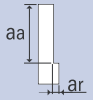
List 8200 - A Brand AE-VMS: 4 Flute, Multiple Lengths
List 8205 - A Brand AE-VMS: 4 Flute, Regular Length
List 8225 - A Brand AE-VMS-RA: 4 Flute, Regular Length, Right Angle Type

Side Milling

Hardness		–		Up to 30 HRC		–		–		–		–		30-45 HRC	
Work Material		Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Stainless Steel		Precipitation Stainless Steel		Titanium Alloy		Ni-Based Alloy Inconel 718		Prehardened Steels Hardened Steels	
Cutting Speed		330-490 SFM		330-490 SFM		200-330 SFM		230-300 SFM		200-260 SFM		80-130 SFM		260-395 SFM	
Depth of Cut		a_a=1.5D a_r=0.2D 													
Mill Dia.		Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/64	-	25,000	20.0	25,000	20.0	25,000	20.0	25000	20.0	25000	20.0	25000	20.0	25,000	20.0
1/32	-	25,000	20.0	25,000	20.0	25,000	20.0	25000	20.0	25000	20.0	12500	10.0	25,000	20.0
-	1	22,298	17.8	22,298	17.8	22,298	17.8	25000	20.0	22300	17.8	9700	7.8	22,298	17.8
3/64	-	18,728	15.0	18,728	15.0	18,728	15.0	21600	17.3	18740	15.0	8150	6.5	18,728	15.0
-	1.5	14,865	17.8	14,865	17.8	14,865	17.8	17140	20.6	14900	17.9	6470	7.8	14,865	17.8
1/16	-	14,046	16.9	14,046	16.9	14,046	16.9	16200	19.4	14050	16.9	6110	7.3	14,046	16.9
5/64	-	11,237	13.5	11,237	13.5	11,237	13.5	13000	15.6	11250	13.5	4890	5.9	11,237	13.5
-	2	11,149	17.8	11,149	17.8	11,149	17.8	12850	20.6	11160	17.9	4850	7.8	11,149	17.8
3/32	-	9,364	15.0	9,364	15.0	9,364	15.0	10800	17.3	9370	15.0	4075	6.5	9,364	15.0
-	2.5	8,919	17.8	8,919	17.8	8,919	17.8	10285	20.6	8930	17.9	3880	7.8	8,919	17.8
7/64	-	8,724	17.4	8,724	17.4	8,724	17.4	9250	18.5	8030	16.1	3500	7.0	8,724	17.4
–	3	13,896	66.7	12,603	40.3	8,079	19.4	9760	20.1	8490	18.9	4240	8.7	10,664	29.9
–	4	10,422	70.9	9,452	45.4	6,059	21.8	7320	21.7	6370	20.9	3180	9.4	7,998	32.0
3/16	–	8,753	59.5	7,939	38.1	5,089	18.3	6110	22.9	5400	22.6	2650	10.2	6,718	26.9
–	5	8,337	80.0	7,562	48.4	4,847	21.3	5860	22.0	5090	21.3	2550	9.8	6,398	35.8
–	6	6,948	83.4	6,302	60.5	4,201	25.2	4880	22.8	4240	21.7	2120	9.8	5,332	42.7
1/4	–	6,565	78.8	5,954	57.2	3,969	23.8	4580	21.4	4050	20.7	1980	9.2	5,038	40.3
5/16	–	5,252	63.0	4,763	45.7	3,176	19.1	3660	20.2	3240	19.6	1590	9.1	4,031	32.2
–	8	5,211	70.9	4,726	60.5	3,151	23.9	3200	17.7	2790	16.9	1590	9.1	3,999	41.6
3/8	–	4,377	59.5	3,969	50.8	2,646	20.1	2700	17.8	2340	16.9	1320	9.0	3,359	34.9
–	10	4,169	65.0	3,781	52.9	2,521	23.2	2560	16.9	2230	16.1	1270	8.7	3,199	35.8
7/16	–	3,751	58.5	3,402	47.6	2,268	20.9	2310	17.8	2000	16.9	1130	8.8	2,879	32.2
–	12	3,474	54.2	3,151	49.2	2,101	21.0	2140	16.5	1860	15.7	1060	8.3	2,666	29.9
1/2	–	3,282	51.2	2,977	46.4	1,985	19.8	2025	15.6	1760	14.9	990	7.8	2,519	28.2
5/8	–	2,656	41.4	2,382	37.2	1,405	14.0	1380	16.2	1220	16.1	700	8.3	2,015	22.6
–	16	2,600	49.2	2,400	41.7	1,400	17.7	1370	16.1	1190	15.7	700	8.3	2,000	25.2
3/4	–	2,214	41.6	1,985	34.1	1,170	15.0	1150	16.1	1020	16.1	585	8.3	1,679	20.8
–	20	2,100	39.8	1,900	33.1	1,100	14.6	1100	15.4	950	15.0	560	7.9	1,600	20.1
–	25	1,700	32.3	1,500	26.0	900	12.2	880	20.1	760	19.3	320	7.5	1,300	16.5
1	–	1,660	31.2	1,469	25.3	878	11.9	860	19.6	765	19.4	325	7.6	1,260	16.1

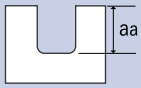
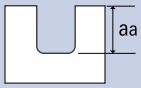
1. The above milling condition is a guidline for overhang length 3xD.
2. Use a rigid and precise machine and holder.
3. The rotational speed is calculated by the median of the recommended cutting speed. Adjustments may be necessary depending on the rigidity or the workpiece, fixture, and machine.
4. 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.
7. Reduce speed and feed as well as depth of cut when high precision is required.
8. Adjust the speed and feed accordingly when the overhang length is longer than specified (refer to Parameter Reduction Chart below).

Parameter Reduction Chart by Length to Diameter Ratio

Hardness		–		Up to 30 HRC		–		–		–		–		30-45 HRC	
Work Material		Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Stainless Steel		Precipitation Stainless Steel		Titanium Alloy		Ni-Based Alloy Inconel 718		Prehardened Steels Hardened Steels	
L/D		Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
Slotting	4	80%		70%		60%		60%		50%		50%		70%	
	5	70%		60%		50%		50%		50%		50%		60%	
Side Milling	4	90%		90%		70%		70%		60%		60%		80%	
	5	80%		80%		70%		70%		60%		60%		70%	

List 8200 - A Brand AE-VMS: 4 Flute, Multiple Lengths (Cont.)
List 8205 - A Brand AE-VMS: 4 Flute, Regular Length (Cont.)
List 8225 - A Brand AE-VMS-RA: 4 Flute, Regular Length, Right Angle Type (Cont.)

Slotting

Hardness		–		Up to 30 HRC		–		–		–		–		30-45 HRC	
Work Material		Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Stainless Steel		Precipitation Stainless Steel		Titanium Alloy		Ni-Based Alloy Inconel 718		Prehardened Steels Hardened Steels	
Cutting Speed		260-395 SFM		230-360 SFM		160-260 SFM		200-260 SFM		165-230 SFM		65-100 SFM		195-330 SFM	
Depth of Cut		a_a=1.0D				D≤6, a_a=0.5D D>6, a_a=1.0D		a_a=0.25D						a_a=1.0D	
Mill Dia.		Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/64	-	25,000	10.0	25,000	10.0	25,000	10.0	25000	10.0	25000	10.0	19500	7.8	25,000	10.0
1/32	-	25,000	10.0	25,000	10.0	24,427	19.5	25000	10.0	24400	9.8	9780	3.9	25,000	10.0
-	1	25,000	20.0	25,000	20.0	19,389	15.5	22300	17.8	19400	15.5	7760	6.2	22,298	17.8
3/64	-	24,427	19.5	21,578	17.3	16,285	13.0	18740	15.0	16300	13.0	6520	5.2	18,728	15.0
-	1.5	19,389	23.3	17,127	20.6	12,926	15.5	14880	17.9	12900	15.5	5175	6.2	14,865	17.8
1/16	-	18,321	22.0	16,183	19.4	12,214	14.7	14060	16.9	12220	14.7	4890	5.9	14,046	16.9
5/64	-	14,656	17.6	12,947	15.5	9,771	15.6	11250	13.5	9780	11.7	3900	4.7	11,237	13.5
-	2	14,542	23.3	12,845	20.6	9,695	15.5	11160	17.9	9700	15.5	3880	6.2	11,149	17.8
3/32	-	12,214	19.5	10,789	17.3	8,142	19.5	9370	15.0	8150	13.0	3260	5.2	9,364	15.0
-	2.5	11,634	32.6	10,276	24.7	7,756	18.6	8930	17.9	7760	15.5	3100	6.2	8,919	17.8
7/64	-	10,469	29.3	9,248	22.2	8,201	19.7	8030	16.1	6985	14.0	2800	5.6	8,026	16.1
–	3	10,664	38.4	8,564	24.0	7,594	18.2	8540	16.9	7430	16.1	3180	6.3	7,433	17.8
–	4	7,998	38.4	7,150	28.6	5,696	20.5	6410	18.1	5570	17.3	2390	6.7	5,574	17.8
3/16	–	6,718	32.2	6,005	24.0	4,784	17.2	5400	20.4	4685	19.4	2040	7.6	4,682	15.0
–	5	6,398	41.0	5,720	32.0	4,556	21.9	5120	19.3	4460	18.5	1910	7.1	4,460	21.4
–	6	5,332	42.7	4,767	34.3	3,797	15.2	4270	18.9	3710	18.1	1590	7.1	3,716	23.8
1/4	–	5,038	40.3	4,504	32.4	3,588	14.4	4050	17.9	3510	17.1	1530	6.8	3,511	22.5
5/16	–	4,031	32.2	3,603	25.9	2,870	14.9	3240	20.9	2810	19.9	1220	7.3	2,809	18.0
–	8	3,999	35.2	3,575	28.6	2,848	14.8	2750	17.7	2390	16.9	1190	7.1	2,787	22.3
3/8	–	3,359	29.6	3,003	24.0	2,392	13.4	2340	17.6	2040	16.8	1020	8.5	2,341	18.7
–	10	3,199	33.3	2,860	27.5	2,278	14.6	2200	16.5	1910	15.7	950	7.9	2,230	19.6
7/16	–	2,879	29.9	2,574	24.7	2,050	13.9	2000	18.0	1745	17.2	870	7.7	2,007	17.7
–	12	2,666	32.0	2,383	25.7	1,899	12.9	1830	16.5	1590	15.7	800	7.1	2,101	21.8
1/2	–	2,519	30.2	2,252	24.3	1,794	12.2	1760	15.9	1530	15.1	765	6.8	1,985	20.6
5/8	–	2,015	24.2	1,802	19.5	1,221	12.2	1160	10.4	1000	9.9	520	4.5	1,588	16.5
–	16	2,000	23.6	1,800	19.7	1,200	12.2	1140	10.2	990	9.8	500	4.3	1,600	16.5
3/4	–	1,679	20.2	1,476	15.9	1,018	11.0	970	11.2	840	10.7	430	5.1	1,349	14.0
–	20	1,600	18.9	1,400	15.4	900	9.8	920	10.6	800	10.2	400	4.7	1,300	13.4
–	25	1,300	15.4	1,100	12.2	600	6.7	730	9.8	640	9.4	250	3.5	1,000	10.2
1	–	1,260	15.1	1,088	12.2	592	6.6	725	9.7	630	9.3	245	3.4	992	10.3

1. The above milling condition is a guidline for overhang length 3xD.
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