

GENERAL PURPOSE CARBIDE END MILL

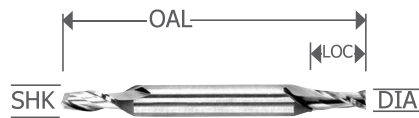


2 FLUTE • DOUBLE END STUB LENGTH END MILLS

Carbide	2	30°	Bright AlTiN	+0.0005 -0.0005 <1/8	+0.000 -0.002	Square				HRC <48	<table border="1"><tr><td>P</td><td>K</td></tr><tr><td>M</td><td>S</td></tr><tr><td></td><td>N</td></tr></table>	P	K	M	S		N
P	K																
M	S																
	N																

SERIES: BSMG

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP
1/32	1/8	1/16	1-1/2	stub	BSMG-401	14070
3/64	1/8	3/32	1-1/2	stub	BSMG-401-1/2	14072
1/16	1/8	1/8	1-1/2	stub	BSMG-402	14074
5/64	1/8	1/8	1-1/2	stub	BSMG-402-1/2	14076
3/32	1/8	3/16	1-1/2	stub	BSMG-403	14078
7/64	1/8	1/4	1-1/2	stub	BSMG-403-1/2	17848
1/8	1/8	1/4	1-1/2	stub	BSMG-404	14080
1/8	3/16	1/4	2	stub	BSMG-604	11739
9/64	3/16	5/16	2	stub	BSMG-604-1/2	17849
5/32	3/16	5/16	2	stub	BSMG-605	14084
11/64	3/16	3/8	2	stub	BSMG-605-1/2	16319
3/16	3/16	3/8	2	stub	BSMG-606	14086
13/64	1/4	1/2	2-1/2	stub	BSMG-806-1/2	17850
7/32	1/4	1/2	2-1/2	stub	BSMG-807	14092
15/64	1/4	1/2	2-1/2	stub	BSMG-807-1/2	16320
1/4	1/4	1/2	2-1/2	stub	BSMG-808	14094
5/16	5/16	1/2	2-1/2	stub	BSMG-1010	14098
3/8	3/8	9/16	2-1/2	stub	BSMG-1212	14102
7/16	7/16	5/8	3	stub	BSMG-1414	15915
1/2	1/2	5/8	3	stub	BSMG-1616	14106
5/8	5/8	3/4	4	stub	BSMG-2020	17851
3/4	3/4	1	4	stub	BSMG-2424	17852



2 FLUTE • DOUBLE END, END MILLS

Carbide	2	30°	BRIGHT	+0.000 -0.002	Square				HRC <48	<table border="1"><tr><td>P</td><td>K</td></tr><tr><td>M</td><td>S</td></tr><tr><td></td><td>N</td></tr></table>	P	K	M	S		N
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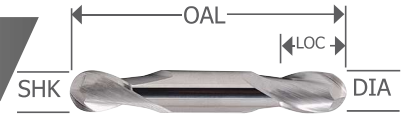
SERIES: BMG

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP
1/8	1/8	3/8	2	std	BMG-404	16070
1/8	3/8	3/8	3-1/16	std	BMG-1204	14082
5/32	3/8	7/16	3-1/4	std	BMG-1205	11357
3/16	3/8	1/2	3-1/4	std	BMG-1206	14090
7/32	3/8	5/8	3-1/2	std	BMG-1207	11581
1/4	3/8	5/8	3-1/2	std	BMG-1208	14096
9/32	3/8	11/16	3-1/2	std	BMG-1209	15914
5/16	3/8	3/4	3-1/2	std	BMG-1210	14100
3/8	3/8	3/4	3-1/2	std	BMG-1212*	14104
1/2	1/2	1	4	std	BMG-1616*	14108

* = Weldon Flat

GENERAL PURPOSE CARBIDE END MILL

2 FLUTE • DOUBLE END STUB BALL NOSE END MILLS



Carbide 2 30° BRIGHT +.000 -.002 Ball HRC <48

P	K
M	S
	N

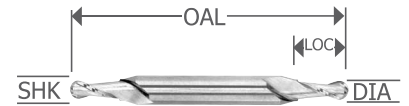
SERIES: BSMG-__-B

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP
1/8	1/8	1/4	1-1/2	stub	BSMG-404-B	14110
1/8	3/16	1/4	2	stub	BSMG-604-B	11795
5/32	3/16	5/16	2	stub	BSMG-605-B	15916
3/16	3/16	3/8	2	stub	BSMG-606-B	14112
7/32	1/4	1/2	2-1/2	stub	BSMG-807-B	15917
1/4	1/4	1/2	2-1/2	stub	BSMG-808-B	14114
5/16	5/16	1/2	2-1/2	stub	BSMG-1010-B	14116
3/8	3/8	9/16	2-1/2	stub	BSMG-1212-B	14118
7/16	7/16	5/8	3	stub	BSMG-1414-B	15918
1/2	1/2	5/8	3	stub	BSMG-1616-B	14120

2 FLUTE • DOUBLE END BALL NOSE END MILLS

Carbide 2 30° BRIGHT +.000 -.002 Ball HRC <48

P	K
M	S
	N



SERIES: BMG-__-B

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP
1/8	1/8	3/8	2	std	BMG-404-B	11696
1/8	3/8	3/8	3-1/16	std	BMG-1204-B	16271
5/32	3/8	7/16	3-1/4	std	BMG-1205-B	10438
3/16	3/8	1/2	3-1/4	std	BMG-1206-B	16272
7/32	3/8	5/8	3-1/2	std	BMG-1207-B	16317
1/4	3/8	5/8	3-1/2	std	BMG-1208-B	16273
9/32	3/8	11/16	3-1/2	std	BMG-1209-B	16274
5/16	3/8	3/4	3-1/2	std	BMG-1210-B	16275
11/32	3/8	3/4	3-1/2	std	BMG-1211-B	10196
3/8	3/8	3/4	3-1/2	std	BMG-1212-B*	16276
1/2	1/2	1	4	std	BMG-1616-B*	16277

* = Weldon Flat

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

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

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

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

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

$$\begin{aligned} \text{D} &= \text{Cutter Dia.} \\ \text{Z} &= \text{No. Of Teeth.} \end{aligned}$$

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

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

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