



H-Carb High Efficiency Endmills



Keeping the world moving.



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INTRODUCING THE H-CARB SEVEN FLUTE HIGH EFFICIENCY ENDMILL

The H-Carb Seven Flute High Efficiency Endmill specialises in deep axial trochoidal and high-speed machining applications offered at various lengths of cut. The specialised core and flute design improves rigidity and chip flow while reducing deflection. The seven-flute design allows for superior finishes at high rates over 5 and 6 flute tools. The series is offered in a variety of cut lengths and end configurations with two cutting edge styles. The H-Carb is available with either Ti-NAMITE-M or Ti-NAMITE-A coatings for superior tool life and performance in a variety of ferrous materials and high temp alloys.



THE H-CARB IS IDEAL FOR HIGH-EFFICIENCY ROUGHING AND FINISHING IN THE FOLLOWING TARGET MATERIALS:

- Titanium
- High-Temperature Alloys
- Stainless Steels
- Carbon and alloyed Steels
- Cast Iron
- Hardened Steels

EXPANSIVE OFFERING

- Over 500 items in portfolio
- Available in 3 lengths of cut
- Full complement of corner radii available
- Specials and alterations are available upon request
- Available coatings are suitable for dry machining in ferrous based materials such as cast irons and many carbon steels
- Chip breaker profile standard in portfolio

Ti-NAMITE-M

Features of Ti-Namite-M include high wear resistance, reduced friction, and excellent prevention of cutting edge build up. The coating provides superior material removal rates and tool life when used in high performance operations in cast iron and steel and with difficult to machine materials like titanium.

Hardness (HV): 3600

Oxidation Temperature: 1150°C / 2100°F

Coefficient of Friction: 0.45

Thickness: 1 – 4 Microns (based on tool diameter)

Ti-NAMITE-A

The H-Carb is available with an abrasive resistant and hard coating. The coating has a high hardness giving ultimate protection against abrasive wear and erosion. Ideal for high temperature alloys and stainless-steel applications.

Hardness (HV): 3700

Oxidation Temperature: 1100°C / 2010°F

Coefficient of Friction: 0.30

Thickness: 1 – 4 Microns (based on tool diameter)



Features



END WORK

- Open center design delivers efficiency during entry movements into the workpiece
- Specially engineered gash provides increased strength at the end of the tool



CHIP BREAKER

- Breaks up the chips formed by the long flute length allowing for better chip flow and evacuation in deep pocketing operations
- Specialized design enhances edge strength and reduces load

FLUTING & HELIX ANGLE

- The innovative seven flute design allows for higher feed rates, decreasing cycle time and improving productivity
- An optimized core improves rigidity, chip flow and reduced deflection
- The variable flute indexing provides advanced chatter suppression
- Optimized Helix angle provides enhanced shearing capabilities

Capabilities

Roughing

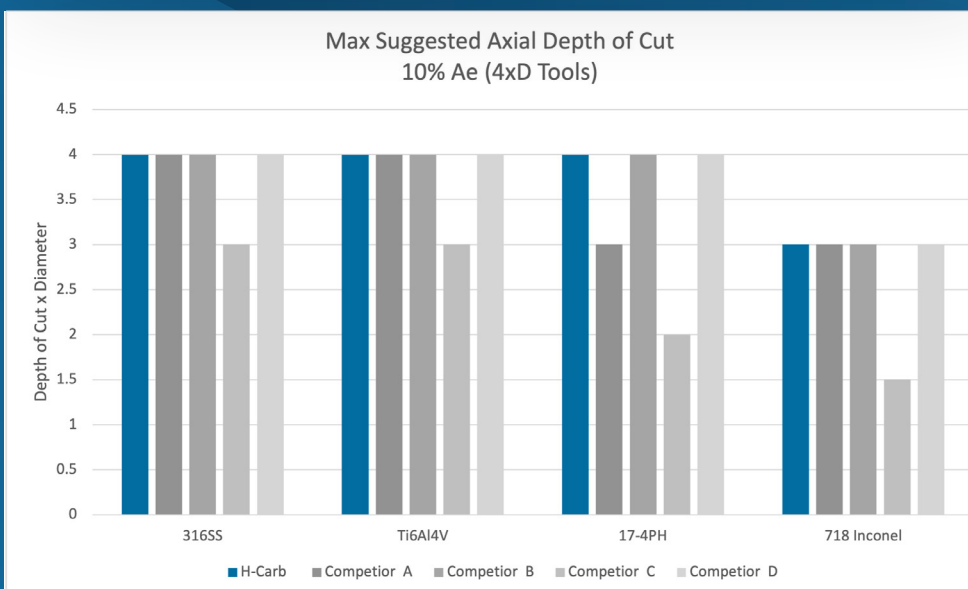
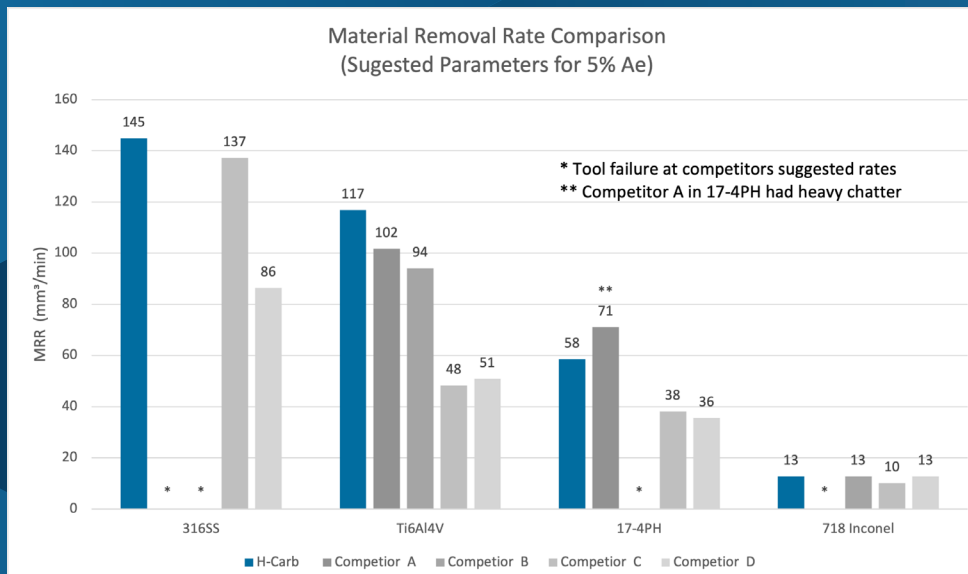
- 2.5xD length of cut is capable of 20% radial engagement at full axial depth of cut
- 3xD length of cut is capable of 15% radial engagement at full axial depth of cut
- 4xD length of cut is capable of 10% radial engagement at full axial depth of cut

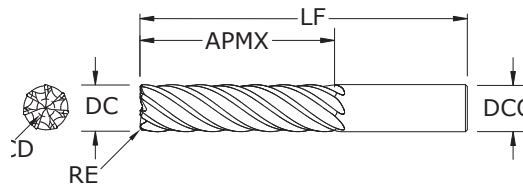
Finishing

- Varying length of cuts available to attain an optimal surface finish
- The seven-flute design allows for superior finishes at higher rates over 5 and 6 flute tools, allowing for superior finishes in a shorter cycle time

High-Speed Machining

- Long flute length enables deep axial cuts at high speeds and feeds, enhancing material removal rate in a wide range of difficult to machine materials
- Exclusive TI-NAMITE-M coating for high heat resistance to enhance tool life in difficult to machine materials like titanium
- Available with TI-NAMITE-A coating for superior wear, edge build-up resistance and extended tool life in difficult to machine materials like stainless steel





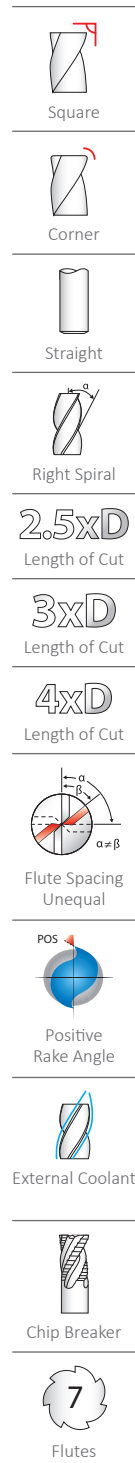
TOLERANCES (mm)

DC	DC	DCC
6	+0,000 / -0,030	h6
> 6 - 10	+0,000 / -0,040	h6
> 10 - 25	+0,000 / -0,050	h6

CORNER RADIUS TOLERANCES (mm)

RE = +0,000 / -0,050

Cutting Diameter DC	Length of Cut APMX	Overall Length LF	Shank Diameter DCC	Corner Radius RE	Non-Cutting Center Diameter (NCD)	Ti-Namite-A (TA) EDP No.	Ti-Namite-A (TA) EDP No. Chip Breaker	Ti-Namite-M (TM) EDP No.	Ti-Namite-M (TM) EDP No. Chip Breaker
6,0	15,0	63,0	6,0	—	2,03	74300	74302	74301	74303
6,0	15,0	63,0	6,0	0,3	2,03	74304	74306	74305	74307
6,0	15,0	63,0	6,0	0,5	2,03	74308	74310	74309	74311
6,0	18,0	63,0	6,0	—	2,03	74316	74318	74317	74319
6,0	18,0	63,0	6,0	0,3	2,03	74320	74322	74321	74323
6,0	18,0	63,0	6,0	0,5	2,03	74324	74326	74325	74327
6,0	24,0	75,0	6,0	—	2,03	74332	74334	74333	74335
6,0	24,0	75,0	6,0	0,3	2,03	74336	74338	74337	74339
6,0	24,0	75,0	6,0	0,5	2,03	74340	74342	74341	74343
8,0	20,0	75,0	8,0	—	2,71	74348	74350	74349	74351
8,0	20,0	75,0	8,0	0,5	2,71	74352	74354	74353	74355
8,0	20,0	75,0	8,0	1,0	2,71	74356	74358	74357	74359
8,0	20,0	75,0	8,0	2,0	2,71	74360	74362	74361	74363
8,0	24,0	75,0	8,0	—	2,71	74364	74366	74365	74367
8,0	24,0	75,0	8,0	0,5	2,71	74368	74370	74369	74371
8,0	24,0	75,0	8,0	1,0	2,71	74372	74374	74373	74375
8,0	24,0	75,0	8,0	2,0	2,71	74376	74378	74377	74379
8,0	32,0	85,0	8,0	—	2,71	74380	74382	74381	74383
8,0	32,0	85,0	8,0	0,5	2,71	74384	74386	74385	74387
8,0	32,0	85,0	8,0	1,0	2,71	74388	74390	74389	74391
8,0	32,0	85,0	8,0	2,0	2,71	74392	74394	74393	74395
10,0	25,0	75,0	10,0	—	3,38	74396	74398	74397	74399
10,0	25,0	75,0	10,0	0,5	3,38	74400	74402	74401	74403
10,0	25,0	75,0	10,0	1,0	3,38	74404	74406	74405	74407
10,0	30,0	80,0	10,0	—	3,38	74408	74410	74409	74411
10,0	30,0	80,0	10,0	0,5	3,38	74412	74414	74413	74415
10,0	30,0	80,0	10,0	1,0	3,38	74416	74418	74417	74419
10,0	40,0	100,0	10,0	—	3,38	74420	74422	74421	74423
10,0	40,0	100,0	10,0	0,5	3,38	74424	74426	74425	74427
10,0	40,0	100,0	10,0	1,0	3,38	74428	74430	74429	74431
12,0	30,0	83,0	12,0	—	4,06	74432	74434	74433	74435
12,0	30,0	83,0	12,0	0,5	4,06	74436	74438	74437	74439
12,0	30,0	83,0	12,0	1,0	4,06	74440	74442	74441	74443
12,0	36,0	83,0	12,0	—	4,06	74444	74446	74445	74447
12,0	36,0	83,0	12,0	0,5	4,06	74448	74450	74449	74451
12,0	36,0	83,0	12,0	1,0	4,06	74452	74454	74453	74455



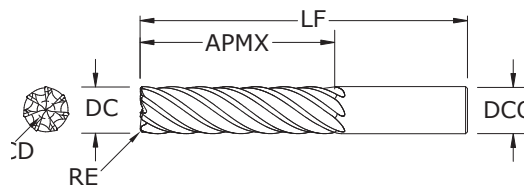
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TOLERANCES (mm)

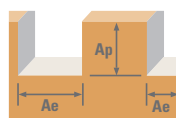
DC	DC	DCON
6	+0,000 / -0,030	h6
> 6 - 10	+0,000 / -0,040	h6
> 10 - 25	+0,000 / -0,050	h6

CORNER RADIUS TOLERANCES (mm)

RE = +0,000 / -0,050

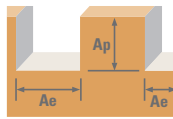


Cutting Diameter DC	Length of Cut APMX	Overall Length LF	Shank Diameter DCON	Corner Radius RE	Non-Cutting Center Diameter (NCD)	Ti-Namite-A (TA) EDP No.	Ti-Namite-A (TA) EDP No. Chip Breaker	Ti-Namite-M (TM) EDP No.	Ti-Namite-M (TM) EDP No. Chip Breaker
12,0	48,0	100,0	12,0	–	4,06	74456	74458	74457	74459
12,0	48,0	100,0	12,0	0,5	4,06	74460	74462	74461	74463
12,0	48,0	100,0	12,0	1,0	4,06	74464	74466	74465	74467
16,0	40,0	92,0	16,0	–	5,41	74468	74470	74469	74471
16,0	40,0	92,0	16,0	0,5	5,41	74472	74474	74473	74475
16,0	40,0	92,0	16,0	1,0	5,41	74476	74478	74477	74479
16,0	48,0	100,0	16,0	–	5,41	74480	74482	74481	74483
16,0	48,0	100,0	16,0	0,5	5,41	74484	74486	74485	74487
16,0	48,0	100,0	16,0	1,0	5,41	74488	74490	74489	74491
16,0	64,0	115,0	16,0	–	5,41	74492	74494	74493	74495
16,0	64,0	115,0	16,0	0,5	5,41	74496	74498	74497	74499
16,0	64,0	115,0	16,0	1,0	5,41	74500	74502	74501	74503
20,0	50,0	100,0	20,0	–	6,76	74504	74506	74505	74507
20,0	50,0	100,0	20,0	0,5	6,76	74508	74510	74509	74511
20,0	50,0	100,0	20,0	1,0	6,76	74512	74514	74513	74515
20,0	50,0	100,0	20,0	2,0	6,76	74516	74518	74517	74519
20,0	60,0	115,0	20,0	–	6,76	74520	74522	74521	74523
20,0	60,0	115,0	20,0	0,5	6,76	74524	74526	74525	74527
20,0	60,0	115,0	20,0	1,0	6,76	74528	74530	74529	74531
20,0	60,0	115,0	20,0	2,0	6,76	74532	74534	74533	74535
20,0	80,0	140,0	20,0	–	6,76	74536	74538	74537	74539
20,0	80,0	140,0	20,0	0,5	6,76	74540	74542	74541	74543
20,0	80,0	140,0	20,0	1,0	6,76	74544	74546	74545	74547
20,0	80,0	140,0	20,0	2,0	6,76	74548	74550	74549	74551
25,0	63,0	135,0	25,0	–	8,45	74552	74554	74553	74555
25,0	63,0	135,0	25,0	1,0	8,45	74556	74558	74557	74559
25,0	63,0	135,0	25,0	2,0	8,45	74560	74562	74561	74563
25,0	63,0	135,0	25,0	3,0	8,45	74564	74566	74565	74567
25,0	75,0	150,0	25,0	–	8,45	74568	74570	74569	74571
25,0	75,0	150,0	25,0	1,0	8,45	74572	74574	74573	74575
25,0	75,0	150,0	25,0	2,0	8,45	74576	74578	74577	74579
25,0	75,0	150,0	25,0	3,0	8,45	74580	74582	74581	74583
25,0	100,0	170,0	25,0	–	8,45	74584	74586	74585	74587
25,0	100,0	170,0	25,0	1,0	8,45	74588	74590	74589	74591
25,0	100,0	170,0	25,0	2,0	8,45	74592	74594	74593	74595
25,0	100,0	170,0	25,0	3,0	8,45	74596	74598	74597	74599



Series 77M, 77MCR		Ae Ap		Vc (m/min)	DC • mm								
Metric	Hardness	Ae x DC	Ap x DC		6	8	10	12	16	20	25		
P	CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 275 Bhn or ≤ 28 HRC			RPM	12208	9156	7325	6104	4578	3662	2930	
			HSM	2.5xD	284 (227-341)	Fz	0.0413	0.0411	0.0640	0.0711	0.0889	0.1013	0.1050
				≤ 0.2	≤ APMX	Feed (mm/min)	3529	2634	3282	3038	2849	2597	2154
			HSM	3xD	257 (206-308)	Fz	0.0347	0.0461	0.0717	0.0797	0.0996	0.1135	0.1176
				≤ 0.15	≤ APMX	Feed (mm/min)	2965	2955	3676	3405	3192	2910	2412
			HSM	4xD	230 (184-276)	Fz	0.0362	0.0480	0.0747	0.0830	0.1037	0.1182	0.0919
				≤ 0.1	≤ APMX	Feed (mm/min)	3094	3076	3830	3546	3323	3030	1885
	ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 375 Bhn or ≤ 40 HRC			RPM	8068	6051	4841	4034	3025	2420	1936	
			HSM	2.5xD	132 (106-159)	Fz	0.0213	0.0285	0.0512	0.0610	0.0711	0.0827	0.0875
				≤ 0.2	≤ APMX	Feed (mm/min)	1203	1207	1735	1723	1506	1401	1186
			HSM	3xD	138 (111-166)	Fz	0.0239	0.0319	0.0574	0.0683	0.0797	0.0926	0.0980
				≤ 0.15	≤ APMX	Feed (mm/min)	1350	1351	1945	1929	1688	1569	1328
			HSM	4xD	152 (122-182)	Fz	0.0249	0.0332	0.0597	0.0711	0.0830	0.0964	0.1021
				≤ 0.1	≤ APMX	Feed (mm/min)	1406	1406	2023	2008	1758	1633	1384
M	STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F, 440F	≤ 275 Bhn or ≤ 28 HRC			RPM	9660	7245	5796	4830	3623	2898	2318	
			HSM	2.5xD	197 (158-236)	Fz	0.0216	0.0285	0.0448	0.0533	0.0635	0.0747	0.0800
				≤ 0.2	≤ APMX	Feed (mm/min)	1461	1445	1818	1803	1610	1515	1298
			HSM	3xD	204 (163-245)	Fz	0.0242	0.0319	0.0502	0.0598	0.0711	0.0837	0.0896
				≤ 0.15	≤ APMX	Feed (mm/min)	1636	1618	2037	2022	1803	1698	1454
			HSM	4xD	182 (146-218)	Fz	0.0252	0.0332	0.0523	0.0622	0.0741	0.0871	0.0933
				≤ 0.1	≤ APMX	Feed (mm/min)	1704	1684	2122	2104	1879	1767	1514
	STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L	≤ 275 Bhn or ≤ 28 HRC			RPM	6369	4777	3822	3185	2389	1911	1529	
			HSM	2.5xD	130 (104-156)	Fz	0.0168	0.0221	0.0371	0.0432	0.0584	0.0693	0.0750
				≤ 0.2	≤ APMX	Feed (mm/min)	749	739	993	963	976	927	803
			HSM	3xD	134 (107-161)	Fz	0.0188	0.0248	0.0416	0.0484	0.0655	0.0777	0.0840
				≤ 0.15	≤ APMX	Feed (mm/min)	838	829	1113	1079	1095	1039	899
			HSM	4xD	120 (96-144)	Fz	0.0196	0.0258	0.0433	0.0504	0.0682	0.0809	0.0875
				≤ 0.1	≤ APMX	Feed (mm/min)	874	863	1158	1124	1140	1082	936
STAINLESS STEELS (PH) 13-8 PH, 15-5PH, 17-4 PH, CUSTOM 450	≤ 325 Bhn or ≤ 35 HRC			RPM	6104	4578	3662	3052	2289	1831	1465		
		HSM	2.5xD	124 (99-149)	Fz	0.0168	0.0221	0.0371	0.0432	0.0584	0.0693	0.0750	
			≤ 0.2	≤ APMX	Feed (mm/min)	718	708	952	923	936	888	769	
		HSM	3xD	129 (103-155)	Fz	0.0188	0.0248	0.0416	0.0484	0.0655	0.0777	0.0840	
			≤ 0.15	≤ APMX	Feed (mm/min)	803	795	1066	1034	1050	996	861	
		HSM	4xD	115 (92-138)	Fz	0.0196	0.0258	0.0433	0.0504	0.0682	0.0809	0.0875	
			≤ 0.1	≤ APMX	Feed (mm/min)	837	827	1110	1077	1093	1037	897	

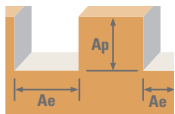
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Series 77M, 77MCR		Ae		Vc		DC • mm								
Metric	Hardness	Ae x DC	Ap x DC	(m/min)		6	8	10	12	16	20	25		
S	SUPER ALLOYS (NICKEL , COBALT, IRON BASE) Inconel 601, 617, 625, Incoloy, Monel 400	≤ 300 Bhn or ≤ 32 HRc	HSM	2.5xD		41 (33-49)	Fz	0.0140	0.0183	0.0294	0.0356	0.0457	0.0560	0.0625
				Feed (mm/ min)	198		194	249	251	242	237	212		
				≤ 0.2	≤ APMX		Fz	0.0157	0.0205	0.0330	0.0398	0.0512	0.0627	0.0700
			HSM	3xD		43 (34-52)	Fz	0.0157	0.0205	0.0330	0.0398	0.0512	0.0627	0.0700
				Feed (mm/ min)	222		217	280	281	271	266	237		
				≤ 0.15	≤ APMX		Fz	0.0163	0.0213	0.0344	0.0415	0.0533	0.0653	0.0729
		HSM	4xD		38 (30-46)	Fz	0.0163	0.0213	0.0344	0.0415	0.0533	0.0653	0.0729	
			Feed (mm/ min)	230		226	291	293	282	277	247			
			≤ 0.1	≤ APMX		Fz	0.0163	0.0213	0.0344	0.0415	0.0533	0.0653	0.0729	
			Feed (mm/ min)	230		226	291	293	282	277	247			
			≤ 0.1	≤ APMX		Fz	0.0163	0.0213	0.0344	0.0415	0.0533	0.0653	0.0729	
			Feed (mm/ min)	230		226	291	293	282	277	247			
	SUPER ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 718, X-750, Incoloy, Waspaloy, Hastelloy, Rene	≤ 400 Bhn or ≤ 43 HRc	HSM	2.5xD		26 (21-31)	Fz	0.0114	0.0152	0.0243	0.0305	0.0381	0.0480	0.0550
				Feed (mm/ min)	102		102	130	136	127	128	118		
				≤ 0.2	≤ APMX		Fz	0.0128	0.0171	0.0273	0.0342	0.0427	0.0538	0.0616
			HSM	3xD		27 (22-32)	Fz	0.0128	0.0171	0.0273	0.0342	0.0427	0.0538	0.0616
				Feed (mm/ min)	114		114	146	152	143	144	132		
				≤ 0.15	≤ APMX		Fz	0.0133	0.0178	0.0284	0.0356	0.0445	0.0560	0.0642
		HSM	4xD		24 (19-29)	Fz	0.0133	0.0178	0.0284	0.0356	0.0445	0.0560	0.0642	
			Feed (mm/ min)	119		119	152	159	149	150	137			
			≤ 0.1	≤ APMX		Fz	0.0133	0.0178	0.0284	0.0356	0.0445	0.0560	0.0642	
			Feed (mm/ min)	119		119	152	159	149	150	137			
			≤ 0.1	≤ APMX		Fz	0.0133	0.0178	0.0284	0.0356	0.0445	0.0560	0.0642	
			Feed (mm/ min)	119		119	152	159	149	150	137			
TITANIUM ALLOYS Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	≤ 350 Bhn or ≤ 38 HRc	HSM	2.5xD		88 (70-106)	Fz	0.0191	0.0254	0.0397	0.0483	0.0635	0.0747	0.0800	
			Feed (mm/ min)	582		580	726	736	725	683	585			
			≤ 0.2	≤ APMX		Fz	0.0213	0.0285	0.0445	0.0541	0.0711	0.0837	0.0896	
		HSM	3xD		91 (73-109)	Fz	0.0213	0.0285	0.0445	0.0541	0.0711	0.0837	0.0896	
			Feed (mm/ min)	649		651	813	824	812	765	655			
			≤ 0.15	≤ APMX		Fz	0.0222	0.0296	0.0463	0.0563	0.0741	0.0871	0.0933	
	HSM	4xD		82 (66-98)	Fz	0.0222	0.0296	0.0463	0.0563	0.0741	0.0871	0.0933		
		Feed (mm/ min)	676		676	846	858	847	796	682				
		≤ 0.1	≤ APMX		Fz	0.0222	0.0296	0.0463	0.0563	0.0741	0.0871	0.0933		
		Feed (mm/ min)	676		676	846	858	847	796	682				
		≤ 0.1	≤ APMX		Fz	0.0222	0.0296	0.0463	0.0563	0.0741	0.0871	0.0933		
		Feed (mm/ min)	676		676	846	858	847	796	682				
TITANIUM ALLOYS (DIFFICULT) Ti10Al2Fe3Al, Ti5Al5V5Mo3Cr, Ti7Al4Mo, Ti3Al8V6Cr4Zr4Mo, Ti6Al6V6Sn, Ti15V3 Cr3Sn3Al	≤ 440 Bhn or ≤ 47 HRc	HSM	2.5xD		52 (42-62)	Fz	0.0163	0.0254	0.0397	0.0483	0.0635	0.0747	0.0800	
			Feed (mm/ min)	291		340	425	431	425	400	342			
			≤ 0.2	≤ APMX		Fz	0.0182	0.0285	0.0445	0.0541	0.0711	0.0837	0.0896	
		HSM	3xD		54 (43-65)	Fz	0.0182	0.0285	0.0445	0.0541	0.0711	0.0837	0.0896	
			Feed (mm/ min)	325		381	476	482	476	448	384			
			≤ 0.15	≤ APMX		Fz	0.0190	0.0296	0.0463	0.0563	0.0741	0.0871	0.0933	
	HSM	4xD		48 (38-58)	Fz	0.0190	0.0296	0.0463	0.0563	0.0741	0.0871	0.0933		
		Feed (mm/ min)	339		396	495	502	496	466	399				
		≤ 0.1	≤ APMX		Fz	0.0190	0.0296	0.0463	0.0563	0.0741	0.0871	0.0933		
		Feed (mm/ min)	339		396	495	502	496	466	399				
		≤ 0.1	≤ APMX		Fz	0.0190	0.0296	0.0463	0.0563	0.0741	0.0871	0.0933		
		Feed (mm/ min)	339		396	495	502	496	466	399				
H	TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 375 Bhn or ≤ 40 HRc	HSM	2.5xD		83 (66-100)	Fz	0.0140	0.0183	0.0294	0.0356	0.0457	0.0560	0.0625
				Feed (mm/ min)	401		393	505	509	490	481	429		
				≤ 0.2	≤ APMX		Fz	0.0157	0.0205	0.0330	0.0398	0.0512	0.0627	0.0700
			HSM	3xD		86 (69-103)	Fz	0.0157	0.0205	0.0330	0.0398	0.0512	0.0627	0.0700
				Feed (mm/ min)	449		440	566	569	549	538	481		
				≤ 0.15	≤ APMX		Fz	0.0163	0.0213	0.0344	0.0415	0.0533	0.0653	0.0729
		HSM	4xD		77 (62-92)	Fz	0.0163	0.0213	0.0344	0.0415	0.0533	0.0653	0.0729	
			Feed (mm/ min)	466		457	590	594	572	560	501			
			≤ 0.1	≤ APMX		Fz	0.0163	0.0213	0.0344	0.0415	0.0533	0.0653	0.0729	
			Feed (mm/ min)	466		457	590	594	572	560	501			
			≤ 0.1	≤ APMX		Fz	0.0163	0.0213	0.0344	0.0415	0.0533	0.0653	0.0729	
			Feed (mm/ min)	466		457	590	594	572	560	501			

Note:

- Bhn (Brinell) HRC (Rockwell C) HSM (High Speed Machining)
- rpm = (Vc x 1000) / (DC x 3.14)
- mm/min = Fz x 7 x rpm
- reduce speed and feed for materials harder than listed
- reduce feed and Ae when finish milling (.02 x DC maximum)
- refer to the KYOCERA SGS Tool Wizard* for complete technical information (www.kyocera-sgstool.com)



Series 77M, 77MCR				Vc (m/min)	DC • mm										
Metric	Hardness	Ae x DC	Ap x DC		6	8	10	12	16	20	25				
P	CAST IRONS (LOW & MEDIUM ALLOY) Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRC		2.5xD	218 (174-262)	RPM	10722	8041	6433	5361	4021	3217	2573		
				≤ 0.2		≤ APMX	Fz	0.0239	0.0315	0.0474	0.0559	0.0762	0.0880	0.0925	
				Feed (mm/min)		1794	1773	2135	2098	2145	1981	1666			
					3xD	225 (180-270)	Fz	0.0268	0.0353	0.0531	0.0626	0.0854	0.0986	0.1036	
					≤ 0.15		≤ APMX	Feed (mm/min)	2011	1987	2391	2349	2404	2220	1866
					4xD		202 (162-242)	Fz	0.0279	0.0368	0.0553	0.0652	0.0889	0.1027	0.1079
					≤ 0.1			≤ APMX	Feed (mm/min)	2094	2071	2490	2447	2502	2312
	CAST IRONS (HIGH ALLOY) Gray, Malleable, Ductile	≤ 260 Bhn or ≤ 26 HRC		2.5xD	130 (104-156)	RPM	6369	4777	3822	3185	2389	1911	1529		
				≤ 0.2		≤ APMX	Fz	0.0168	0.0221	0.0371	0.0432	0.0584	0.0693	0.0750	
				Feed (mm/min)		749	739	993	963	976	927	803			
					3xD	134 (107-161)	Fz	0.0188	0.0248	0.0416	0.0484	0.0655	0.0777	0.0840	
					≤ 0.15		≤ APMX	Feed (mm/min)	838	829	1113	1079	1095	1039	899
					4xD		120 (96-144)	Fz	0.0196	0.0258	0.0433	0.0504	0.0682	0.0809	0.0875
					≤ 0.1			≤ APMX	Feed (mm/min)	874	863	1158	1124	1140	1082
N	NON-FERROUS MATERIALS	Not Recommended for this Material Group													

continued on next page

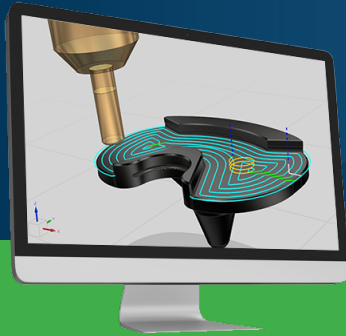


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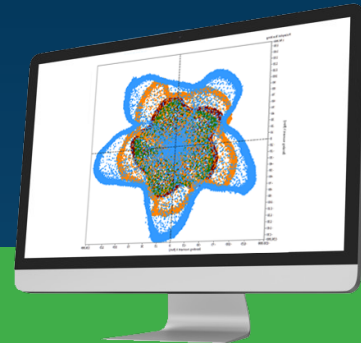


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