Aqua Mill Hard

Features

- Excellent for HSM of hardened steels up to 70 HRC
- Thick core and wide land width for increased rigidity
- Available in Square End, Corner Radius, and Ball End
- Aqua Mill Nano-layer Coating for high heat and wear resistance

Work Materials

- Tool steels 50+ HRC
- Hardened Steels 50+ HRC
- High Speed Steels

Performance

For Machining Hard Materials 50-70 HRC

ALH Mill

Features

- Cylindrical land allows for great surface finishes and high feed rates
- 3 Flutes allow for faster feed rates while not sacrificing chip evacuation
- High polished flutes help shear and clear chips
- Available in Square End, Corner Radius, and Ball End
- Available with coating through our 72 hour modification service

Work Materials

- Aluminum alloys
- Aluminum castings
- Copper Alloys
- Magnesium

Performance

For Aluminum and Non-ferrous Materials

*More information for **Aqua Mill Hard** can be found on pages 21-25*
*More information for **ALH Mill** can be found on pages 26-30*

Aqua Mill Hard

Carbide | AQ Mill | h6 | HELIX H

> 1/2, >12

List No. 9711 Fractional Sizes

EDP	Cutting Diameter	Length of Cut	Overall Length	Flutes
41000276	1/8	0.3750	1.5	6
41000277	3/16	0.4375	2.0	6
41000278	1/4	0.6250	2.5	6
41000279	5/16	0.8125	2.5	6
41000280	3/8	1.0000	3.0	6
41000281	1/2	1.1250	3.5	6
41000282	5/8	1.5000	4.0	8
41000283	3/4	1.7500	4.0	8

List No. 9712 Metric Sizes

(Unit) : mm

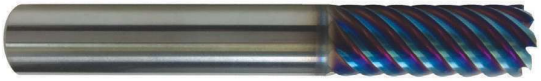
EDP	Cutting Diameter	Length of Cut	Overall Length	Flutes
41000063	3	8	50	6
41000064	4	11	50	6
41000065	5	13	50	6
41000066	6	13	50	6
41000067	8	19	60	6
41000068	10	22	70	6
41000069	12	26	75	6
41000070	16	32	90	8
41000071	20	38	100	8

1 per tube

WARNING: Cancer - www.P65Warnings.ca.gov

Aqua Mill Hard Corner Radius

Carbide | AQ Mill | h6 | HELIX H | > 1/2, >12



List No. 9713

Fractional sizes

EDP	Cutting Diameter	Length of Cut	Overall Length	0.015 CR	0.030 CR	Neck Length	Flutes
41000284	1/8	0.3750	1.50	X			6
41000285	3/16	0.4375	2.00	X			6
41000286	1/4	0.6250	2.50	X			6
41000287	5/16	0.8125	2.50	X			6
41000288	3/8	1.0000	3.00		X		6
41000289	1/2	1.1250	3.00		X		6
41000292	3/16	0.2180	3.00	X		1.00	6
41000293	1/4	0.2810	3.00	X		1.00	6
41000294	3/8	0.4680	3.50	X		1.25	6
41000295	1/2	0.6250	4.00	X		2.25	6

List No. 9714

Metric sizes

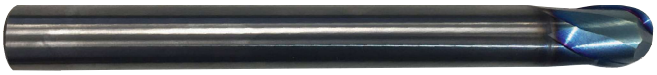
(Unit) : mm

EDP	Cutting Diameter	Length of Cut	Overall Length	0.30 CR	0.50 CR	Neck Length	Flutes
41000072	3	8	50	X			6
41000074	4	11	50	X			6
41000076	5	13	60	X			6
41000078	6	13	60	X			6
41000080	8	19	70	X			6
41000083	10	22	70		X		6
41000085	12	26	75		X		6
41000088	5	8	60	X		15	6
41000089	6	9	65	X		20	6
41000091	10	15	100	X		30	6
41000092	12	18	100	X		35	6

1 per tube

⚠ WARNING: Cancer - www.P65Warnings.ca.gov

Aqua Mill Hard Ball Nose



List No. 9715 Fractional Sizes

EDP	Cutting Diameter	Length of Cut	Overall Length	Flutes
41000298	1/8	0.1875	2.50	2
41000299	3/16	0.2810	2.50	2
41000300	1/4	0.3750	2.50	2
41000301	5/16	0.4680	2.50	2
41000302	3/8	0.5625	3.00	2
41000303	1/2	0.6250	4.00	2

List No. 9716 Metric sizes

(Unit) : mm

EDP	Cutting Diameter	Shank Diameter	Length of Cut	Overall Length	Flutes
41000093	3	4	3	50	2
41000094	6	6	6	76	2
41000095	8	8	8	90	2
41000096	10	10	10	100	2
41000097	12	12	12	100	2
41000098	16	16	16	100	2

1 per tube

⚠ **WARNING**: Cancer - www.P65Warnings.ca.gov

Standard Milling Conditions List No. 9711, 9712, 9713, 9714

Conventional Condition

Work Material		Hardened Steels 45-55 HRC			Hardened Steels 55-60 HRC			Hardened Steels 60-65 HRC			Hardened Steels 65-70 HRC		
Milling Conditions		280-320 SFM			220-250 SFM			200-220 SFM			140-160 SFM		
Mill Diam.		RPM	IPT	IPM	RPM	IPT	IPM	RPM	IPT	IPM	RPM	IPT	IPM
3		10400	0.0007	41.3	8200	0.0005	25.6	7400	0.0005	21.3	5200	0.0005	15.0
1/8		9200	0.0007	41.3	7200	0.0006	25.6	6400	0.0006	21.3	4600	0.0005	15.0
5		6200	0.0014	51.2	4900	0.0011	31.9	4400	0.0010	26.4	3100	0.0010	18.5
3/16		6100	0.0014	51.2	4800	0.0011	31.9	4300	0.0010	26.4	3050	0.0010	18.5
6		5200	0.0016	51.2	4100	0.0013	31.9	3700	0.0012	26.4	2600	0.0012	18.5
1/4		4900	0.0017	51.2	3850	0.0014	31.9	3500	0.0013	26.4	2450	0.0013	18.5
5/16		3900	0.0022	51.2	3050	0.0017	31.9	2800	0.0016	26.4	1950	0.0016	18.5
8		3900	0.0022	51.2	3050	0.0017	31.9	2800	0.0016	26.4	1950	0.0016	18.5
3/8		3250	0.0026	51.2	2600	0.0020	31.9	2300	0.0019	26.4	1650	0.0019	18.5
10		3100	0.0028	51.2	2450	0.0022	31.9	2200	0.0020	26.4	1550	0.0020	18.5
12		2600	0.0033	51.2	2050	0.0026	31.9	1850	0.0024	26.4	1300	0.0024	18.5
1/2		2450	0.0035	51.2	1950	0.0027	31.9	1750	0.0025	26.4	1250	0.0025	18.5
5/8		1950	0.0041	64.0	1550	0.0032	40.0	1400	0.0030	33.1	980	0.0029	23.1
16		1950	0.0041	64.0	1530	0.0033	39.9	1400	0.0030	33.1	980	0.0029	23.1
3/4		1650	0.0045	59.3	1300	0.0036	36.9	1150	0.0032	29.9	820	0.0033	21.5
Depth of Cut	a_a	1-1.5D											
	a_r	0.07D						0.02D					
	H	0.07D						0.05D - Max 0.5mm					

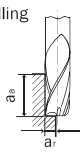
Standard Milling Conditions

High Speed Condition

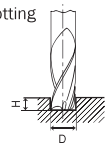
Work Material		Hardened Steels 45-55 HRC			Hardened Steels 55-60 HRC			Hardened Steels 60-65 HRC		
Milling Conditions		800-1000 SFM			600-740 SFM			400-450 SFM		
Mill Diam.		RPM	IPT	IPM	RPM	IPT	IPM	RPM	IPT	IPM
3		32000	0.0010	192.9	24000	0.0007	107.9	13900	0.0008	63.9
1/8		27500	0.0012	192.9	20500	0.0009	107.9	13150	0.0009	71.2
5		19200	0.0020	228.3	14300	0.0015	126.0	8350	0.0015	75.3
3/16		18300	0.0021	228.3	13700	0.0015	126.0	8750	0.0016	83.2
6		16000	0.0024	228.3	12000	0.0018	126.0	6950	0.0018	75.2
1/4		15100	0.0025	228.3	11500	0.0018	126.0	6600	0.0019	76.2
5/16		12000	0.0032	228.3	9000	0.0023	126.0	5250	0.0019	60.6
8		12000	0.0032	228.3	9000	0.0023	126.0	5200	0.0025	78.4
3/8		10000	0.0038	228.3	7500	0.0028	126.0	4400	0.0030	79.6
10		9600	0.0040	228.3	7200	0.0029	126.0	4200	0.0031	79.2
12		8000	0.0048	228.3	6000	0.0035	126.0	3500	0.0039	82.6
1/2		7550	0.0050	228.3	5750	0.0037	126.0	3300	0.0042	83.1
5/8		6000	0.0059	283.5	4500	0.0044	157.5	2600	0.0050	103.7
16		6000	0.0059	283.5	4500	0.0044	157.5	2600	0.0050	103.7
3/4		5000	0.0063	250.0	3750	0.0046	139.5	2200	0.0055	96.0
Depth of Cut	a_a	1-1.5D								
	a_r	0.03D						0.02D		

D: Dia. of Mill

Side Milling



Slotting



Recommended to run dry with air blow.
When altering depth of cut or speed, it is important to read chips in order to ensure that heat is coming off in chip.
Adjust milling condition when unusual vibration or sound occurs.
When using long reach tools, decrease width of cut and feed rate by 50%.
Conventional conditions are recommended for finishing.

Standard Milling Conditions List No. 9715, 9716

Roughing Condition

Work Material		Hardened Steels D2 40-55 HRC			Hardened Steels M2 55-60 HRC			Hardened Steels M35, PM 60-65 HRC		
Milling Conditions		280-400 SFM			250-280 SFM			200-250 SFM		
Mill Diam.		RPM	IPT	IPM	RPM	IPT	IPM	RPM	IPT	IPM
3		11000	0.0016	36	8600	0.0012	21	7300	0.0011	17
1/8		10400	0.0017	36	8100	0.0013	21	6900	0.0012	17
5		6900	0.0026	36	5400	0.0020	21	4600	0.0018	17
3/16		6600	0.0027	36	5150	0.0021	21	4400	0.0019	17
6		5500	0.0032	36	4300	0.0025	21	3650	0.0023	17
1/4		5200	0.0034	36	4050	0.0026	21	3450	0.0024	17
5/16		4200	0.0042	35	3250	0.0033	21	2750	0.0030	17
8		4100	0.0042	34	3200	0.0033	21	2750	0.0030	17
3/8		3500	0.0049	34	2700	0.0040	21	2300	0.0036	17
10		3300	0.0050	33	2550	0.0042	21	2200	0.0038	17
12		2800	0.0060	34	2150	0.0050	21	1850	0.0045	17
1/2		2600	0.0063	33	2000	0.0053	21	1750	0.0048	17
5/8		2100	0.0079	33	1600	0.0066	21	1400	0.0060	17
16		2050	0.0080	33	1600	0.0067	21	1400	0.0060	17
3/4		1700	0.0095	32	1350	0.0079	21	1150	0.0072	17
Depth of Cut	a_a	0.025" - 0.035"			0.015" - 0.025"					
	P_f	0.25D			0.25D					

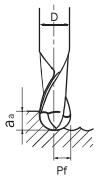
High Speed Finishing Condition

Work Material		Hardened Steels			Hardened Steels			Hardened Steels		
Milling Conditions		800-1000 SFM			700-900 SFM			600-800 SFM		
Mill Diam.		RPM	IPT	IPM	RPM	IPT	IPM	RPM	IPT	IPM
3		29100	0.0024	141	25900	0.0014	74	22600	0.0014	64
1/8		27500	0.0025	136	24500	0.0015	71	21400	0.0015	62
5		18300	0.0028	104	16300	0.0017	55	14250	0.0017	48
3/16		17500	0.0029	102	15500	0.0017	53	13600	0.0017	46
6		14500	0.0031	91	12950	0.0019	48	11300	0.0019	42
1/4		13750	0.0032	89	12200	0.0019	46	10700	0.0019	41
5/16		11000	0.0034	75	9800	0.0021	42	8600	0.0021	37
8		10900	0.0034	74	9700	0.0021	41	8500	0.0021	36
3/8		9200	0.0038	69	8150	0.0024	38	7200	0.0024	34
10		8700	0.0039	67	7800	0.0024	38	6800	0.0024	33
12		7300	0.0041	59	6500	0.0027	35	5700	0.0027	31
1/2		6900	0.0042	58	6100	0.0028	34	5350	0.0028	30
5/8		5500	0.0049	54	4900	0.0033	32	4300	0.0033	28
16		5500	0.0049	54	4850	0.0033	32	4250	0.0033	28
3/4		4600	0.0056	51	4100	0.0037	30	3600	0.0037	27
Depth of Cut	a_a	0.025" - 0.035"			0.015" - 0.025"					
	P_f	0.005"			0.005"					

Low Speed Finishing Condition

Work Material		Hardened Steels			Hardened Steels			Hardened Steels		
Milling Conditions		180-275 SFM			150-180 SFM			120-150 SFM		
Mill Diam.		RPM	IPT	IPM	RPM	IPT	IPM	RPM	IPT	IPM
3		7450	0.0007	10	5350	0.0006	6	4400	0.0006	5
1/8		7050	0.0007	10	5050	0.0006	6	4150	0.0006	5
5		4700	0.0010	10	3350	0.0009	6	2750	0.0009	5
3/16		4500	0.0011	10	3200	0.0009	6	2600	0.0009	5
6		3700	0.0013	9	2700	0.0010	6	2200	0.0010	5
1/4		3500	0.0013	9	2500	0.0011	6	2050	0.0011	5
5/16		2800	0.0016	9	2000	0.0014	5	1650	0.0014	4
8		2750	0.0016	9	2000	0.0014	5	1650	0.0014	4
3/8		2350	0.0019	9	1680	0.0016	5	1400	0.0016	4
10		2250	0.0020	9	1600	0.0017	5	1300	0.0017	4
12		1850	0.0024	9	1350	0.0020	5	1100	0.0020	4
1/2		1800	0.0025	9	1250	0.0021	5	1050	0.0021	4
5/8		1400	0.0031	9	1000	0.0026	5	850	0.0026	4
16		1400	0.0031	9	1000	0.0026	5	820	0.0026	4
3/4		1170	0.0037	9	850	0.0031	5	680	0.0031	4
Depth of Cut	a_a	0.005"			0.005"					
	P_f	0.005"			0.005"					

D:Dia. of Mill
R:Ball Radius



Recommended to run dry with air blow.
When altering depth of cut or speed, it is important to read chips in order to ensure that heat is coming off in chip.
Adjust milling condition when unusual vibration or sound occurs.
When using long reach tools, decrease width of cut and feed rate by 50%.

ALH Mill

List No. 9717

Fractional sizes

EDP	Cutting Diameter	Length of Cut	Overall Length	Flutes
41000304	1/8	0.2500	1.50	3
41000305	1/8	0.3750	2.00	3
41000306	1/8	0.5000	2.50	3
41000307	3/16	0.3125	2.00	3
41000308	3/16	0.5625	2.50	3
41000309	1/4	0.3750	2.00	3
41000310	1/4	0.5000	2.50	3
41000311	1/4	0.6250	2.50	3
41000312	1/4	1.0000	3.00	3
41000313	5/16	0.4375	2.00	3
41000314	5/16	0.6250	2.50	3
41000315	5/16	1.0000	3.00	3
41000316	5/16	1.2500	3.00	3
41000317	3/8	0.5000	2.00	3
41000318	3/8	1.0000	3.00	3

EDP	Cutting Diameter	Length of Cut	Overall Length	Flutes
41000319	3/8	1.2500	3.50	3
41000320	3/8	1.5000	4.00	3
41000321	3/8	2.0000	4.00	3
41000322	1/2	0.6250	2.50	3
41000323	1/2	1.0000	3.00	3
41000324	1/2	1.2500	3.00	3
41000325	1/2	1.6250	4.00	3
41000326	1/2	2.0000	4.00	3
41000327	1/2	2.5000	5.00	3
41000328	5/8	0.7500	3.00	3
41000329	5/8	1.6250	3.50	3
41000330	5/8	2.1250	4.00	3
41000331	3/4	1.0000	4.00	3
41000332	3/4	1.6250	4.00	3
41000333	3/4	2.2500	5.00	3

List No. 9718

Metric sizes

(Unit) : mm

EDP	Cutting Diameter	Length of Cut	Overall Length	Flutes
41000100	3	8	57	3
41000101	4	11	57	3
41000102	5	11	57	3
41000103	6	13	57	3
41000104	8	19	70	3
41000105	10	22	70	3
41000106	12	26	75	3
41000107	12	32	94	3
41000108	16	32	90	3
41000109	18	38	90	3
41000110	20	45	100	3

1 per tube

⚠ **WARNING**: Cancer - www.P65Warnings.ca.gov

ALH Mill Corner Radius

List No. 9719 Fractional sizes

EDP	Cutting Dia.	Length of Cut	Overall Length	0.015 CR	0.030 CR	0.060 CR	0.120 CR	Flutes
41000334	1/8	0.2500	1.5	X				3
41000335	1/8	0.3750	2.0	X				3
41000336	1/8	0.5000	2.5	X				3
41000337	3/16	0.3125	2.0		X			3
41000338	3/16	0.5625	2.5		X			3
41000339	1/4	0.3750	2.0		X			3
41000340	1/4	0.3750	2.0			X		3
41000341	1/4	0.5000	2.5		X			3
41000345	5/16	0.4375	2.0		X			3
41000346	5/16	0.4375	2.0			X		3
41000347	5/16	0.6250	2.5		X			3
41000348	5/16	1.0000	3.0		X			3
41000349	5/16	1.0000	3.0			X		3
41000350	5/16	1.2500	3.0		X			3
41000351	3/8	0.5000	2.0		X			3
41000352	3/8	0.5000	2.0			X		3
41000353	3/8	0.5000	2.0				X	3
41000354	3/8	1.0000	3.0		X			3
41000355	3/8	1.0000	3.0			X		3
41000356	3/8	1.0000	3.0				X	3
41000357	3/8	1.2500	3.5			X		3
41000358	3/8	1.5000	4.0			X		3
41000359	3/8	2.0000	4.0		X			3

EDP	Cutting Dia.	Length of Cut	Overall Length	0.015 CR	0.030 CR	0.060 CR	0.120 CR	Flutes
41000360	1/2	0.6250	2.5		X			3
41000361	1/2	0.6250	2.5			X		3
41000362	1/2	0.6250	2.5				X	3
41000363	1/2	1.0000	3.0		X			3
41000364	1/2	1.0000	3.0			X		3
41000365	1/2	1.0000	3.0				X	3
41000366	1/2	1.2500	3.0		X			3
41000367	1/2	1.6250	4.0		X			3
41000368	1/2	2.0000	4.0		X			3
41000369	1/2	2.5000	5.0		X			3
41000370	5/8	0.7500	3.0			X		3
41000371	5/8	0.7500	3.0				X	3
41000372	5/8	1.6250	3.5			X		3
41000373	5/8	1.6250	3.5				X	3
41000374	5/8	2.1250	4.0		X			3
41000375	5/8	2.5000	5.0		X			3
41000376	3/4	1.0000	4.0			X		3
41000377	3/4	1.0000	4.0				X	3
41000378	3/4	1.6250	4.0			X		3
41000379	3/4	1.6250	4.0				X	3
41000380	3/4	2.2500	5.0		X			3
41000381	3/4	3.2500	6.0		X			3

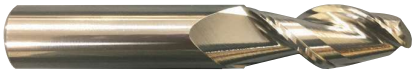
List No. 9720 Metric Sizes (Unit) : mm

EDP	Cutting Dia.	Length of Cut	Overall Length	0.3 CR	0.5 CR	1.0 CR	2.0 CR	Flutes
41000111	3	8	57	X				3
41000112	4	11	57	X				3
41000113	5	11	57	X				3
41000114	6	13	57	X				3
41000115	6	13	57		X			3
41000116	8	19	70		X			3
41000117	8	19	70			X		3
41000118	10	22	70		X			3
41000119	10	22	70			X		3
41000120	12	26	75		X			3
41000121	12	26	75			X		3
41000123	16	32	90			X		3
41000124	16	32	90				X	3
41000126	18	38	90				X	3
41000128	20	45	100				X	3

1 per tube

⚠ **WARNING**: Cancer - www.P65Warnings.ca.gov

ALH Mill Ball Nose



List No. 9721 Fractional sizes

EDP	Cutting Diameter	Length of Cut	Overall Length	Flutes
41000382	1/8	0.2500	1.50	3
41000383	1/8	0.3750	2.00	3
41000384	1/8	0.5000	2.50	3
41000385	3/16	0.3750	2.00	3
41000386	3/16	0.7500	2.50	3
41000387	3/16	1.0000	3.00	3
41000388	1/4	0.3750	2.00	3
41000389	1/4	0.7500	2.50	3
41000390	1/4	1.0000	3.00	3
41000391	5/16	0.8125	2.50	3

EDP	Cutting Diameter	Length of Cut	Overall Length	Flutes
41000392	3/8	0.5000	2.00	3
41000393	3/8	1.0000	2.50	3
41000394	3/8	1.5000	3.50	3
41000395	1/2	0.6250	2.50	3
41000396	1/2	1.0000	3.00	3
41000397	1/2	1.2500	3.50	3
41000398	5/8	1.0000	3.00	3
41000399	5/8	1.6250	4.50	3
41000400	3/4	1.0000	3.00	3
41000401	3/4	1.6250	4.00	3

List No. 9722 Metric sizes (Unit) : mm

EDP	Cutting Diameter	Length of Cut	Overall Length	Flutes
41000129	3	8	57	3
41000130	4	11	57	3
41000131	5	11	57	3
41000132	6	13	57	3
41000133	8	19	70	3
41000134	10	22	70	3
41000135	12	26	75	3
41000136	16	32	90	3
41000137	18	38	100	3

1 per tube

⚠ **WARNING**: Cancer - www.P65Warnings.ca.gov

Standard Milling Conditions

List No. 9717, 9718, 9719, 9720, 9721, 9722

Profiling

Work Material	Aluminum 2024, 5052, 6061, 7075, etc.			Aluminum Cast			Copper Alloys		
Milling Conditions	1000-2000 SFM			600-1000 SFM			300-600 SFM		
Mill Diam.	RPM	IPT	IPM	RPM	IPT	IPM	RPM	IPT	IPM
3	48500	0.0015	219.83	25900	0.0013	104.41	14500	0.0013	56.91
1/8	45800	0.0016	220.18	24500	0.0014	104.19	13800	0.0014	57.30
4	36400	0.0020	222.17	19400	0.0018	102.73	10900	0.0017	56.94
3/16	30600	0.0024	223.42	16300	0.0021	102.02	9200	0.0021	57.17
5	29100	0.0026	223.32	15500	0.0022	101.66	8700	0.0022	56.75
6	24300	0.0031	224.66	12900	0.0026	100.91	7300	0.0026	57.10
1/4	22900	0.0033	224.31	12200	0.0028	100.83	6900	0.0028	57.11
5/16	18300	0.0041	224.88	9800	0.0034	100.66	5500	0.0034	56.87
8	18200	0.0041	225.44	9700	0.0035	100.40	5450	0.0035	56.79
3/8	15300	0.0049	226.17	8150	0.0041	100.06	4600	0.0041	57.05
10	14600	0.0052	226.72	7800	0.0043	100.45	4400	0.0043	57.28
7/16	13100	0.0058	226.32	7000	0.0048	99.99	3900	0.0048	56.41
12	12100	0.0062	225.91	6500	0.0051	100.13	3600	0.0052	56.22
1/2	11500	0.0066	227.36	6100	0.0054	99.37	3400	0.0055	56.19
9/16	10200	0.0074	227.09	5400	0.0061	98.80	3050	0.0062	56.70
5/8	9200	0.0083	227.77	4900	0.0068	99.48	2750	0.0069	56.79
16	9100	0.0083	227.08	4850	0.0068	99.23	2700	0.0069	56.20
18	8100	0.0094	227.57	4300	0.0077	98.85	2400	0.0078	56.19
3/4	7650	0.0099	227.55	4100	0.0081	99.69	2300	0.0083	56.99
20	7300	0.0104	228.03	3900	0.0085	99.51	2200	0.0087	57.22
Depth of Cut a_a	1.5D								
Depth of Cut a_r	0.5D								

Slotting

Work Material	Aluminum			Aluminum Cast			Copper Alloys		
Milling Conditions	800-1600 SFM			500-800 SFM			250-500 SFM		
Mill Diam.	RPM	IPT	IPM	RPM	IPT	IPM	RPM	IPT	IPM
3	38900	0.0014	167.74	21000	0.0011	66.74	12100	0.0011	38.82
1/8	36700	0.0015	167.35	19900	0.0011	66.86	11500	0.0011	38.99
4	29100	0.0019	166.72	15800	0.0014	66.64	9100	0.0014	38.65
3/16	24500	0.0023	166.85	13200	0.0017	66.13	7600	0.0017	38.30
5	23300	0.0024	166.52	12600	0.0018	66.24	7300	0.0018	38.59
6	19400	0.0029	166.14	10500	0.0021	66.11	6050	0.0021	38.27
1/4	18300	0.0030	165.80	9900	0.0022	65.93	5700	0.0022	38.13
5/16	14700	0.0038	166.26	8000	0.0028	66.48	4600	0.0028	38.36
8	14600	0.0038	166.42	7900	0.0028	66.16	4550	0.0028	38.24
3/8	12200	0.0045	165.43	6600	0.0033	65.74	3800	0.0033	37.96
10	11600	0.0047	165.11	6300	0.0035	65.86	3600	0.0035	37.74
7/16	10500	0.0053	166.01	5700	0.0039	66.18	3300	0.0039	38.41
12	9700	0.0057	165.56	5300	0.0042	66.42	3050	0.0042	38.32
1/2	9200	0.0060	166.15	5000	0.0044	66.30	2900	0.0044	38.54
9/16	8150	0.0068	165.53	4400	0.0050	65.60	2550	0.0050	38.10
5/8	7300	0.0075	164.69	4000	0.0055	66.24	2300	0.0055	38.16
16	7250	0.0076	164.84	3950	0.0056	65.93	2250	0.0056	37.62
18	6500	0.0085	166.22	3500	0.0063	65.69	2000	0.0063	37.60
3/4	6100	0.0090	165.07	3300	0.0066	65.54	1900	0.0066	37.79
20	5800	0.0095	164.76	3150	0.0069	65.67	1800	0.0070	37.58
Depth of Cut H	1D								

Finishing

Work Material	Aluminum			Aluminum Cast			Copper Alloys		
Milling Conditions	1000-2000 SFM			600-1000 SFM			300-600 SFM		
Mill Diam.	RPM	IPT	IPM	RPM	IPT	IPM	RPM	IPT	IPM
3	48500	0.0007	101.96	25900	0.0007	54.45	14500	0.0007	30.48
1/8	45800	0.0008	109.92	24500	0.0008	58.80	13800	0.0008	33.12
4	36400	0.0013	138.43	19400	0.0013	73.78	10900	0.0013	41.45
3/16	30600	0.0017	156.06	16300	0.0017	83.13	9200	0.0017	46.92
5	29100	0.0018	160.16	15500	0.0018	85.31	8700	0.0018	47.88
6	24300	0.0024	175.07	12900	0.0024	92.94	7300	0.0024	52.59
1/4	22900	0.0026	178.62	12200	0.0026	95.16	6900	0.0026	53.82
5/16	18300	0.0035	192.15	9800	0.0035	102.90	5500	0.0035	57.75
8	18200	0.0035	193.03	9700	0.0035	102.88	5450	0.0035	57.80
3/8	15300	0.0044	201.96	8150	0.0044	107.58	4600	0.0044	60.72
10	14600	0.0047	204.51	7800	0.0047	109.26	4400	0.0047	61.63
7/16	13100	0.0053	208.29	7000	0.0053	111.30	3900	0.0053	62.01
12	12100	0.0058	210.65	6500	0.0058	113.16	3600	0.0058	62.67
1/2	11500	0.0062	213.90	6100	0.0062	113.46	3400	0.0062	63.24
9/16	10200	0.0071	217.26	5400	0.0071	115.02	3050	0.0071	64.97
5/8	9200	0.0080	220.80	4900	0.0080	117.60	2750	0.0080	66.00
16	9100	0.0081	220.33	4850	0.0081	117.43	2700	0.0081	65.37
18	8100	0.0092	223.67	4300	0.0092	118.74	2400	0.0092	66.27
3/4	7650	0.0098	224.91	4100	0.0098	120.54	2300	0.0098	67.62
20	7300	0.0103	226.41	3900	0.0103	120.96	2200	0.0103	68.23
Depth of Cut a_a	1.5D								
Depth of Cut a_r	0.010" - 0.030"								

Standard Milling Conditions

List No. 9717, 9718, 9719, 9720, 9721, 9722

For Spindles Under 10K RPM

Profiling

Work Material	Aluminum			Aluminum Cast			Copper Alloys		
Milling Conditions	300-1500 SFM			600-1000 SFM			SFM		
Mill Diam.	RPM	IPT	IPM	RPM	IPT	IPM	RPM	IPT	IPM
3	10000	0.0015	45.33	10000	0.0013	40.31	10000	0.0013	39.25
1/8	10000	0.0016	48.08	10000	0.0014	42.53	10000	0.0014	41.52
4	10000	0.0020	61.03	10000	0.0018	52.95	10000	0.0017	52.24
3/16	10000	0.0024	73.01	10000	0.0021	62.59			
5	10000	0.0026	76.74	10000	0.0022	65.59			
6	10000	0.0031	92.45	10000	0.0026	78.23			
1/4	10000	0.0033	97.95	10000	0.0028	82.65			
5/16	10000	0.0041	122.89						
8	10000	0.0041	123.87						
3/8	10000	0.0049	147.83						
10	10000	0.0052	155.29						
7/16	10000	0.0058	172.76						
12	10000	0.0062	186.70						
1/2	10000	0.0066	197.70						
9/16	10000	0.0074	222.64						
Depth of Cut a_a	1.5D								
Depth of Cut a_r	0.5D								

Slotting

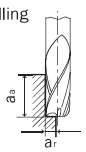
Work Material	Aluminum			Aluminum Cast			Copper Alloys		
Milling Conditions	800-1600 SFM			500-800 SFM			250-500 SFM		
Mill Diam.	RPM	IPT	IPM	RPM	IPT	IPM	RPM	IPT	IPM
3	10000	0.0014	43.12	10000	0.0011	31.78	10000	0.0011	32.08
1/8	10000	0.0015	45.60	10000	0.0011	33.60	10000	0.0011	33.90
4	10000	0.0019	57.29	10000	0.0014	42.17			
3/16	10000	0.0023	68.10	10000	0.0017	50.10			
5	10000	0.0024	71.47	10000	0.0018	52.57			
6	10000	0.0029	85.64	10000	0.0021	62.96			
1/4	10000	0.0030	90.60						
5/16	10000	0.0038	113.10						
8	10000	0.0038	113.99						
3/8	10000	0.0045	135.60						
10	10000	0.0047	142.33						
7/16	10000	0.0053	158.10						
Depth of Cut H	1D								

Finishing

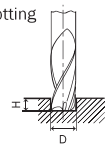
Work Material	Aluminum			Aluminum Cast			Copper Alloys		
Milling Conditions	1000-2000 SFM			600-1000 SFM			300-600 SFM		
Mill Diam.	RPM	IPT	IPM	RPM	IPT	IPM	RPM	IPT	IPM
3	10000	0.0007	21.02	10000	0.0007	21.02	10000	0.0007	21.02
1/8	10000	0.0008	24.00	10000	0.0008	24.00	10000	0.0008	24.00
4	10000	0.0013	38.03	10000	0.0013	38.03	10000	0.0013	38.03
3/16	10000	0.0017	51.00	10000	0.0017	51.00			
5	10000	0.0018	55.04	10000	0.0018	55.04			
6	10000	0.0024	72.05	10000	0.0024	72.05			
1/4	10000	0.0026	78.00						
5/16	10000	0.0035	105.00						
8	10000	0.0035	106.06						
3/8	10000	0.0044	132.00						
10	10000	0.0047	140.08						
7/16	10000	0.0053	159.00						
Depth of Cut a_a	1.5D								
Depth of Cut a_r	0.010" - 0.030"								

D: Dia. of Mill

Side Milling



Slotting



For entry, it is recommended to use slotting conditions.
Adjust milling condition when unusual vibration or sound occurs.
When using long reach tools, decrease width of cut and feed rate by 50%.