



### List VGM7: 7 Flute

#### Side Milling

Hardness	-		Up to 30 HRC		-		-		-		-		-		35 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Stainless Steel 304		Titanium Alloy Ti-6AL-4V		Inconel 718		Inconel 625		Cast Iron		Hardened Steel	
Cutting	350-500 SFM		350-500 SFM		150-350 SFM		150-350 SFM		100-200 SFM		150-250 SFM		350-600SFM		150-350 SFM	
Depth of Cut	Aa = up to Max LOC, Ar= 0.15xD				Aa = up to Max LOC, Ar= 0.1xD				Aa = up to Max LOC, Ar= 0.05xD				Aa = up to Max LOC, Ar= 0.15xD		Aa = up to Max LOC, Ar= 0.08xD	
Mill Dia. Inch	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM
1/4	6,870	105.8	6,870	105.8	3,817	58.8	3,817	58.8	2,290	37.4	3,053	42.7	7,634	117.6	3,817	58.8
5/16	5,496	115.4	5,496	115.4	3,053	64.1	3,053	64.1	1,832	29.9	2,443	34.2	6,107	128.2	3,053	64.1
3/8	4,580	112.2	4,580	112.2	2,545	62.3	2,545	62.3	1,527	31.2	2,036	35.6	5,089	124.7	2,545	62.3
1/2	3,435	101.0	3,435	101.0	1,908	56.1	1,908	56.1	1,145	23.4	1,527	26.7	3,817	112.2	1,908	56.1
5/8	2,748	80.8	2,748	80.8	1,527	44.9	1,527	44.9	916	18.7	1,221	21.4	3,053	89.8	1,527	44.9
3/4	2,290	70.5	2,290	70.5	1,272	39.2	1,272	39.2	763	15.6	1,018	17.8	2,545	78.4	1,272	39.2
1	1,718	52.9	1,718	52.9	954	29.4	954	29.4	573	14.0	763	16.0	1,908	58.8	954	29.4

1. The above milling condition is a guideline for L/D ratio 1.25 and 1.5.
2. Use a rigid and precise machine and holder.
3. The rotational speed is calculated by the median of the recommended cutting speed. Adjustments may be necessary depending on the rigidity or the workpiece, fixture, and machine.
4. Please use a suitable fluid with high smoke retardant properties.
5. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
6. Please use water-soluble coolant when machining stainless steel and titanium alloy.
7. Reduce speed and feed as well as depth of cut when high precision is required.

#### Speed & Feed Reduction Chart by L/D Ratio

Hardness	-		Up to 30 HRC		-		-		-		-		-		35 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Stainless Steel 304		Titanium Alloy Ti-6AL-4V		Inconel 718		Inconel 625		Cast Iron		Hardened Steel	
L/D Ratio	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM
2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
2.5	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
3	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
4	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
5	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
6	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%

#### Aa & Ar Adjustment Chart by L/D Ratio

Hardness	-		Up to 30 HRC		-		-		-		-		-		35 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Stainless Steel 304		Titanium Alloy Ti-6AL-4V		Inconel 718		Inconel 625		Cast Iron		Hardened Steel	
L/D Ratio	Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar
2		0.1 x D		0.1 x D		0.08 x D		0.08 x D		0.03 x D		0.03 x D		0.1 x D		0.05 x D
2.5		0.1 x D		0.1 x D		0.08 x D		0.08 x D		0.03 x D		0.03 x D		0.1 x D		0.05 x D
3	Up to Max. LOC	0.07x D	Up to Max. LOC	0.07x D	Up to Max. LOC	0.05x D	Up to Max. LOC	0.05x D	Up to Max. LOC	0.02 x D	Up to Max. LOC	0.02 x D	Up to Max. LOC	0.07x D	Up to Max. LOC	0.03x D
4		0.05x D		0.05x D		0.03x D		0.03x D		0.02 x D		0.02 x D		0.05x D		0.02x D
5		0.05x D		0.05x D		0.03x D		0.03x D		0.02 x D		0.02 x D		0.05x D		0.02x D
6		0.03 x D		0.03 x D		0.02x D		0.02x D		0.01x D		0.01x D		0.03 x D		0.01x D

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