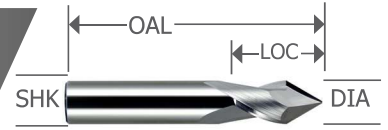


SPECIAL USE CARBIDE END MILLS

2 FLUTE • 60°, 82° & 90° DRILL POINT END MILLS



Carbide	2	30°	Bright AlTiN	+0.0005 -0.0005 <1/8	+0.0000 -0.0020 ≥1/8	Drill Pt.	HRC <48	P M	K S	N
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SERIES: AMG-__-DP60

DIA	SHK	LOC	OAL	ANGLE	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/16	1/8	3/16	1-1/2	60°	std	AMG-402-DP60	12199	52199
3/32	1/8	3/8	1-1/2	60°	std	AMG-403-DP60	12200	52200
1/8	1/8	1/2	1-1/2	60°	std	AMG-404-DP60	11663	51663
3/16	3/16	5/8	2	60°	std	AMG-606-DP60	12201	52201
1/4	1/4	3/4	2-1/2	60°	std	AMG-808-DP60	11665	51665
5/16	5/16	13/16	2-1/2	60°	std	AMG-1010-DP60	12193	52193
3/8	3/8	1	2-1/2	60°	std	AMG-1212-DP60	11667	51667
7/16	7/16	1	2-3/4	60°	std	AMG-1414-DP60	12195	52195
1/2	1/2	1	3	60°	std	AMG-1616-DP60	11669	51669
5/8	5/8	1-1/4	3-1/2	60°	std	AMG-2020-DP60	12196	52196
3/4	3/4	1-1/2	4	60°	std	AMG-2424-DP60	12197	52197

SERIES: AMG-__-DP82

DIA	SHK	LOC	OAL	ANGLE	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/8	1/8	1/2	1-1/2	82°	std	AMG-404-DP82	12455	52455
1/4	1/4	3/4	2-1/2	82°	std	AMG-808-DP82	16590	56590
3/8	3/8	1	2-1/2	82°	std	AMG-1212-DP82	16591	56591
1/2	1/2	1	3	82°	std	AMG-1616-DP82	16592	56592
5/8	5/8	1-1/4	3-1/2	82°	std	AMG-2020-DP82	16593	56593
3/4	3/4	1-1/2	4	82°	std	AMG-2424-DP82	16594	56594

SERIES: AMG-__-DP

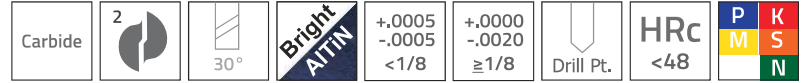
DIA	SHK	LOC	OAL	ANGLE	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
.015	1/8	.045	1-1/2	90°	std	AMG-.015-DP	13039	53039
.020	1/8	.060	1-1/2	90°	std	AMG-.020-DP	13029	53029
.025	1/8	.075	1-1/2	90°	std	AMG-.025-DP	13031	53031
.030	1/8	.090	1-1/2	90°	std	AMG-.030-DP	13033	53033
.045	1/8	.105	1-1/2	90°	std	AMG-.045-DP	13035	53035
.060	1/8	.180	1-1/2	90°	std	AMG-.060-DP	13037	53037
1/16	1/8	3/16	1-1/2	90°	std	AMG-402-DP	11623	51623
3/32	1/8	3/8	1-1/2	90°	std	AMG-403-DP	11625	51625
1/8	1/8	1/2	1-1/2	90°	std	AMG-404-DP	16083	56083
1/8	1/8	1/2	1-1/2	90°	std	AMG-404-DP-1	16703	56703
3/16	3/16	5/8	2	90°	std	AMG-606-DP	16084	56084
3/16	3/16	5/8	2	90°	std	AMG-606-DP-1	16704	56704
1/4	1/4	3/4	2-1/2	90°	std	AMG-808-DP	16085	56085
1/4	1/4	3/4	2-1/2	90°	std	AMG-808-DP-1	16712	56712
5/16	5/16	13/16	2-1/2	90°	std	AMG-1010-DP	16086	56086
5/16	5/16	13/16	2-1/2	90°	std	AMG-1010-DP-1	16705	56705
3/8	3/8	1	2-1/2	90°	std	AMG-1212-DP	16087	56087
3/8	3/8	1	2-1/2	90°	std	AMG-1212-DP-1	16462	56462
7/16	7/16	1	2-3/4	90°	std	AMG-1414-DP	16088	56088
1/2	1/2	1	3	90°	std	AMG-1616-DP	16089	56089
1/2	1/2	1	3	90°	std	AMG-1616-DP-1	16707	56707
5/8	5/8	1-1/4	3-1/2	90°	std	AMG-2020-DP	16090	56090
5/8	5/8	1-1/4	3-1/2	90°	std	AMG-2020-DP-1	16706	56706
3/4	3/4	1-1/2	4	90°	std	AMG-2424-DP	16091	56091

Tool names with "-1" have a .005 sharp point for groove milling

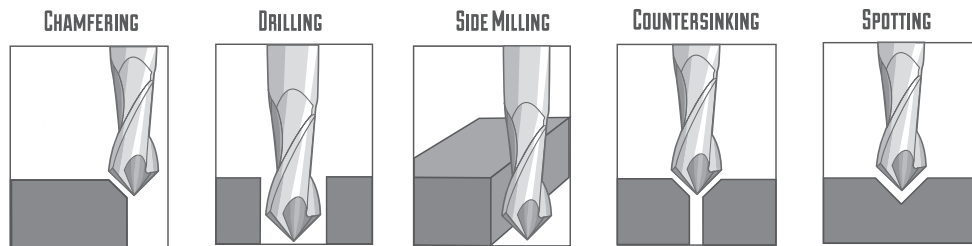
SPECIAL USE CARBIDE END MILLS

2 FLUTE • 90° DRILL POINT END MILLS

SERIES: AMG-__-DP



DIA	SHK	LOC	OAL	ANGLE	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
0.5mm	3mm	2.0mm	38mm	90°	std	AMG-M3M0.5-DP	13364	53364
0.6mm	3mm	2.5mm	38mm	90°	std	AMG-M3M0.6-DP	13365	53365
0.7mm	3mm	2.5mm	38mm	90°	std	AMG-M3M0.7-DP	13366	53366
0.8mm	3mm	3.0mm	38mm	90°	std	AMG-M3M0.8-DP	13367	53367
0.9mm	3mm	3.5mm	38mm	90°	std	AMG-M3M0.9-DP	13368	53368
1.0mm	3mm	4.0mm	38mm	90°	std	AMG-M3M1-DP	13369	53369
1.2mm	3mm	4.5mm	38mm	90°	std	AMG-M3M1.2-DP	13370	53370
1.4mm	3mm	5.5mm	38mm	90°	std	AMG-M3M1.4-DP	13371	53371
1.5mm	3mm	6.0mm	38mm	90°	std	AMG-M3M1.5-DP	13372	53372
1.8mm	3mm	7.0mm	38mm	90°	std	AMG-M3M1.8-DP	13373	53373
2.0mm	3mm	8.0mm	38mm	90°	std	AMG-M3M2-DP	13374	53374
2.5mm	3mm	10mm	38mm	90°	std	AMG-M3M2.5-DP	13375	53375
3.0mm	3mm	12mm	38mm	90°	std	AMG-M3M3-DP	13376	53376
4.0mm	4mm	14mm	51mm	90°	std	AMG-M4M4-DP	13377	53377
5.0mm	5mm	20mm	51mm	90°	std	AMG-M5M5-DP	13378	53378
6.0mm	6mm	20mm	63mm	90°	std	AMG-M6M6-DP	13379	53379
8.0mm	8mm	20mm	63mm	90°	std	AMG-M8M8-DP	13380	53380
10.0mm	10mm	25mm	70mm	90°	std	AMG-M10M10-DP	13381	53381
12.0mm	12mm	25mm	76mm	90°	std	AMG-M12M12-DP	13382	53382
16.0mm	16mm	32mm	89mm	90°	std	AMG-M16M16-DP	13383	53383
20.0mm	20mm	38mm	100mm	90°	std	AMG-M20M20-DP	13384	53384



General Purpose Carbide End Mills

SERIES: General Purpose Carbide End Mills

MATERIAL	CONDITIONS	CUTTING DIAMETER											
		1/8"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	CHIP PER TOOTH			
		Under 32 HRc	Over 32 HRc										
STAINLESS STEELS ISO-M													
Precipitation 13-8, 15-5, 17-4PH	Slotting .5 x Dia.	110-200	80-115	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040		
	Profiling ≤ .5 x Dia.	110-200	80-115	0.0006	0.0012	0.0015	0.0018	0.0025	0.0031	0.0038	0.0050		
Austenitic 302, 303, 304L, 316L	Slotting .5 x Dia.	150-275	80-180	0.0005	0.0011	0.0014	0.0016	0.0023	0.0029	0.0035	0.0046		
	Profiling ≤ .5 x Dia.	150-275	80-180	0.0007	0.0014	0.0018	0.0021	0.0030	0.0038	0.0045	0.0060		
Martensitic 403, 410, 416	Slotting .5 x Dia.	200-400	80-160	0.0005	0.0011	0.0014	0.0016	0.0023	0.0029	0.0035	0.0046		
	Profiling ≤ .5 x Dia.	200-400	80-160	0.0007	0.0014	0.0018	0.0021	0.0030	0.0038	0.0045	0.0060		
HIGH TEMP ALLOYS ISO-S													
Cobalt Base Stellite, Haynes 25, 188, X-40, L-605	Slotting .5 x Dia.	60-125	60-125	0.0004	0.0007	0.0009	0.0011	0.0015	0.0019	0.0023	0.0030		
	Profiling ≤ .5 x Dia.	60-125	60-125	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040		
Nickel Base Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel, PermaNickel 300, Incoly 600	Slotting .5 x Dia.	60-125	60-125	0.0004	0.0007	0.0009	0.0011	0.0015	0.0019	0.0023	0.0030		
	Profiling ≤ .5 x Dia.	60-125	60-125	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040		
Iron Base Incoloy 800-802, Multimet N-155, Timken 16-26-6	Slotting .5 x Dia.	60-125	60-125	0.0004	0.0007	0.0009	0.0011	0.0015	0.0019	0.0023	0.0030		
	Profiling ≤ .5 x Dia.	60-125	60-125	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040		
STEELS ISO-P													
High Strength Steels 4140, 4340, 52100	Slotting .5 x Dia.	150-300	80-180	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.004		
	Profiling ≤ .5 x Dia.	150-300	80-180	0.0006	0.0010	0.0012	0.0018	0.0025	0.0031	0.0038	0.005		
High Alloy Steels - Mold & Die A-2, P20, 01, 02, D2, H-13	Slotting .5 x Dia.	150-275	80-185	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.004		
	Profiling ≤ .5 x Dia.	150-275	80-185	0.0006	0.0010	0.0012	0.0018	0.0025	0.0031	0.0038	0.005		
Medium Alloy Steels 200, 250, 300	Slotting .5 x Dia.	175-350	100-225	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.004		
	Profiling ≤ .5 x Dia.	175-350	100-225	0.0006	0.0010	0.0012	0.0018	0.0025	0.0031	0.0038	0.005		
Low Alloy Steels-Maraging 10XX, 11XX, 13XX	Slotting .5 x Dia.	200-450	100-250	0.0006	0.0012	0.0015	0.0018	0.0025	0.0031	0.0038	0.005		
	Profiling ≤ .5 x Dia.	200-450	100-250	0.0007	0.0014	0.0018	0.0021	0.0030	0.0038	0.0045	0.006		
CAST IRONS ISO-K													
Ductile Iron Ductile Cast Iron	Slotting .5 x Dia.	120-325	80-140	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040		
	Profiling ≤ .5 x Dia.	120-325	80-140	0.0006	0.0012	0.0015	0.0018	0.0025	0.0031	0.0038	0.0050		
Cast Iron Grey Cast Iron	Slotting .5 x Dia.	250-425	125-285	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040		
	Profiling ≤ .5 x Dia.	250-425	125-285	0.0006	0.0012	0.0015	0.0018	0.0025	0.0031	0.0038	0.0050		
TITANIUMS ISO-S													
Titanium Alloys 6AL-4V, ASTM 1, 2, 3, 6AL-2S For 5553, decrease SFM and IPM by 25%	Slotting .5 x Dia.	140-200	90-145	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040		
	Profiling ≤ .5 x Dia.	140-200	90-145	0.0006	0.0012	0.0015	0.0018	0.0025	0.0031	0.0038	0.0050		
ALUMINUM ISO-N													
Aluminum Alloys 6061-T6, 7075	Slotting .5 x Dia.	600-1000	NA	0.0006	0.0012	0.0015	0.0018	0.003	0.005	0.006	0.0080		
	Profiling ≤ .5 x Dia.	600-1000	NA	0.0007	0.0014	0.0018	0.0025	0.0035	0.006	0.0068	0.0100		

All technical data provided are suggested starting points. They may be increased or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our TECHNICAL SERVICE TEAM with questions.

SPEED & FEED INFORMATION

Calculations

End mill speed & feed formulas are the various individual equations that determine the proper overall machining setup or more specifically the speed of the cutting tool and the rate which it is fed into the work piece. Each individual formula is distinct in what it determines but coordinates with the others to ensure successful cutting tool application. You can visit the TECHNICAL section on www.melintool.com for more information.

INCH

$$\text{RPM} = \frac{\text{Revolutions Per Minute}}{3.82 \times \text{SFM} / \text{Tool Dia}}$$

$$\text{SFM} = \frac{\text{Surface Foot Per Minute}}{.262 \times \text{RPM} \times \text{Tool Dia}}$$

$$\text{CPT or IPT} = \frac{\text{Chip-Load Per Tooth}}{\text{IPM} / \text{RPM} / \text{No. Of Flutes}}$$

$$\text{IPM} = \frac{\text{Inches Per Minute}}{\text{CPT} \times \text{RPM} \times \text{No. Of Flutes}}$$

$$\text{MRRCI} = \frac{\text{Metal Removal Rate Cubic Inches}}{\text{IPM} \times \text{Axial Doc} \times \text{Radial Woc}}$$

$$\text{IPR} = \frac{\text{Inches Per Revolution}}{\text{IPM} / \text{RPM}}$$

METRIC

$$\text{RPM} = \frac{\text{Revolutions Per Minute}}{1000 \times \text{M/MIN} / (3.14 \times \text{D})}$$

$$\text{M/MIN} = \frac{\text{Meters Per Minute}}{(3.14 \times \text{D} \times \text{RPM}) / 1000}$$

$$\text{Fz OR CPT} = \frac{\text{Chip-Load Per Tooth}}{\text{Feedrate (mm) per MIN} / (\text{Z} \times \text{RPM})}$$

$$\text{VF OR FPM} = \frac{\text{Feedrate (mm) Per Minute}}{\text{Feedrate (mm) per Tooth} \times \text{Z} \times \text{RPM}}$$

D = Cutter Dia.
Z = No. Of Teeth.

EQUIVALENTS & CONVERSIONS:

ABBREVIATIONS

RPM	Revolutions Per Minute
SFM	Surface Feet Per Minute
CPT	Chip Load Per Tooth
IPM	Inches Per Minute
V_f	Millimeters Per Minute
ae	Radial Width of Cut
ap	Axial Depth of Cut
Vc	Surface Meters Per Minute
Fz	Metric Chip Load Per Tooth

$$N, n \text{ or } \text{Min}^{-1} = \text{RPM}$$

$$Vc \text{ or } \text{M/MIN} = \text{SFM}$$

$$Fz \text{ or } \text{mm/TOOTH} = \text{CPT}$$

$$V_f \text{ or } \text{mm/MIN} = \text{IPM}$$

$$\text{SFM} / 3.281 = \text{M/MIN}$$

$$\text{M/MIN} \times 3.281 = \text{SFM}$$

$$\text{mm/MIN} / 25.4 = \text{IPM}$$

$$\text{mm/TOOTH} / 25.4 = \text{CPT}$$



IMPERIAL METRIC

$$\text{Inch} \times 25.4 = \text{Millimeter}$$

$$\text{Millimeter} \times .03937 = \text{Inch}$$