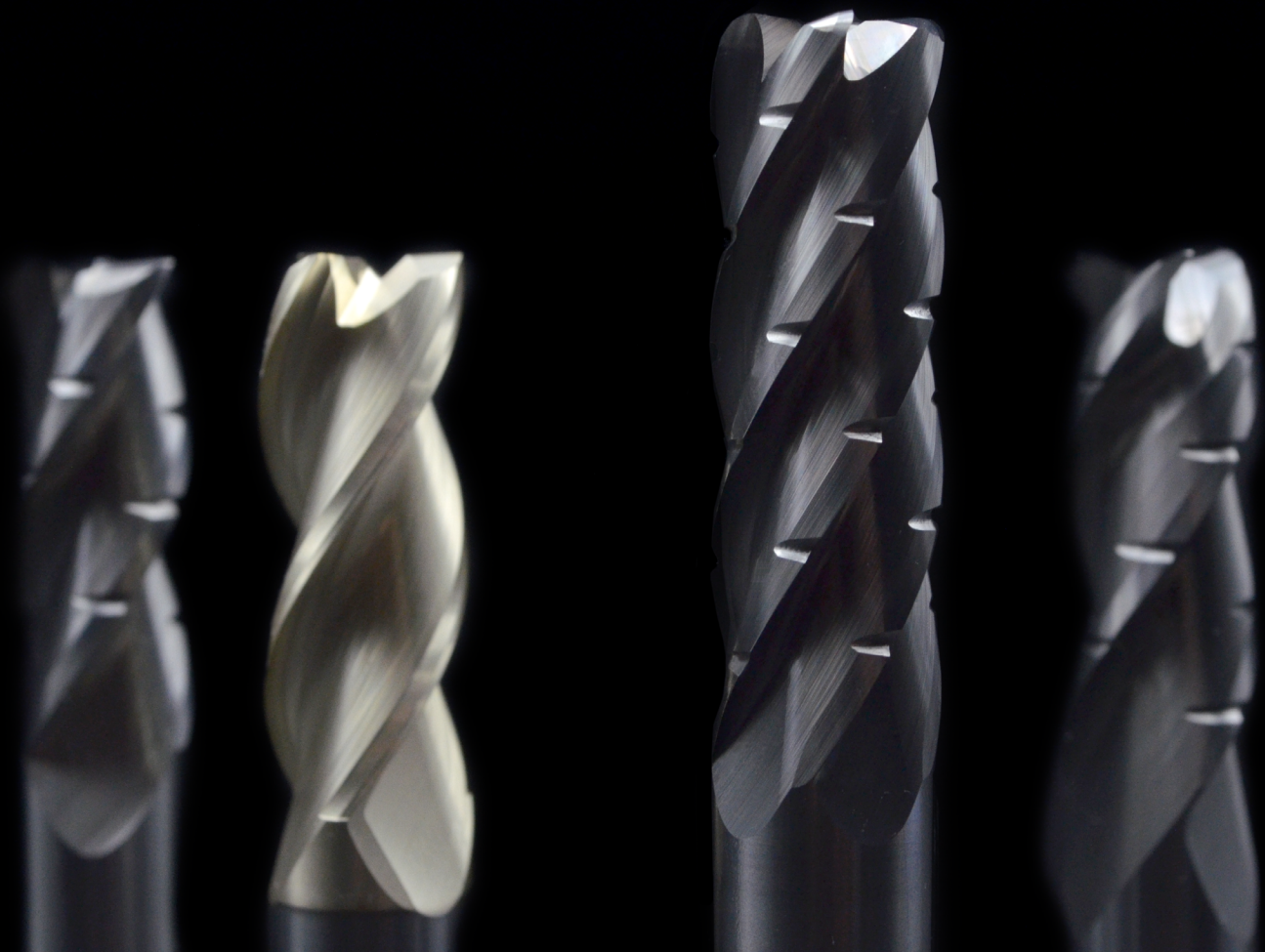


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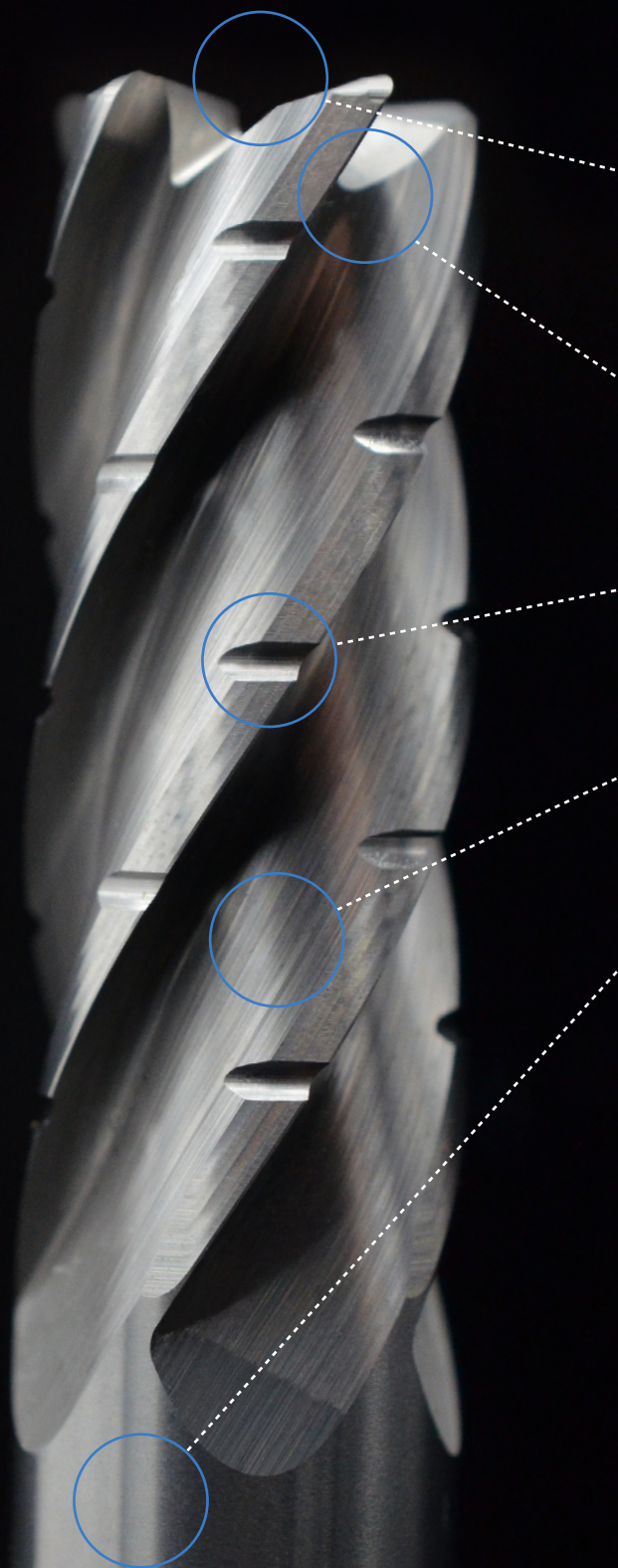
*FEATURING THE NEW ASR5 - SUPER ROUGHER*

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**ULTIMATE PERFORMANCE END MILLS FOR ALUMINUM**





Coolant-through for heat reduction and fast chip flushing

Proprietary gashing enables up to 10° ramping for pocketing operations

Chip breakers for reduced cutting torque

Polished flutes for smooth chip evacuation

Safe-Lock® shank available upon request

- **HIGH EFFICIENCY ROUGHING**
- **TROCHOIDAL MILLING**
- **HIGH EFFICIENCY FINISHING**
- **RAMPING**



## Slotting and Roughing Mill

Circular land design reduces cutting friction maximizing shearing forces and chip control

Modified tapered core design ensures maximum chip volume capacity for full depth slotting operations

Chip thinning grooves create smaller chips that reduce cutting torque and permits more aggressive metal removal rates



## Ramping and Pocketing Mill

Proprietary end gashing enables aggressive ramping up to 45 degrees at 100+ IPM

Tapered core construction ensures maximum rigidity during ramping and high-speed dynamic machining operations

Chip thinning grooves create smaller chips that reduce cutting torque and permits more aggressive metal removal rates

## Finishing Mill

Circular land design reduces cutting friction maximizing shearing forces and chip control

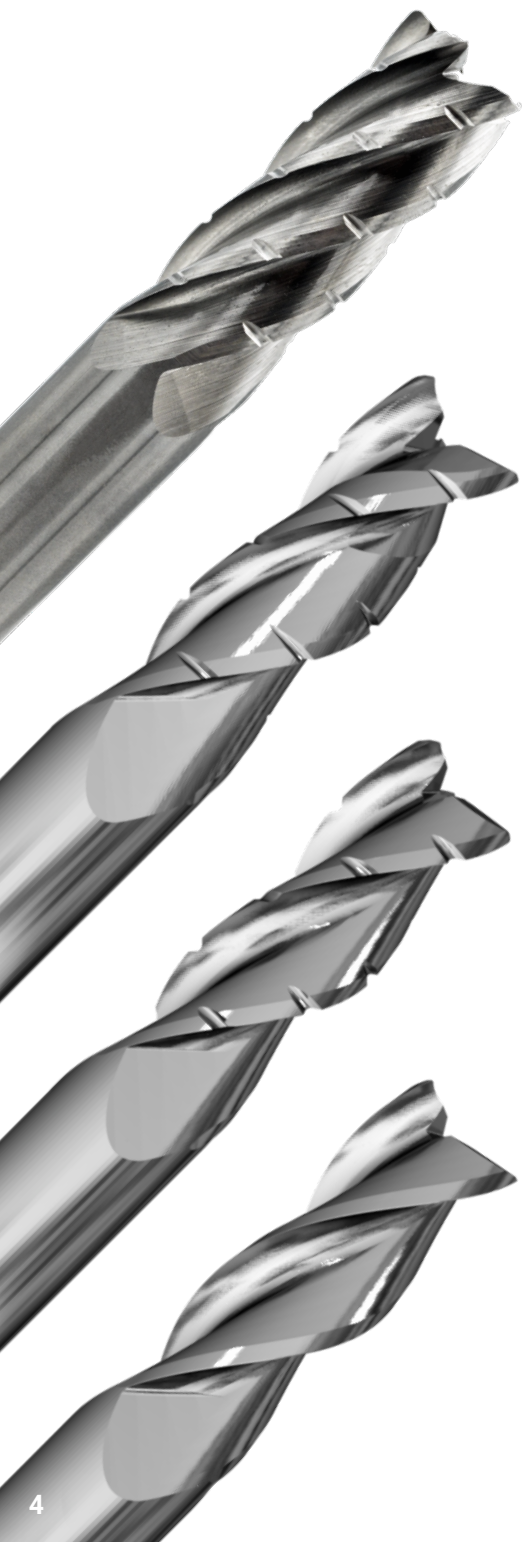
Tapered core construction ensures maximum rigidity during ramping and high-speed dynamic machining operations

High-polished flutes and cutting margin for optimal surface finish





# MEET THE ALUMIGATOR™ LINEUP



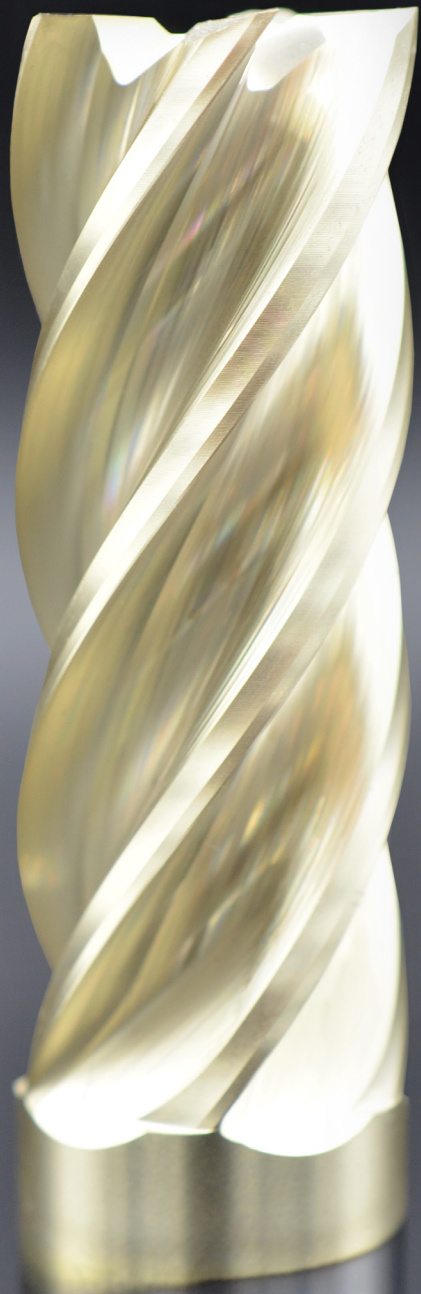
Coolant-through available  
Metal removal rates up to 100 cubic inches per minute  
Unequal indexing reduces chatter for optimized high efficiency milling

Designed for ultra-high speed pocketing of Aluminum  
Aggressive ramping into pockets up to 45 degrees  
Aerospace radii available from stock

Designed for ultra-high speed roughing in Aluminum  
High speed roughing and slotting at speeds in excess of 200 IPM  
Aerospace radii available from stock

Designed for ultra-high speed finishing of Aluminum  
Polished flutes and full eccentric circular land produce mirror-like finishes on walls and floors  
Ideal for thin walled parts and bottom finishing





## ALSO AVAILABLE PERFORMANCE-AL SERIES

The Performance-AL end mill series is GWS' largest consolidated offering of 2, 3 and 5-flute end mills designed for conventional and high speed milling of Aluminum Alloys. Over 1000 options available that include various lengths of cut, aerospace radii, ball mills, necks and our NF1 coating. If it's Aluminum you need to machine, your solution is here.

- + Designed for conventional or high speed machining of Aluminum
- + Several variations including 2, 3 and 5-flute designs and types available in this family of products
- + Custom options include additional lengths, corner radii and DLC coating



# WHAT OUR CUSTOMERS HAVE TO SAY



*"Best Aluminum Rougher I have ever used. The best part about this end mill, is that I can ACTUALLY run at the speeds that they recommend, while taking enormous cuts that would be impossible with the other tools I have used in the past."*

**Cameron Smith | Carbon Copy Designs**

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*"The Alumigator™ is the best roughing tool for aluminum that I have seen in my 40 years of machining!"*

**Randy Miller | DK International**

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*"The ramping is insane, I've never seen anything so aggressive...the chips eject with no problem even when ramping at extremely steep angles."*

**Jason Breiner | Breiner Machine**

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*"This Alumigator™ - ASR5 cuts amazing, I mean it is really impressive!"*

**Tony | Autosports Engineering**

◀ Scan the QR Code to read  
Tony's case study on using  
the new Alumigator™ ASR5's

# WHY USE THE ALUMIGATOR™

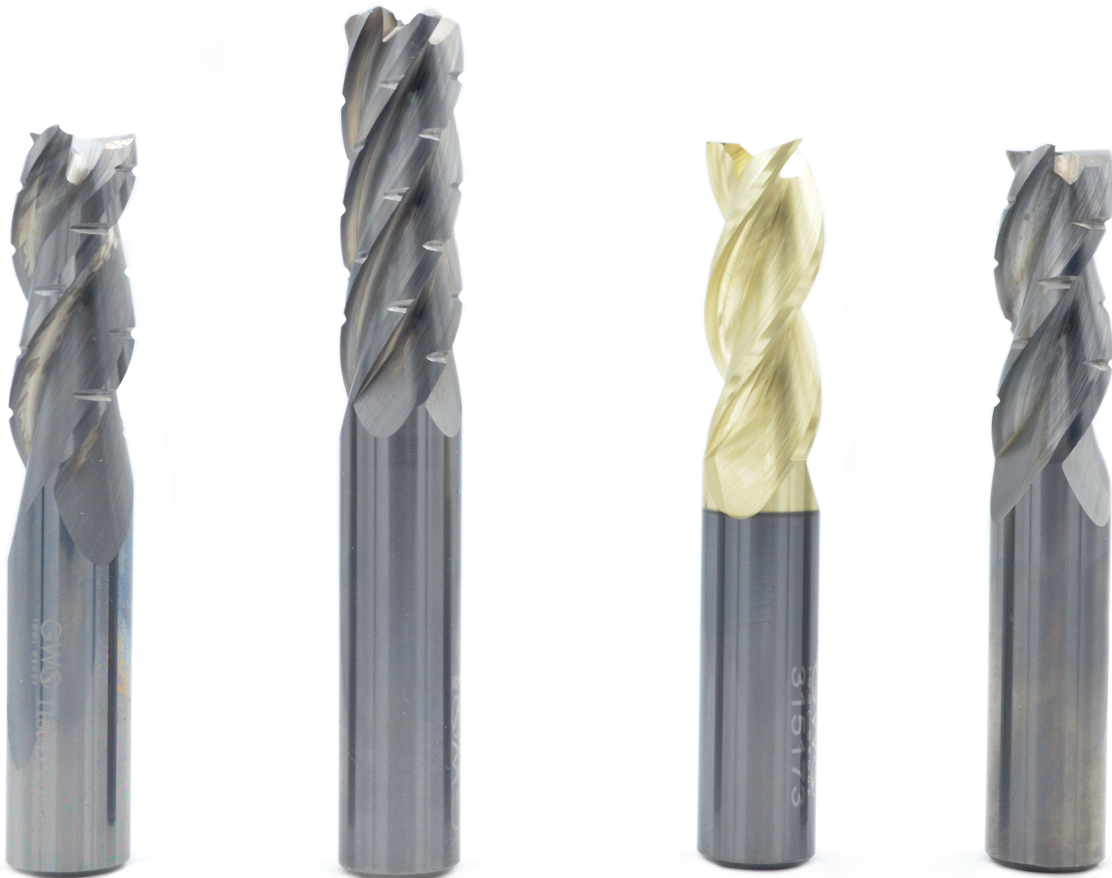
The Alumigator™ is a series of next generation, high performance end mills for Aluminum Alloys.

With 3, 4 and now 5 flute tools, they are stronger than traditional end mills. Whether ramping, roughing, slotting or finishing, the Alumigator™ outlasts, outruns and outcuts the competition in every way.

The strong core, highly engineered cutting edges and advanced geometries come together to create a family of tools capable of meeting any machining need or challenge in non-ferrous alloys like 6061 or 7075 Aluminum.

## YOU CAN'T OUTFRAN THE ALUMIGATOR™

- 3 to 4 times faster than traditional aluminum cutting end mills
- Roughing | Finishing | Pocketing | Slotting | Ramping | High Speed Dynamic Milling





# ULTIMATE PERFORMANCE

Premium High Performance Carbide Mills for Non-Ferrous Alloys



ASR5 | 5 Flute | Coolant-Through | Super Rougher

Diameter	Shank Dia	LOC	OAL	Radius	EDP
3/8	3/8	1-1/8	3	-	
3/8	3/8	1-1/8	3	0.015	
3/8	3/8	1-1/8	3	0.030	
3/8	3/8	1-1/8	3	0.060	
1/2	1/2	1-1/2	3-1/2	-	
1/2	1/2	1-1/2	3-1/2	0.015	
1/2	1/2	1-1/2	3-1/2	0.030	
1/2	1/2	1-1/2	3-1/2	0.060	
5/8	5/8	1-7/8	4	-	
5/8	5/8	1-7/8	4	0.030	
5/8	5/8	1-7/8	4	0.060	
5/8	5/8	1-7/8	4	0.090	
3/4	3/4	2-1/4	5	-	
3/4	3/4	2-1/4	5	0.030	
3/4	3/4	2-1/4	5	0.060	
3/4	3/4	2-1/4	5	0.090	
1	1	3	5-1/2	-	
1	1	3	5-1/2	0.030	
1	1	3	5-1/2	0.060	
1	1	3	5-1/2	0.090	

High speed dynamic milling

Coolant-through for increased MRR

### Custom Options:

**SAFE-LOCK**<sup>®</sup>

Shank available upon request



# ULTIMATE PERFORMANCE

Premium High Performance Carbide Mills for Non-Ferrous Alloys



ASR5 | 5 Flute | Solid | Super Rougher

Diameter	Shank Dia	LOC	OAL	Radius	EDP
3/8	3/8	1-1/8	3	-	
3/8	3/8	1-1/8	3	0.015	
3/8	3/8	1-1/8	3	0.030	
3/8	3/8	1-1/8	3	0.060	
1/2	1/2	1-1/2	3-1/2	-	
1/2	1/2	1-1/2	3-1/2	0.015	
1/2	1/2	1-1/2	3-1/2	0.030	
1/2	1/2	1-1/2	3-1/2	0.060	
5/8	5/8	1-7/8	4	-	
5/8	5/8	1-7/8	4	0.030	
5/8	5/8	1-7/8	4	0.060	
5/8	5/8	1-7/8	4	0.090	
3/4	3/4	2-1/4	5	-	
3/4	3/4	2-1/4	5	0.030	
3/4	3/4	2-1/4	5	0.060	
3/4	3/4	2-1/4	5	0.090	
1	1	3	5-1/2	-	
1	1	3	5-1/2	0.030	
1	1	3	5-1/2	0.060	
1	1	3	5-1/2	0.090	

High speed dynamic milling

### Custom Options:

**SAFE-LOCK®**

Shank available upon request





# SPEED & FEED GUIDE

Optimum Performance

## Series 1500

### ASR5 5-FLUTE COOLANT-THROUGH FOR ALUMINUM

Material	Axial ↓	Radial →	SFM		3/8	1/2	5/8	3/4	1
					IPT	IPT	IPT	IPT	IPT
N	Aluminum Alloy 6061, 7075	.25 X D	700	3930	0.0030	0.0050	0.0060	0.0080	0.0090
		0.5 X D			0.0030	0.0050	0.0060	0.0080	0.0090
		2 X D			0.0033	0.0055	0.0065	0.0087	0.0098
		Loc Max			0.0051	0.0085	0.0102	0.0136	0.0153
		Loc Max			0.0069	0.0115	0.0138	0.0184	0.0207
		Loc Max			0.0105	0.0175	0.021	0.028	0.0315
	High Silicon Aluminum > 12%	.25 X D	525	2948	0.0026	0.0045	0.0054	0.0072	0.0081
		0.5 X D			0.0026	0.0045	0.0054	0.0072	0.0081
		2 X D			0.0028	0.0049	0.0059	0.0078	0.0088
		Loc Max			0.0043	0.0077	0.0092	0.0122	0.0138
		Loc Max			0.0059	0.0104	0.0124	0.0166	0.0186
		Loc Max			0.0089	0.0158	0.0189	0.0252	0.0284

## Series 1502

### ASR5 5-FLUTE SOLID FOR ALUMINUM

Material	Axial ↓	Radial →	SFM		3/8	1/2	5/8	3/4	1
					IPT	IPT	IPT	IPT	IPT
N	Aluminum Alloy 6061, 7075	.25 X D	490	2751	0.0030	0.0050	0.0060	0.0080	0.0090
		0.5 X D			0.0030	0.0050	0.0060	0.0080	0.0090
		2 X D			0.0033	0.0055	0.0065	0.0087	0.0098
		Loc Max			0.0051	0.0085	0.0102	0.0136	0.0153
		Loc Max			0.0069	0.0115	0.0138	0.0184	0.0207
		Loc Max			0.0105	0.0175	0.021	0.028	0.0315
	High Silicon Aluminum > 12%	.25 X D	368	2063	0.0026	0.0045	0.0054	0.0072	0.0081
		0.5 X D			0.0026	0.0045	0.0054	0.0072	0.0081
		2 X D			0.0028	0.0049	0.0059	0.0078	0.0088
		Loc Max			0.0043	0.0077	0.0092	0.0122	0.0138
		Loc Max			0.0059	0.0104	0.0124	0.0166	0.0186
		Loc Max			0.0089	0.0158	0.0189	0.0252	0.0284



Scan to see  
the ASR5 in  
action!



# ULTIMATE PERFORMANCE

Premium High Performance Carbide Mills for Non-Ferrous Alloys



ART | 3 Flute | Chip Breaker | Radius | Ramping Mill

Diameter	Shank Dia	LOC	OAL	Radius	EDP
3/16	3/16	5/8	2	0.015	
3/16	3/16	5/8	2	0.030	
1/4	1/4	3/4	2-1/2	0.015	
1/4	1/4	3/4	2-1/2	0.030	
1/4	1/4	1-1/8	3	0.015	
1/4	1/4	1-1/8	3	0.030	
5/16	5/16	3/4	2-1/2	0.015	
5/16	5/16	3/4	2-1/2	0.030	
5/16	5/16	1-1/8	3	0.015	
5/16	5/16	1-1/8	3	0.030	
3/8	3/8	1	2-1/2	0.015	
3/8	3/8	1	2-1/2	0.030	
3/8	3/8	1	2-1/2	0.060	
3/8	3/8	1-1/2	4	0.015	
3/8	3/8	1-1/2	4	0.030	
3/8	3/8	1-1/2	4	0.060	
1/2	1/2	1-1/4	3	0.015	
1/2	1/2	1-1/4	3	0.030	
1/2	1/2	1-1/4	3	0.045	
1/2	1/2	1-1/4	3	0.060	
1/2	1/2	1-1/4	3	0.090	
1/2	1/2	2-1/4	4	0.015	
1/2	1/2	2-1/4	4	0.030	
1/2	1/2	2-1/4	4	0.045	
1/2	1/2	2-1/4	4	0.060	
1/2	1/2	2-1/4	4	0.090	

Ideal for pocketing, profiling and ramping up to 45 degrees

When the absolute highest in Metal Removal Rates is the goal

### Custom Options:

**SAFE-LOCK<sup>®</sup>**  
Shank available upon request



# ULTIMATE PERFORMANCE

Premium High Performance Carbide Mills for Non-Ferrous Alloys



ART | 3 Flute | Chip Breaker | Radius | Ramping Mill

Diameter	Shank Dia	LOC	OAL	Radius	EDP
5/8	5/8	1-5/8	3-1/2	0.015	
5/8	5/8	1-5/8	3-1/2	0.030	
5/8	5/8	1-5/8	3-1/2	0.045	
5/8	5/8	1-5/8	3-1/2	0.060	
5/8	5/8	1-5/8	3-1/2	0.090	
5/8	5/8	2-1/2	5	0.030	
5/8	5/8	2-1/2	5	0.060	
5/8	5/8	2-1/2	5	0.090	
3/4	3/4	1-5/8	4	0.030	
3/4	3/4	1-5/8	4	0.060	
3/4	3/4	1-5/8	4	0.090	
3/4	3/4	1-5/8	4	0.120	
3/4	3/4	2-1/2	5	0.030	
3/4	3/4	2-1/2	5	0.060	
3/4	3/4	2-1/2	5	0.090	
3/4	3/4	2-1/2	5	0.120	

Ideal for pocketing, profiling and ramping up to 45 degrees

When the absolute highest in Metal Removal Rates is the goal

### Custom Options:

**SAFE-LOCK<sup>®</sup>**  
Shank available upon request



# ULTIMATE PERFORMANCE

Premium High Performance Carbide Mills for Non-Ferrous Alloys



AST | 3 Flute | Chip Breaker | Square & Radius | Slotting & Roughing

Diameter	Shank Dia	LOC	OAL	Radius	EDP
3/16	3/16	5/8	2	-	
3/16	3/16	5/8	2	0.015	
3/16	3/16	5/8	2	0.030	
1/4	1/4	3/4	2-1/2	-	
1/4	1/4	3/4	2-1/2	0.015	
1/4	1/4	3/4	2-1/2	0.030	
1/4	1/4	1-1/8	3	-	
1/4	1/4	1-1/8	3	0.015	
1/4	1/4	1-1/8	3	0.030	
5/16	5/16	3/4	2-1/2	-	
5/16	5/16	3/4	2-1/2	0.015	
5/16	5/16	3/4	2-1/2	0.030	
5/16	5/16	1-1/8	3	-	
5/16	5/16	1-1/8	3	0.015	
5/16	5/16	1-1/8	3	0.030	
3/8	3/8	1	2-1/2	-	
3/8	3/8	1	2-1/2	0.015	
3/8	3/8	1	2-1/2	0.030	
3/8	3/8	1	2-1/2	0.060	
3/8	3/8	1-1/2	4	-	
3/8	3/8	1-1/2	4	0.015	
3/8	3/8	1-1/2	4	0.030	
3/8	3/8	1-1/2	4	0.060	
1/2	1/2	1-1/4	3	0.015	
1/2	1/2	1-1/4	3	0.030	
1/2	1/2	1-1/4	3	0.045	

High speed slotting up to two times diameter

Staggered chip breakers for easy chip management and high quality surface finishes

### Custom Options:

**SAFE-LOCK<sup>®</sup>**  
Shank available upon request 



# ULTIMATE PERFORMANCE

Premium High Performance Carbide Mills for Non-Ferrous Alloys



AST | 3 Flute | Chip Breaker | Square & Radius | Slotting & Roughing

Diameter	Shank Dia	LOC	OAL	Radius	EDP
1/2	1/2	1-1/4	3	-	
1/2	1/2	1-1/4	3	0.060	
1/2	1/2	1-1/4	3	0.090	
1/2	1/2	2-1/4	4	-	
1/2	1/2	2-1/4	4	0.015	
1/2	1/2	2-1/4	4	0.030	
1/2	1/2	2-1/4	4	0.060	
1/2	1/2	2-1/4	4	0.090	
5/8	5/8	1-5/8	3-1/2	-	
5/8	5/8	1-5/8	3-1/2	0.015	
5/8	5/8	1-5/8	3-1/2	0.030	
5/8	5/8	1-5/8	3-1/2	0.045	
5/8	5/8	1-5/8	3-1/2	0.060	
5/8	5/8	1-5/8	3-1/2	0.090	
5/8	5/8	2-1/2	5	-	
5/8	5/8	2-1/2	5	0.015	
5/8	5/8	2-1/2	5	0.030	
5/8	5/8	2-1/2	5	0.060	
5/8	5/8	2-1/2	5	0.090	
3/4	3/4	1-5/8	4	-	
3/4	3/4	1-5/8	4	0.030	
3/4	3/4	1-5/8	4	0.060	
3/4	3/4	1-5/8	4	0.090	
3/4	3/4	1-5/8	4	0.120	
3/4	3/4	2-1/2	5	-	
3/4	3/4	2-1/2	5	0.030	
3/4	3/4	2-1/2	5	0.060	
3/4	3/4	2-1/2	5	0.090	
3/4	3/4	2-1/2	5	0.120	

High speed slotting up to two times diameter

Staggered chip breakers for easy chip management and high quality surface finishes

### Custom Options:

**SAFE-LOCK®**  
Shank available upon request





# ULTIMATE PERFORMANCE

Premium High Performance Carbide Mills for Non-Ferrous Alloys



AFT | 3 Flute | Square & Radius | Finishing

Diameter	Shank Dia	LOC	OAL	Radius	EDP
3/16	3/16	5/8	2	-	
3/16	3/16	5/8	2	0.010	
3/16	3/16	5/8	2	0.030	
1/4	1/4	3/4	2-1/2	-	
1/4	1/4	3/4	2-1/2	0.010	
1/4	1/4	3/4	2-1/2	0.030	
1/4	1/4	3/4	2-1/2	0.040	
1/4	1/4	1-1/8	3	-	
1/4	1/4	1-1/8	3	0.010	
1/4	1/4	1-1/8	3	0.040	
5/16	5/16	3/4	2-1/2	-	
5/16	5/16	3/4	2-1/2	0.010	
5/16	5/16	3/4	2-1/2	0.030	
5/16	5/16	3/4	2-1/2	0.050	
5/16	5/16	1-1/8	3	-	
5/16	5/16	1-1/8	3	0.010	
5/16	5/16	1-1/8	3	0.050	
3/8	3/8	1	2-1/2	-	
3/8	3/8	1	2-1/2	0.015	
3/8	3/8	1	2-1/2	0.030	
3/8	3/8	1	2-1/2	0.060	
3/8	3/8	1-1/2	4	-	
3/8	3/8	1-1/2	4	0.015	
3/8	3/8	1-1/2	4	0.060	
1/2	1/2	1-1/4	3	0.015	
1/2	1/2	1-1/4	3	0.030	

Wiper flat for high quality floor finish

Designed to finish parts at roughing speeds and feeds

### Custom Options:

**SAFE-LOCK<sup>®</sup>**  
Shank available upon request



# ULTIMATE PERFORMANCE

Premium High Performance Carbide Mills for Non-Ferrous Alloys



AFT | 3 Flute | Square & Radius | Finishing

Diameter	Shank Dia	LOC	OAL	Radius	EDP
1/2	1/2	1-1/4	3	-	
1/2	1/2	1-1/4	3	0.045	
1/2	1/2	1-1/4	3	0.060	
1/2	1/2	1-1/4	3	0.080	
1/2	1/2	1-1/4	3	0.090	
1/2	1/2	2-1/4	4	-	
1/2	1/2	2-1/4	4	0.015	
1/2	1/2	2-1/4	4	0.080	
5/8	5/8	1-5/8	3-1/2	-	
5/8	5/8	1-5/8	3-1/2	0.020	
5/8	5/8	1-5/8	3-1/2	0.030	
5/8	5/8	1-5/8	3-1/2	0.060	
5/8	5/8	1-5/8	3-1/2	0.090	
5/8	5/8	1-5/8	3-1/2	0.100	
5/8	5/8	2-1/2	5	-	
5/8	5/8	2-1/2	5	0.020	
5/8	5/8	2-1/2	5	0.100	
3/4	3/4	1-5/8	4	-	
3/4	3/4	1-5/8	4	0.030	
3/4	3/4	1-5/8	4	0.060	
3/4	3/4	1-5/8	4	0.090	
3/4	3/4	1-5/8	4	0.120	
3/4	3/4	2-1/2	5	-	
3/4	3/4	2-1/2	5	0.030	
3/4	3/4	2-1/2	5	0.120	

Wiper flat for high quality floor finish

Designed to finish parts at roughing speeds and feeds

### Custom Options:

**SAFE-LOCK®**  
Shank available upon request



# SPEED & FEED GUIDE

Optimum Performance

## Series 1010

### ART 3 FLUTE SERIES NON-FERROUS

Material	Axial ↓	Radial →	3/16		1/4		5/16		3/8		1/2		5/8		3/4	
			RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
N Aluminum, Brass, Copper 6061, 7050, 7075	0.5 X D	0.7 X D	12000	169	12000	227	12000	283	12000	341	12000	454	12000	568	12000	680
	1 X D	.6 X D	12000	155	12000	208	12000	260	12000	312	12000	416	12000	520	12000	624
	2 X D	.4 X D	12000	141	12000	189	12000	236	12000	284	12000	378	12000	473	12000	567
	0.5 X D	0.7 X D	12000	140	12000	188	12000	235	12000	282	12000	376	12000	470	12000	564
	1 X D	.6 X D	12000	133	12000	179	12000	223	12000	268	12000	357	12000	447	12000	536
	2 X D	.4 X D	12000	127	12000	170	12000	212	12000	256	12000	340	12000	426	12000	510

## Series 1015

### AST 3 FLUTE SERIES NON-FERROUS

Material	Axial ↓	Radial →	3/16		1/4		5/16		3/8		1/2		5/8		3/4	
			RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
N Aluminum, Brass, Copper 6061, 7050, 7075	1 X D	1.0 X D	12000	98	12000	132	12000	165	12000	198	12000	263	12000	330	12000	395
	2 X D	1.0 X D	12000	74	12000	99	12000	124	12000	149	12000	198	12000	248	12000	297
	2 X D	.4 X D	12000	141	12000	189	12000	236	12000	284	12000	378	12000	473	12000	567
	1 X D	1.0 X D	12000	89	12000	119	12000	148	12000	178	12000	237	12000	297	12000	356
	2 X D	1.0 X D	12000	67	12000	89	12000	112	12000	134	12000	178	12000	223	12000	267
	2 X D	.4 X D	12000	127	12000	170	12000	212	12000	256	12000	340	12000	426	12000	510

## Series 1020

### AFT 3 FLUTE SERIES NON-FERROUS

Material	Axial ↓	Radial →	3/16		1/4		5/16		3/8		1/2		5/8		3/4	
			RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
N Aluminum, Brass, Copper 6061, 7050, 7075	2 X D	.05 X D	12000	101	12000	135	12000	168	12000	203	12000	270	12000	338	12000	405
	.05 X D	0.65 X D	12000	111	12000	149	12000	185	12000	223	12000	297	12000	372	12000	446
	2 X D	.05 X D	12000	91	12000	122	12000	151	12000	183	12000	243	12000	304	12000	365
	.05 X D	0.65 X D	12000	100	12000	134	12000	166	12000	201	12000	267	12000	335	12000	401







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