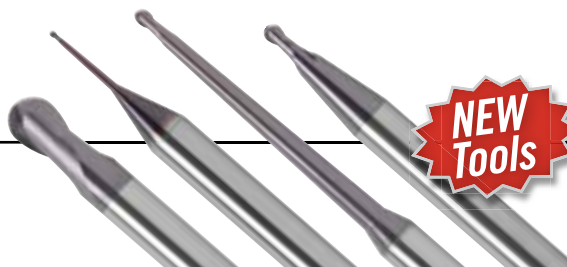


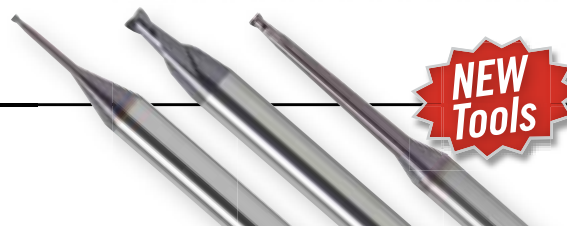
Die/Mold & Hardened Materials Tools

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TM 2 Flute Extended Length Toroidal Corner Radius **71**



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HM 4, 6, 8 and 10 Flute Corner Radius **73**



MHM 4, 6, 8 and 10 Flute Corner Radius **73**



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DM Die/Mold End Mills



Characteristics



Applications

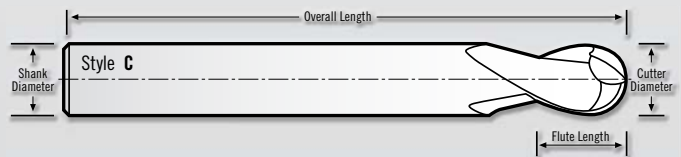
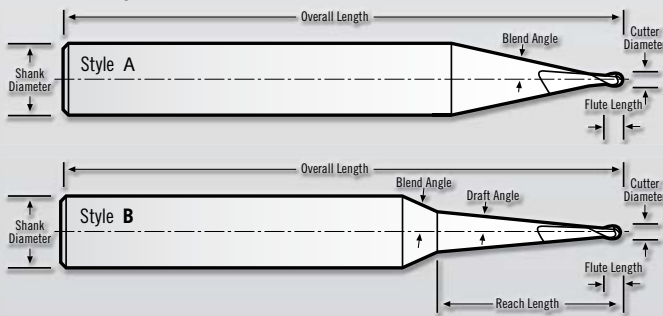


Materials



Coatings

Aluminum
Titan. Nitride



DM Tolerances

Cutting Dia. (1/32"-3/16") = ±.0003"
 (1/4"-1/2") = -.0007/-0.0013"
 Shank Dia. = -.0001/-0.0002"
 LOC (1/32"-1/2") = +.000/+0.020"
 OAL = ±.060"

MDM Tolerances

Cutting Dia. (0.5-5.0) = ±.008mm
 (6.0-12.0) = -.018/-0.033mm
 Shank Dia. = -.002/-0.005mm
 LOC (0.5-12.0) = +.000/+0.500mm
 OAL = ±1.000mm



DM 2 Flute Grade Ball End Extended Length

Cutting Diameter	Shank Diameter	Flute Length	Reach Length	Draft Angle	Blend Angle	Tool Style	Overall Length	Tool Number AITiN Coated
1/32"	1/4"	1/32"	-	-	8°	A	2-1/2"	DM-201-01
1/32"	1/4"	1/32"	1/8"	3°	18°	B	2-1/2"	DM-202-01
1/32"	1/4"	1/32"	3/16"	1.5°	16.5°	B	2-1/2"	DM-203-01
1/32"	1/4"	1/32"	3/8"	1.5°	16.5°	B	2-1/2"	DM-204-01
1/32"	1/4"	1/32"	9/16"	1.5°	16.5°	B	2-1/2"	DM-205-01
1/16"	1/4"	1/16"	-	-	8°	A	2-1/2"	DM-201-02
1/16"	1/4"	1/16"	3/16"	3°	18°	B	2-1/2"	DM-202-02
1/16"	1/4"	1/16"	3/8"	1.5°	16.5°	B	2-1/2"	DM-203-02
1/16"	1/4"	1/16"	3/4"	1.5°	16.5°	B	2-1/2"	DM-204-02
1/16"	1/4"	1/16"	1-1/8"	1.5°	16.5°	B	2-1/2"	DM-205-02
3/32"	1/4"	3/32"	-	-	8°	A	2-1/2"	DM-201-03
3/32"	1/4"	3/32"	1/4"	3°	18°	B	2-1/2"	DM-202-03
3/32"	1/4"	3/32"	1/2"	1.5°	16.5°	B	2-1/2"	DM-203-03
3/32"	1/4"	3/32"	15/16"	1.5°	16.5°	B	2-1/2"	DM-204-03
3/32"	1/4"	3/32"	1-5/16"	1.5°	16.5°	B	2-1/2"	DM-205-03
1/8"	1/4"	1/8"	-	-	8°	A	3"	DM-201-04
1/8"	1/4"	1/8"	5/16"	3°	18°	B	3"	DM-202-04
1/8"	1/4"	1/8"	5/8"	1.5°	16.5°	B	3"	DM-203-04
1/8"	1/4"	1/8"	1"	1°	16°	B	3"	DM-204-04
1/8"	1/4"	1/8"	1-1/2"	1°	16°	B	3"	DM-205-04

Die/Mold End Mills **DM/MDM**

DM 2 Flute Grade Ball End Extended Length —CONTINUED FROM PREVIOUS

Cutting Diameter	Shank Diameter	Flute Length	Reach Length	Draft Angle	Blend Angle	Tool Style	Overall Length	Tool Number AlTiN Coated
3/16"	1/4"	3/16"	—	—	8°	A	3"	DM-201-06
3/16"	1/4"	3/16"	3/8"	2°	17°	B	3"	DM-202-06
3/16"	1/4"	3/16"	3/4"	1.5°	16.5°	B	3"	DM-203-06
3/16"	1/4"	3/16"	1-1/8"	1°	16°	B	3"	DM-204-06
3/16"	1/4"	3/16"	1-9/16"	1°	16°	B	3"	DM-205-06
1/4"	1/4"	1/4"	—	—	—	C	3"	DM-201-08
5/16"	5/16"	5/16"	—	—	—	C	3-1/8"	DM-201-10
3/8"	3/8"	3/8"	—	—	—	C	3-1/4"	DM-201-12
7/16"	7/16"	7/16"	—	—	—	C	3-3/4"	DM-201-14
1/2"	1/2"	1/2"	—	—	—	C	4"	DM-201-16

MDM 2 Flute Tuffy Ball End Extended Length **METRIC**

Cutting Diameter	Shank Diameter	Flute Length	Reach Length	Draft Angle	Blend Angle	Tool Style	Overall Length	Tool Number AlTiN Coated
0.5mm	6mm	0.5mm	—	—	8°	A	63mm	MDM-201-0.5
0.5mm	6mm	0.5mm	1mm	3°	18°	B	63mm	MDM-203-0.5
0.5mm	6mm	0.5mm	3mm	1.5°	16.5°	B	63mm	MDM-204-0.5
0.5mm	6mm	0.5mm	5mm	1.5°	16.5°	B	63mm	MDM-205-0.5
0.5mm	6mm	0.5mm	10mm	1.5°	16.5°	B	63mm	MDM-206-0.5
0.8mm	6mm	0.8mm	—	—	8°	A	63mm	MDM-201-0.8
0.8mm	6mm	0.8mm	3mm	3°	18°	B	63mm	MDM-203-0.8
0.8mm	6mm	0.8mm	5mm	1.5°	16.5°	B	63mm	MDM-204-0.8
0.8mm	6mm	0.8mm	10mm	1.5°	16.5°	B	63mm	MDM-205-0.8
0.8mm	6mm	0.8mm	15mm	1.5°	16.5°	B	63mm	MDM-206-0.8
1mm	6mm	1mm	—	—	8°	A	63mm	MDM-201-01
1mm	6mm	1mm	3mm	3°	18°	B	63mm	MDM-203-01
1mm	6mm	1mm	5mm	1.5°	16.5°	B	63mm	MDM-204-01
1mm	6mm	1mm	10mm	1.5°	16.5°	B	63mm	MDM-205-01
1mm	6mm	1mm	20mm	1.5°	16.5°	B	63mm	MDM-206-01
1.5mm	6mm	1.5mm	—	—	8°	A	63mm	MDM-201-01.5
1.5mm	6mm	1.5mm	5mm	3°	18°	B	63mm	MDM-203-01.5
1.5mm	6mm	1.5mm	10mm	1.5°	16.5°	B	63mm	MDM-204-01.5
1.5mm	6mm	1.5mm	20mm	1.5°	16.5°	B	63mm	MDM-205-01.5
1.5mm	6mm	1.5mm	30mm	1.5°	16.5°	B	63mm	MDM-206-01.5
2mm	6mm	2mm	—	—	8°	A	63mm	MDM-201-02
2mm	6mm	2mm	5mm	3°	18°	B	63mm	MDM-203-02
2mm	6mm	2mm	10mm	1.5°	16.5°	B	63mm	MDM-204-02
2mm	6mm	2mm	20mm	1.5°	16.5°	B	63mm	MDM-205-02
2mm	6mm	2mm	30mm	1.5°	16.5°	B	63mm	MDM-206-02
3mm	6mm	3mm	—	—	8°	A	75mm	MDM-201-03
3mm	6mm	3mm	5mm	3°	18°	B	75mm	MDM-203-03
3mm	6mm	3mm	15mm	1.5°	16.5°	B	75mm	MDM-204-03
3mm	6mm	3mm	30mm	1°	16°	B	75mm	MDM-205-03
3mm	6mm	3mm	45mm	1°	16°	B	75mm	MDM-206-03
4mm	6mm	4mm	—	—	8°	A	75mm	MDM-201-04
4mm	6mm	4mm	10mm	2°	17°	B	75mm	MDM-203-04
4mm	6mm	4mm	15mm	1.5°	16.5°	B	75mm	MDM-204-04
4mm	6mm	4mm	20mm	1°	16°	B	75mm	MDM-205-04
5mm	6mm	5mm	—	—	8°	B	75mm	MDM-201-05
5mm	6mm	5mm	10mm	2°	17°	B	75mm	MDM-203-05
5mm	6mm	5mm	25mm	1°	16°	B	75mm	MDM-204-05
6mm	6mm	6mm	—	—	—	C	75mm	MDM-201-06
8mm	8mm	8mm	—	—	—	C	80mm	MDM-201-08
10mm	10mm	10mm	—	—	—	C	82mm	MDM-201-10
12mm	12mm	12mm	—	—	—	C	100mm	MDM-201-12

DM Die/Mold End Mills

DM SERIES SPEED & FEED (Chipload per Tooth)

Tool Number	Cutter Diameter	Steels 30-40 HRc		Steels 40-50 HRc		Steels 50-60 HRc	
		ROUGHING	FINISHING	ROUGHING	FINISHING	ROUGHING	FINISHING
DM-201-01	1/32"	0.0006-0.0008	0.0005-0.0006	0.0005-0.0006	0.0004-0.0005	0.0004-0.0005	0.0003-0.0004
DM-201-02	1/16"	0.0013-0.0015	0.0010-0.0013	0.0010-0.0013	0.0008-0.0010	0.0008-0.0010	0.0005-0.0008
DM-201-03	3/32"	0.0019-0.0023	0.0015-0.0019	0.0015-0.0019	0.0011-0.0015	0.0011-0.0015	0.0008-0.0011
DM-201-04	1/8"	0.0025-0.0030	0.0020-0.0025	0.0020-0.0025	0.0015-0.0020	0.0015-0.0020	0.0010-0.0015
DM-201-06	3/16"	0.0038-0.0045	0.0030-0.0038	0.0030-0.0038	0.0023-0.0030	0.0023-0.0030	0.0015-0.0023
DM-201-08	1/4"	0.0050-0.0060	0.0040-0.0050	0.0040-0.0050	0.0030-0.0040	0.0030-0.0040	0.0020-0.0030
DM-201-10	5/16"	0.0063-0.0075	0.0050-0.0063	0.0050-0.0063	0.0038-0.0050	0.0038-0.0050	0.0025-0.0038
DM-201-12	3/8"	0.0075-0.0090	0.0060-0.0075	0.0060-0.0075	0.0045-0.0060	0.0045-0.0060	0.0030-0.0045
DM-201-14	7/16"	0.0088-0.0105	0.0070-0.0088	0.0070-0.0088	0.0053-0.0070	0.0053-0.0070	0.0035-0.0053
DM-201-16	1/2"	0.0100-0.0120	0.0080-0.0100	0.0080-0.0100	0.0060-0.0080	0.0060-0.0080	0.0040-0.0060

DM SERIES SPEED & FEED (Roughing & Semi-Finishing)

Tool Number	Cutter Diameter	Rotations Per Minute (RPM)		
		STEELS 30-40HRc	STEELS 40-50HRc	STEELS 50-60HRc
DM-201-01	1/32"	20,000-40,000	20,000-40,000	20,000-40,000
DM-201-02	1/16"	20,000-40,000	20,000-40,000	20,000-36,000
DM-201-03	3/32"	20,000-32,000	20,000-32,000	16,000-24,000
DM-201-04	1/8"	15,000-24,000	18,000-24,000	12,000-18,000
DM-201-06	3/16"	10,000-16,000	12,000-16,000	8,100-12,000
DM-201-08	1/4"	7,600-12,000	9,100-12,000	6,100-9,100
DM-201-10	5/16"	6,000-9,700	7,300-9,700	4,800-7,300
DM-201-12	3/8"	5,000-8,100	6,100-8,100	4,000-6,100
DM-201-14	7/16"	4,300-6,900	5,200-6,900	3,400-5,200
DM-201-16	1/2"	3,800-6,100	4,500-6,100	3,000-4,500

DM Series Guidelines

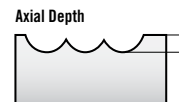
- Special diameters and lengths are available on a make-to-order basis.
- Air or mist coolant on materials greater than 40 HRc.



Radial Step Over
 Radial Step Over for finishing depends on finish requirements. 25%-40% of tool diameter

DM SERIES SPEED & FEED (Finishing)

Tool Number	Cutter Diameter	Rotations Per Minute (RPM)		
		STEELS 30-40HRc	STEELS 40-50HRc	STEELS 50-60HRc
DM-201-01	1/32"	20,000-40,000	20,000-40,000	20,000-40,000
DM-201-02	1/16"	20,000-40,000	20,000-40,000	20,000-36,000
DM-201-03	3/32"	20,000-32,000	20,000-32,000	16,000-24,000
DM-201-04	1/8"	15,000-24,000	18,000-24,000	12,000-18,000
DM-201-06	3/16"	10,000-16,000	12,000-16,000	8,100-12,000
DM-201-08	1/4"	7,600-12,000	9,100-12,000	6,100-9,100
DM-201-10	5/16"	6,000-9,700	7,300-9,700	4,800-7,300
DM-201-12	3/8"	5,000-8,100	6,100-8,100	4,000-6,100
DM-201-14	7/16"	4,300-6,900	5,200-6,900	3,400-5,200
DM-201-16	1/2"	3,800-6,100	4,500-6,100	3,000-4,500

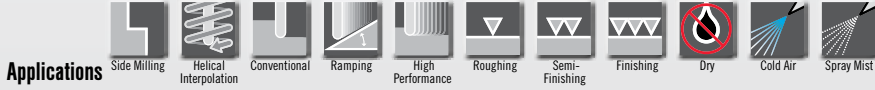


Axial Depth
 30-40 HRc Axial depth = 10% of tool diameter
 40-50 HRc Axial depth = 5% of tool diameter
 50-60 HRc Axial depth = 4% of tool diameter

Solid Carbide Toroid Style End Mills **TM**



Characteristics



Applications

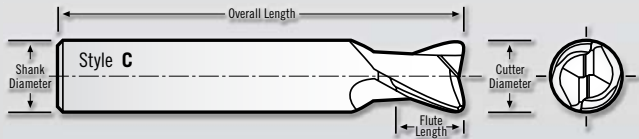
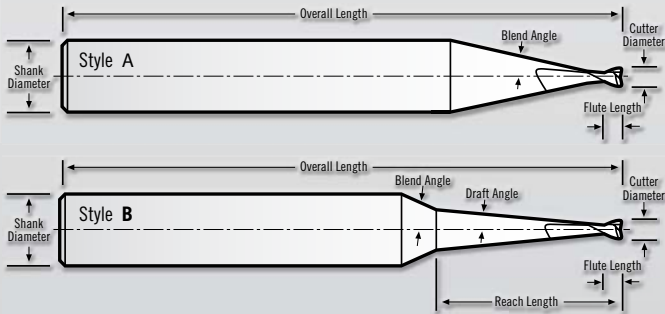


Materials



Coatings

Aluminum Titan. Nitride



TM Tolerances:

Cutting Dia. = $-.001 / -.002$
 Shank Dia. = $-.0001 / -.0002$
 LOC (1/32" to 1/2") = $+.000 / +.020$
 OAL = $\pm .060$ "



TM 2 Flute Tuffy Grade Toroid End Mill

Cutting Diameter	Shank Diameter	Flute Length	Reach Length	Draft Angle	Blend Angle	Corner Radius	Tool Style	Overall Length	Tool Number AlTiN Coated
1/32"	1/4"	1/32"	—	—	8°	.008"	A	2-1/2"	TM-201-01
1/32"	1/4"	1/32"	1/8"	3°	18°	.008"	B	2-1/2"	TM-202-01
1/32"	1/4"	1/32"	3/16"	1.5°	16.5°	.008"	B	2-1/2"	TM-203-01
1/32"	1/4"	1/32"	3/8"	1.5°	16.5°	.008"	B	2-1/2"	TM-204-01
1/32"	1/4"	1/32"	9/16"	1.5°	16.5°	.008"	B	2-1/2"	TM-205-01
1/16"	1/4"	1/16"	—	—	8°	.012"	A	2-1/2"	TM-201-02
1/16"	1/4"	1/16"	3/16"	3°	18°	.012"	B	2-1/2"	TM-202-02
1/16"	1/4"	1/16"	3/8"	1.5°	16.5°	.012"	B	2-1/2"	TM-203-02
1/16"	1/4"	1/16"	3/4"	1.5°	16.5°	.012"	B	2-1/2"	TM-204-02
1/16"	1/4"	1/16"	1-1/8"	1.5°	16.5°	.012"	B	2-1/2"	TM-205-02
3/32"	1/4"	3/32"	—	—	8°	.020"	A	2-1/2"	TM-201-03
3/32"	1/4"	3/32"	1/4"	3°	18°	.020"	B	2-1/2"	TM-202-03
3/32"	1/4"	3/32"	1/2"	1.5°	16.5°	.020"	B	2-1/2"	TM-203-03
3/32"	1/4"	3/32"	15/16"	1.5°	16.5°	.020"	B	2-1/2"	TM-204-03
3/32"	1/4"	3/32"	1-5/16"	1.5°	16.5°	.020"	B	2-1/2"	TM-205-03
1/8"	1/4"	1/8"	—	—	8°	.020"	A	3"	TM-201-04
1/8"	1/4"	1/8"	5/16"	3°	18°	.020"	B	3"	TM-202-04
1/8"	1/4"	1/8"	5/8"	1.5°	16.5°	.020"	B	3"	TM-203-04
1/8"	1/4"	1/8"	1"	1°	16°	.020"	B	3"	TM-204-04
1/8"	1/4"	1/8"	1-1/2"	1°	16°	.020"	B	3"	TM-205-04
3/16"	1/4"	3/16"	—	—	8°	.040"	A	3"	TM-201-06
3/16"	1/4"	3/16"	3/8"	2°	17°	.040"	B	3"	TM-202-06
3/16"	1/4"	3/16"	3/4"	1.5°	16.5°	.040"	B	3"	TM-203-06
3/16"	1/4"	3/16"	1-1/8"	1°	16°	.040"	B	3"	TM-204-06
3/16"	1/4"	3/16"	1-9/16"	1°	16°	.040"	B	3"	TM-205-06
1/4"	1/4"	1/4"	—	—	—	.040"	C	3"	TM-201-08
5/16"	5/16"	5/16"	—	—	—	.040"	C	3-1/8"	TM-201-10
3/8"	3/8"	3/8"	—	—	—	.080"	C	3-1/4"	TM-201-12
7/16"	7/16"	7/16"	—	—	—	.080"	C	3-3/4"	TM-201-14
1/2"	1/2"	1/2"	—	—	—	.120"	C	4"	TM-201-16

TM/MTM Solid Carbide Toroid Style End Mills



MTM Metrics 2 Flute Tuffy Grade Toroid End Mill METRIC

Cutting Diameter	Shank Diameter	Flute Length	Reach Length	Draft Angle	Blend Angle	Corner Radius	Tool Style	Overall Length	Tool Number AlTiN Coated
0.8mm	6mm	0.8mm	—	—	8°	0.2mm	A	63mm	MTM-201-0.8
0.8mm	6mm	0.8mm	3mm	3°	18°	0.2mm	B	63mm	MTM-202-0.8
0.8mm	6mm	0.8mm	5mm	1.5°	16.5°	0.2mm	B	63mm	MTM-203-0.8
0.8mm	6mm	0.8mm	10mm	1.5°	16.5°	0.2mm	B	63mm	MTM-204-0.8
0.8mm	6mm	0.8mm	15mm	1.5°	16.5°	0.2mm	B	63mm	MTM-205-0.8
1mm	6mm	1mm	—	—	8°	0.3mm	A	63mm	MTM-201-01
1mm	6mm	1mm	3mm	3°	18°	0.3mm	B	63mm	MTM-202-01
1mm	6mm	1mm	5mm	1.5°	16.5°	0.3mm	B	63mm	MTM-203-01
1mm	6mm	1mm	10mm	1.5°	16.5°	0.3mm	B	63mm	MTM-204-01
1mm	6mm	1mm	20mm	1.5°	16.5°	0.3mm	B	63mm	MTM-205-01
1.5mm	6mm	1.5mm	—	—	8°	0.5mm	A	63mm	MTM-201-01.5
1.5mm	6mm	1.5mm	5mm	3°	18°	0.5mm	B	63mm	MTM-202-01.5
1.5mm	6mm	1.5mm	10mm	1.5°	16.5°	0.5mm	B	63mm	MTM-203-01.5
1.5mm	6mm	1.5mm	20mm	1.5°	16.5°	0.5mm	B	63mm	MTM-204-01.5
1.5mm	6mm	1.5mm	30mm	1.5°	16.5°	0.5mm	B	63mm	MTM-205-01.5
2mm	6mm	2mm	—	—	8°	0.5mm	A	63mm	MTM-201-02
2mm	6mm	2mm	5mm	3°	18°	0.5mm	B	63mm	MTM-202-02
2mm	6mm	2mm	10mm	1.5°	16.5°	0.5mm	B	63mm	MTM-203-02
2mm	6mm	2mm	20mm	1.5°	16.5°	0.5mm	B	63mm	MTM-204-02
2mm	6mm	2mm	30mm	1.5°	16.5°	0.5mm	B	63mm	MTM-205-02
3mm	6mm	3mm	—	—	8°	0.5mm	A	75mm	MTM-201-03
3mm	6mm	3mm	5mm	3°	18°	0.5mm	B	75mm	MTM-202-03
3mm	6mm	3mm	15mm	1.5°	16.5°	0.5mm	B	75mm	MTM-203-03
3mm	6mm	3mm	30mm	1°	16°	0.5mm	B	75mm	MTM-204-03
3mm	6mm	3mm	45mm	1°	16°	0.5mm	B	75mm	MTM-205-03
4mm	6mm	4mm	—	—	8°	0.5mm	A	75mm	MTM-201-04
4mm	6mm	4mm	10mm	2°	17°	0.5mm	B	75mm	MTM-202-04
4mm	6mm	4mm	15mm	1.5°	16.5°	0.5mm	B	75mm	MTM-203-04
4mm	6mm	4mm	20mm	1°	16°	0.5mm	B	75mm	MTM-204-04
5mm	6mm	5mm	—	—	8°	1mm	A	75mm	MTM-201-05
5mm	6mm	5mm	10mm	3°	18°	1mm	B	75mm	MTM-202-05
5mm	6mm	5mm	25mm	1°	16°	1mm	B	75mm	MTM-203-05
6mm	6mm	6mm	—	—	—	1mm	C	75mm	MTM-201-06
8mm	8mm	8mm	—	—	—	1mm	C	80mm	MTM-201-08
10mm	10mm	10mm	—	—	—	2mm	C	82mm	MTM-201-10
12mm	12mm	12mm	—	—	—	3mm	C	100mm	MTM-201-12

TM SERIES SPEED & FEED (Semi-Finishing & Finishing)

Tool Number	Cutter Diameter	Steels 30-40 HRC		Steels 40-50 HRC		Steels 50-60 HRC	
		ROUGHING	FINISHING	ROUGHING	FINISHING	ROUGHING	FINISHING
TM-201-01	1/32"	34,000-40,000	0.0001-0.00025	26,000-30,000	0.0001-0.0002	16,000-18,000	0.0001-0.0002
TM-201-02	1/16"	34,000-40,000	0.0003-0.0005	25,000-30,000	0.0003-0.0005	16,000-18,000	0.0002-0.0004
TM-201-03	3/32"	22,000-26,000	0.0006-0.00075	16,000-19,000	0.0005-0.0007	10,000-12,000	0.0005-0.0006
TM-201-04	1/8"	17,000-20,000	0.0008-0.001	13,000-17,000	0.0007-0.0009	8,000-13,000	0.0006-0.0008
TM-201-06	3/16"	12,000-14,000	0.0011-0.0015	9,000-12,000	0.0001-0.0014	5,300-9,000	0.0009-0.0012
TM-201-08	1/4"	9,000-10,400	0.0015-0.002	7,000-9,000	0.0014-0.0018	4,000-6,600	0.0012-0.0016
TM-201-10	5/16"	7,200-8,300	0.0019-0.0025	5,500-7,200	0.0017-0.0023	3,200-5,400	0.0015-0.0020
TM-201-12	3/8"	6,000-6,900	0.0020-0.003	4,600-6,000	0.0018-0.0027	2,700-4,500	0.0016-0.0024
TM-201-14	7/16"	5,200-6,000	0.0023-0.0035	4,000-5,200	0.0021-0.0032	2,300-3,900	0.0019-0.0028
TM-201-16	1/2"	4,500-5,200	0.0025-0.004	3,500-4,500	0.0023-0.0036	2,100-3,500	0.0020-0.0032

Additional Notes

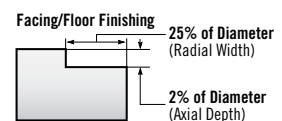
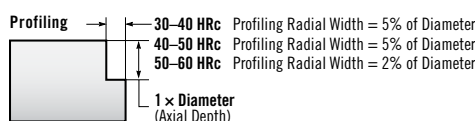
- Special diameters, lengths, and corner radii are available on a make-to-order basis.
- Special draft angles (blend angle) or necked shanks for part clearance are available upon request and usually ship within the next business day.

(Use maximum RPM if suggested RPM is higher than the machine's capabilities)

TM Series Guidelines

- Speed and Feeds are only general starting points and may vary depending on specific applications.
- Use Climb Milling for better finish and longer tool life.
- Air or mist coolant on materials greater than 40 HRC.

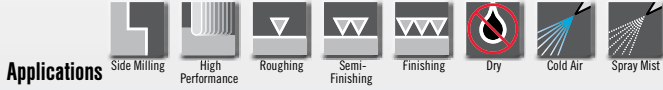
- Good machines, tool holders, and programming methods all help in extending tool life.
- The best way to engage into the material is by helical interpolation or entering from off the part.
- Use for tight areas like helical bores or tight corners. For large open areas use HM/MHM Series.



Die/Mold End Mills **HM/MHM**



Characteristics



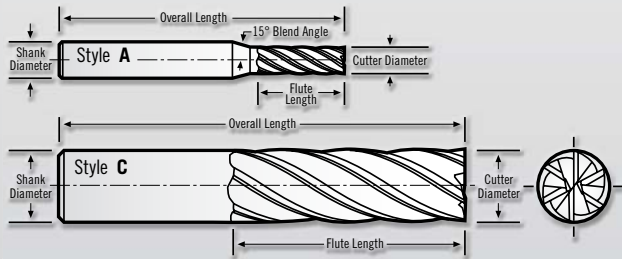
Applications



Materials



Coatings



HM Tolerances

Cutting Dia. = $-.001/-0.002$ "
 Shank Dia. = $-.0001/-0.0002$ "
 LOC = $+0.060/-0.000$ "
 OAL = ± 0.060 "

MHM Tolerances

Cutting Dia. = $-.025/-0.050$ mm
 Shank Dia. = $-.002/-0.005$ mm
 LOC = $+0.50/+1.50$ mm
 OAL = ± 1.000 mm



HM Multi-Flute Tuffy Grade

Cutting Diameter	Shank Diameter	Number of Flutes	Flute Length	Corner Radius	Tool Style	Overall Length	Tool Number AITiN Coated
1/8"	1/4"	4	3/8"	0.015"	A	3"	HM-402-04
3/16"	1/4"	4	9/16"	0.02"	A	3"	HM-402-06
1/4"	1/4"	6	5/8"	0.02"	C	3-1/2"	HM-602-08
5/16"	5/16"	6	3/4"	0.03"	C	4"	HM-602-10
3/8"	3/8"	6	1"	0.03"	C	4"	HM-602-12
7/16"	7/16"	6	1-1/8"	0.04"	C	4"	HM-602-14
1/2"	1/2"	6	1-1/4"	0.04"	C	4"	HM-602-16
5/8"	5/8"	6	1-5/8"	0.04"	C	6"	HM-602-20
3/4"	3/4"	8	1-3/4"	0.06"	C	6"	HM-802-24
1"	1"	10	2"	0.06"	C	6"	HM-102-32

MHM Metric Multi-Flute Tuffy Grade **METRIC**

Cutting Diameter	Shank Diameter	Number of Flutes	Flute Length	Corner Radius	Tool Style	Overall Length	Tool Number AITiN Coated
3mm	6mm	4	9mm	0.4mm	A	76mm	MHM-402-03
4mm	6mm	4	12mm	0.5mm	A	76mm	MHM-402-04
5mm	6mm	4	15mm	0.5mm	C	90mm	MHM-402-05
6mm	6mm	6	15mm	0.5mm	C	90mm	MHM-602-06
8mm	8mm	6	20mm	0.75mm	C	100mm	MHM-602-08
10mm	10mm	6	25mm	0.75mm	C	100mm	MHM-602-10
12mm	12mm	6	30mm	1mm	C	100mm	MHM-602-12
16mm	16mm	6	40mm	1mm	C	150mm	MHM-602-16
20mm	20mm	8	45mm	1.5mm	C	150mm	MHM-802-20
25mm	25mm	10	50mm	1.5mm	C	150mm	MHM-102-25

HM Die/Mold End Mills

HM SERIES SPEED & FEED (Semi-Finishing & Finishing)

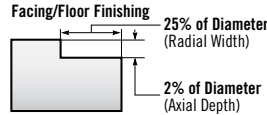
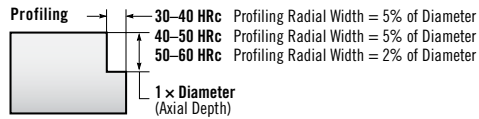
Tool Number	Cutter Diameter	Steels 30-40 HRc		Steels 40-50 HRc		Steels 50-60 HRc	
		RPM	CLPT	RPM	CLPT	RPM	CLPT
HM-402-04	1/8"	17,000-20,000	0.0008-0.001	13,000-17,000	0.0007-0.0009	8,000-13,000	0.0006-0.0008
HM-402-06	3/16"	12,000-14,000	0.0011-0.0015	9,000-12,000	0.0010-0.0014	5,300-9,000	0.0009-0.0012
HM-602-08	1/4"	9,000-10,400	0.0015-0.002	7,000-9,000	0.0014-0.0018	4,000-6,600	0.0012-0.0016
HM-602-10	5/16"	7,200-8,300	0.0019-0.0025	5,500-7,200	0.0017-0.0023	3,200-5,400	0.0015-0.0020
HM-602-12	3/8"	6,000-6,900	0.0020-0.003	4,600-6,000	0.0018-0.0027	2,700-4,500	0.0016-0.0024
HM-602-14	7/16"	5,200-6,000	0.0023-0.0035	4,000-5,200	0.0021-0.0032	2,300-3,900	0.0019-0.0028
HM-602-16	1/2"	4,500-5,200	0.0025-0.004	3,500-4,500	0.0023-0.0036	2,100-3,500	0.0020-0.0032
HM-602-20	5/8"	3,600-4,150	0.0026-0.0042	2,800-3,600	0.0023-0.0038	1,600-2,750	0.0021-0.0034
HM-802-24	3/4"	3,000-3,500	0.0028-0.005	2,300-3,000	0.0025-0.0045	1,350-2,250	0.0023-0.0041
HM-102-32	1"	2,200-2,600	0.0030-0.006	1,700-2,200	0.0027-0.0054	1,000-1,700	0.0024-0.0049

HM Series Guidelines

- Speed and Feeds are only general starting points and may vary depending on specific applications.
- Use Climb Milling for better finish and longer tool life.
- Air or mist coolant on materials greater than 40 HRc.
- Good machines, tool holders, and programming methods all help in extending tool life.
- The best way to engage into the material is by helical interpolation or entering from off the part.
- Use for open areas of floors or walls. For tight areas like helical bores or tight corners use TM/MTM Series.

Additional Notes

- Special draft angles (blend angle) or necked shanks for part clearance are available upon request.
- Special diameters, lengths, and corner radii are available on a make-to-order basis.



Die/Mold Tools in Other Sections

ET

Engraving Tools
(See Multiple Applications)



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