

# Aluminum Applications Tools

<b>A1 / MA1</b> 201	2 Flute		<b>12</b>
<b>A1 / MA1</b> 303	3 Flute		<b>14</b>
<b>FM / MFM</b> 201/202/203/204/205	2 Flute (Short to Long Reach)		<b>16</b>
<b>FM</b> 301/302/303/304/305	3 Flute (Short to Long Reach)		<b>20</b>
<b>S1 / MS1</b> 201/301/401	2, 3 and 4 Flute		<b>27</b>
<b>C1 / MC1</b> 201/301/401	2, 3 and 4 Flute		<b>29</b>
<b>WU1 / WD1</b> 310	3 Flute Up and Down Shear		<b>31</b>
<b>SSB / MSB 201</b> <b>B / MB 203</b>	2 Flute Ball End (See Multiple Applications)		<b>100</b>
<b>C8</b> 201/203/301/303	2 and 3 Flute on 1/4" Shank (See Multiple Applications)		<b>93</b>
<b>NR / MNR</b> 204/303/404	2, 3 and 4 Flute (See Multiple Applications)		<b>102</b>
<b>PM / PMD</b> Routers	1 Flute Routers (See Composites & Plastics)		<b>63</b>
<b>PCD</b> 203 Routers	2 Flute PCD-Tipped Routers (See Composites & Plastics)		<b>59</b>
<b>PCD-BN</b> 201 Routers	2 Flute PCD-Tipped Routers, Ball Nose (See Composites & Plastics)		<b>59</b>
<b>MINIATURES</b>	(See Miniatures Applications)		<b>77</b>
<b>SAWS</b>	(See Saws Applications)		<b>108</b>

# A1/MA1 2 Flute High Performance Tools for Aluminum

**Characteristics**

- Square End
- Corner Break
- 2 Flute
- 30° Helix

**Applications**

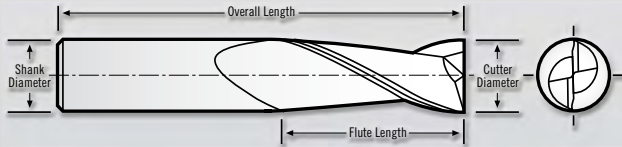
- Slotting
- Side Milling
- Helical Interpolation
- Ramping
- High Performance
- Roughing
- Semi-Finishing
- Finishing
- Dry
- Wet
- Cold Air
- Spray Mist

**Materials**

- Aluminum
- Copper
- Magnesium
- Plastics
- BRASS

**Coatings**

- Diamond-Like Carbon (DLC)



**A1 Series Tolerances:**

Cutting Dia. =  $-.001/-0.0015$ "  
 Shank Dia. =  $-.0001/-0.0002$ "  
 LOC =  $+0.060/-0.000$ "  
 OAL =  $+/- .060$ "

**MA1 Series Tolerances:**

Cutting Dia. =  $-0.025/-0.038$ mm  
 Shank Dia. =  $-0.002/-0.005$ mm  
 LOC (<10D) =  $+0.75/-0.000$ mm  
 (>10D) =  $+1.5/-0.000$ mm  
 OAL =  $+/-1.000$ mm



## A1-201 2 Flute Stub Length

Cutting Diameter	Shank Diameter	Flute Length	Corner Chamfer	Overall Length	Tool Number Uncoated	Tool Number DLC Coated
1/8"	1/8"	3/16"	.005"	1-1/2"	A1-201-04	A1-201-04 DLC
3/16"	3/16"	9/32"	.005"	2"	A1-201-06	A1-201-06 DLC
1/4"	1/4"	3/8"	.005"	2"	A1-201-08	A1-201-08 DLC
5/16"	5/16"	15/32"	.005"	2-1/2"	A1-201-10	A1-201-10 DLC
3/8"	3/8"	9/16"	.010"	2-1/2"	A1-201-12	A1-201-12 DLC
1/2"	1/2"	3/4"	.010"	3"	A1-201-16	A1-201-16 DLC
5/8"	5/8"	15/16"	.010"	3-1/2"	A1-201-20	A1-201-20 DLC
3/4"	3/4"	1-1/8"	.010"	4"	A1-201-24	A1-201-24 DLC
1"	1"	1-1/2"	.015"	4"	A1-201-32	A1-201-32 DLC

See RobbJack Videos on



[www.youtube.com/RobbJackCorp](http://www.youtube.com/RobbJackCorp)  
 or  
[www.robbjack.com/videos](http://www.robbjack.com/videos)



## MA1-201 Metric 2 Flute Stub Length **METRIC**

Cutting Diameter	Shank Diameter	Flute Length	Corner Chamfer	Overall Length	Tool Number Uncoated	Tool Number DLC Coated
3mm	3mm	4.5mm	0.12mm	38mm	MA1-201-03	MA1-201-03 DLC
4mm	4mm	6mm	0.12mm	50mm	MA1-201-04	MA1-201-04 DLC
5mm	5mm	7.5mm	0.12mm	50mm	MA1-201-05	MA1-201-05 DLC
6mm	6mm	9mm	0.12mm	50mm	MA1-201-06	MA1-201-06 DLC
8mm	8mm	12mm	0.25mm	63mm	MA1-201-08	MA1-201-08 DLC
10mm	10mm	15mm	0.25mm	72mm	MA1-201-10	MA1-201-10 DLC
12mm	12mm	18mm	0.25mm	83mm	MA1-201-12	MA1-201-12 DLC
16mm	16mm	24mm	0.25mm	92mm	MA1-201-16	MA1-201-16 DLC
20mm	20mm	30mm	0.3mm	104mm	MA1-201-20	MA1-201-20 DLC

# 2 Flute High Performance Tools for Aluminum **A1/MA1**

## A1-201 SPEED & FEED

Tool Diameter	Aluminum 6061-T6, 7075, 2024		Brass		Copper		Plastic		Magnesium	
	RPM	CLPT	RPM	CLPT	RPM	CLPT	RPM	CLPT	RPM	CLPT
1/8"	Max	0.0032"	22900	0.0016"	18300	0.0016"	39700	0.0032"	Max	0.0032"
3/16"	Max	0.0048"	15300	0.0024"	12200	0.0024"	26500	0.0048"	Max	0.0048"
1/4"	Max	0.0064"	11500	0.0032"	9200	0.0032"	19900	0.0064"	Max	0.0064"
5/16"	Max	0.0080"	9200	0.0040"	7300	0.0040"	15900	0.0080"	Max	0.0080"
3/8"	Max	0.0096"	7600	0.0048"	6100	0.0048"	13200	0.0096"	Max	0.0096"
1/2"	Max	0.0128"	5700	0.0064"	4600	0.0064"	9900	0.0128"	Max	0.0128"
5/8"	Max	0.0160"	4600	0.0080"	3700	0.0080"	7900	0.0160"	Max	0.0160"
3/4"	Max	0.0192"	3800	0.0096"	3100	0.0096"	6600	0.0192"	Max	0.0192"
1"	Max	0.0256"	2900	0.0128"	2300	0.0128"	5000	0.0256"	Max	0.0256"

Axial depth of cut up to 1 x diameter of the tool

## MA1-201 SPEED & FEED

Tool Diameter	Aluminum 6061-T6, 7075, 2024		Brass		Copper		Plastic		Magnesium	
	RPM	CLPT	RPM	CLPT	RPM	CLPT	RPM	CLPT	RPM	CLPT
3mm	Max	0.077mm	24300	0.038mm	19400	0.038mm	42000	0.077mm	Max	0.077mm
4mm	Max	0.102mm	18200	0.051mm	14600	0.051mm	31500	0.102mm	Max	0.102mm
5mm	Max	0.128mm	14600	0.064mm	11600	0.064mm	25200	0.128mm	Max	0.128mm
6mm	Max	0.154mm	12100	0.077mm	9700	0.077mm	21000	0.154mm	Max	0.154mm
8mm	Max	0.205mm	9100	0.102mm	7300	0.102mm	15800	0.205mm	Max	0.205mm
10mm	Max	0.256mm	7300	0.128mm	5800	0.128mm	12600	0.256mm	Max	0.256mm
12mm	Max	0.307mm	6100	0.154mm	4900	0.154mm	10500	0.307mm	Max	0.307mm
16mm	Max	0.410mm	4500	0.205mm	3600	0.205mm	7900	0.410mm	Max	0.410mm
20mm	Max	0.512mm	3600	0.256mm	2900	0.256mm	6300	0.512mm	Max	0.512mm

Axial depth of cut up to 1 x diameter of the tool



## Videos Online!

See RobbJack's high performance aluminum tools in action.

[www.youtube.com/RobbJackCorp](http://www.youtube.com/RobbJackCorp)  
or  
[www.robbjack.com/videos](http://www.robbjack.com/videos)

# A1/MA1 3 Flute High Performance Tools for Aluminum

**Characteristics**

- Square End
- Corner Break
- 3 Flute
- 35° Helix
- Mirror Edge
- Polished

**Applications**

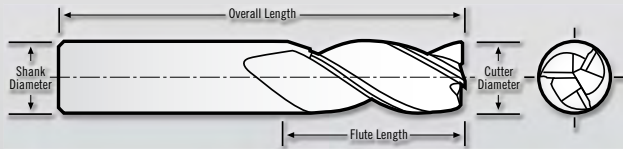
- Slotting
- Side Milling
- Helical Interpolation
- Ramping
- High Performance
- Roughing
- Semi-Finishing
- Finishing
- Wet

**Materials**

- Aluminum
- Copper
- Magnesium
- BRASS

**Coatings**

- Diamond-Like Carbon (DLC)



**A1 Series Tolerances:**  
 Cutting Dia. =  $-.001/-0.0015$ "  
 Shank Dia. =  $-.0001/-0.0002$ "  
 LOC =  $+0.060/-0.000$ "  
 OAL =  $+/-0.060$ "

**MA1 Series Tolerances:**  
 Cutting Dia. =  $-0.025/-0.038$ mm  
 Shank Dia. =  $-0.002/-0.005$ mm  
 LOC (<10D) =  $+0.750/-0.000$ mm  
 (>10D) =  $+1.500/-0.000$ mm  
 OAL =  $+/-1.000$ mm



## A1-303 3 Flute Standard Length

Cutting Diameter	Shank Diameter	Flute Length	Corner Chamfer	Overall Length	Tool Number Uncoated	Tool Number DLC Coated
1/8"	1/8"	3/8"	.005"	1-1/2"	A1-303-04	A1-303-04 <b>DLC</b>
3/16"	3/16"	9/16"	.005"	2"	A1-303-06	A1-303-06 <b>DLC</b>
1/4"	1/4"	3/4"	.005"	2-1/2"	A1-303-08	A1-303-08 <b>DLC</b>
5/16"	5/16"	7/8"	.005"	2-1/2"	A1-303-10	A1-303-10 <b>DLC</b>
3/8"	3/8"	1"	.010"	2-1/2"	A1-303-12	A1-303-12 <b>DLC</b>
1/2"	1/2"	1-1/8"	.010"	3"	A1-303-16	A1-303-16 <b>DLC</b>
5/8"	5/8"	1-1/4"	.010"	3-1/2"	A1-303-20	A1-303-20 <b>DLC</b>
3/4"	3/4"	1-5/8"	.010"	4"	A1-303-24	A1-303-24 <b>DLC</b>
1"	1"	2"	.015"	4"	A1-303-32	A1-303-32 <b>DLC</b>



## MA1-303 Metric 3 Flute Standard Length **METRIC**

Cutting Diameter	Shank Diameter	Flute Length	Corner Chamfer	Overall Length	Tool Number Uncoated	Tool Number DLC Coated
3mm	3mm	8mm	0.1mm	38mm	MA1-303-03	MA1-303-03 <b>DLC</b>
4mm	4mm	12mm	0.1mm	50mm	MA1-303-04	MA1-303-04 <b>DLC</b>
5mm	5mm	14mm	0.1mm	50mm	MA1-303-05	MA1-303-05 <b>DLC</b>
6mm	6mm	15mm	0.1mm	63mm	MA1-303-06	MA1-303-06 <b>DLC</b>
8mm	8mm	20mm	0.1mm	63mm	MA1-303-08	MA1-303-08 <b>DLC</b>
10mm	10mm	22mm	0.1mm	72mm	MA1-303-10	MA1-303-10 <b>DLC</b>
12mm	12mm	26mm	0.2mm	83mm	MA1-303-12	MA1-303-12 <b>DLC</b>
16mm	16mm	33mm	0.2mm	92mm	MA1-303-16	MA1-303-16 <b>DLC</b>
20mm	20mm	42mm	0.2mm	104mm	MA1-303-20	MA1-303-20 <b>DLC</b>

# 3 Flute High Performance Tools for Aluminum **A1/MA1**

## A1-303 SPEED & FEED

Tool Diameter	Aluminum 6061-T6		Aluminum 6061-T3		Aluminum 7075		Aluminum 2024	
	RPM	CLPT	RPM	CLPT	RPM	CLPT	RPM	CLPT
1/8"	Max	0.0020"	Max	0.0018"	Max	0.0020"	Max	0.0020"
3/16"	Max	0.0030"	Max	0.0026"	Max	0.0030"	Max	0.0030"
1/4"	Max	0.0040"	Max	0.0035"	Max	0.0040"	Max	0.0040"
5/16"	Max	0.0050"	Max	0.0044"	Max	0.0050"	Max	0.0050"
3/8"	Max	0.0060"	Max	0.0053"	Max	0.0060"	Max	0.0060"
1/2"	Max	0.0080"	Max	0.0070"	Max	0.0080"	Max	0.0080"
5/8"	Max	0.0100"	Max	0.0088"	Max	0.0100"	Max	0.0100"
3/4"	Max	0.0120"	Max	0.0105"	Max	0.0120"	Max	0.0120"
1"	Max	0.0160"	Max	0.0140"	Max	0.0160"	Max	0.0160"

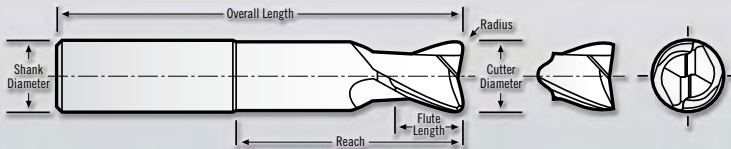
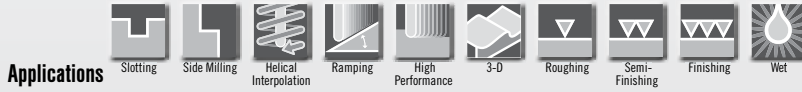
Axial depth of cut up to  $1.5 \times$  diameter of the tool with 50% radial step over.

## MA1-303 SPEED & FEED

Tool Diameter	Aluminum 6061-T6		Aluminum 6061-T3		Aluminum 7075		Aluminum 2024	
	RPM	CLPT	RPM	CLPT	RPM	CLPT	RPM	CLPT
3mm	Max	0.048mm	Max	0.042mm	Max	0.048mm	Max	0.048mm
4mm	Max	0.064mm	Max	0.056mm	Max	0.064mm	Max	0.064mm
5mm	Max	0.080mm	Max	0.070mm	Max	0.080mm	Max	0.080mm
6mm	Max	0.096mm	Max	0.084mm	Max	0.096mm	Max	0.096mm
8mm	Max	0.128mm	Max	0.112mm	Max	0.128mm	Max	0.128mm
10mm	Max	0.160mm	Max	0.140mm	Max	0.160mm	Max	0.160mm
12mm	Max	0.192mm	Max	0.168mm	Max	0.192mm	Max	0.192mm
16mm	Max	0.256mm	Max	0.224mm	Max	0.256mm	Max	0.256mm
20mm	Max	0.320mm	Max	0.280mm	Max	0.320mm	Max	0.320mm

Axial depth of cut up to  $1.5 \times$  diameter of the tool with 50% radial step over.

# FM 2 Flute High Performance Tools for Aluminum



**FM Series Tolerances:**  
 Cutting Dia. =  $-.001/-0.0015$ "  
 Shank Dia. =  $-.0001/-0.0002$ "  
 LOC =  $+0.060/-0.000$ "  
 OAL =  $+/-0.060$ "



**NEW!**

## FM 2 Flute (Short to Long Reach)

	Cutting Diameter	Shank Diameter	Flute Length	Corner Radius	Reach Length*	Overall Length	Tool Number Uncoated	Tool Number DLC Coated	
SHORT	1/4"	1/4"	1/4"	Sq. End	0.625"	3"	FM-201-08	FM-201-08 <b>DLC</b>	1/4" DIAMETER
	1/4"	1/4"	1/4"	0.03"	0.625"	3"	FM-201-08-030	FM-201-08-030 <b>DLC</b>	
	1/4"	1/4"	1/4"	0.06"	0.625"	3"	FM-201-08-060	FM-201-08-060 <b>DLC</b>	
	1/4"	1/4"	1/4"	0.09"	0.625"	3"	FM-201-08-090	FM-201-08-090 <b>DLC</b>	
	1/4"	1/4"	1/4"	Ball End	0.625"	3"	FM-201-08-BN	FM-201-08-BN <b>DLC</b>	
MEDIUM	1/4"	1/4"	1/4"	Sq. End	0.875"	3"	FM-202-08	FM-202-08 <b>DLC</b>	
	1/4"	1/4"	1/4"	0.03"	0.875"	3"	FM-202-08-030	FM-202-08-030 <b>DLC</b>	
	1/4"	1/4"	1/4"	0.06"	0.875"	3"	FM-202-08-060	FM-202-08-060 <b>DLC</b>	
	1/4"	1/4"	1/4"	0.09"	0.875"	3"	FM-202-08-090	FM-202-08-090 <b>DLC</b>	
	1/4"	1/4"	1/4"	Ball End	0.875"	3"	FM-202-08-BN	FM-202-08-BN <b>DLC</b>	
LONG	1/4"	1/4"	1/4"	Sq. End	1.063"	3"	FM-204-08	FM-204-08 <b>DLC</b>	
	1/4"	1/4"	1/4"	0.03"	1.063"	3"	FM-204-08-030	FM-204-08-030 <b>DLC</b>	
	1/4"	1/4"	1/4"	0.06"	1.063"	3"	FM-204-08-060	FM-204-08-060 <b>DLC</b>	
	1/4"	1/4"	1/4"	0.09"	1.063"	3"	FM-204-08-090	FM-204-08-090 <b>DLC</b>	
	1/4"	1/4"	1/4"	Ball End	1.063"	3"	FM-204-08-BN	FM-204-08-BN <b>DLC</b>	
EXTRA LONG	1/4"	1/4"	1/4"	Sq. End	1.500"	3"	FM-205-08	FM-205-08 <b>DLC</b>	
	1/4"	1/4"	1/4"	0.03"	1.500"	3"	FM-205-08-030	FM-205-08-030 <b>DLC</b>	
	1/4"	1/4"	1/4"	0.06"	1.500"	3"	FM-205-08-060	FM-205-08-060 <b>DLC</b>	
	1/4"	1/4"	1/4"	0.09"	1.500"	3"	FM-205-08-090	FM-205-08-090 <b>DLC</b>	
	1/4"	1/4"	1/4"	Ball End	1.500"	3"	FM-205-08-BN	FM-205-08-BN <b>DLC</b>	
SHORT	5/16"	5/16"	5/16"	Sq. End	0.875"	3-1/8"	FM-201-10	FM-201-10 <b>DLC</b>	5/16" DIAMETER
	5/16"	5/16"	5/16"	0.03"	0.875"	3-1/8"	FM-201-10-030	FM-201-10-030 <b>DLC</b>	
	5/16"	5/16"	5/16"	0.06"	0.875"	3-1/8"	FM-201-10-060	FM-201-10-060 <b>DLC</b>	
	5/16"	5/16"	5/16"	0.09"	0.875"	3-1/8"	FM-201-10-090	FM-201-10-090 <b>DLC</b>	
	5/16"	5/16"	5/16"	0.12"	0.875"	3-1/8"	FM-201-10-120	FM-201-10-120 <b>DLC</b>	
	5/16"	5/16"	5/16"	Ball End	0.875"	3-1/8"	FM-201-10-BN	FM-201-10-BN <b>DLC</b>	
	5/16"	5/16"	5/16"	Sq. End	1.094"	3-1/8"	FM-202-10	FM-202-10 <b>DLC</b>	
	5/16"	5/16"	5/16"	0.03"	1.094"	3-1/8"	FM-202-10-030	FM-202-10-030 <b>DLC</b>	
	5/16"	5/16"	5/16"	0.06"	1.094"	3-1/8"	FM-202-10-060	FM-202-10-060 <b>DLC</b>	
	5/16"	5/16"	5/16"	0.09"	1.094"	3-1/8"	FM-202-10-090	FM-202-10-090 <b>DLC</b>	
MEDIUM	5/16"	5/16"	5/16"	0.12"	1.094"	3-1/8"	FM-202-10-120	FM-202-10-120 <b>DLC</b>	
	5/16"	5/16"	5/16"	Ball End	1.094"	3-1/8"	FM-202-10-BN	FM-202-10-BN <b>DLC</b>	

\*Other Reach Lengths available upon request.

# 2 Flute High Performance Tools for Aluminum

# FM

Aluminum



**NEW!**

## FM 2 Flute (Short to Long Reach) —CONTINUED FROM PREVIOUS

	Cutting Diameter	Shank Diameter	Flute Length	Corner Radius	Reach Length*	Overall Length	Tool Number Uncoated	Tool Number DLC Coated	
LONG	5/16"	5/16"	5/16"	Sq. End	1.313"	3-1/8"	FM-204-10	FM-204-10 <b>DLC</b>	5/16" DIAMETER
	5/16"	5/16"	5/16"	0.03"	1.313"	3-1/8"	FM-204-10-030	FM-204-10-030 <b>DLC</b>	
	5/16"	5/16"	5/16"	0.06"	1.313"	3-1/8"	FM-204-10-060	FM-204-10-060 <b>DLC</b>	
	5/16"	5/16"	5/16"	0.09"	1.313"	3-1/8"	FM-204-10-090	FM-204-10-090 <b>DLC</b>	
	5/16"	5/16"	5/16"	0.12"	1.313"	3-1/8"	FM-204-10-120	FM-204-10-120 <b>DLC</b>	
	5/16"	5/16"	5/16"	Ball End	1.313"	3-1/8"	FM-204-10-BN	FM-204-10-BN <b>DLC</b>	
EXTRA LONG	5/16"	5/16"	5/16"	Sq. End	1.625"	3-1/8"	FM-205-10	FM-205-10 <b>DLC</b>	
	5/16"	5/16"	5/16"	0.03"	1.625"	3-1/8"	FM-205-10-030	FM-205-10-030 <b>DLC</b>	
	5/16"	5/16"	5/16"	0.06"	1.625"	3-1/8"	FM-205-10-060	FM-205-10-060 <b>DLC</b>	
	5/16"	5/16"	5/16"	0.09"	1.625"	3-1/8"	FM-205-10-090	FM-205-10-090 <b>DLC</b>	
	5/16"	5/16"	5/16"	0.12"	1.625"	3-1/8"	FM-205-10-120	FM-205-10-120 <b>DLC</b>	
	5/16"	5/16"	5/16"	Ball End	1.625"	3-1/8"	FM-205-10-BN	FM-205-10-BN <b>DLC</b>	
SHORT	3/8"	3/8"	3/8"	Sq. End	1.000"	4"	FM-201-12	FM-201-12 <b>DLC</b>	3/8" DIAMETER
	3/8"	3/8"	3/8"	0.03"	1.000"	4"	FM-201-12-030	FM-201-12-030 <b>DLC</b>	
	3/8"	3/8"	3/8"	0.06"	1.000"	4"	FM-201-12-060	FM-201-12-060 <b>DLC</b>	
	3/8"	3/8"	3/8"	0.09"	1.000"	4"	FM-201-12-090	FM-201-12-090 <b>DLC</b>	
	3/8"	3/8"	3/8"	0.12"	1.000"	4"	FM-201-12-120	FM-201-12-120 <b>DLC</b>	
	3/8"	3/8"	3/8"	Ball End	1.000"	4"	FM-201-12-BN	FM-201-12-BN <b>DLC</b>	
MEDIUM	3/8"	3/8"	3/8"	Sq. End	1.250"	4"	FM-202-12	FM-202-12 <b>DLC</b>	
	3/8"	3/8"	3/8"	0.03"	1.250"	4"	FM-202-12-030	FM-202-12-030 <b>DLC</b>	
	3/8"	3/8"	3/8"	0.06"	1.250"	4"	FM-202-12-060	FM-202-12-060 <b>DLC</b>	
	3/8"	3/8"	3/8"	0.09"	1.250"	4"	FM-202-12-090	FM-202-12-090 <b>DLC</b>	
	3/8"	3/8"	3/8"	0.12"	1.250"	4"	FM-202-12-120	FM-202-12-120 <b>DLC</b>	
	3/8"	3/8"	3/8"	Ball End	1.250"	4"	FM-202-12-BN	FM-202-12-BN <b>DLC</b>	
LONG	3/8"	3/8"	3/8"	Sq. End	1.563"	4"	FM-204-12	FM-204-12 <b>DLC</b>	
	3/8"	3/8"	3/8"	0.03"	1.563"	4"	FM-204-12-030	FM-204-12-030 <b>DLC</b>	
	3/8"	3/8"	3/8"	0.06"	1.563"	4"	FM-204-12-060	FM-204-12-060 <b>DLC</b>	
	3/8"	3/8"	3/8"	0.09"	1.563"	4"	FM-204-12-090	FM-204-12-090 <b>DLC</b>	
	3/8"	3/8"	3/8"	0.12"	1.563"	4"	FM-204-12-120	FM-204-12-120 <b>DLC</b>	
	3/8"	3/8"	3/8"	Ball End	1.563"	4"	FM-204-12-BN	FM-204-12-BN <b>DLC</b>	
EXTRA LONG	3/8"	3/8"	3/8"	Sq. End	2.125"	4"	FM-205-12	FM-205-12 <b>DLC</b>	
	3/8"	3/8"	3/8"	0.03"	2.125"	4"	FM-205-12-030	FM-205-12-030 <b>DLC</b>	
	3/8"	3/8"	3/8"	0.06"	2.125"	4"	FM-205-12-060	FM-205-12-060 <b>DLC</b>	
	3/8"	3/8"	3/8"	0.09"	2.125"	4"	FM-205-12-090	FM-205-12-090 <b>DLC</b>	
	3/8"	3/8"	3/8"	0.12"	2.125"	4"	FM-205-12-120	FM-205-12-120 <b>DLC</b>	
	3/8"	3/8"	3/8"	Ball End	2.125"	4"	FM-205-12-BN	FM-205-12-BN <b>DLC</b>	
SHORT	1/2"	1/2"	1/2"	Sq. End	1.250"	5"	FM-201-16	FM-201-16 <b>DLC</b>	1/2" DIAMETER
	1/2"	1/2"	1/2"	0.03"	1.250"	5"	FM-201-16-030	FM-201-16-030 <b>DLC</b>	
	1/2"	1/2"	1/2"	0.06"	1.250"	5"	FM-201-16-060	FM-201-16-060 <b>DLC</b>	
	1/2"	1/2"	1/2"	0.09"	1.250"	5"	FM-201-16-090	FM-201-16-090 <b>DLC</b>	
	1/2"	1/2"	1/2"	0.12"	1.250"	5"	FM-201-16-120	FM-201-16-120 <b>DLC</b>	
	1/2"	1/2"	1/2"	Ball End	1.250"	5"	FM-201-16-BN	FM-201-16-BN <b>DLC</b>	
MEDIUM	1/2"	1/2"	1/2"	Sq. End	1.625"	5"	FM-202-16	FM-202-16 <b>DLC</b>	
	1/2"	1/2"	1/2"	0.03"	1.625"	5"	FM-202-16-030	FM-202-16-030 <b>DLC</b>	
	1/2"	1/2"	1/2"	0.06"	1.625"	5"	FM-202-16-060	FM-202-16-060 <b>DLC</b>	
	1/2"	1/2"	1/2"	0.09"	1.625"	5"	FM-202-16-090	FM-202-16-090 <b>DLC</b>	
	1/2"	1/2"	1/2"	0.12"	1.625"	5"	FM-202-16-120	FM-202-16-120 <b>DLC</b>	
	1/2"	1/2"	1/2"	Ball End	1.625"	5"	FM-202-16-BN	FM-202-16-BN <b>DLC</b>	
LONG	1/2"	1/2"	1/2"	Sq. End	2.125"	5"	FM-204-16	FM-204-16 <b>DLC</b>	
	1/2"	1/2"	1/2"	0.03"	2.125"	5"	FM-204-16-030	FM-204-16-030 <b>DLC</b>	
	1/2"	1/2"	1/2"	0.06"	2.125"	5"	FM-204-16-060	FM-204-16-060 <b>DLC</b>	
	1/2"	1/2"	1/2"	0.09"	2.125"	5"	FM-204-16-090	FM-204-16-090 <b>DLC</b>	
	1/2"	1/2"	1/2"	0.12"	2.125"	5"	FM-204-16-120	FM-204-16-120 <b>DLC</b>	
	1/2"	1/2"	1/2"	Ball End	2.125"	5"	FM-204-16-BN	FM-204-16-BN <b>DLC</b>	

\*Other Reach Lengths available upon request.

CONTINUED ON NEXT PAGE—

# FM 2 Flute High Performance Tools for Aluminum



**NEW!**

**FM 2 Flute (Short to Long Reach)** —CONTINUED FROM PREVIOUS

	Cutting Diameter	Shank Diameter	Flute Length	Corner Radius	Reach Length*	Overall Length	Tool Number Uncoated	Tool Number DLC Coated	
EXTRA LONG	1/2"	1/2"	1/2"	Sq. End	2.625"	5"	FM-205-16	FM-205-16 <b>DLC</b>	1/2" DIAMETER
	1/2"	1/2"	1/2"	0.03"	2.625"	5"	FM-205-16-030	FM-205-16-030 <b>DLC</b>	
	1/2"	1/2"	1/2"	0.06"	2.625"	5"	FM-205-16-060	FM-205-16-060 <b>DLC</b>	
	1/2"	1/2"	1/2"	0.09"	2.625"	5"	FM-205-16-090	FM-205-16-090 <b>DLC</b>	
	1/2"	1/2"	1/2"	0.12"	2.625"	5"	FM-205-16-120	FM-205-16-120 <b>DLC</b>	
	1/2"	1/2"	1/2"	Ball End	2.625"	5"	FM-205-16-BN	FM-205-16-BN <b>DLC</b>	
SHORT	5/8"	5/8"	5/8"	Sq. End	1.500"	6"	FM-201-20	FM-201-20 <b>DLC</b>	5/8" DIAMETER
	5/8"	5/8"	5/8"	0.03"	1.500"	6"	FM-201-20-030	FM-201-20-030 <b>DLC</b>	
	5/8"	5/8"	5/8"	0.06"	1.500"	6"	FM-201-20-060	FM-201-20-060 <b>DLC</b>	
	5/8"	5/8"	5/8"	0.09"	1.500"	6"	FM-201-20-090	FM-201-20-090 <b>DLC</b>	
	5/8"	5/8"	5/8"	0.12"	1.500"	6"	FM-201-20-120	FM-201-20-120 <b>DLC</b>	
	5/8"	5/8"	5/8"	Ball End	1.500"	6"	FM-201-20-BN	FM-201-20-BN <b>DLC</b>	
MEDIUM	5/8"	5/8"	5/8"	Sq. End	2.063"	6"	FM-202-20	FM-202-20 <b>DLC</b>	5/8" DIAMETER
	5/8"	5/8"	5/8"	0.03"	2.063"	6"	FM-202-20-030	FM-202-20-030 <b>DLC</b>	
	5/8"	5/8"	5/8"	0.06"	2.063"	6"	FM-202-20-060	FM-202-20-060 <b>DLC</b>	
	5/8"	5/8"	5/8"	0.09"	2.063"	6"	FM-202-20-090	FM-202-20-090 <b>DLC</b>	
	5/8"	5/8"	5/8"	0.12"	2.063"	6"	FM-202-20-120	FM-202-20-120 <b>DLC</b>	
	5/8"	5/8"	5/8"	Ball End	2.063"	6"	FM-202-20-BN	FM-202-20-BN <b>DLC</b>	
LONG	5/8"	5/8"	5/8"	Sq. End	2.625"	6"	FM-204-20	FM-204-20 <b>DLC</b>	5/8" DIAMETER
	5/8"	5/8"	5/8"	0.03"	2.625"	6"	FM-204-20-030	FM-204-20-030 <b>DLC</b>	
	5/8"	5/8"	5/8"	0.06"	2.625"	6"	FM-204-20-060	FM-204-20-060 <b>DLC</b>	
	5/8"	5/8"	5/8"	0.09"	2.625"	6"	FM-204-20-090	FM-204-20-090 <b>DLC</b>	
	5/8"	5/8"	5/8"	0.12"	2.625"	6"	FM-204-20-120	FM-204-20-120 <b>DLC</b>	
	5/8"	5/8"	5/8"	Ball End	2.625"	6"	FM-204-20-BN	FM-204-20-BN <b>DLC</b>	
EXTRA LONG	5/8"	5/8"	5/8"	Sq. End	3.125"	6"	FM-205-20	FM-205-20 <b>DLC</b>	5/8" DIAMETER
	5/8"	5/8"	5/8"	0.03"	3.125"	6"	FM-205-20-030	FM-205-20-030 <b>DLC</b>	
	5/8"	5/8"	5/8"	0.06"	3.125"	6"	FM-205-20-060	FM-205-20-060 <b>DLC</b>	
	5/8"	5/8"	5/8"	0.09"	3.125"	6"	FM-205-20-090	FM-205-20-090 <b>DLC</b>	
	5/8"	5/8"	5/8"	0.12"	3.125"	6"	FM-205-20-120	FM-205-20-120 <b>DLC</b>	
	5/8"	5/8"	5/8"	Ball End	3.125"	6"	FM-205-20-BN	FM-205-20-BN <b>DLC</b>	
SHORT	3/4"	3/4"	3/4"	Sq. End	2.000"	6"	FM-201-24	FM-201-24 <b>DLC</b>	3/4" DIAMETER
	3/4"	3/4"	3/4"	0.03"	2.000"	6"	FM-201-24-030	FM-201-24-030 <b>DLC</b>	
	3/4"	3/4"	3/4"	0.06"	2.000"	6"	FM-201-24-060	FM-201-24-060 <b>DLC</b>	
	3/4"	3/4"	3/4"	0.09"	2.000"	6"	FM-201-24-090	FM-201-24-090 <b>DLC</b>	
	3/4"	3/4"	3/4"	0.12"	2.000"	6"	FM-201-24-120	FM-201-24-120 <b>DLC</b>	
	3/4"	3/4"	3/4"	Ball End	2.000"	6"	FM-201-24-BN	FM-201-24-BN <b>DLC</b>	
MEDIUM	3/4"	3/4"	3/4"	Sq. End	2.563"	6"	FM-202-24	FM-202-24 <b>DLC</b>	3/4" DIAMETER
	3/4"	3/4"	3/4"	0.03"	2.563"	6"	FM-202-24-030	FM-202-24-030 <b>DLC</b>	
	3/4"	3/4"	3/4"	0.06"	2.563"	6"	FM-202-24-060	FM-202-24-060 <b>DLC</b>	
	3/4"	3/4"	3/4"	0.09"	2.563"	6"	FM-202-24-090	FM-202-24-090 <b>DLC</b>	
	3/4"	3/4"	3/4"	0.12"	2.563"	6"	FM-202-24-120	FM-202-24-120 <b>DLC</b>	
	3/4"	3/4"	3/4"	Ball End	2.563"	6"	FM-202-24-BN	FM-202-24-BN <b>DLC</b>	
LONG	3/4"	3/4"	3/4"	Sq. End	3.125"	6"	FM-204-24	FM-204-24 <b>DLC</b>	3/4" DIAMETER
	3/4"	3/4"	3/4"	0.03"	3.125"	6"	FM-204-24-030	FM-204-24-030 <b>DLC</b>	
	3/4"	3/4"	3/4"	0.06"	3.125"	6"	FM-204-24-060	FM-204-24-060 <b>DLC</b>	
	3/4"	3/4"	3/4"	0.09"	3.125"	6"	FM-204-24-090	FM-204-24-090 <b>DLC</b>	
	3/4"	3/4"	3/4"	0.12"	3.125"	6"	FM-204-24-120	FM-204-24-120 <b>DLC</b>	
	3/4"	3/4"	3/4"	Ball End	3.125"	6"	FM-204-24-BN	FM-204-24-BN <b>DLC</b>	
EXTRA LONG	3/4"	3/4"	3/4"	Sq. End	3.750"	6"	FM-205-24	FM-205-24 <b>DLC</b>	3/4" DIAMETER
	3/4"	3/4"	3/4"	0.03"	3.750"	6"	FM-205-24-030	FM-205-24-030 <b>DLC</b>	
	3/4"	3/4"	3/4"	0.06"	3.750"	6"	FM-205-24-060	FM-205-24-060 <b>DLC</b>	
	3/4"	3/4"	3/4"	0.09"	3.750"	6"	FM-205-24-090	FM-205-24-090 <b>DLC</b>	
	3/4"	3/4"	3/4"	0.12"	3.750"	6"	FM-205-24-120	FM-205-24-120 <b>DLC</b>	
	3/4"	3/4"	3/4"	Ball End	3.750"	6"	FM-205-24-BN	FM-205-24-BN <b>DLC</b>	



# 2 Flute High Performance Tools for Aluminum **FM**



**NEW!**

## FM 2 Flute (Short to Long Reach) —CONTINUED FROM PREVIOUS

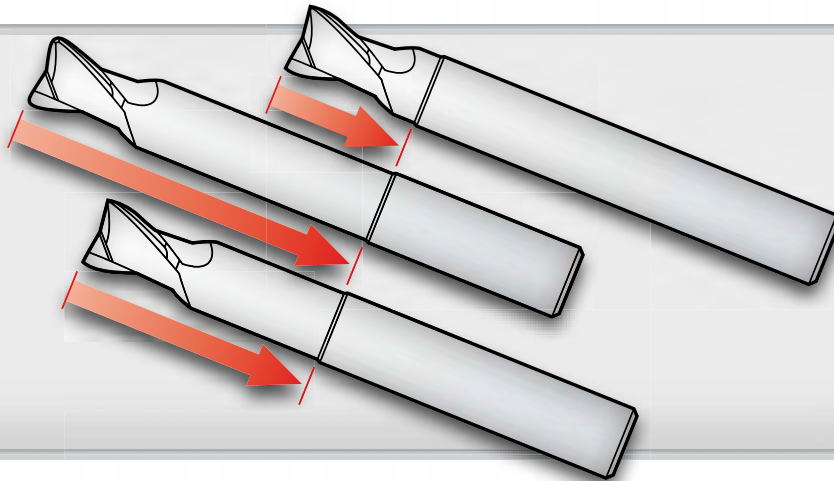
	Cutting Diameter	Shank Diameter	Flute Length	Corner Radius	Reach Length*	Overall Length	Tool Number Uncoated	Tool Number DLC Coated	
SHORT	1"	1"	1"	Sq. End	2.000"	6"	FM-201-32	FM-201-32 DLC	1" DIAMETER
	1"	1"	1"	0.03"	2.000"	6"	FM-201-32-030	FM-201-32-030 DLC	
	1"	1"	1"	0.06"	2.000"	6"	FM-201-32-060	FM-201-32-060 DLC	
	1"	1"	1"	0.09"	2.000"	6"	FM-201-32-090	FM-201-32-090 DLC	
	1"	1"	1"	0.12"	2.000"	6"	FM-201-32-120	FM-201-32-120 DLC	
	1"	1"	1"	Ball End	2.000"	6"	FM-201-32-BN	FM-201-32-BN DLC	
MEDIUM	1"	1"	1"	Sq. End	3.000"	6"	FM-202-32	FM-202-32 DLC	
	1"	1"	1"	0.03"	3.000"	6"	FM-202-32-030	FM-202-32-030 DLC	
	1"	1"	1"	0.06"	3.000"	6"	FM-202-32-060	FM-202-32-060 DLC	
	1"	1"	1"	0.09"	3.000"	6"	FM-202-32-090	FM-202-32-090 DLC	
	1"	1"	1"	0.12"	3.000"	6"	FM-202-32-120	FM-202-32-120 DLC	
	1"	1"	1"	Ball End	3.000"	6"	FM-202-32-BN	FM-202-32-BN DLC	
LONG	1"	1"	1"	Sq. End	3.500"	6"	FM-203-32	FM-203-32 DLC	
	1"	1"	1"	0.03"	3.500"	6"	FM-203-32-030	FM-203-32-030 DLC	
	1"	1"	1"	0.06"	3.500"	6"	FM-203-32-060	FM-203-32-060 DLC	
	1"	1"	1"	0.09"	3.500"	6"	FM-203-32-090	FM-203-32-090 DLC	
	1"	1"	1"	0.12"	3.500"	6"	FM-203-32-120	FM-203-32-120 DLC	
	1"	1"	1"	Ball End	3.500"	6"	FM-203-32-BN	FM-203-32-BN DLC	
EXTRA LONG	1"	1"	1"	Sq. End	4.000"	6"	FM-204-32	FM-204-32 DLC	
	1"	1"	1"	0.03"	4.000"	6"	FM-204-32-030	FM-204-32-030 DLC	
	1"	1"	1"	0.06"	4.000"	6"	FM-204-32-060	FM-204-32-060 DLC	
	1"	1"	1"	0.09"	4.000"	6"	FM-204-32-090	FM-204-32-090 DLC	
	1"	1"	1"	0.12"	4.000"	6"	FM-204-32-120	FM-204-32-120 DLC	
	1"	1"	1"	Ball End	4.000"	6"	FM-204-32-BN	FM-204-32-BN DLC	

\*Other Reach Lengths available upon request.

CONTINUED ON NEXT PAGE—

## Need a Different Reach?

Any neck length available at same price!

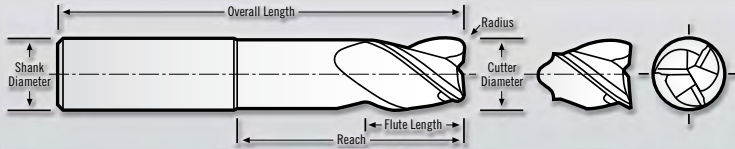
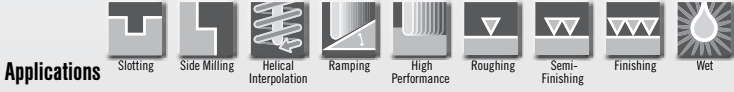


### FM SERIES SPEED & FEED

Tool Diameter	Typical Z-Depth	Aluminum 6061-T6		Aluminum 6061-T3		Aluminum 7075		Aluminum 2024	
		RPM	CLPT	RPM	CLPT	RPM	CLPT	RPM	CLPT
1/4"	0.1500"	Max	0.0040"	Max	0.0035"	Max	0.0040"	Max	0.0040"
5/16"	0.1500"	Max	0.0050"	Max	0.0044"	Max	0.0050"	Max	0.0050"
3/8"	0.1875"	Max	0.0060"	Max	0.0053"	Max	0.0060"	Max	0.0060"
1/2"	0.2000"	Max	0.0080"	Max	0.0070"	Max	0.0080"	Max	0.0080"
5/8"	0.2000"	Max	0.0100"	Max	0.0088"	Max	0.0100"	Max	0.0100"
3/4"	0.2500"	Max	0.0120"	Max	0.0105"	Max	0.0120"	Max	0.0120"
1"	0.2500"	Max	0.0160"	Max	0.0140"	Max	0.0160"	Max	0.0160"

Z-Depth of cut per pass should be deeper than the corner radius to help reduce chatter

# FM 3 Flute High Performance Tools for Aluminum



**FM Series Tolerances:**  
 Cutting Dia. =  $-.001/-0.0015$ "  
 Shank Dia. =  $-.0001/-0.0002$ "  
 LOC =  $+0.060/-0.000$ "  
 OAL =  $\pm 0.060$ "



**NEW!**

## FM 3 Flute (Short to Long Reach)

	Cutting Diameter	Shank Diameter	Flute Length	Corner Radius	Reach Length*	Overall Length	Tool Number Uncoated	Tool Number DLC Coated	
SHORT	1/4"	1/4"	1/4"	Sq. End	0.625"	3"	FM-301-08	FM-301-08 DLC	1/4" DIAMETER
	1/4"	1/4"	1/4"	0.03"	0.625"	3"	FM-301-08-030	FM-301-08-030 DLC	
	1/4"	1/4"	1/4"	0.06"	0.625"	3"	FM-301-08-060	FM-301-08-060 DLC	
	1/4"	1/4"	1/4"	0.09"	0.625"	3"	FM-301-08-090	FM-301-08-090 DLC	
	1/4"	1/4"	1/4"	Ball End	0.625"	3"	FM-301-08-BN	FM-301-08-BN DLC	
MEDIUM	1/4"	1/4"	1/4"	Sq. End	0.875"	3"	FM-302-08	FM-302-08 DLC	
	1/4"	1/4"	1/4"	0.03"	0.875"	3"	FM-302-08-030	FM-302-08-030 DLC	
	1/4"	1/4"	1/4"	0.06"	0.875"	3"	FM-302-08-060	FM-302-08-060 DLC	
	1/4"	1/4"	1/4"	0.09"	0.875"	3"	FM-302-08-090	FM-302-08-090 DLC	
	1/4"	1/4"	1/4"	Ball End	0.875"	3"	FM-302-08-BN	FM-302-08-BN DLC	
LONG	1/4"	1/4"	1/4"	Sq. End	1.063"	3"	FM-304-08	FM-304-08 DLC	
	1/4"	1/4"	1/4"	0.03"	1.063"	3"	FM-304-08-030	FM-304-08-030 DLC	
	1/4"	1/4"	1/4"	0.06"	1.063"	3"	FM-304-08-060	FM-304-08-060 DLC	
	1/4"	1/4"	1/4"	0.09"	1.063"	3"	FM-304-08-090	FM-304-08-090 DLC	
	1/4"	1/4"	1/4"	Ball End	1.063"	3"	FM-304-08-BN	FM-304-08-BN DLC	
EXTRA LONG	1/4"	1/4"	1/4"	Sq. End	1.500"	3"	FM-305-08	FM-305-08 DLC	
	1/4"	1/4"	1/4"	0.03"	1.500"	3"	FM-305-08-030	FM-305-08-030 DLC	
	1/4"	1/4"	1/4"	0.06"	1.500"	3"	FM-305-08-060	FM-305-08-060 DLC	
	1/4"	1/4"	1/4"	0.09"	1.500"	3"	FM-305-08-090	FM-305-08-090 DLC	
	1/4"	1/4"	1/4"	Ball End	1.500"	3"	FM-305-08-BN	FM-305-08-BN DLC	
SHORT	5/16"	5/16"	5/16"	Sq. End	0.875"	3-1/8"	FM-301-10	FM-301-10 DLC	5/16" DIAMETER
	5/16"	5/16"	5/16"	0.03"	0.875"	3-1/8"	FM-301-10-030	FM-301-10-030 DLC	
	5/16"	5/16"	5/16"	0.06"	0.875"	3-1/8"	FM-301-10-060	FM-301-10-060 DLC	
	5/16"	5/16"	5/16"	0.09"	0.875"	3-1/8"	FM-301-10-090	FM-301-10-090 DLC	
	5/16"	5/16"	5/16"	0.12"	0.875"	3-1/8"	FM-301-10-120	FM-301-10-120 DLC	
MEDIUM	5/16"	5/16"	5/16"	Ball End	0.875"	3-1/8"	FM-301-10-BN	FM-301-10-BN DLC	
	5/16"	5/16"	5/16"	Sq. End	1.094"	3-1/8"	FM-302-10	FM-302-10 DLC	
	5/16"	5/16"	5/16"	0.03"	1.094"	3-1/8"	FM-302-10-030	FM-302-10-030 DLC	
	5/16"	5/16"	5/16"	0.06"	1.094"	3-1/8"	FM-302-10-060	FM-302-10-060 DLC	
	5/16"	5/16"	5/16"	0.09"	1.094"	3-1/8"	FM-302-10-090	FM-302-10-090 DLC	
EXTRA LONG	5/16"	5/16"	5/16"	0.12"	1.094"	3-1/8"	FM-302-10-120	FM-302-10-120 DLC	
	5/16"	5/16"	5/16"	Ball End	1.094"	3-1/8"	FM-302-10-BN	FM-302-10-BN DLC	

\*Other Reach Lengths available on request.

# 3 Flute High Performance Tools for Aluminum **FM**

Aluminum



**NEW!**

## FM 3 Flute (Short to Long Reach) —CONTINUED FROM PREVIOUS

	Cutting Diameter	Shank Diameter	Flute Length	Corner Radius	Reach Length*	Overall Length	Tool Number Uncoated	Tool Number DLC Coated	
LONG	5/16"	5/16"	5/16"	Sq. End	1.313"	3-1/8"	FM-304-10	FM-304-10 DLC	5/16" DIAMETER
	5/16"	5/16"	5/16"	0.03"	1.313"	3-1/8"	FM-304-10-030	FM-304-10-030 DLC	
	5/16"	5/16"	5/16"	0.06"	1.313"	3-1/8"	FM-304-10-060	FM-304-10-060 DLC	
	5/16"	5/16"	5/16"	0.09"	1.313"	3-1/8"	FM-304-10-090	FM-304-10-090 DLC	
	5/16"	5/16"	5/16"	0.12"	1.313"	3-1/8"	FM-304-10-120	FM-304-10-120 DLC	
	5/16"	5/16"	5/16"	Ball End	1.313"	3-1/8"	FM-304-10-BN	FM-304-10-BN DLC	
EXTRA LONG	5/16"	5/16"	5/16"	Sq. End	1.625"	3-1/8"	FM-305-10	FM-305-10 DLC	5/16" DIAMETER
	5/16"	5/16"	5/16"	0.03"	1.625"	3-1/8"	FM-305-10-030	FM-305-10-030 DLC	
	5/16"	5/16"	5/16"	0.06"	1.625"	3-1/8"	FM-305-10-060	FM-305-10-060 DLC	
	5/16"	5/16"	5/16"	0.09"	1.625"	3-1/8"	FM-305-10-090	FM-305-10-090 DLC	
	5/16"	5/16"	5/16"	0.12"	1.625"	3-1/8"	FM-305-10-120	FM-305-10-120 DLC	
	5/16"	5/16"	5/16"	Ball End	1.625"	3-1/8"	FM-305-10-BN	FM-305-10-BN DLC	
SHORT	3/8"	3/8"	3/8"	Sq. End	1.000"	4"	FM-301-12	FM-301-12 DLC	3/8" DIAMETER
	3/8"	3/8"	3/8"	0.03"	1.000"	4"	FM-301-12-030	FM-301-12-030 DLC	
	3/8"	3/8"	3/8"	0.06"	1.000"	4"	FM-301-12-060	FM-301-12-060 DLC	
	3/8"	3/8"	3/8"	0.09"	1.000"	4"	FM-301-12-090	FM-301-12-090 DLC	
	3/8"	3/8"	3/8"	0.12"	1.000"	4"	FM-301-12-120	FM-301-12-120 DLC	
	3/8"	3/8"	3/8"	Ball End	1.000"	4"	FM-301-12-BN	FM-301-12-BN DLC	
MEDIUM	3/8"	3/8"	3/8"	Sq. End	1.250"	4"	FM-302-12	FM-302-12 DLC	3/8" DIAMETER
	3/8"	3/8"	3/8"	0.03"	1.250"	4"	FM-302-12-030	FM-302-12-030 DLC	
	3/8"	3/8"	3/8"	0.06"	1.250"	4"	FM-302-12-060	FM-302-12-060 DLC	
	3/8"	3/8"	3/8"	0.09"	1.250"	4"	FM-302-12-090	FM-302-12-090 DLC	
	3/8"	3/8"	3/8"	0.12"	1.250"	4"	FM-302-12-120	FM-302-12-120 DLC	
	3/8"	3/8"	3/8"	Ball End	1.250"	4"	FM-302-12-BN	FM-302-12-BN DLC	
LONG	3/8"	3/8"	3/8"	Sq. End	1.563"	4"	FM-304-12	FM-304-12 DLC	3/8" DIAMETER
	3/8"	3/8"	3/8"	0.03"	1.563"	4"	FM-304-12-030	FM-304-12-030 DLC	
	3/8"	3/8"	3/8"	0.06"	1.563"	4"	FM-304-12-060	FM-304-12-060 DLC	
	3/8"	3/8"	3/8"	0.09"	1.563"	4"	FM-304-12-090	FM-304-12-090 DLC	
	3/8"	3/8"	3/8"	0.12"	1.563"	4"	FM-304-12-120	FM-304-12-120 DLC	
	3/8"	3/8"	3/8"	Ball End	1.563"	4"	FM-304-12-BN	FM-304-12-BN DLC	
EXTRA LONG	3/8"	3/8"	3/8"	Sq. End	2.125"	4"	FM-305-12	FM-305-12 DLC	3/8" DIAMETER
	3/8"	3/8"	3/8"	0.03"	2.125"	4"	FM-305-12-030	FM-305-12-030 DLC	
	3/8"	3/8"	3/8"	0.06"	2.125"	4"	FM-305-12-060	FM-305-12-060 DLC	
	3/8"	3/8"	3/8"	0.09"	2.125"	4"	FM-305-12-090	FM-305-12-090 DLC	
	3/8"	3/8"	3/8"	0.12"	2.125"	4"	FM-305-12-120	FM-305-12-120 DLC	
	3/8"	3/8"	3/8"	Ball End	2.125"	4"	FM-305-12-BN	FM-305-12-BN DLC	
SHORT	1/2"	1/2"	1/2"	Sq. End	1.250"	5"	FM-301-16	FM-301-16 DLC	1/2" DIAMETER
	1/2"	1/2"	1/2"	0.03"	1.250"	5"	FM-301-16-030	FM-301-16-030 DLC	
	1/2"	1/2"	1/2"	0.06"	1.250"	5"	FM-301-16-060	FM-301-16-060 DLC	
	1/2"	1/2"	1/2"	0.09"	1.250"	5"	FM-301-16-090	FM-301-16-090 DLC	
	1/2"	1/2"	1/2"	0.12"	1.250"	5"	FM-301-16-120	FM-301-16-120 DLC	
	1/2"	1/2"	1/2"	Ball End	1.250"	5"	FM-301-16-BN	FM-301-16-BN DLC	
MEDIUM	1/2"	1/2"	1/2"	Sq. End	1.625"	5"	FM-302-16	FM-302-16 DLC	1/2" DIAMETER
	1/2"	1/2"	1/2"	0.03"	1.625"	5"	FM-302-16-030	FM-302-16-030 DLC	
	1/2"	1/2"	1/2"	0.06"	1.625"	5"	FM-302-16-060	FM-302-16-060 DLC	
	1/2"	1/2"	1/2"	0.09"	1.625"	5"	FM-302-16-090	FM-302-16-090 DLC	
	1/2"	1/2"	1/2"	0.12"	1.625"	5"	FM-302-16-120	FM-302-16-120 DLC	
	1/2"	1/2"	1/2"	Ball End	1.625"	5"	FM-302-16-BN	FM-302-16-BN DLC	
LONG	1/2"	1/2"	1/2"	Sq. End	2.125"	5"	FM-304-16	FM-304-16 DLC	1/2" DIAMETER
	1/2"	1/2"	1/2"	0.03"	2.125"	5"	FM-304-16-030	FM-304-16-030 DLC	
	1/2"	1/2"	1/2"	0.06"	2.125"	5"	FM-304-16-060	FM-304-16-060 DLC	
	1/2"	1/2"	1/2"	0.09"	2.125"	5"	FM-304-16-090	FM-304-16-090 DLC	
	1/2"	1/2"	1/2"	0.12"	2.125"	5"	FM-304-16-120	FM-304-16-120 DLC	
	1/2"	1/2"	1/2"	Ball End	2.125"	5"	FM-304-16-BN	FM-304-16-BN DLC	

\*Other Reach Lengths available upon request.

# FM 3 Flute High Performance Tools for Aluminum



**NEW!**

## FM 3 Flute (Short to Long Reach) —CONTINUED FROM PREVIOUS

	Cutting Diameter	Shank Diameter	Flute Length	Corner Radius	Reach Length*	Overall Length	Tool Number Uncoated	Tool Number DLC Coated	
EXTRA LONG	1/2"	1/2"	1/2"	Sq. End	2.625"	5"	FM-305-16	FM-305-16 DLC	1/2" DIAMETER
	1/2"	1/2"	1/2"	0.03"	2.625"	5"	FM-305-16-030	FM-305-16-030 DLC	
	1/2"	1/2"	1/2"	0.06"	2.625"	5"	FM-305-16-060	FM-305-16-060 DLC	
	1/2"	1/2"	1/2"	0.09"	2.625"	5"	FM-305-16-090	FM-305-16-090 DLC	
	1/2"	1/2"	1/2"	0.12"	2.625"	5"	FM-305-16-120	FM-305-16-120 DLC	
	1/2"	1/2"	1/2"	Ball End	2.625"	5"	FM-305-16-BN	FM-305-16-BN DLC	
SHORT	5/8"	5/8"	5/8"	Sq. End	1.500"	6"	FM-301-20	FM-301-20 DLC	5/8" DIAMETER
	5/8"	5/8"	5/8"	0.03"	1.500"	6"	FM-301-20-030	FM-301-20-030 DLC	
	5/8"	5/8"	5/8"	0.06"	1.500"	6"	FM-301-20-060	FM-301-20-060 DLC	
	5/8"	5/8"	5/8"	0.09"	1.500"	6"	FM-301-20-090	FM-301-20-090 DLC	
	5/8"	5/8"	5/8"	0.12"	1.500"	6"	FM-301-20-120	FM-301-20-120 DLC	
	5/8"	5/8"	5/8"	Ball End	1.500"	6"	FM-301-20-BN	FM-301-20-BN DLC	
MEDIUM	5/8"	5/8"	5/8"	Sq. End	2.063"	6"	FM-302-20	FM-302-20 DLC	5/8" DIAMETER
	5/8"	5/8"	5/8"	0.03"	2.063"	6"	FM-302-20-030	FM-302-20-030 DLC	
	5/8"	5/8"	5/8"	0.06"	2.063"	6"	FM-302-20-060	FM-302-20-060 DLC	
	5/8"	5/8"	5/8"	0.09"	2.063"	6"	FM-302-20-090	FM-302-20-090 DLC	
	5/8"	5/8"	5/8"	0.12"	2.063"	6"	FM-302-20-120	FM-302-20-120 DLC	
	5/8"	5/8"	5/8"	Ball End	2.063"	6"	FM-302-20-BN	FM-302-20-BN DLC	
LONG	5/8"	5/8"	5/8"	Sq. End	2.625"	6"	FM-304-20	FM-304-20 DLC	5/8" DIAMETER
	5/8"	5/8"	5/8"	0.03"	2.625"	6"	FM-304-20-030	FM-304-20-030 DLC	
	5/8"	5/8"	5/8"	0.06"	2.625"	6"	FM-304-20-060	FM-304-20-060 DLC	
	5/8"	5/8"	5/8"	0.09"	2.625"	6"	FM-304-20-090	FM-304-20-090 DLC	
	5/8"	5/8"	5/8"	0.12"	2.625"	6"	FM-304-20-120	FM-304-20-120 DLC	
	5/8"	5/8"	5/8"	Ball End	2.625"	6"	FM-304-20-BN	FM-304-20-BN DLC	
EXTRA LONG	5/8"	5/8"	5/8"	Sq. End	3.125"	6"	FM-305-20	FM-305-20 DLC	5/8" DIAMETER
	5/8"	5/8"	5/8"	0.03"	3.125"	6"	FM-305-20-030	FM-305-20-030 DLC	
	5/8"	5/8"	5/8"	0.06"	3.125"	6"	FM-305-20-060	FM-305-20-060 DLC	
	5/8"	5/8"	5/8"	0.09"	3.125"	6"	FM-305-20-090	FM-305-20-090 DLC	
	5/8"	5/8"	5/8"	0.12"	3.125"	6"	FM-305-20-120	FM-305-20-120 DLC	
	5/8"	5/8"	5/8"	Ball End	3.125"	6"	FM-305-20-BN	FM-305-20-BN DLC	
SHORT	3/4"	3/4"	3/4"	Sq. End	2.000"	6"	FM-301-24	FM-301-24 DLC	3/4" DIAMETER
	3/4"	3/4"	3/4"	0.03"	2.000"	6"	FM-301-24-030	FM-301-24-030 DLC	
	3/4"	3/4"	3/4"	0.06"	2.000"	6"	FM-301-24-060	FM-301-24-060 DLC	
	3/4"	3/4"	3/4"	0.09"	2.000"	6"	FM-301-24-090	FM-301-24-090 DLC	
	3/4"	3/4"	3/4"	0.12"	2.000"	6"	FM-301-24-120	FM-301-24-120 DLC	
	3/4"	3/4"	3/4"	Ball End	2.000"	6"	FM-301-24-BN	FM-301-24-BN DLC	
MEDIUM	3/4"	3/4"	3/4"	Sq. End	2.563"	6"	FM-302-24	FM-302-24 DLC	3/4" DIAMETER
	3/4"	3/4"	3/4"	0.03"	2.563"	6"	FM-302-24-030	FM-302-24-030 DLC	
	3/4"	3/4"	3/4"	0.06"	2.563"	6"	FM-302-24-060	FM-302-24-060 DLC	
	3/4"	3/4"	3/4"	0.09"	2.563"	6"	FM-302-24-090	FM-302-24-090 DLC	
	3/4"	3/4"	3/4"	0.12"	2.563"	6"	FM-302-24-120	FM-302-24-120 DLC	
	3/4"	3/4"	3/4"	Ball End	2.563"	6"	FM-302-24-BN	FM-302-24-BN DLC	
LONG	3/4"	3/4"	3/4"	Sq. End	3.125"	6"	FM-304-24	FM-304-24 DLC	3/4" DIAMETER
	3/4"	3/4"	3/4"	0.03"	3.125"	6"	FM-304-24-030	FM-304-24-030 DLC	
	3/4"	3/4"	3/4"	0.06"	3.125"	6"	FM-304-24-060	FM-304-24-060 DLC	
	3/4"	3/4"	3/4"	0.09"	3.125"	6"	FM-304-24-090	FM-304-24-090 DLC	
	3/4"	3/4"	3/4"	0.12"	3.125"	6"	FM-304-24-120	FM-304-24-120 DLC	
	3/4"	3/4"	3/4"	Ball End	3.125"	6"	FM-304-24-BN	FM-304-24-BN DLC	
EXTRA LONG	3/4"	3/4"	3/4"	Sq. End	3.750"	6"	FM-305-24	FM-305-24 DLC	3/4" DIAMETER
	3/4"	3/4"	3/4"	0.03"	3.750"	6"	FM-305-24-030	FM-305-24-030 DLC	
	3/4"	3/4"	3/4"	0.06"	3.750"	6"	FM-305-24-060	FM-305-24-060 DLC	
	3/4"	3/4"	3/4"	0.09"	3.750"	6"	FM-305-24-090	FM-305-24-090 DLC	
	3/4"	3/4"	3/4"	0.12"	3.750"	6"	FM-305-24-120	FM-305-24-120 DLC	
	3/4"	3/4"	3/4"	Ball End	3.750"	6"	FM-305-24-BN	FM-305-24-BN DLC	

\*Other Reach Lengths available upon request.

# 3 Flute High Performance Tools for Aluminum **FM**

Aluminum



**NEW!**

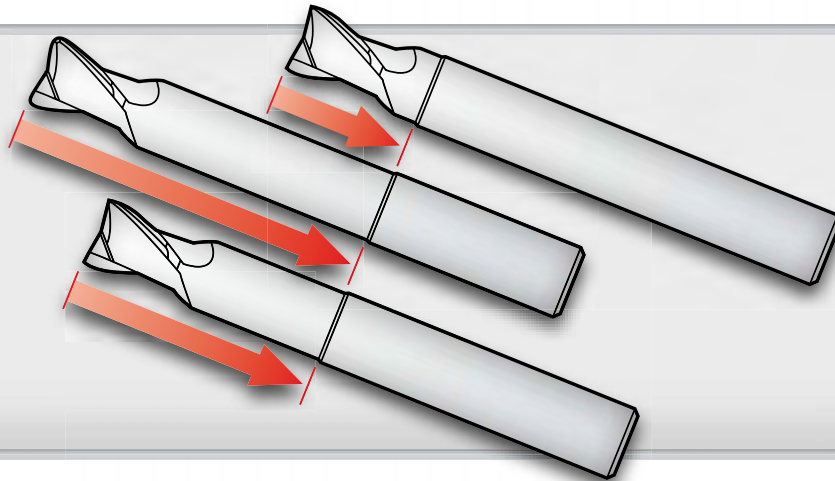
## FM 3 Flute (Short to Long Reach) —CONTINUED FROM PREVIOUS

	Cutting Diameter	Shank Diameter	Flute Length	Corner Radius	Reach Length*	Overall Length	Tool Number Uncoated	Tool Number DLC Coated	
SHORT	1"	1"	1"	Sq. End	2.000"	6"	FM-301-32	FM-301-32 DLC	1" DIAMETER
	1"	1"	1"	0.03"	2.000"	6"	FM-301-32-030	FM-301-32-030 DLC	
	1"	1"	1"	0.06"	2.000"	6"	FM-301-32-060	FM-301-32-060 DLC	
	1"	1"	1"	0.09"	2.000"	6"	FM-301-32-090	FM-301-32-090 DLC	
	1"	1"	1"	0.12"	2.000"	6"	FM-301-32-120	FM-301-32-120 DLC	
	1"	1"	1"	Ball End	2.000"	6"	FM-301-32-BN	FM-301-32-BN DLC	
MEDIUM	1"	1"	1"	Sq. End	3.000"	6"	FM-302-32	FM-302-32 DLC	
	1"	1"	1"	0.03"	3.000"	6"	FM-302-32-030	FM-302-32-030 DLC	
	1"	1"	1"	0.06"	3.000"	6"	FM-302-32-060	FM-302-32-060 DLC	
	1"	1"	1"	0.09"	3.000"	6"	FM-302-32-090	FM-302-32-090 DLC	
	1"	1"	1"	0.12"	3.000"	6"	FM-302-32-120	FM-302-32-120 DLC	
	1"	1"	1"	Ball End	3.000"	6"	FM-302-32-BN	FM-302-32-BN DLC	
LONG	1"	1"	1"	Sq. End	3.500"	6"	FM-303-32	FM-303-32 DLC	
	1"	1"	1"	0.03"	3.500"	6"	FM-303-32-030	FM-303-32-030 DLC	
	1"	1"	1"	0.06"	3.500"	6"	FM-303-32-060	FM-303-32-060 DLC	
	1"	1"	1"	0.09"	3.500"	6"	FM-303-32-090	FM-303-32-090 DLC	
	1"	1"	1"	0.12"	3.500"	6"	FM-303-32-120	FM-303-32-120 DLC	
	1"	1"	1"	Ball End	3.500"	6"	FM-303-32-BN	FM-303-32-BN DLC	
EXTRA LONG	1"	1"	1"	Sq. End	4.000"	6"	FM-304-32	FM-304-32 DLC	
	1"	1"	1"	0.03"	4.000"	6"	FM-304-32-030	FM-304-32-030 DLC	
	1"	1"	1"	0.06"	4.000"	6"	FM-304-32-060	FM-304-32-060 DLC	
	1"	1"	1"	0.09"	4.000"	6"	FM-304-32-090	FM-304-32-090 DLC	
	1"	1"	1"	0.12"	4.000"	6"	FM-304-32-120	FM-304-32-120 DLC	
	1"	1"	1"	Ball End	4.000"	6"	FM-304-32-BN	FM-304-32-BN DLC	

\*Other Reach Lengths available upon request.

## Need a Different Reach?

Any neck length available at same price!



## FM SERIES SPEED & FEED

Tool Diameter	Typical Z-Depth	Aluminum 6061-T6		Aluminum 6061-T3		Aluminum 7075		Aluminum 2024	
		RPM	CLPT	RPM	CLPT	RPM	CLPT	RPM	CLPT
1/4"	0.1500"	Max	0.0040"	Max	0.0035"	Max	0.0040"	Max	0.0040"
5/16"	0.1500"	Max	0.0050"	Max	0.0044"	Max	0.0050"	Max	0.0050"
3/8"	0.1875"	Max	0.0060"	Max	0.0053"	Max	0.0060"	Max	0.0060"
1/2"	0.2000"	Max	0.0080"	Max	0.0070"	Max	0.0080"	Max	0.0080"
5/8"	0.2000"	Max	0.0100"	Max	0.0088"	Max	0.0100"	Max	0.0100"
3/4"	0.2500"	Max	0.0120"	Max	0.0105"	Max	0.0120"	Max	0.0120"
1"	0.2500"	Max	0.0160"	Max	0.0140"	Max	0.0160"	Max	0.0160"

Z-Depth of cut per pass should be deeper than the corner radius to help reduce chatter

# MFM Metric 2 Flute High Performance Tools for Aluminum

**Characteristics**

- Corner Radius
- 2 Flute
- 40° Helix
- Feather Blend
- Necked
- Mirror Edge

**Applications**

- Slotting
- Side Milling
- Helical Interpolation
- Ramping
- High Performance
- 3-D
- Roughing
- Semi-Finishing
- Finishing
- Wet

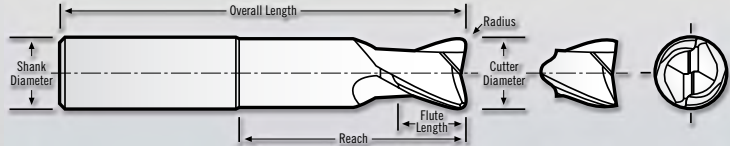
**Materials**

- Aluminum
- Copper
- Magnesium
- BRASS

MFM Series comes with **Mirror Edge!** for Chatter Reduction

**Coatings**

- Diamond-Like Carbon (DLC)



**MFM Series Tolerances:**  
 Cutting Dia. =  $-0.025/-0.038$  mm  
 Shank Dia. =  $-0.002/-0.005$  mm  
 LOC (<10D) =  $+0.750/-0.000$  mm  
 (>10D) =  $+1.500/-0.000$  mm  
 OAL =  $+/- 1.000$  mm



## MFM 2 Flute Metric (Short to Long Reach) **METRIC**

	Cutting Diameter	Shank Diameter	Flute Length	Corner Radius	Reach Length*	Overall Length	Tool Number Uncoated	Tool Number DLC Coated	
S	6mm	6mm	7mm	Sq. End	12mm	75mm	MFM-201-06	MFM-201-06 DLC	6 mm DIAMETER
	6mm	6mm	7mm	0.5mm	12mm	75mm	MFM-201-06-050	MFM-201-06-050 DLC	
	6mm	6mm	7mm	1.0mm	12mm	75mm	MFM-201-06-100	MFM-201-06-100 DLC	
	6mm	6mm	7mm	Ball End	12mm	75mm	MFM-201-06-BN	MFM-201-06-BN DLC	
M	6mm	6mm	7mm	Sq. End	18mm	75mm	MFM-202-06	MFM-202-06 DLC	
	6mm	6mm	7mm	0.5mm	18mm	75mm	MFM-202-06-050	MFM-202-06-050 DLC	
	6mm	6mm	7mm	1.0mm	18mm	75mm	MFM-202-06-100	MFM-202-06-100 DLC	
L	6mm	6mm	7mm	Ball End	18mm	75mm	MFM-202-06-BN	MFM-202-06-BN DLC	
	6mm	6mm	7mm	Sq. End	24mm	75mm	MFM-203-06	MFM-203-06 DLC	
	6mm	6mm	7mm	0.5mm	24mm	75mm	MFM-203-06-050	MFM-203-06-050 DLC	
XL	6mm	6mm	7mm	1.0mm	24mm	75mm	MFM-203-06-100	MFM-203-06-100 DLC	
	6mm	6mm	7mm	Ball End	24mm	75mm	MFM-203-06-BN	MFM-203-06-BN DLC	
	6mm	6mm	7mm	Sq. End	30mm	75mm	MFM-204-06	MFM-204-06 DLC	
	6mm	6mm	7mm	0.5mm	30mm	75mm	MFM-204-06-050	MFM-204-06-050 DLC	
SHORT	6mm	6mm	7mm	1.0mm	30mm	75mm	MFM-204-06-100	MFM-204-06-100 DLC	8 mm DIAMETER
	6mm	6mm	7mm	Ball End	30mm	75mm	MFM-204-06-BN	MFM-204-06-BN DLC	
	8mm	8mm	9mm	Sq. End	16mm	80mm	MFM-201-08	MFM-201-08 DLC	
	8mm	8mm	9mm	1.0mm	16mm	80mm	MFM-201-08-100	MFM-201-08-100 DLC	
	8mm	8mm	9mm	2.0mm	16mm	80mm	MFM-201-08-200	MFM-201-08-200 DLC	
MED	8mm	8mm	9mm	2.5mm	16mm	80mm	MFM-201-08-250	MFM-201-08-250 DLC	
	8mm	8mm	9mm	Ball End	16mm	80mm	MFM-201-08-BN	MFM-201-08-BN DLC	
	8mm	8mm	9mm	Sq. End	24mm	80mm	MFM-202-08	MFM-202-08 DLC	
	8mm	8mm	9mm	1.0mm	24mm	80mm	MFM-202-08-100	MFM-202-08-100 DLC	
	8mm	8mm	9mm	2.0mm	24mm	80mm	MFM-202-08-200	MFM-202-08-200 DLC	
LONG	8mm	8mm	9mm	2.5mm	24mm	80mm	MFM-202-08-250	MFM-202-08-250 DLC	
	8mm	8mm	9mm	Ball End	24mm	80mm	MFM-202-08-BN	MFM-202-08-BN DLC	
	8mm	8mm	9mm	Sq. End	32mm	80mm	MFM-203-08	MFM-203-08 DLC	
	8mm	8mm	9mm	1.0mm	32mm	80mm	MFM-203-08-100	MFM-203-08-100 DLC	
	8mm	8mm	9mm	2.0mm	32mm	80mm	MFM-203-08-200	MFM-203-08-200 DLC	
X LONG	8mm	8mm	9mm	2.5mm	32mm	80mm	MFM-203-08-250	MFM-203-08-250 DLC	
	8mm	8mm	9mm	Ball End	32mm	80mm	MFM-203-08-BN	MFM-203-08-BN DLC	
	8mm	8mm	9mm	Sq. End	40mm	80mm	MFM-204-08	MFM-204-08 DLC	
	8mm	8mm	9mm	1.0mm	40mm	80mm	MFM-204-08-100	MFM-204-08-100 DLC	
	8mm	8mm	9mm	2.0mm	40mm	80mm	MFM-204-08-200	MFM-204-08-200 DLC	
	8mm	8mm	9mm	2.5mm	40mm	80mm	MFM-204-08-250	MFM-204-08-250 DLC	
	8mm	8mm	9mm	Ball End	40mm	80mm	MFM-204-08-BN	MFM-204-08-BN DLC	

\*Other Reach Lengths available upon request.

# Metric 2 Flute High Performance Tools for Aluminum

# MFM

Aluminum



## MFM 2 Flute Metric (Short to Long Reach) **METRIC** —CONTINUED FROM PREVIOUS

	Cutting Diameter	Shank Diameter	Flute Length	Corner Radius	Reach Length*	Overall Length	Tool Number Uncoated	Tool Number DLC Coated		
S	10mm	10mm	11mm	Sq. End	20mm	100mm	MFM-201-10	MFM-201-10 <b>DLC</b>	10 mm DIAMETER	
	10mm	10mm	11mm	1.5mm	20mm	100mm	MFM-201-10-150	MFM-201-10-150 <b>DLC</b>		
	10mm	10mm	11mm	2.5mm	20mm	100mm	MFM-201-10-250	MFM-201-10-250 <b>DLC</b>		
	10mm	10mm	11mm	Ball End	20mm	100mm	MFM-201-10-BN	MFM-201-10-BN <b>DLC</b>		
M	10mm	10mm	11mm	Sq. End	30mm	100mm	MFM-202-10	MFM-202-10 <b>DLC</b>		
	10mm	10mm	11mm	1.5mm	30mm	100mm	MFM-202-10-150	MFM-202-10-150 <b>DLC</b>		
	10mm	10mm	11mm	2.5mm	30mm	100mm	MFM-202-10-250	MFM-202-10-250 <b>DLC</b>		
L	10mm	10mm	11mm	Ball End	30mm	100mm	MFM-202-10-BN	MFM-202-10-BN <b>DLC</b>		
	10mm	10mm	11mm	Sq. End	40mm	100mm	MFM-203-10	MFM-203-10 <b>DLC</b>		
	10mm	10mm	11mm	1.5mm	40mm	100mm	MFM-203-10-150	MFM-203-10-150 <b>DLC</b>		
XL	10mm	10mm	11mm	2.5mm	40mm	100mm	MFM-203-10-250	MFM-203-10-250 <b>DLC</b>		
	10mm	10mm	11mm	Ball End	40mm	100mm	MFM-203-10-BN	MFM-203-10-BN <b>DLC</b>		
	10mm	10mm	11mm	Sq. End	50mm	100mm	MFM-204-10	MFM-204-10 <b>DLC</b>		
S	10mm	10mm	11mm	1.5mm	50mm	100mm	MFM-204-10-150	MFM-204-10-150 <b>DLC</b>		
	10mm	10mm	11mm	2.5mm	50mm	100mm	MFM-204-10-250	MFM-204-10-250 <b>DLC</b>		
	10mm	10mm	11mm	Ball End	50mm	100mm	MFM-204-10-BN	MFM-204-10-BN <b>DLC</b>		
S	12mm	12mm	13mm	Sq. End	24mm	110mm	MFM-201-12	MFM-201-12 <b>DLC</b>	12 mm DIAMETER	
	12mm	12mm	13mm	1.5mm	24mm	110mm	MFM-201-12-150	MFM-201-12-150 <b>DLC</b>		
	12mm	12mm	13mm	2.5mm	24mm	110mm	MFM-201-12-250	MFM-201-12-250 <b>DLC</b>		
	12mm	12mm	13mm	4.0mm	24mm	110mm	MFM-201-12-400	MFM-201-12-400 <b>DLC</b>		
M	12mm	12mm	13mm	Ball End	24mm	110mm	MFM-201-12-BN	MFM-201-12-BN <b>DLC</b>		
	12mm	12mm	13mm	Sq. End	36mm	110mm	MFM-202-12	MFM-202-12 <b>DLC</b>		
	12mm	12mm	13mm	1.5mm	36mm	110mm	MFM-202-12-150	MFM-202-12-150 <b>DLC</b>		
L	12mm	12mm	13mm	2.5mm	36mm	110mm	MFM-202-12-250	MFM-202-12-250 <b>DLC</b>		
	12mm	12mm	13mm	4.0mm	36mm	110mm	MFM-202-12-400	MFM-202-12-400 <b>DLC</b>		
	12mm	12mm	13mm	Ball End	36mm	110mm	MFM-202-12-BN	MFM-202-12-BN <b>DLC</b>		
XL	12mm	12mm	13mm	Sq. End	48mm	110mm	MFM-203-12	MFM-203-12 <b>DLC</b>		
	12mm	12mm	13mm	1.5mm	48mm	110mm	MFM-203-12-150	MFM-203-12-150 <b>DLC</b>		
	12mm	12mm	13mm	2.5mm	48mm	110mm	MFM-203-12-250	MFM-203-12-250 <b>DLC</b>		
S	12mm	12mm	13mm	4.0mm	48mm	110mm	MFM-203-12-400	MFM-203-12-400 <b>DLC</b>		
	12mm	12mm	13mm	Ball End	48mm	110mm	MFM-203-12-BN	MFM-203-12-BN <b>DLC</b>		
	12mm	12mm	13mm	Sq. End	60mm	110mm	MFM-204-12	MFM-204-12 <b>DLC</b>		
M	12mm	12mm	13mm	1.5mm	60mm	110mm	MFM-204-12-150	MFM-204-12-150 <b>DLC</b>		
	12mm	12mm	13mm	2.5mm	60mm	110mm	MFM-204-12-250	MFM-204-12-250 <b>DLC</b>		
	12mm	12mm	13mm	4.0mm	60mm	110mm	MFM-204-12-400	MFM-204-12-400 <b>DLC</b>		
L	12mm	12mm	13mm	Ball End	60mm	110mm	MFM-204-12-BN	MFM-204-12-BN <b>DLC</b>		
	SHORT	16mm	16mm	17mm	Sq. End	32mm	130mm	MFM-201-16	MFM-201-16 <b>DLC</b>	16 mm DIAMETER
		16mm	16mm	17mm	2.0mm	32mm	130mm	MFM-201-16-200	MFM-201-16-200 <b>DLC</b>	
16mm		16mm	17mm	2.5mm	32mm	130mm	MFM-201-16-250	MFM-201-16-250 <b>DLC</b>		
16mm		16mm	17mm	3.0mm	32mm	130mm	MFM-201-16-300	MFM-201-16-300 <b>DLC</b>		
16mm		16mm	17mm	4.0mm	32mm	130mm	MFM-201-16-400	MFM-201-16-400 <b>DLC</b>		
MEDIUM	16mm	16mm	17mm	Ball End	32mm	130mm	MFM-201-16-BN	MFM-201-16-BN <b>DLC</b>		
	16mm	16mm	17mm	Sq. End	48mm	130mm	MFM-202-16	MFM-202-16 <b>DLC</b>		
	16mm	16mm	17mm	2.0mm	48mm	130mm	MFM-202-16-200	MFM-202-16-200 <b>DLC</b>		
	16mm	16mm	17mm	2.5mm	48mm	130mm	MFM-202-16-250	MFM-202-16-250 <b>DLC</b>		
	16mm	16mm	17mm	3.0mm	48mm	130mm	MFM-202-16-300	MFM-202-16-300 <b>DLC</b>		
LONG	16mm	16mm	17mm	4.0mm	48mm	130mm	MFM-202-16-400	MFM-202-16-400 <b>DLC</b>		
	16mm	16mm	17mm	Ball End	48mm	130mm	MFM-202-16-BN	MFM-202-16-BN <b>DLC</b>		
	16mm	16mm	17mm	Sq. End	64mm	130mm	MFM-203-16	MFM-203-16 <b>DLC</b>		
	16mm	16mm	17mm	2.0mm	64mm	130mm	MFM-203-16-200	MFM-203-16-200 <b>DLC</b>		
	16mm	16mm	17mm	2.5mm	64mm	130mm	MFM-203-16-250	MFM-203-16-250 <b>DLC</b>		
S	16mm	16mm	17mm	3.0mm	64mm	130mm	MFM-203-16-300	MFM-203-16-300 <b>DLC</b>		
	16mm	16mm	17mm	4.0mm	64mm	130mm	MFM-203-16-400	MFM-203-16-400 <b>DLC</b>		
	16mm	16mm	17mm	Ball End	64mm	130mm	MFM-203-16-BN	MFM-203-16-BN <b>DLC</b>		

\*Other Reach Lengths available upon request.

# MFM Metric 2 Flute High Performance Tools for Aluminum



## MFM 2 Flute Metric (Short to Long Reach) METRIC —CONTINUED FROM PREVIOUS

	Cutting Diameter	Shank Diameter	Flute Length	Corner Radius	Reach Length*	Overall Length	Tool Number Uncoated	Tool Number DLC Coated	
X LONG	16mm	16mm	17mm	Sq. End	80mm	130mm	MFM-204-16	MFM-204-16 DLC	16 mm DIAMETER
	16mm	16mm	17mm	2.0mm	80mm	130mm	MFM-204-16-200	MFM-204-16-200 DLC	
	16mm	16mm	17mm	2.5mm	80mm	130mm	MFM-204-16-250	MFM-204-16-250 DLC	
	16mm	16mm	17mm	3.0mm	80mm	130mm	MFM-204-16-300	MFM-204-16-300 DLC	
	16mm	16mm	17mm	4.0mm	80mm	130mm	MFM-204-16-400	MFM-204-16-400 DLC	
	16mm	16mm	17mm	Ball End	80mm	130mm	MFM-204-16-BN	MFM-204-16-BN DLC	
SHORT	20mm	20mm	21mm	Sq. End	40mm	150mm	MFM-201-20	MFM-201-20 DLC	20 mm DIAMETER
	20mm	20mm	21mm	2.0mm	40mm	150mm	MFM-201-20-200	MFM-201-20-200 DLC	
	20mm	20mm	21mm	2.5mm	40mm	150mm	MFM-201-20-250	MFM-201-20-250 DLC	
	20mm	20mm	21mm	3.0mm	40mm	150mm	MFM-201-20-300	MFM-201-20-300 DLC	
	20mm	20mm	21mm	4.0mm	40mm	150mm	MFM-201-20-400	MFM-201-20-400 DLC	
	20mm	20mm	21mm	Ball End	40mm	150mm	MFM-201-20-BN	MFM-201-20-BN DLC	
MEDIUM	20mm	20mm	21mm	Sq. End	60mm	150mm	MFM-202-20	MFM-202-20 DLC	20 mm DIAMETER
	20mm	20mm	21mm	2.0mm	60mm	150mm	MFM-202-20-200	MFM-202-20-200 DLC	
	20mm	20mm	21mm	2.5mm	60mm	150mm	MFM-202-20-250	MFM-202-20-250 DLC	
	20mm	20mm	21mm	3.0mm	60mm	150mm	MFM-202-20-300	MFM-202-20-300 DLC	
	20mm	20mm	21mm	4.0mm	60mm	150mm	MFM-202-20-400	MFM-202-20-400 DLC	
	20mm	20mm	21mm	Ball End	60mm	150mm	MFM-202-20-BN	MFM-202-20-BN DLC	
LONG	20mm	20mm	21mm	Sq. End	80mm	150mm	MFM-203-20	MFM-203-20 DLC	20 mm DIAMETER
	20mm	20mm	21mm	2.0mm	80mm	150mm	MFM-203-20-200	MFM-203-20-200 DLC	
	20mm	20mm	21mm	2.5mm	80mm	150mm	MFM-203-20-250	MFM-203-20-250 DLC	
	20mm	20mm	21mm	3.0mm	80mm	150mm	MFM-203-20-300	MFM-203-20-300 DLC	
	20mm	20mm	21mm	4.0mm	80mm	150mm	MFM-203-20-400	MFM-203-20-400 DLC	
	20mm	20mm	21mm	Ball End	80mm	150mm	MFM-203-20-BN	MFM-203-20-BN DLC	
X LONG	20mm	20mm	21mm	Sq. End	100mm	150mm	MFM-204-20	MFM-204-20 DLC	20 mm DIAMETER
	20mm	20mm	21mm	2.0mm	100mm	150mm	MFM-204-20-200	MFM-204-20-200 DLC	
	20mm	20mm	21mm	2.5mm	100mm	150mm	MFM-204-20-250	MFM-204-20-250 DLC	
	20mm	20mm	21mm	3.0mm	100mm	150mm	MFM-204-20-300	MFM-204-20-300 DLC	
	20mm	20mm	21mm	4.0mm	100mm	150mm	MFM-204-20-400	MFM-204-20-400 DLC	
	20mm	20mm	21mm	Ball End	100mm	150mm	MFM-204-20-BN	MFM-204-20-BN DLC	
S	25mm	25mm	26mm	Sq. End	50mm	165mm	MFM-201-25	MFM-201-25 DLC	25 mm DIAMETER
	25mm	25mm	26mm	2.5mm	50mm	165mm	MFM-201-25-250	MFM-201-25-250 DLC	
	25mm	25mm	26mm	4.0mm	50mm	165mm	MFM-201-25-400	MFM-201-25-400 DLC	
	25mm	25mm	26mm	Ball End	50mm	165mm	MFM-201-25-BN	MFM-201-25-BN DLC	
M	25mm	25mm	26mm	Sq. End	75mm	165mm	MFM-202-25	MFM-202-25 DLC	25 mm DIAMETER
	25mm	25mm	26mm	2.5mm	75mm	165mm	MFM-202-25-250	MFM-202-25-250 DLC	
	25mm	25mm	26mm	4.0mm	75mm	165mm	MFM-202-25-400	MFM-202-25-400 DLC	
	25mm	25mm	26mm	Ball End	75mm	165mm	MFM-202-25-BN	MFM-202-25-BN DLC	
XL	25mm	25mm	26mm	Sq. End	100mm	165mm	MFM-204-25	MFM-204-25 DLC	25 mm DIAMETER
	25mm	25mm	26mm	2.5mm	100mm	165mm	MFM-204-25-250	MFM-204-25-250 DLC	
	25mm	25mm	26mm	4.0mm	100mm	165mm	MFM-204-25-400	MFM-204-25-400 DLC	
	25mm	25mm	26mm	Ball End	100mm	165mm	MFM-204-25-BN	MFM-204-25-BN DLC	

### MFM SERIES SPEED & FEED

Tool Diameter	Typical Z-Depth	Aluminum 6061-T6		Aluminum 6061-T3		Aluminum 7075		Aluminum 2024	
		RPM	CLPT	RPM	CLPT	RPM	CLPT	RPM	CLPT
6mm	4mm	Max	0.096mm	Max	0.084mm	Max	0.096mm	Max	0.096mm
8mm	4mm	Max	0.128mm	Max	0.112mm	Max	0.128mm	Max	0.128mm
10mm	5mm	Max	0.16mm	Max	0.14mm	Max	0.16mm	Max	0.16mm
12mm	5mm	Max	0.192mm	Max	0.168mm	Max	0.192mm	Max	0.192mm
16mm	5mm	Max	0.256mm	Max	0.224mm	Max	0.256mm	Max	0.256mm
20mm	6.5mm	Max	0.32mm	Max	0.28mm	Max	0.32mm	Max	0.32mm
25mm	6.5mm	Max	0.4mm	Max	0.35mm	Max	0.4mm	Max	0.4mm

Z-Depth of cut per pass should be deeper than the corner radius to help reduce chatter



# C-2 Grade Carbide End Mills S1/MS1

**Characteristics**

Square End   2 Flute   3 Flute   4 Flute   30° Helix

**Applications**

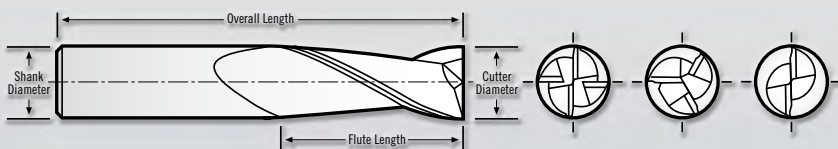
Slotting   Side Milling   High Performance   Roughing   Semi-Finishing   Finishing   Dry   Wet   Cold Air   Spray Mist

**Materials**

Aluminum   Copper   Magnesium   Plastics   Composites   Brass

**Coatings**

Diamond-Like Carbon (DLC)



**S1 Tolerances**

Cutting Dia. (1/16" to 1/4") = +.000/-0.002"  
 (9/32" to 3/4") = +.000/-0.003"  
 Shank Dia. = -.0001/-0.0002"  
 LOC (1/16" to 5/16") = +.030/-0.000"  
 (3/8" to 3/4") = +.060/-0.000"  
 OAL = ±.060"

**MS1 Tolerances**

Cutting Dia. = +.000/-0.075mm  
 Shank Dia. = -.002/-0.005mm  
 LOC = +0.500/+1.500mm  
 OAL = ±1.000mm



Slotting   Side Milling   Helical Interpolation

## S1-201 2 Flute C-2 Grade Stub Length

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number Uncoated	Tool Number DLC Coated
1/16"	1/8"	1/8"	1-1/2"	S1-201-02	S1-201-02 <b>DLC</b>
3/32"	1/8"	3/16"	1-1/2"	S1-201-03	S1-201-03 <b>DLC</b>
1/8"	1/8"	1/4"	1-1/2"	S1-201-04	S1-201-04 <b>DLC</b>
3/16"	3/16"	3/8"	2"	S1-201-06	S1-201-06 <b>DLC</b>
1/4"	1/4"	1/2"	2"	S1-201-08	S1-201-08 <b>DLC</b>
5/16"	5/16"	1/2"	2-1/2"	S1-201-10	S1-201-10 <b>DLC</b>
3/8"	3/8"	5/8"	2-1/2"	S1-201-12	S1-201-12 <b>DLC</b>
7/16"	7/16"	5/8"	2-3/4"	S1-201-14	S1-201-14 <b>DLC</b>
1/2"	1/2"	5/8"	3"	S1-201-16	S1-201-16 <b>DLC</b>
5/8"	5/8"	7/8"	3-1/2"	S1-201-20	S1-201-20 <b>DLC</b>
3/4"	3/4"	1"	3-1/2"	S1-201-24	S1-201-24 <b>DLC</b>

Available with  
**Wiper Flats**  
 See Page 7

Available with  
**45° Chamfer**  
 See Page 7

## MS1-201 Metric 2 Flute C-2 Grade Stub Length **METRIC**

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number Uncoated	Tool Number DLC Coated
2mm	3mm	5mm	38mm	MS1-201-02	MS1-201-02 <b>DLC</b>
3mm	3mm	6mm	38mm	MS1-201-03	MS1-201-03 <b>DLC</b>
4mm	4mm	8mm	50mm	MS1-201-04	MS1-201-04 <b>DLC</b>
5mm	5mm	8mm	50mm	MS1-201-05	MS1-201-05 <b>DLC</b>
6mm	6mm	8mm	50mm	MS1-201-06	MS1-201-06 <b>DLC</b>
8mm	8mm	12mm	58mm	MS1-201-08	MS1-201-08 <b>DLC</b>
10mm	10mm	14mm	66mm	MS1-201-10	MS1-201-10 <b>DLC</b>
12mm	12mm	16mm	73mm	MS1-201-12	MS1-201-12 <b>DLC</b>
16mm	16mm	20mm	82mm	MS1-201-16	MS1-201-16 <b>DLC</b>
20mm	20mm	25mm	92mm	MS1-201-20	MS1-201-20 <b>DLC</b>

Available with  
**Coolant Grooves**  
 See Page 6

# S1 C-2 Grade Carbide End Mills



## S1-301 3 Flute C-2 Grade Stub Length

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number Uncoated	Tool Number DLC Coated
1/16"	1/8"	1/8"	1-1/2"	S1-301-02	S1-301-02 <b>DLC</b>
3/32"	1/8"	3/16"	1-1/2"	S1-301-03	S1-301-03 <b>DLC</b>
1/8"	1/8"	1/4"	1-1/2"	S1-301-04	S1-301-04 <b>DLC</b>
3/16"	3/16"	3/8"	2"	S1-301-06	S1-301-06 <b>DLC</b>
1/4"	1/4"	1/2"	2"	S1-301-08	S1-301-08 <b>DLC</b>
5/16"	5/16"	1/2"	2-1/2"	S1-301-10	S1-301-10 <b>DLC</b>
3/8"	3/8"	5/8"	2-1/2"	S1-301-12	S1-301-12 <b>DLC</b>
7/16"	7/16"	5/8"	2-3/4"	S1-301-14	S1-301-14 <b>DLC</b>
1/2"	1/2"	5/8"	3"	S1-301-16	S1-301-16 <b>DLC</b>

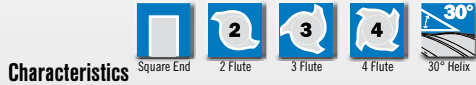


## S1-401 4 Flute C-2 Grade Stub Length

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number Uncoated	Tool Number DLC Coated
1/16"	1/8"	1/8"	1-1/2"	S1-401-02	S1-401-02 <b>DLC</b>
3/32"	1/8"	3/16"	1-1/2"	S1-401-03	S1-401-03 <b>DLC</b>
1/8"	1/8"	1/4"	1-1/2"	S1-401-04	S1-401-04 <b>DLC</b>
3/16"	3/16"	3/8"	2"	S1-401-06	S1-401-06 <b>DLC</b>
1/4"	1/4"	1/2"	2"	S1-401-08	S1-401-08 <b>DLC</b>
5/16"	5/16"	1/2"	2-1/2"	S1-401-10	S1-401-10 <b>DLC</b>
3/8"	3/8"	5/8"	2-1/2"	S1-401-12	S1-401-12 <b>DLC</b>
7/16"	7/16"	5/8"	2-3/4"	S1-401-14	S1-401-14 <b>DLC</b>
1/2"	1/2"	5/8"	3"	S1-401-16	S1-401-16 <b>DLC</b>
5/8"	5/8"	7/8"	3-1/2"	S1-401-20	S1-401-20 <b>DLC</b>
3/4"	3/4"	1"	3-1/2"	S1-401-24	S1-401-24 <b>DLC</b>

Available with  
**Flats**  
 Eliminate Slippage in the Tool Holder!  
 Page 8

# C-2 Grade Carbide End Mills C1/MC1



Characteristics



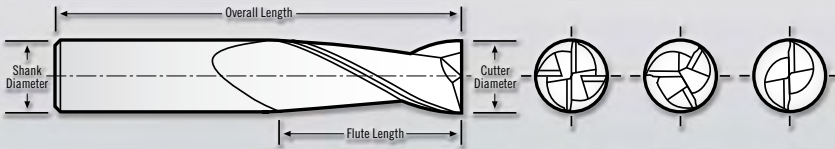
Applications



Materials



Coatings



### C1 Tolerances

Cutting Dia. (1/16" to 1/4") = +.000/- .002"  
 (9/32" to 3/4") = +.000/- .003"  
 LOC (1/16" to 5/16") = +.030/- .000"  
 (3/8" to 3/4") = +.060/- .000"  
 Shank Dia. = -.0001/- .0002"  
 OAL = ±.060"



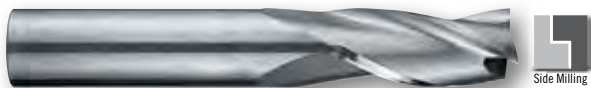
## C1-201 2 Flute C-2 Grade Standard Length

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number Uncoated	Tool Number DLC Coated
1/16"	1/8"	3/16"	1-1/2"	C1-201-02	C1-201-02 DLC
3/32"	1/8"	3/8"	1-1/2"	C1-201-03	C1-201-03 DLC
1/8"	1/8"	1/2"	1-1/2"	C1-201-04	C1-201-04 DLC
5/32"	3/16"	9/16"	2"	C1-201-05	C1-201-05 DLC
3/16"	3/16"	5/8"	2"	C1-201-06	C1-201-06 DLC
7/32"	1/4"	5/8"	2-1/2"	C1-201-07	C1-201-07 DLC
1/4"	1/4"	3/4"	2-1/2"	C1-201-08	C1-201-08 DLC
9/32"	5/16"	3/4"	2-1/2"	C1-201-09	C1-201-09 DLC
5/16"	5/16"	13/16"	2-1/2"	C1-201-10	C1-201-10 DLC
3/8"	3/8"	7/8"	2-1/2"	C1-201-12	C1-201-12 DLC
7/16"	7/16"	1"	2-3/4"	C1-201-14	C1-201-14 DLC
1/2"	1/2"	1"	3"	C1-201-16	C1-201-16 DLC
9/16"	9/16"	1-1/4"	3-1/2"	C1-201-18	C1-201-18 DLC
5/8"	5/8"	1-1/4"	3-1/2"	C1-201-20	C1-201-20 DLC
3/4"	3/4"	1-1/2"	4"	C1-201-24	C1-201-24 DLC

## MC1-201 Metric 2 Flute C-2 Grade Standard Length METRIC

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number	Tool Number DLC Coated
2mm	3mm	8mm	38mm	MC1-201-02	MC1-201-02 DLC
3mm	3mm	12mm	38mm	MC1-201-03	MC1-201-03 DLC
4mm	4mm	12mm	50mm	MC1-201-04	MC1-201-04 DLC
5mm	5mm	14mm	50mm	MC1-201-05	MC1-201-05 DLC
6mm	6mm	14mm	57mm	MC1-201-06	MC1-201-06 DLC
8mm	8mm	16mm	63mm	MC1-201-08	MC1-201-08 DLC
10mm	10mm	20mm	72mm	MC1-201-10	MC1-201-10 DLC
12mm	12mm	25mm	83mm	MC1-201-12	MC1-201-12 DLC
16mm	16mm	32mm	92mm	MC1-201-16	MC1-201-16 DLC
20mm	20mm	38mm	104mm	MC1-201-20	MC1-201-20 DLC
25mm	25mm	38mm	104mm	MC1-201-25	MC1-201-25 DLC

# C1/MC1 C-2 Grade Carbide End Mills



## C1-301 3 Flute C-2 Grade Standard Length

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number Uncoated	Tool Number DLC Coated
1/16"	1/8"	3/16"	1-1/2"	C1-301-02	C1-301-02 DLC
3/32"	1/8"	3/8"	1-1/2"	C1-301-03	C1-301-03 DLC
1/8"	1/8"	1/2"	1-1/2"	C1-301-04	C1-301-04 DLC
5/32"	3/16"	9/16"	2"	C1-301-05	C1-301-05 DLC
3/16"	3/16"	5/8"	2"	C1-301-06	C1-301-06 DLC
7/32"	1/4"	5/8"	2-1/2"	C1-301-07	C1-301-07 DLC
1/4"	1/4"	3/4"	2-1/2"	C1-301-08	C1-301-08 DLC
9/32"	5/16"	3/4"	2-1/2"	C1-301-09	C1-301-09 DLC
5/16"	5/16"	13/16"	2-1/2"	C1-301-10	C1-301-10 DLC
3/8"	3/8"	7/8"	2-1/2"	C1-301-12	C1-301-12 DLC
7/16"	7/16"	1"	2-3/4"	C1-301-14	C1-301-14 DLC
1/2"	1/2"	1"	3"	C1-301-16	C1-301-16 DLC
9/16"	9/16"	1-1/4"	3-1/2"	C1-301-18	C1-301-18 DLC
5/8"	5/8"	1-1/4"	3-1/2"	C1-301-20	C1-301-20 DLC
3/4"	3/4"	1-1/2"	4"	C1-301-24	C1-301-24 DLC

## MC1-301 Metric 3 Flute C-2 Grade Standard Length **METRIC**

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number	Tool Number DLC Coated
2mm	3mm	8mm	38mm	MC1-301-02	MC1-301-02 DLC
3mm	3mm	12mm	38mm	MC1-301-03	MC1-301-03 DLC
4mm	4mm	12mm	50mm	MC1-301-04	MC1-301-04 DLC
5mm	5mm	14mm	50mm	MC1-301-05	MC1-301-05 DLC
6mm	6mm	14mm	57mm	MC1-301-06	MC1-301-06 DLC
8mm	8mm	16mm	63mm	MC1-301-08	MC1-301-08 DLC
10mm	10mm	20mm	72mm	MC1-301-10	MC1-301-10 DLC
12mm	12mm	25mm	83mm	MC1-301-12	MC1-301-12 DLC
16mm	16mm	32mm	92mm	MC1-301-16	MC1-301-16 DLC
20mm	20mm	38mm	104mm	MC1-301-20	MC1-301-20 DLC
25mm	25mm	38mm	104mm	MC1-301-25	MC1-301-25 DLC



## C1-401 4 Flute C-2 Grade Standard Length

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number Uncoated	Tool Number DLC Coated
1/16"	1/8"	3/16"	1-1/2"	C1-401-02	C1-401-02 DLC
3/32"	1/8"	3/8"	1-1/2"	C1-401-03	C1-401-03 DLC
1/8"	1/8"	1/2"	1-1/2"	C1-401-04	C1-401-04 DLC
5/32"	3/16"	9/16"	2"	C1-401-05	C1-401-05 DLC
3/16"	3/16"	5/8"	2"	C1-401-06	C1-401-06 DLC
7/32"	1/4"	5/8"	2-1/2"	C1-401-07	C1-401-07 DLC
1/4"	1/4"	3/4"	2-1/2"	C1-401-08	C1-401-08 DLC
9/32"	5/16"	3/4"	2-1/2"	C1-401-09	C1-401-09 DLC
5/16"	5/16"	13/16"	2-1/2"	C1-401-10	C1-401-10 DLC
3/8"	3/8"	7/8"	2-1/2"	C1-401-12	C1-401-12 DLC
7/16"	7/16"	1"	2-3/4"	C1-401-14	C1-401-14 DLC
1/2"	1/2"	1"	3"	C1-401-16	C1-401-16 DLC
9/16"	9/16"	1-1/4"	3-1/2"	C1-401-18	C1-401-18 DLC
5/8"	5/8"	1-1/4"	3-1/2"	C1-401-20	C1-401-20 DLC
3/4"	3/4"	1-1/2"	4"	C1-401-24	C1-401-24 DLC

# Router for Aluminum Aircraft Skins **WU1/WD1**

**Characteristics**

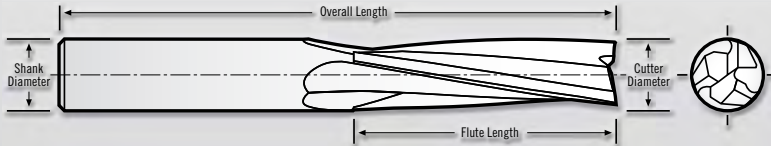
- Square End
- 3 Flute
- 10° Helix

**Applications**

- Slotting
- Side Milling
- Roughing
- Semi-Finishing
- Finishing
- Dry
- Wet
- Cold Air
- Spray Mist

**Materials**

- Aluminum
- Copper
- Magnesium
- Plastics



**WU1/WD1 Tolerances**  
 Cutting Dia. = .001/- .002"  
 Shank Dia. = -.0001/- .0002"  
 LOC (<5/16") = +.020/+ .030"  
 (>5/16") = +.030/+ .060"  
 OAL = ± .060"



## WU1-310 Up Shear 3 Flute Standard Length (10° Helix)

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number
1/2"	1/2"	1-3/4"	4"	WU1-310-16
5/8"	5/8"	2"	4-5/8"	WU1-310-20
3/4"	3/4"	2-1/2"	5-1/4"	WU1-310-24

## WD1-310 Down Shear 3 Flute Standard Length (10° Helix)

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number
1/2"	1/2"	1-3/4"	4"	WD1-310-16
5/8"	5/8"	2"	4-5/8"	WD1-310-20
3/4"	3/4"	2-1/2"	5-1/4"	WD1-310-24

Available with

Chatter Reduction with

**Mirror Edge!**

See Page 6

# Aluminum Tools in Other Sections

<b>SB / B 201/203</b> <b>MSB / MB 201/203</b>	2 Flute Ball End (See Multiple Applications)		<b>100</b>
<b>C8</b> <b>201/203/301/303</b>	2 & 3 Flute on 1/4" Shank (See Multiple Applications)		<b>93</b>
<b>NR / MNR</b> <b>204/303/404</b>	2, 3 and 4 Flute (See Multiple Applications)		<b>102</b>
<b>PM / PMD</b> <b>Routers</b>	Single Flute (See Composites & Plastics)		<b>63</b>
<b>PCD</b> <b>203 Routers</b>	2 Flute PCD Diamond (See Composites & Plastics)		<b>59</b>
<b>PCD-BN</b> <b>201 Routers</b>	2 Flute PCD Diamond, Ball End (See Composites & Plastics)		<b>59</b>
<b>MINIATURES</b>	(See Miniatures Applications)		<b>77</b>
<b>SAWS</b>	(See Saws Applications)		<b>108</b>

TOOLS FOR

# Titanium, Steel & High-Temp Alloys