

# VXMG Series Variable Helix End Mills

## SPEED AND FEED RECOMMENDATIONS

> These recommendations are starting points. Ideal parameters depend on material condition, equipment, setup, actual cutting depths, and coolant conditions

> These recommendations are for materials up to 32HRC

*\*For materials 33-40HRC, maintain the same RPM and decrease above feed rate by 10%*

*\*For materials 41-50HRC, maintain the same RPM and decrease above feed rate by 30%*

> The cutting parameters are for cutting depths up to:

*\*Side Milling (profiling) 0.5D radial depth x 1.5D*

*\*Slotting 1.0D radial depth x 0.5D*

> The higher SFM/IPM is recommended for high end machining centers with higher H/P, truer spindles and rigid setups.

> The lower SFM/IPM is recommended for older machines with lower H/P, spindles with possible run out and less rigid setups.

> When using extended neck style end mills.

*\*For tools with reach lengths under 2XD to 4XD, reduce SFM by 20% and maintain the above feed rate*

*\*For tools with reach lengths from 4XD to 6XD, reduce SFM by 40% and maintain the above feed rate.*

MATERIAL	SFM	CUTTING DIAMETER							
		1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
<b>STAINLESS STEELS</b>									
<b>Precipitation</b>									
13-8, 15-5, AM-350/355, 17-4PH	80	0.0007	0.0011	0.0012	0.0015	0.0020	0.0026	0.0031	0.0041
	200	0.0007	0.0010	0.0013	0.0015	0.0020	0.0025	0.0029	0.0039
<b>Austenitic</b>									
200 Series, 302, 303, 304L, 316L	250	0.0004	0.0004	0.0006	0.0010	0.0016	0.0018	0.0022	0.0021
	280	0.0004	0.0004	0.0006	0.0010	0.0016	0.0018	0.0023	0.0021
<b>Martensitic</b>									
403, 410, 416	200	0.0007	0.0010	0.0013	0.0016	0.0020	0.0025	0.0029	0.0039
	250	0.0007	0.0010	0.0013	0.0016	0.0020	0.0025	0.0029	0.0039
<b>HIGH TEMP ALLOYS</b>									
<b>Cobalt Base</b>									
Stellite, HS-21, Haynes 25, 188, X-40, L-605	60	0.0003	0.0004	0.0005	0.0008	0.0011	0.0014	0.0016	0.0022
	100	0.0003	0.0004	0.0007	0.0007	0.0013	0.0016	0.0020	0.0026
<b>Nickel Base</b>									
Inconel 600, 625, 718, Nickel 200, 270, Invar,	75	0.0004	0.0003	0.0007	0.0010	0.0017	0.0016	0.0026	0.0026
Monel 400, 405, K-Monel, PermaNickel 300, Incoly	90	0.0004	0.0004	0.0007	0.0011	0.0018	0.0018	0.0022	0.0022
600, 800, Mar-M-246, 247									
<b>Iron Base</b>									
Incoloy 800-802, Multimet N-155, Timken 16-26-6	70	0.0004	0.0005	0.0009	0.0014	0.0019	0.0023	0.0028	0.0037
	125	0.0004	0.0005	0.0010	0.0016	0.0021	0.0026	0.0031	0.0042
<b>STEELS</b>									
<b>High Strength Steels</b>									
4140, 4340, 6150, 52100, H-11	500	0.0006	0.0010	0.0016	0.0025	0.0031	0.0035	0.0037	0.0041
	600	0.0006	0.0010	0.0016	0.0025	0.0031	0.0035	0.0037	0.0040
<b>High Alloy Steels - Mold &amp; Die</b>									
A-2, A-6, A-10, P20, O1, O2, O6, D2, H-13	300	0.0005	0.0007	0.0014	0.0020	0.0025	0.0031	0.0033	0.0035
	550	0.0005	0.0007	0.0014	0.0020	0.0025	0.0031	0.0032	0.0035
<b>Medium Alloy Steels</b>									
200, 250, 300	500	0.0005	0.0005	0.0012	0.0020	0.0025	0.0035	0.0040	0.0050
	600	0.0005	0.0005	0.0012	0.0020	0.0025	0.0035	0.0040	0.0050
<b>Low Alloy Steels-Maraging</b>									
10XX, 11XX, 13XX	500	0.0006	0.0008	0.0008	0.0012	0.0018	0.0020	0.0024	0.0027
	600	0.0006	0.0008	0.0008	0.0012	0.0018	0.0020	0.0024	0.0028
<b>CAST IRONS</b>									
<b>Ductile Iron</b>									
Ductile Cast Iron	400	0.0005	0.0007	0.0015	0.0022	0.0030	0.0040	0.0050	0.0061
	550	0.0005	0.0007	0.0015	0.0022	0.0030	0.0040	0.0050	0.0059
<b>Cast Iron</b>									
Grey Cast Iron	450	0.0008	0.0008	0.0008	0.0012	0.0018	0.0020	0.0024	0.0028
	600	0.0008	0.0008	0.0008	0.0012	0.0018	0.0020	0.0024	0.0028
<b>TITANIUM</b>									
<b>Titanium Alloys</b>									
6AL-4V, ASTM 1, 2, 3, 6AL-2S, N-4Zr-2Mo-Si	160	0.0005	0.0005	0.0006	0.0011	0.0014	0.0015	0.0021	0.0025
For 5553, increase IPM by 25%	190	0.0005	0.0005	0.0006	0.0012	0.0014	0.0015	0.0023	0.0028

**Note:** All speed and feed data are suggested starting points. They may be increased or decreased depending on machine condition, hole depth, finish required, coolant, etc. If end mill depth exceeds 3 diameters, reduce speed and feed for carbide end mills.



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