090	.120	.190	.250
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3/4	3/4	1	3	E5G95048	E5G97048	-	E5G97818	E5G97819	E5G97820	E5G97821	E5G97822	E5G97823
		1-5/8	4	E5G95920	E5G97824	-	E5G97825	E5G97826	E5G97827	E5G97828	E5G97829	E5G97830
		2-1/4	5	E5G95921	E5G97831	-	E5G97832	E5G97833	E5G97834	E5G97835	E5G97836	E5G97837
		3-1/4	6	E5G95922	E5G97838	-	E5G97839	E5G97840	E5G97841	E5G97842	E5G97843	E5G97844
		4	6-1/4	E5G95923	E5G97845	-	E5G97846	E5G97847	E5G97848	E5G97849	E5G97850	E5G97851
1	1	1-1/4	3	E5G95064	E5G97064	-	E5G97852	E5G97853	E5G97854	E5G97855	E5G97856	E5G97857
		1-1/4	4	E5G95928	E5G97885	-	E5G97886	E5G97887	E5G97888	E5G97889	E5G97890	E5G97891
		2	5	E5G95924	E5G97858	-	E5G97859	E5G97860	E5G97861	E5G97862	E5G97863	E5G97864
		3-1/4	6	E5G95925	E5G97865	-	E5G97866	E5G97867	E5G97868	E5G97869	E5G97870	E5G97871
		4	7	E5G95926	E5G97872	-	E5G97873	E5G97874	E5G97875	E5G97876	E5G97877	E5G97878

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

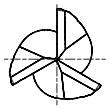
ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

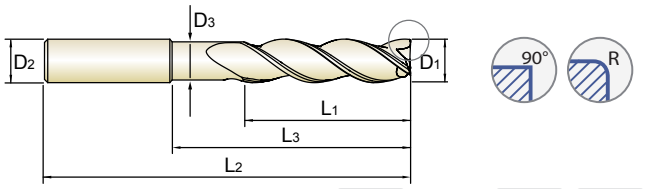
SERIES

Square **JAG96**
Corner Radius **JAG98**

HIGH-PERFORMANCE SOLID CARBIDE END MILLS
3-FLUTE EXTENDED LENGTH – COATED

- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life





CARBIDE | 3 | 37° | PLAIN | DLC | P.32

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	LBS (L_3)	Neck Dia. (D_3)	OAL (L_2)	Square End	Corner Radius						
							.010	.030	.060	.090	.120	.190	.250
						EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/8	1/8	5/32	1/2	-	2-1/2	JAG96912	JAG98996	JAG98997	-	-	-	-	-
			5/8	-	2-1/2	JAG96913	JAG98998	JAG98999	-	-	-	-	-
			3/4	-	3	JAG96914	JAG98801	JAG98802	-	-	-	-	-
			1	-	3	JAG96915	JAG98803	JAG98804	-	-	-	-	-
3/16	3/16	7/32	1/2	-	2-1/2	JAG96916	JAG98805	JAG98806	-	-	-	-	-
			5/8	-	2-1/2	JAG96917	JAG98807	JAG98808	-	-	-	-	-
			3/4	-	3	JAG96918	JAG98809	JAG98810	-	-	-	-	-
			1	-	3	JAG96919	JAG98811	JAG98812	-	-	-	-	-
1/4	1/4	3/8	3/4	.220	2-1/2	JAG96016	JAG98016	JAG98901	JAG98902	-	-	-	-
			1-1/8	.220	3	JAG96901	JAG98903	JAG98904	JAG98905	-	-	-	-
			1-5/8	.220	3-1/2	JAG96920	JAG98813	JAG98814	JAG98815	-	-	-	-
			2-1/8	.220	4	JAG96921	JAG98816	JAG98817	JAG98818	-	-	-	-
			2-1/2	.220	4	JAG96922	JAG98819	JAG98820	JAG98821	-	-	-	-
3/8	3/8	1/2	1-1/8	.345	3	JAG96024	JAG98024	JAG98906	JAG98907	JAG98908	JAG98909	-	-
			1-5/8	.345	3-1/2	JAG96923	JAG98822	JAG98823	JAG98824	JAG98825	JAG98826	-	-
			2-1/8	.345	4	JAG96902	JAG98910	JAG98911	JAG98912	JAG98913	JAG98914	-	-
			2-5/8	.345	5	JAG96924	JAG98827	JAG98828	JAG98829	JAG98830	JAG98831	-	-
			3-1/8	.345	6	JAG96925	JAG98832	JAG98833	JAG98834	JAG98835	JAG98836	-	-

NEXT PAGE ▶

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

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SERIES

Square **JAG96**
Corner Radius **JAG98**

HIGH-PERFORMANCE SOLID CARBIDE END MILLS
3-FLUTE EXTENDED LENGTH – COATED

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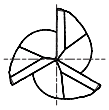

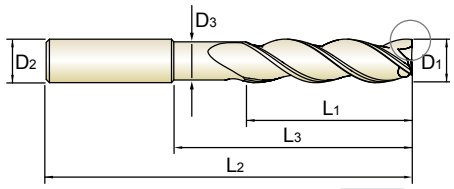

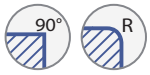

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	LBS (L_3)	Neck Dia. (D_3)	OAL (L_2)	Square End	Corner Radius						
							.010	.030	.060	.090	.120	.190	.250
						EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/2	1/2	5/8	1-3/8	.470	3	JAG96032	JAG98032	JAG98915	JAG98916	JAG98917	JAG98918	JAG98919	-
			1-3/4	.470	3-1/2	JAG96926	-	JAG98837	JAG98838	JAG98839	JAG98840	JAG98841	-
			2-1/4	.470	4	JAG96903	JAG98920	JAG98921	JAG98922	JAG98923	JAG98924	JAG98925	-
			2-3/4	.470	4-1/2	JAG96927	-	JAG98842	JAG98843	JAG98844	JAG98845	JAG98846	-
			3-3/8	.470	5	JAG96904	JAG98926	JAG98927	JAG98928	JAG98929	JAG98930	JAG98931	-
			4-1/4	.470	6	JAG96905	JAG98932	JAG98933	JAG98934	JAG98935	JAG98936	JAG98937	-
5/8	5/8	3/4	1-5/8	.585	4	JAG96040	JAG98040	JAG98938	JAG98939	JAG98940	JAG98941	JAG98942	-
			2-1/2	.585	5	JAG96928	-	JAG98847	JAG98848	JAG98849	JAG98850	JAG98851	-
			3-3/8	.585	6	JAG96906	JAG98943	JAG98944	JAG98945	JAG98946	JAG98947	JAG98948	-
3/4	3/4	1	2	.710	4	JAG96048	JAG98048	JAG98949	JAG98950	JAG98951	JAG98952	JAG98953	JAG98954
			2-5/8	.710	5	JAG96929	-	JAG98852	JAG98853	JAG98854	JAG98855	JAG98856	JAG98857
			3-3/8	.710	6	JAG96907	JAG98955	JAG98956	JAG98957	JAG98958	JAG98959	JAG98960	JAG98961
			4-1/8	.710	6	JAG96930	-	JAG98858	JAG98859	JAG98860	JAG98861	JAG98862	JAG98863
			5	.710	7	JAG96908	JAG98962	JAG98963	JAG98964	JAG98965	JAG98966	JAG98967	JAG98968
1	1	1-1/4	2-5/8	.960	5	JAG96064	JAG98064	JAG98969	JAG98970	JAG98971	JAG98972	JAG98973	JAG98974
			3-3/8	.960	6	JAG96909	JAG98975	JAG98976	JAG98977	JAG98978	JAG98979	JAG98980	JAG98981
			4-3/8	.960	7	JAG96910	JAG98982	JAG98983	JAG98984	JAG98985	JAG98986	JAG98987	JAG98988
			6	.960	9	JAG96911	JAG98989	JAG98990	JAG98991	JAG98992	JAG98993	JAG98994	JAG98995

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

SERIES

HIGH-PERFORMANCE SOLID CARBIDE END MILLS
3-FLUTE EXTENDED LENGTH – UNCOATED

Square **E5G96**
Corner Radius **E5G98**

- ▶ Balanced cutting with less vibration
- ▶ Ability to run at higher speeds with less heat in aluminum
- ▶ More efficient chip evacuation
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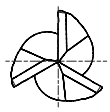

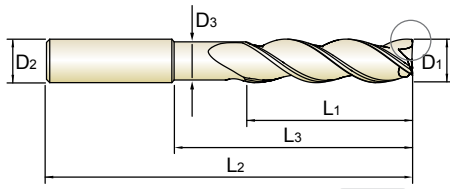

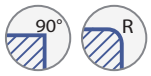

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	LBS (L_3)	Neck Dia. (D_3)	OAL (L_2)	Square End	Corner Radius						
							.010	.030	.060	.090	.120	.190	.250
						EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/8	1/8	5/32	1/2	.117	2-1/2	E5G96912	E5G98996	E5G98997	-	-	-	-	-
			5/8	.117	2-1/2	E5G96913	E5G98998	E5G98999	-	-	-	-	-
			3/4	.117	3	E5G96914	E5G98801	E5G98802	-	-	-	-	-
			1	.117	3	E5G96915	E5G98803	E5G98804	-	-	-	-	-
3/16	3/16	7/32	1/2	.172	2-1/2	E5G96916	E5G98805	E5G98806	-	-	-	-	-
			5/8	.172	2-1/2	E5G96917	E5G98807	E5G98808	-	-	-	-	-
			3/4	.172	3	E5G96918	E5G98809	E5G98810	-	-	-	-	-
			1	.172	3	E5G96919	E5G98811	E5G98812	-	-	-	-	-
1/4	1/4	3/8	3/4	.220	2-1/2	E5G96016	E5G98016	E5G98901	E5G98902	-	-	-	-
			1-1/8	.220	3	E5G96901	E5G98903	E5G98904	E5G98905	-	-	-	-
			1-5/8	.220	3-1/2	E5G96920	E5G98813	E5G98814	E5G98815	-	-	-	-
			2-1/8	.220	4	E5G96921	E5G98816	E5G98817	E5G98818	-	-	-	-
			2-1/2	.220	4	E5G96922	E5G98819	E5G98820	E5G98821	-	-	-	-
3/8	3/8	1/2	1-1/8	.345	3	E5G96024	E5G98024	E5G98906	E5G98907	E5G98908	E5G98909	-	-
			1-5/8	.345	3-1/2	E5G96923	E5G98822	E5G98823	E5G98824	E5G98825	E5G98826	-	-
			2-1/8	.345	4	E5G96902	E5G98910	E5G98911	E5G98912	E5G98913	E5G98914	-	-
			2-5/8	.345	5	E5G96924	E5G98827	E5G98828	E5G98829	E5G98830	E5G98831	-	-
			3-1/8	.345	6	E5G96925	E5G98832	E5G98833	E5G98834	E5G98835	E5G98836	-	-

NEXT PAGE ▶

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
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ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
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HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

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SERIES

Square **E5G96**
Corner Radius **E5G98**

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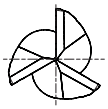
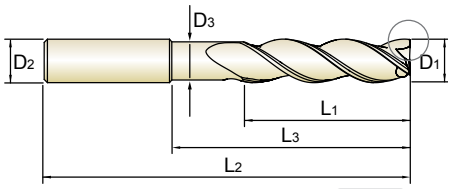
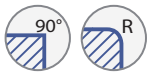






Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	LBS (L_3)	Neck Dia. (D_3)	OAL (L_2)	Square End	Corner Radius						
							.010	.030	.060	.090	.120	.190	.250
						EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/2	1/2	5/8	1-3/8	.470	3	E5G96032	E5G98032	E5G98915	E5G98916	E5G98917	E5G98918	E5G98919	-
			1-3/4	.470	3-1/2	E5G96926	-	E5G98837	E5G98838	E5G98839	E5G98840	E5G98841	-
			2-1/4	.470	4	E5G96903	E5G98920	E5G98921	E5G98922	E5G98923	E5G98924	E5G98925	-
			2-3/4	.470	4-1/2	E5G96927	-	E5G98842	E5G98843	E5G98844	E5G98845	E5G98846	-
			3-3/8	.470	5	E5G96904	E5G98926	E5G98927	E5G98928	E5G98929	E5G98930	E5G98931	-
			4-1/4	.470	6	E5G96905	E5G98932	E5G98933	E5G98934	E5G98935	E5G98936	E5G98937	-
5/8	5/8	3/4	1-5/8	.585	4	E5G96040	E5G98040	E5G98938	E5G98939	E5G98940	E5G98941	E5G98942	-
			2-1/2	.585	5	E5G96928	-	E5G98847	E5G98848	E5G98849	E5G98850	E5G98851	-
			3-3/8	.585	6	E5G96906	E5G98943	E5G98944	E5G98945	E5G98946	E5G98947	E5G98948	-
3/4	3/4	1	2	.710	4	E5G96048	E5G98048	E5G98949	E5G98950	E5G98951	E5G98952	E5G98953	E5G98954
			2-5/8	.710	5	E5G96929	-	E5G98852	E5G98853	E5G98854	E5G98855	E5G98856	E5G98857
			3-3/8	.710	6	E5G96907	E5G98955	E5G98956	E5G98957	E5G98958	E5G98959	E5G98960	E5G98961
			4-1/8	.710	6	E5G96930	-	E5G98858	E5G98859	E5G98860	E5G98861	E5G98862	E5G98863
			5	.710	7	E5G96908	E5G98962	E5G98963	E5G98964	E5G98965	E5G98966	E5G98967	E5G98968
1	1	1-1/4	2-5/8	.960	5	E5G96064	E5G98064	E5G98969	E5G98970	E5G98971	E5G98972	E5G98973	E5G98974
			3-3/8	.960	6	E5G96909	E5G98975	E5G98976	E5G98977	E5G98978	E5G98979	E5G98980	E5G98981
			4-3/8	.960	7	E5G96910	E5G98982	E5G98983	E5G98984	E5G98985	E5G98986	E5G98987	E5G98988
			6	.960	9	E5G96911	E5G98989	E5G98990	E5G98991	E5G98992	E5G98993	E5G98994	E5G98995

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

HIGH-PERFORMANCE SOLID CARBIDE END MILLS

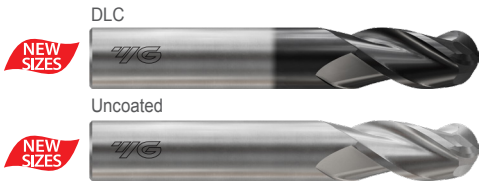
3-FLUTE STANDARD LENGTH BALL NOSE

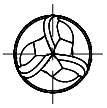
SERIES

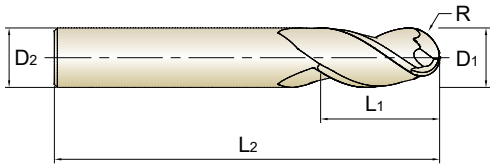
DLC **JAI58**

Bright **E5I58**

- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life







CARBIDE | 3 | 37° | R ±.0005 | PLAIN | DLC | UNCOATED | P.34

Unit : INCH

OD (D_1)	Radius of Ball Nose R (±.0005)	SD (D_2)	LOC (L_1)	OAL (L_2)	Ball Nose	
					DLC	Uncoated
1/8	1/16	1/8	1/4	1-1/2	JAI58008	E5I58008
			3/8	1-1/2	JAI58901	E5I58901
			1/2	2	JAI58915	E5I58915
			5/8	2-1/4	JAI58916	E5I58916
3/16	3/32	3/16	5/16	2	JAI58012	E5I58012
			9/16	2	JAI58902	E5I58902
			3/4	2-1/2	JAI58917	E5I58917
1/4	1/8	1/4	3/8	2	JAI58016	E5I58016
			5/8	2-1/2	JAI58903	E5I58903
			7/8	3	JAI58918	E5I58918
			1-1/4	3-1/4	JAI58919	E5I58919
5/16	5/32	5/16	7/16	2	JAI58920	E5I58920
			5/8	2-1/2	JAI58020	E5I58020
			1	3	JAI58921	E5I58921
			1-1/4	3-1/2	JAI58904	E5I58904
3/8	3/16	3/8	1/2	2	JAI58024	E5I58024
			1	2-1/2	JAI58905	E5I58905
			1-1/4	3-1/4	JAI58922	E5I58922
			1-1/2	3-1/2	JAI58906	E5I58906

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Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

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HIGH-PERFORMANCE SOLID CARBIDE END MILLS

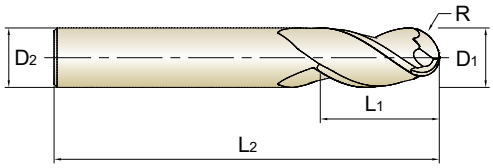
3-FLUTE STANDARD LENGTH BALL NOSE

SERIES

DLC **JAI58**

Bright **E5I58**

- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life



CARBIDE | 3 | 37° | R ±.0005 | PLAIN | DLC | UNCOATED | P. 34

Unit : INCH

OD (D_1)	Radius of Ball Nose R (±.0005)	SD (D_2)	LOC (L_1)	OAL (L_2)	Ball Nose	
					DLC	Uncoated
7/16	7/32	7/16	9/16	2-1/2	JAI58028	E5I58028
			1-1/4	2-3/4	JAI58907	E5I58907
1/2	1/4	1/2	5/8	2-1/2	JAI58032	E5I58032
			1	3	JAI58908	E5I58908
			1-1/4	3	JAI58923	E5I58923
			1-5/8	4	JAI58909	E5I58909
			2	4	JAI58910	E5I58910
5/8	5/16	5/8	3/4	3	JAI58040	E5I58040
			1-1/4	3-1/4	JAI58924	E5I58924
			1-5/8	3-1/2	JAI58911	E5I58911
			2-1/8	4	JAI58925	E5I58925
			2-1/2	5	JAI58912	E5I58912
3/4	3/8	3/4	1	3	JAI58048	E5I58048
			1-5/8	4	JAI58913	E5I58913
			2-1/4	5	JAI58926	E5I58926
1	1/2	1	1-1/4	4	JAI58064	E5I58064
			2	5	JAI58914	E5I58914

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

SERIES

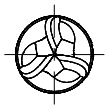
DLC **JAI59**

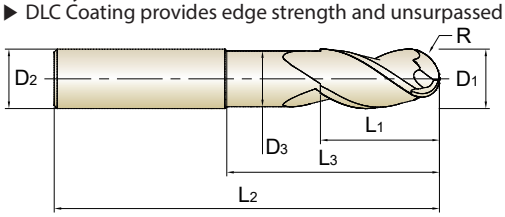
Bright **E5I59**

HIGH-PERFORMANCE SOLID CARBIDE END MILLS

3-FLUTE EXTENTED LENGTH BALL NOSE

- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life





Unit : INCH

OD (D_1)	Radius of Ball Nose R (±.0005)	SD (D_2)	LOC (L_1)	LBS (L_3)	Neck Dia. (D_3)	OAL (L_2)	Ball Nose	
							DLC	Uncoated
1/8	1/16	1/8	5/32	1/2	.117	2-1/2	JAI59906	E5I59906
				3/4	.117	3	JAI59907	E5I59907
				1	.117	3	JAI59908	E5I59908
				1-1/4	.117	3	JAI59909	E5I59909
				1-1/2	.117	3	JAI59910	E5I59910
3/16	3/32	3/16	7/32	1/2	.172	2-1/2	JAI59911	E5I59911
				3/4	.172	3	JAI59912	E5I59912
				1	.172	3	JAI59913	E5I59913
				1-5/16	.172	3	JAI59914	E5I59914
				1-1/2	.172	3	JAI59915	E5I59915
1/4	1/8	1/4	3/8	3/4	.220	2-1/2	JAI59916	E5I59916
				1-1/8	.220	3	JAI59917	E5I59917
				1-5/8	.220	3-1/2	JAI59918	E5I59918
				2-1/8	.220	4	JAI59919	E5I59919
				2-1/2	.220	4	JAI59920	E5I59920
				3	.220	4-1/2	JAI59921	E5I59921
5/16	5/32	5/16	7/16	1-1/8	.282	4	JAI59922	E5I59922
				1-3/4	.282	4	JAI59923	E5I59923
				2-1/8	.282	4	JAI59924	E5I59924
3/8	3/16	3/8	1/2	1-1/8	.345	3	JAI59925	E5I59925
				1-5/8	.345	3-1/2	JAI59926	E5I59926
				2-1/8	.345	4	JAI59024	E5I59024

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Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

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SERIES

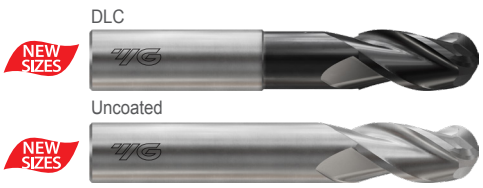
DLC **JAI59**

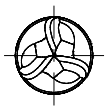
Bright **E5I59**

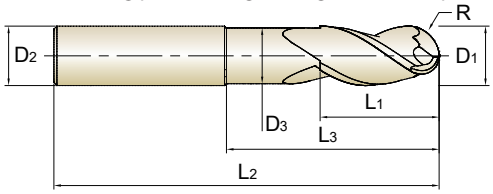
HIGH-PERFORMANCE SOLID CARBIDE END MILLS

3-FLUTE EXTENTED LENGTH BALL NOSE

- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life







CARBIDE | 3 | 37° | R ±.0005 | PLAIN | DLC | UNCOATED | P. 34

Unit : INCH

OD (D_1)	Radius of Ball Nose R (±.0005)	SD (D_2)	LOC (L_1)	LBS (L_3)	Neck Dia. (D_3)	OAL (L_2)	Ball Nose	
							DLC	Uncoated
3/8	3/16	3/8	1/2	2-5/8	.345	5	JAI59927	E5I59927
				3-1/8	.345	6	JAI59928	E5I59928
				4	.345	6	JAI59929	E5I59929
1/2	1/4	1/2	5/8	1-3/8	.470	3	JAI59930	E5I59930
				1-3/4	.470	3-1/2	JAI59931	E5I59931
				2-1/4	.470	4	JAI59032	E5I59032
				2-3/4	.470	4-1/2	JAI59932	E5I59932
				3-3/8	.470	5	JAI59901	E5I59901
				3-3/4	.470	6	JAI59933	E5I59933
				4-1/4	.470	6	JAI59934	E5I59934
5/8	5/16	5/8	3/4	1-5/8	.585	4	JAI59937	E5I59937
				2-1/2	.585	5	JAI59938	E5I59938
				3-3/8	.585	6	JAI59040	E5I59040
3/4	3/8	3/4	1	2	.710	4	JAI59048	E5I59048
				2-5/8	.710	5	JAI59939	E5I59939
				3-3/8	.710	6	JAI59902	E5I59902
				4-1/8	.710	6	JAI59940	E5I59940
				5	.710	7	JAI59903	E5I59903
1	1/2	1	1-1/4	2-5/8	.960	5	JAI59064	E5I59064
				3-3/8	.960	6	JAI59904	E5I59904
				4-3/8	.960	7	JAI59905	E5I59905

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

HIGH-PERFORMANCE SOLID CARBIDE END MILLS

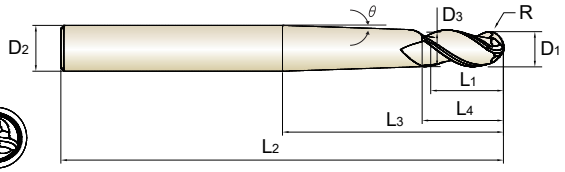
3-FLUTE EXTENTED LENGTH TAPER NECK BALL NOSE

SERIES

DLC **JAK92**

Bright **E5K92**

- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life

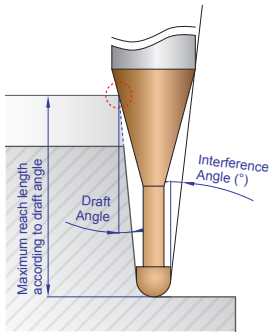


CARBIDE | 3 | 37° | R ±.0005 | PLAIN | DLC | UNCOATED | P. 34

Unit : INCH

OD (D_1)	Radius of Ball Nose R (±.0005)	SD (D_2)	LOC (L_1)	LBS (L_3)	Neck Dia. (D_3)	OAL (L_2)	Neck Taper Angle(°)	Under Neck Parallel Length(L_4)	Interferance Angle	Maximum reach lengths according to draft angle				Ball Nose	
										0.5°	1°	1.5°	2°	DLC	Uncoated
3/16	3/32	3/8	3/8	2	.187	4	3.56°	.493	2.82°	.559	.649	.784	1.004	JAK92012	E5K92012
				4		6	1.53°		1.37°	.687	1.245	-	-	JAK92901	E5K92901
1/4	1/8	3/8	1/2	2	.250	4	2.59°	.618	1.91°	.736	.928	1.297	-	JAK92016	E5K92016
				4		6	1.06°		0.92°	1.060	-	-	-	JAK92902	E5K92902
5/16	5/32	1/2	5/8	3	.312	5	2.38°	.743	1.89°	.900	1.169	1.745	-	JAK92020	E5K92020
				5		8	1.26°		1.11°	1.128	2.986	-	-	JAK92903	E5K92903
3/8	3/16	1/2	3/4	3	.375	6	1.68°	.868	1.27°	1.157	1.870	-	-	JAK92024	E5K92024
				5		8	0.87°		0.74°	1.797	-	-	-	JAK92904	E5K92904
1/2	1/4	5/8	1	3	.500	6	1.90°	1.118	1.30°	1.428	2.080	-	-	JAK92032	E5K92032
				5		8	0.92°		0.75°	2.146	-	-	-	JAK92905	E5K92905

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	



◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

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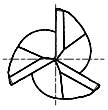
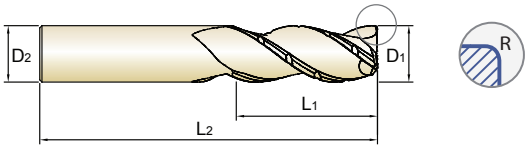
HIGH-PERFORMANCE SOLID CARBIDE END MILLS

3-FLUTE STANDARD LENGTH - CHIP BREAKER - COATED

SERIES
Corner Radius **JAI38**

- ▶ Balanced cutting with less vibration
- ▶ Ability to run at higher speeds with less heat in aluminum
- ▶ Chip Breaker Improves chip evacuation by shortening the chip length
- ▶ Ability to counteract extreme radial forces
- ▶ DLC Coating provides edge strength and unsurpassed tool life





CARBIDE | 3 | 37° | PLAIN | DLC | P.33

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Corner Radius .010 EDP No.	.030 EDP No.	.060 EDP No.	.120 EDP No.	.250 EDP No.
1/8	1/8	1/4	1-1/2	JAI38008	JAI38948	-	-	-
		3/8	1-1/2	JAI38901	JAI38949	-	-	-
		1/2	2	JAI38902	JAI38950	-	-	-
		5/8	2-1/4	JAI38951	-	-	-	-
3/16	3/16	5/16	2	JAI38012	JAI38952	-	-	-
		9/16	2	JAI38903	JAI38904	-	-	-
		3/4	2-1/2	JAI38953	JAI38954	-	-	-
		1	2-1/2	JAI38955	-	-	-	-
1/4	1/4	3/8	2	JAI38016	JAI38905	-	-	-
		5/8	2-1/2	JAI38906	JAI38907	-	-	-
		7/8	3	JAI38956	JAI38957	-	-	-
		1-1/4	3-1/4	JAI38908	JAI38909	JAI38910	-	-
5/16	5/16	7/16	2	JAI38020	JAI38958	-	-	-
		13/16	3	JAI38959	JAI38960	-	-	-
		1	3	JAI38961	JAI38962	-	-	-
		1-1/4	3-1/2	JAI38963	-	-	-	-
3/8	3/8	1/2	2	JAI38024	JAI38911	JAI38964	-	-
		1	2-1/2	JAI38912	JAI38913	JAI38914	-	-
		1-1/4	3-1/4	JAI38965	JAI38966	JAI38967	-	-
		1-1/2	3-1/2	JAI38915	JAI38916	JAI38917	-	-
		2	4	JAI38968	-	JAI38918	-	-

NEXT PAGE ▶

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

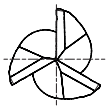
HIGH-PERFORMANCE SOLID CARBIDE END MILLS

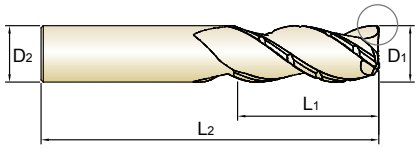
3-FLUTE STANDARD LENGTH - CHIP BREAKER – COATED

SERIES
Corner Radius **JAI38**

- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- Chip Breaker Improves chip evacuation by shortening the chip length
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life

NEW SIZES





CARBIDE | 3 | 37° | PLAIN | DLC | P.33

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Corner Radius .010 EDP No.	.030 EDP No.	.060 EDP No.	.120 EDP No.	.250 EDP No.
1/2	1/2	5/8	2-1/2	JAI38032	JAI38919	JAI38920	JAI38969	-
		1	3	JAI38970	JAI38971	JAI38972	JAI38973	-
		1-1/4	3	JAI38921	JAI38922	JAI38923	JAI38974	-
		1-5/8	4	JAI38924	JAI38925	JAI38926	JAI38975	-
		2	4	JAI38927	JAI38928	JAI38929	-	-
		2-1/2	5	-	JAI38930	JAI38931	-	-
		3	5	-	JAI38932	-	-	-
5/8	5/8	3/4	3	JAI38976	JAI38977	JAI38040	-	-
		1-5/8	3-1/2	JAI38978	JAI38979	JAI38933	-	-
		2-1/2	5	JAI38980	JAI38934	-	-	-
3/4	3/4	1	3	JAI38048	JAI38935	JAI38936	-	-
		1-5/8	4	JAI38937	JAI38938	JAI38939	JAI38940	-
		2-1/4	5	JAI38981	JAI38941	JAI38942	JAI38943	-
		3-1/4	6	-	JAI38982	JAI38983	-	-
1	1	1-1/4	3	JAI38064	-	JAI38984	-	-
		2	5	JAI38944	JAI38945	JAI38946	JAI38985	JAI38986
		3-1/4	6	JAI38947	JAI38987	JAI38988	-	-

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

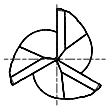
ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

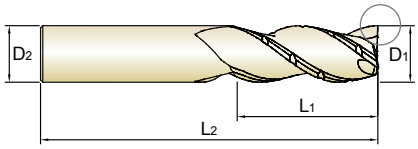
SERIES

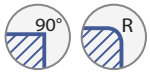
Square **E5I36**
Corner Radius **E5I38**

HIGH-PERFORMANCE SOLID CARBIDE END MILLS
3-FLUTE STANDARD LENGTH - CHIP BREAKER – UNCOATED

- ▶ Balanced cutting with less vibration
- ▶ Ability to run at higher speeds with less heat in aluminum
- ▶ Chip Breaker Improves chip evacuation by shortening the chip length
- ▶ Ability to counteract extreme radial forces







CARBIDE | 3 | 37° | PLAIN | UNCOATED | P.33

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius				
					.010	.030	.060	.120	.250
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/8	1/8	1/4	1-1/2	-	E5I38008	E5I38948	-	-	-
		3/8	1-1/2	-	E5I38901	E5I38949	-	-	-
		1/2	2	-	E5I38902	E5I38950	-	-	-
		5/8	2-1/4	-	E5I38951	-	-	-	-
3/16	3/16	5/16	2	-	E5I38012	E5I38952	-	-	-
		9/16	2	-	E5I38903	E5I38904	-	-	-
		3/4	2-1/2	-	E5I38953	E5I38954	-	-	-
		1	2-1/2	-	E5I38955	-	-	-	-
1/4	1/4	3/8	2	-	E5I38016	E5I38905	-	-	-
		5/8	2-1/2	-	E5I38906	E5I38907	-	-	-
		7/8	3	-	E5I38956	E5I38957	-	-	-
		1-1/4	3-1/4	-	E5I38908	E5I38909	E5I38910	-	-
5/16	5/16	7/16	2	-	E5I38020	E5I38958	-	-	-
		13/16	3	-	E5I38959	E5I38960	-	-	-
		1	3	-	E5I38961	E5I38962	-	-	-
		1-1/4	3-1/2	-	E5I38963	-	-	-	-
3/8	3/8	1/2	2	-	E5I38024	E5I38911	E5I38964	-	-
		1	2-1/2	-	E5I38912	E5I38913	E5I38914	-	-
		1-1/4	3-1/4	-	E5I38965	E5I38966	E5I38967	-	-
		1-1/2	3-1/2	-	E5I38915	E5I38916	E5I38917	-	-
		2	4	-	E5I38968	-	E5I38918	-	-

NEXT PAGE ▶

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

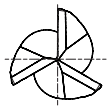
SERIES

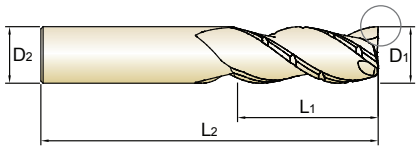
HIGH-PERFORMANCE SOLID CARBIDE END MILLS

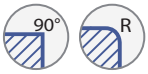
3-FLUTE STANDARD LENGTH - CHIP BREAKER – UNCOATED

Square **E5I36**
Corner Radius **E5I38**

- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- Chip Breaker Improves chip evacuation by shortening the chip length
- Ability to counteract extreme radial forces







Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius				
					.010	.030	.060	.120	.250
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/2	1/2	5/8	2-1/2	-	E5I38032	E5I38919	E5I38920	E5I38969	-
		1	3	-	E5I38970	E5I38971	E5I38972	E5I38973	-
		1-1/4	3	E5I36032	E5I38921	E5I38922	E5I38923	E5I38974	-
		1-5/8	4	-	E5I38924	E5I38925	E5I38926	E5I38975	-
		2	4	E5I36901	E5I38927	E5I38928	E5I38929	-	-
		2-1/2	5	-	-	E5I38930	E5I38931	-	-
		3	5	E5I36902	-	E5I38932	-	-	-
5/8	5/8	3/4	3	E5I36040	E5I38976	E5I38977	E5I38040	-	-
		1-5/8	3-1/2	-	E5I38978	E5I38979	E5I38933	-	-
		2-1/2	5	-	E5I38980	E5I38934	-	-	-
3/4	3/4	1	3	E5I36048	E5I38048	E5I38935	E5I38936	-	-
		1-5/8	4	E5I36903	E5I38937	E5I38938	E5I38939	E5I38940	-
		2-1/4	5	-	E5I38981	E5I38941	E5I38942	E5I38943	-
		3-1/4	6	-	-	E5I38982	E5I38983	-	-
1	1	1-1/4	3	-	E5I38064	-	E5I38984	-	-
		2	5	-	E5I38944	E5I38945	E5I38946	E5I38985	E5I38986
		3-1/4	6	-	E5I38947	E5I38987	E5I38988	-	-

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

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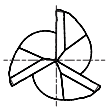
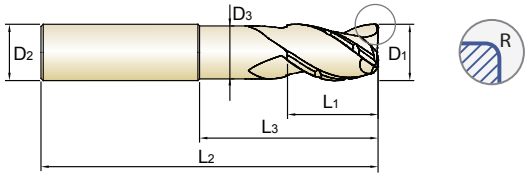
HIGH-PERFORMANCE SOLID CARBIDE END MILLS

3-FLUTE EXTENDED LENGTH - CHIP BREAKER – COATED

SERIES
Corner Radius **JAI39**

- ▶ Balanced cutting with less vibration
- ▶ Ability to run at higher speeds with less heat in aluminum
- ▶ Chip Breaker Improves chip evacuation by shortening the chip length
- ▶ Ability to counteract extreme radial forces
- ▶ DLC Coating provides edge strength and unsurpassed tool life





CARBIDE | 3 | 37° | PLAIN | DLC | P.33

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	LBS (L_3)	Neck Dia. (D_3)	OAL (L_2)	Corner Radius .010 EDP No.	Corner Radius .030 EDP No.	Corner Radius .060 EDP No.
1/8	1/8	5/32	1/2	.117	2-1/2	JAI39008	-	-
		5/32	5/8	.117	2-1/2	JAI39915	-	-
		5/32	3/4	.117	3	JAI39916	-	-
		5/32	1	.117	3	JAI39917	-	-
3/16	3/16	7/32	3/4	.172	3	JAI39012	-	-
		7/32	1	.172	3	JAI39918	-	-
1/4	1/4	3/8	3/4	.220	3	JAI39016	-	-
		3/8	1-1/8	.220	3	JAI39919	-	-
		3/8	1-5/8	.220	3-1/2	JAI39920	-	-
		3/8	2-1/8	.220	4	JAI39921	-	-
		3/8	2-1/2	.220	4	JAI39922	-	-
3/8	3/8	1/2	1-1/8	.345	3	-	JAI39024	-
		1/2	1-5/8	.345	3-1/2	-	JAI39923	-
		1/2	2-1/8	.345	4	-	JAI39901	-
		1/2	2-5/8	.345	5	-	JAI39924	-
1/2	1/2	5/8	1-3/8	.470	3	-	JAI39032	JAI39902
		5/8	1-3/4	.470	3-1/2	-	JAI39925	JAI39926
		5/8	2-1/4	.470	4	-	JAI39903	JAI39904
		5/8	3-3/8	.470	5	-	JAI39905	JAI39906
		5/8	4-1/4	.470	6	JAI39907	JAI39908	JAI39909
3/4	3/4	1	2	.710	4	-	JAI39048	JAI39910
		1	2-5/8	.710	5	-	JAI39927	JAI39928
		1	3-3/8	.710	6	-	JAI39911	JAI39912
		1	5	.710	7	-	JAI39913	JAI39914
1	1	1-1/4	4-3/8	.960	7	JAI39064	-	-

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

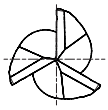
SERIES

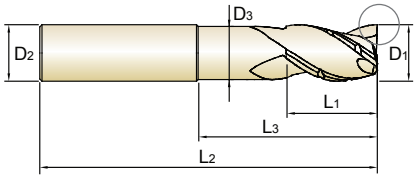
HIGH-PERFORMANCE SOLID CARBIDE END MILLS

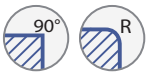
3-FLUTE EXTENDED LENGTH - CHIP BREAKER – UNCOATED

Square **E5I37**
Corner Radius **E5I39**

- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- Chip Breaker Improves chip evacuation by shortening the chip length
- Ability to counteract extreme radial forces







Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	LBS (L_3)	Neck Dia. (D_3)	OAL (L_2)	Square End	Corner Radius		
							.010	.030	.060
						EDP No.	EDP No.	EDP No.	EDP No.
1/8	1/8	5/32	1/2	.117	2-1/2	-	E5I39008	-	-
		5/32	5/8	.117	2-1/2	-	E5I39915	-	-
		5/32	3/4	.117	3	-	E5I39916	-	-
		5/32	1	.117	3	-	E5I39917	-	-
3/16	3/16	7/32	3/4	.172	3	-	E5I39012	-	-
		7/32	1	.172	3	-	E5I39918	-	-
1/4	1/4	3/8	3/4	.220	3	-	E5I39016	-	-
		3/8	1-1/8	.220	3	-	E5I39919	-	-
		3/8	1-5/8	.220	3-1/2	-	E5I39920	-	-
		3/8	2-1/8	.220	4	-	E5I39921	-	-
		3/8	2-1/2	.220	4	-	E5I39922	-	-
3/8	3/8	1/2	1-1/8	.345	3	-	-	E5I39024	-
		1/2	1-5/8	.345	3-1/2	-	-	E5I39923	-
		1/2	2-1/8	.345	4	-	-	E5I39901	-
		1/2	2-5/8	.345	5	-	-	E5I39924	-
1/2	1/2	5/8	1-3/8	.470	3	E5I37032	-	E5I39032	E5I39902
		5/8	1-3/4	.470	3-1/2	-	-	E5I39925	E5I39926
		5/8	2-1/4	.470	4	E5I37901	-	E5I39903	E5I39904
		5/8	3-3/8	.470	5	-	-	E5I39905	E5I39906
		5/8	4-1/4	.470	6	-	E5I39907	E5I39908	E5I39909

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Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

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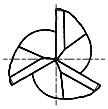
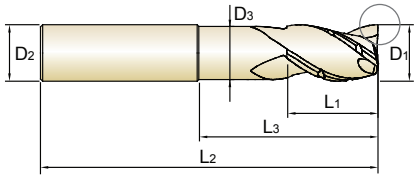
SERIES

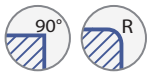
Square **E5I37**
Corner Radius **E5I39**

HIGH-PERFORMANCE SOLID CARBIDE END MILLS
3-FLUTE EXTENDED LENGTH - CHIP BREAKER – UNCOATED

- ▶ Balanced cutting with less vibration
- ▶ Ability to run at higher speeds with less heat in aluminum
- ▶ Chip Breaker Improves chip evacuation by shortening the chip length
- ▶ Ability to counteract extreme radial forces







CARBIDE | 3 | 37° | PLAIN | UNCOATED | P.33

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	LBS (L_3)	Neck Dia. (D_3)	OAL (L_2)	Square End	Corner Radius		
							.010	.030	.060
						EDP No.	EDP No.	EDP No.	EDP No.
3/4	3/4	1	2	.710	4	-	-	E5I39048	E5I39910
		1	2-5/8	.710	5	-	-	E5I39927	E5I39928
		1	3-3/8	.710	6	-	-	E5I39911	E5I39912
		1	5	.710	7	-	-	E5I39913	E5I39914
1	1	1-1/4	4-3/8	.960	7	-	E5I39064	-	-

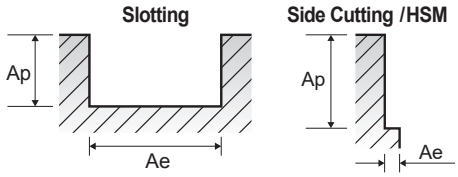
Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

RECOMMENDED CUTTING CONDITIONS – INCH

JAG95 | JAG97 I JAG96 | JAG98 SERIES (COATED)
E5G95 | E5G97 | E5G96 | E5G98 SERIES (UNCOATED)



RPM = rev./min. Feed = in./min.
Vc = ft./min. fz = in./tooth

3-FLUTE - SLOTTING

ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Mill Diameter (Ø) 1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
N	21-22	Aluminum-wrought alloy	60 / 100	1.0D	1.0D	SFM (Vc)	2000	2000	2000	2000	2000	2000	2000	2000	2000
						IPT (fz)	.0010	.0015	.0030	.0038	.0045	.0060	.0066	.0075	.0100
						RPM	61100	40700	30500	24400	20400	15300	12200	10200	7600
						IPM (FEED)	183	183	275	278	275	275	242	230	228
	23-25	Aluminum-cast, alloyed	75 / 90 / 130	1.0D	1.0D	SFM (Vc)	600	600	600	600	600	600	600	600	600
						IPT (fz)	.0010	.0015	.0030	.0038	.0045	.0060	.0066	.0075	.0100
						RPM	18340	12220	9170	7330	6110	4580	3670	3060	2290
						IPM (FEED)	55	55	83	83	83	83	73	69	69
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	1.0D	1.0D	SFM (Vc)	880	880	880	880	880	880	880	880	880
						IPT (fz)	.0008	.0012	.0020	.0025	.0040	.0050	.0055	.0060	.0070
						RPM	26890	17930	13450	10760	8960	6720	5380	4480	3360
						IPM (FEED)	65	65	81	81	108	101	89	81	71
	29.1	Non Metallic Materials (Duroplastic)	-	1.0D	1.0D	SFM (Vc)	1670	1670	1670	1670	1670	1670	1670	1670	1670
						IPT (fz)	.0015	.0023	.0040	.0050	.0075	.0100	.0110	.0120	.0140
						RPM	51040	34020	25520	20410	17010	12760	10210	8510	6380
						IPM (FEED)	230	235	306	306	383	383	337	306	268

3-FLUTE - SIDE CUTTING

ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Mill Diameter (Ø) 1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
N	21-22	Aluminum-wrought alloy	60 / 100	0.5D	1.5D	SFM (Vc)	3000	3000	3000	3000	3000	3000	3000	3000	2000
						IPT (fz)	.0010	.0015	.0030	.0038	.0045	.0060	.0066	.0075	.0100
						RPM	91700	61100	45800	36700	30600	23000	18300	15300	11500
						IPM (FEED)	275	275	412	418	413	414	362	344	345
	23-25	Aluminum-cast, alloyed	75 / 130	0.5D	1.5D	SFM (Vc)	800	800	800	800	800	800	800	800	800
						IPT (fz)	.0010	.0015	.0030	.0038	.0045	.0060	.0066	.0075	.0100
						RPM	24450	16300	12220	9780	8150	6110	4890	4080	3060
						IPM (FEED)	73	73	110	111	110	110	97	92	92
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	0.5D	1.5D	SFM (Vc)	1150	1150	1150	1150	1150	1150	1150	1150	1150
						IPT (fz)	.0008	.0012	.0020	.0025	.0040	.0050	.0055	.0060	.0070
						RPM	35140	23430	17570	14060	11720	8790	7030	5860	4390
						IPM (FEED)	84	84	105	105	141	132	116	105	92
	29.1	Non Metallic Materials (Duroplastic)	-	0.5D	1.5D	SFM (Vc)	2070	2070	2070	2070	2070	2070	2070	2070	2070
						IPT (fz)	.0015	.0023	.0040	.0050	.0075	.0100	.0110	.0120	.0140
						RPM	63260	42170	31630	25300	21090	15820	12650	10540	7910
						IPM (FEED)	230	290	306	380	383	383	337	306	332

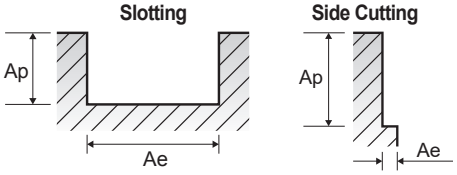
3-FLUTE - SIDE CUTTING HSM (Light)

ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Mill Diameter (Ø) 1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
N	21-22	Aluminum-wrought alloy	60 / 100	0.05D	2.0D	SFM (Vc)	8000	8000	8000	8000	8000	8000	8000	8000	8000
						IPT (fz)	.0021	.0032	.0055	.0069	.0105	.0140	.0150	.0165	.0195
						RPM	244500	162900	122200	97800	81500	61100	48900	40700	30600
						IPM (FEED)	1540	1565	2016	2024	2567	2566	2201	2015	1790
	23-25	Aluminum-cast, alloyed	75 /130	0.05D	2.0D	SFM (Vc)	1200	1200	1200	1200	1200	1200	1200	1200	1200
						IPT (fz)	.0021	.0032	.0055	.0069	.0105	.0140	.0150	.0165	.0195
						RPM	36670	24450	18340	14670	12220	9170	7330	6110	4580
						IPM (FEED)	231	235	303	303	385	385	330	303	268
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	0.05D	2.0D	SFM (Vc)	1850	1850	1850	1850	1850	1850	1850	1850	1850
						IPT (fz)	.0017	.0026	.0045	.0056	.0085	.0115	.0130	.0140	.0160
						RPM	56540	37690	28270	22610	18850	14130	11310	9420	7070
						IPM (FEED)	288	294	382	380	481	488	441	396	339
	29.1	Non Metallic Materials (Duroplastic)	-	0.05D	2.0D	SFM (Vc)	3350	3350	3350	3350	3350	3350	3350	3350	3350
						IPT (fz)	.0034	.0051	.0090	.0113	.0170	.0230	.0250	.0275	.0320
						RPM	102380	68250	51190	40950	34130	25590	20480	17060	12800
						IPM (FEED)	1044	1044	1382	1388	1740	1766	1536	1408	1229

NOTES:
- All cutting data are target values
- Maximum recommended depth shown
- Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D or less
- Reduce speed and feed recommendations for materials harder than listed
- Reduce cut depth and feed by 50% for long-flute or long-reach tools
- Above recommendations are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions
- HSM = high-speed machining

RECOMMENDED CUTTING CONDITIONS – INCH

JAI38 | JAI39 SERIES (COATED)
E5I36 | E5I38 | E5I37 | E5I39 SERIES (UNCOATED)



RPM = rev./min. Feed = in./min.
Vc = ft./min. Fz = in./tooth

3-FLUTE CHIP BREAKER- SLOTTING

ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Mill Diameter (Ø) 1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
N	21-22	Aluminum-wrought alloy	60 / 100	1.0D	1.0D	SFM (Vc)	2000	2000	2000	2000	2000	2000	2000	2000	2000
						IPT (fz)	.0010	.0015	.0030	.0038	.0045	.0060	.0066	.0075	.0100
						RPM	61100	40700	30500	24400	20400	15300	12200	10200	7600
						IPM (FEED)	183	183	275	278	275	275	242	230	228
	23-25	Aluminum-cast, alloyed	75 /130	1.0D	1.0D	SFM (Vc)	600	600	600	600	600	600	600	600	600
						IPT (fz)	.0010	.0015	.0030	.0038	.0045	.0060	.0066	.0075	.0100
						RPM	18340	12220	9170	7330	6110	4580	3670	3060	2290
						IPM (FEED)	55	55	83	83	83	83	73	69	69
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	1.0D	1.0D	SFM (Vc)	880	880	880	880	880	880	880	880	880
						IPT (fz)	.0008	.0012	.0020	.0025	.0040	.0050	.0055	.0060	.0070
						RPM	26890	17930	13450	10760	8960	6720	5380	4480	3360
						IPM (FEED)	65	65	81	81	108	101	89	81	71
	29.1	Non Metallic Materials (Duroplastic)	-	1.0D	1.0D	SFM (Vc)	1670	1670	1670	1670	1670	1670	1670	1670	1670
						IPT (fz)	.0015	.0023	.0040	.0050	.0075	.0100	.0110	.0120	.0140
						RPM	51040	34020	25520	20410	17010	12760	10210	8510	6380
						IPM (FEED)	230	235	306	306	383	383	337	306	268

3-FLUTE CHIP BREAKER- SIDE CUTTING

ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Mill Diameter (Ø) 1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
N	21-22	Aluminum-wrought alloy	60 / 100	0.5D	1.5D	SFM (Vc)	3000	3000	3000	3000	3000	3000	3000	3000	2000
						IPT (fz)	.0010	.0015	.0030	.0038	.0045	.0060	.0066	.0075	.0100
						RPM	91700	61100	45800	36700	30600	23000	18300	15300	11500
						IPM (FEED)	275	275	412	418	413	414	362	344	345
	23-25	Aluminum-cast, alloyed	75 /130	0.5D	1.5D	SFM (Vc)	800	800	800	800	800	800	800	800	800
						IPT (fz)	.0010	.0015	.0030	.0038	.0045	.0060	.0066	.0075	.0100
						RPM	24450	16300	12220	9780	8150	6110	4890	4080	3060
						IPM (FEED)	73	73	110	111	110	110	97	92	92
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	0.5D	1.5D	SFM (Vc)	1150	1150	1150	1150	1150	1150	1150	1150	1150
						IPT (fz)	.0008	.0012	.0020	.0025	.0040	.0050	.0055	.0060	.0070
						RPM	35140	23430	17570	14060	11720	8790	7030	5860	4390
						IPM (FEED)	84	84	105	105	141	132	116	105	92
	29.1	Non Metallic Materials (Duroplastic)	-	0.5D	1.5D	SFM (Vc)	2070	2070	2070	2070	2070	2070	2070	2070	2070
						IPT (fz)	.0015	.0023	.0040	.0050	.0075	.0100	.0110	.0120	.0140
						RPM	63260	42170	31630	25300	21090	15820	12650	10540	7910
						IPM (FEED)	230	290	306	380	383	383	337	306	332

NOTES:
- All cutting data are target values
- Maximum recommended depth shown
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- Reduce speed and feed recommendations for materials harder than listed
- Reduce cut depth and feed by 50% for long-flute or long-reach tools
- Above recommendations are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions
- HSM = high-speed machining

Tech Tip : The tables above are based on common machining calculations.
We realize that shops may not have **RPM capability** shown in the tables
To adapt the tables to machining conditions available, use the following calculation:
(Recommended Feed (IPM) / Recommended RPM) X Available RPM = IPM
Example for 1/8" Side Milling in N21-22 WorkPiece Materials:
(275 IPM / 91700 RPM) X 15,000 = 45 IPM

RECOMMENDED CUTTING CONDITIONS – INCH

JAI58 | JAI59 I JAK92 SERIES (COATED)
E5I58 | E5I59 I E5K92 SERIES (UNCOATED)

3-FLUTE - PROFILING

RPM = rev./min. Feed = in./min.
Vc = ft./min. fz = in./tooth

ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Mill Diameter (Ø)								
							1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
N	21-22	Aluminum-wrought alloy	60 / 100	0.2D	0.1D	SFM (Vc)	3690	3690	3690	3690	3690	3690	3690	3690	3690
						IPT (fz)	.0013	.0019	.0025	.0032	.0038	.0050	.0063	.0075	.0100
						RPM	112770	75180	56380	45110	37590	28190	22550	18790	14100
						IPM (FEED)	440	423	423	429	429	423	426	423	423
	23-25	Aluminum-cast, alloyed	75 / 90 / 130	0.2D	0.1D	SFM (Vc)	2950	2950	2950	2950	2950	2950	2950	2950	2950
						IPT (fz)	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0060	.0080
						RPM	90150	60100	45080	36060	30050	22540	18030	15030	11270
						IPM (FEED)	270	270	270	270	270	270	270	271	270
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	0.2D	0.1D	SFM (Vc)	1700	1700	1700	1700	1700	1700	1700	1700	1700
						IPT (fz)	.0009	.0013	.0018	.0022	.0026	.0035	.0044	.0053	.0070
						RPM	51950	34630	25980	20780	17320	12990	10390	8660	6490
						IPM (FEED)	140	140	140	135	135	136	137	138	136
	29.1	Non Metallic Materials (Duroplastic)	-	0.2D	0.1D	SFM (Vc)	1840	1840	1840	1840	1840	1840	1840	1840	1840
						IPT (fz)	.0011	.0017	.0023	.0028	.0034	.0045	.0056	.0068	.0090
						RPM	56230	37490	28120	22490	18740	14060	11250	9370	7030
						IPM (FEED)	186	194	194	191	191	190	189	191	190

NOTES:
- All cutting data are target values
- Maximum recommended depth shown
- Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D or less
- Reduce speed and feed recommendations for materials harder than listed
- Reduce cut depth and feed by 50% for long-flute or long-reach tools
- Above recommendations are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions

Tech Tip : The tables above are based on common machining calculations.
We realize that shops may not have **RPM capability** shown in the tables
To adapt the tables to machining conditions available, use the following calculation:
(Recommended Feed (IPM) / Recommended RPM) X Available RPM = IPM
Example for 1/8" Side Milling in N21-22 WorkPiece Materials:
(440 IPM /112770 RPM) X 15,000=58 IPM

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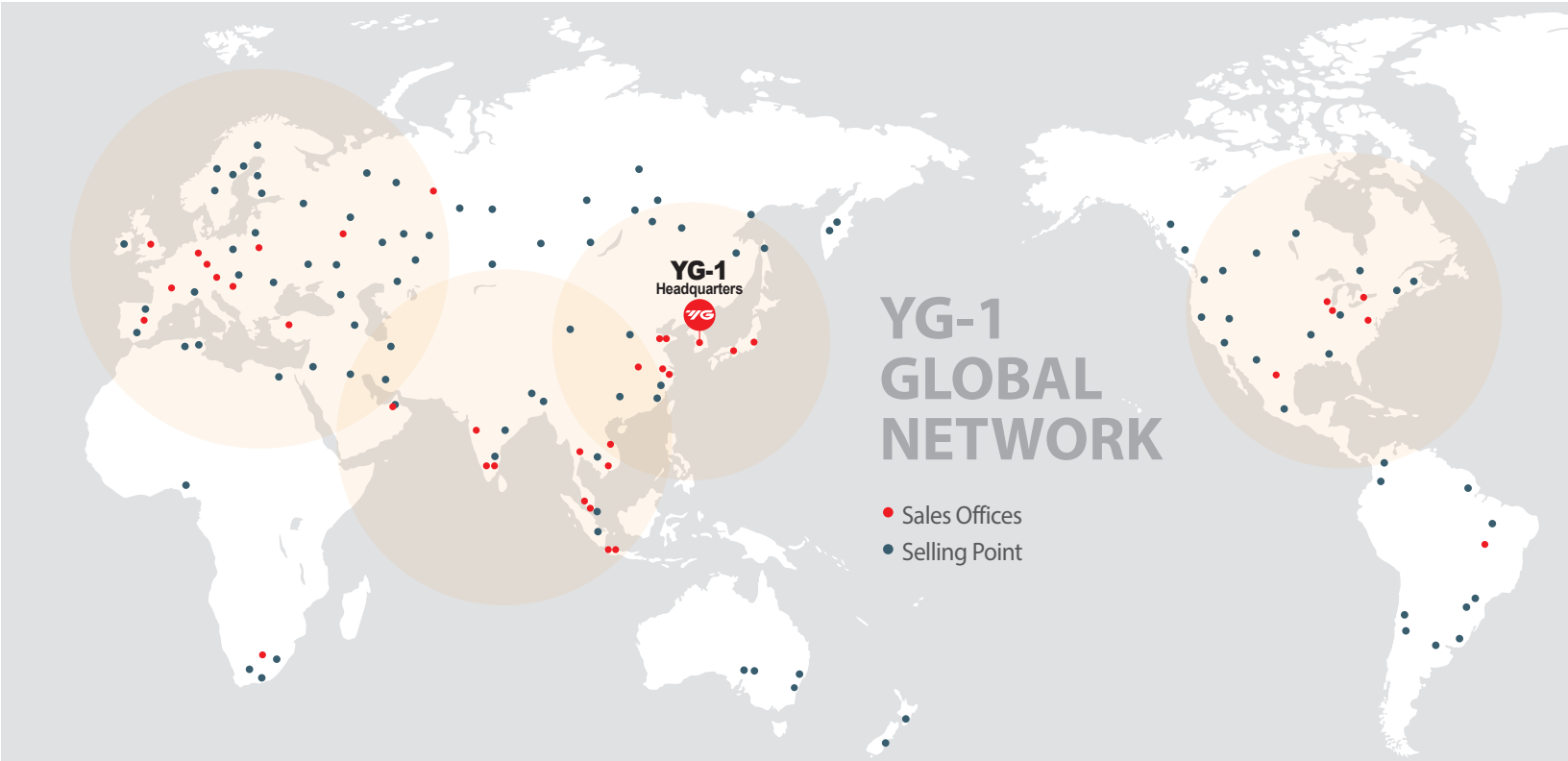

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