

MIL-TEC's Easy Guide to Proper Speeds and Feeds for the Freedom Cutter®



Please contact us at the 800 number listed below for the speeds and feeds of cutters with diameters greater than 10”.

Phone: (800) 564-5832

Fax: (866) 244-0298

**5578 6th Street W.
Lehigh Acres, FL 33971**

www.milteccusa.com

©2002 MIL-TEC, USA, Inc.

FRACTION DECIMAL METRIC EQUIVALENT CHART

Fraction	Decimal	MM	Fraction	Decimal	MM
1/64	0.0156	0.3962	33/64	0.5156	13.0962
1/32	0.0312	0.7925	17/32	0.5312	13.4925
3/64	0.0469	1.1913	35/64	0.5469	13.8913
1/16	0.0625	1.5875	9/16	0.5625	14.2875
5/64	0.0781	1.9837	37/64	0.5781	14.6837
3/32	0.0937	2.3800	19/32	0.5937	15.0800
7/64	0.1094	2.7788	39/64	0.6094	15.4788
1/8	0.1250	3.1750	5/8	0.6250	15.8750
9/64	0.1406	3.5712	41/64	0.6406	16.2712
5/32	0.1562	3.9675	21/32	0.6562	16.6675
11/64	0.1719	4.3663	43/64	0.6719	17.0663
3/16	0.1875	4.7625	11/16	0.6875	17.4625
13/64	0.2031	5.1587	45/64	0.7031	17.8587
7/32	0.2187	5.5550	23/32	0.7187	18.2550
15/64	0.2344	5.9538	47/64	0.7344	18.6538
1/4	0.2500	6.3500	3/4	0.7500	19.0500
17/64	0.2656	6.7462	49/64	0.7656	19.4183
9/32	0.2812	7.1425	25/32	0.7812	19.8425
19/64	0.2969	7.5413	51/64	0.7969	20.2413
5/16	0.3125	7.9375	13/16	0.8125	20.6375
21/64	0.3281	8.3337	53/64	0.8281	21.0337
11/32	0.3437	8.7300	27/32	0.8437	21.4300
23/64	0.3594	9.1288	55/64	0.8594	21.8288
3/8	0.3750	9.5250	7/8	0.8750	22.2250
25/64	0.3906	9.9212	57/64	0.8906	22.6212
13/32	0.4062	10.3175	29/32	0.9062	23.0175
27/64	0.4219	10.7163	59/64	0.9219	23.4163
7/16	0.4375	11.1125	15/16	0.9375	23.8125
29/64	0.4531	11.5087	61/64	0.9531	24.2087
15/32	0.4687	11.9050	31/32	0.9687	24.6050
31/64	0.4844	12.3038	63/64	0.9844	25.0038
1/2	0.5000	12.7000	1	1.0000	25.4000

CHART A:

Safe Starting Parameters for the MIL-TEC Freedom Cutter®

Workpiece Material		SFPM		Recommended Chip Load Per Blade		
		Min.	Max.	Type of Octagon Insert		
				SS45L	PS45L	NP45L
Die & High	Below 28RC	800	1200	.004	.006	.012
	32 to 42 RC	450	900	N/A	.006	.010
Carbon Steels		850	1200	.004	.006	.010
Low Carbon Steels		800	1800	.004	.008	.012
Austenitic Stainless Steels		800	1500	.004	.008	.012
"PH" Type Stainless Steels		800	1500	.004	.008	.012
400 Series Stainless Steel		800	1500	.004	.008	.012
Aluminum & Al. Alloys		800	12000	Super Shear Only - Maximum Chip Load: .018		
Cast Iron (Soft) Approx. 187 Brinell		650	1200	N/A	.008	.012
Plastic, Non Metals & Wood		800	8000	Super Shear Only - Maximum Chip Load: .015		
Ductile Iron & Nodular Iron		900	1500	.004	.008	.015
Nickel Based Alloys		80	500	N/A	.003/.005	N/A
Copper & Brass		1000	2500	.003	.005	N/A
Titanium		80	500	N/A	.003/.008	N/A

- STEP 1** SELECT THE WORKPIECE MATERIAL
STEP 2 A) USING UNCOATED CARBIDE, SELECT THE MINIMUM SFPM
 B) USING COATED CARBIDE, SELECT THE MID-RANGE SFPM
STEP 3 GOTO CHART B.

MIL-TEC CARBIDE "MTC"

Type of Material	Heavy Feeds	Moderate Feeds	General Purpose
Steel	317 A2	357 A2	54 A2
Aluminum	21	20	51
Cast Iron	317 A2	327 A2	327 A2

CHART B:

CHART OF SURFACE FEET PER MINUTE

CUTTER DIAMETER IN INCHES

RPM	0.5	1	2	3	4	5	6	8	10
50	7	13	26	39	52	65	79	105	131
100	13	26	52	79	105	131	157	209	262
200	26	52	105	157	209	262	314	419	524
300	39	79	157	236	314	393	471	628	785
400	52	105	209	314	419	524	628	838	1,047
500	65	131	262	393	524	654	785	1,047	1,309
600	79	157	314	471	628	785	942	1,257	1,571
700	92	183	366	550	733	916	1,099	1,466	1,832
800	105	209	419	628	838	1,047	1,257	1,675	2,094
900	118	236	471	707	942	1,178	1,414	1,885	2,356
1,000	131	262	524	785	1,047	1,309	1,571	2,094	2,618
1,500	196	393	785	1,178	1,571	1,963	2,356	3,141	3,927
2,000	262	524	1,047	1,571	2,094	2,618	3,141	4,188	5,236
2,500	327	654	1,309	1,963	2,618	3,272	3,927	5,236	6,545
3,000	393	785	1,571	2,356	3,141	3,927	4,712	6,283	7,853
3,500	458	916	1,832	2,749	3,665	4,581	5,497	7,330	9,162
4,000	524	1,047	2,094	3,141	4,188	5,236	6,283	8,377	10,471
4,500	589	1,178	2,356	3,534	4,712	5,896	7,068	9,424	11,780
5,000	654	1,309	2,618	3,927	5,236	6,545	7,853	10,471	13,089
5,500	720	1,440	2,880	4,319	5,759	7,199	8,639	11,518	14,398
6,000	785	1,571	3,141	4,712	6,283	7,853	9,424	12,565	15,707
6,500	851	1,702	3,403	5,105	6,806	8,508	10,209	13,613	17,016
7,000	916	1,832	3,665	5,497	7,330	9,162	10,995	14,660	18,325
7,500	982	1,963	3,927	5,890	7,853	9,817	11,780	15,707	19,634
8,000	1,047	2,094	4,188	6,283	8,377	10,471	12,565	16,754	20,942
8,500	1,113	2,225	4,450	6,675	8,901	11,126	13,351	17,801	22,251
9,000	1,178	2,356	4,712	7,068	9,424	11,780	14,136	18,848	23,560
9,500	1,243	2,487	4,974	7,461	9,948	12,435	14,921	19,895	24,869
10,000	1,309	2,618	5,236	7,853	10,471	13,089	15,707	20,942	26,178
10,500	1,374	2,749	5,497	8,246	10,995	13,743	16,492	21,990	27,487
11,000	1,440	2,880	5,759	8,639	11,518	14,398	17,277	23,037	28,796
11,500	1,505	3,010	6,021	9,031	12,042	15,052	18,063	24,084	30,105
12,000	1,571	3,141	6,283	9,424	12,565	15,707	18,848	25,131	31,414
12,500	1,636	3,272	6,545	9,817	13,089	16,361	19,634	26,178	32,723
13,000	1,702	3,403	6,806	10,209	13,613	17,016	20,419	27,225	34,031
13,500	1,767	3,534	7,068	10,602	14,136	17,670	21,204	28,272	35,340
14,000	1,832	3,665	7,330	10,995	14,660	18,325	21,990	29,319	36,649
14,500	1,898	3,796	7,592	11,387	15,183	18,979	22,775	30,366	37,958
15,000	1,963	3,927	7,853	11,780	15,707	19,634	23,560	31,414	39,267

- STEP 1** FIND THE DIAMETER OF YOUR CUTTER ON THE TOP ROW.
- STEP 2** LOOK DOWN THAT COLUMN TO FIND THE SFPM FIGURE CLOSEST TO THE ONE SELECTED FOR YOUR WORKPIECE MATERIAL.
- STEP 3** LOOK LEFT TO THE FIRST COLUMN TO FIND THE APPROPRIATE RPM FOR APPLICATION (NOW GO TO CHART C).

CHART C:

BLADES PER MINUTE

BLADES PER CUTTER

RPM	1	2	3	4	5	6	7	8	9	10
50	50	100	150	200	250	300	350	400	450	500
100	100	200	300	400	500	600	700	800	900	1,000
200	200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000
300	300	600	900	1,200	1,500	1,800	2,100	2,400	2,700	3,000
400	400	800	1,200	1,600	2,000	2,400	2,800	3,200	3,600	4,000
500	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000
600	600	1,200	1,800	2,400	3,000	3,600	4,200	4,800	5,400	6,000
700	700	1,400	2,100	2,800	3,500	4,200	4,900	5,600	6,300	7,000
800	800	1,600	2,400	3,200	4,000	4,800	5,600	6,400	7,200	8,000
900	900	1,800	2,700	3,600	4,500	5,400	6,300	7,200	8,100	9,000
1,000	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000
1,500	1,500	3,000	4,500	6,000	7,500	9,000	10,500	12,000	13,500	15,000
2,000	2,000	4,000	6,000	8,000	10,000	12,000	14,000	16,000	18,000	20,000
2,500	2,500	5,000	7,500	10,000	12,500	15,000	17,500	20,000	22,500	25,000
3,000	3,000	6,000	9,000	12,000	15,000	18,000	21,000	24,000	27,000	30,000
3,500	3,500	7,000	10,500	14,000	17,500	21,000	24,500	28,000	31,500	35,000
4,000	4,000	8,000	12,000	16,000	20,000	24,000	28,000	32,000	36,000	40,000
4,500	4,500	9,000	13,500	18,000	22,500	27,000	31,500	36,000	40,500	45,000
5,000	5,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	50,000
5,500	5,500	11,000	16,500	22,000	27,500	33,000	38,500	44,000	49,500	55,000
6,000	6,000	12,000	18,000	24,000	30,000	36,000	42,000	48,000	54,000	60,000
6,500	6,500	13,000	19,500	26,000	32,500	39,000	45,500	52,000	58,500	65,000
7,000	7,000	14,000	21,000	28,000	35,000	42,000	49,000	56,000	63,000	70,000
7,500	7,500	15,000	22,500	30,000	37,500	45,000	52,500	60,000	67,500	75,000
8,000	8,000	16,000	24,000	32,000	40,000	48,000	56,000	64,000	72,000	80,000
8,500	8,500	17,000	25,500	34,000	42,500	51,000	59,500	68,000	76,500	85,000
9,000	9,000	18,000	27,000	36,000	45,000	54,000	63,000	72,000	81,000	90,000
9,500	9,500	19,000	28,500	38,000	47,500	57,000	66,500	76,000	85,500	95,000
10,000	10,000	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000
10,500	10,500	21,000	31,500	42,000	52,500	63,000	73,500	84,000	94,500	105,000
11,000	11,000	22,000	33,000	44,000	55,000	66,000	77,000	88,000	99,000	110,000
11,500	11,500	23,000	34,500	46,000	57,500	69,000	80,500	92,000	103,500	115,000
12,000	12,000	24,000	36,000	48,000	60,000	72,000	84,000	96,000	108,000	120,000
12,500	12,500	25,000	37,500	50,000	62,500	75,000	87,500	100,000	112,500	125,000
13,000	13,000	26,000	39,000	52,000	65,000	78,000	91,000	104,000	117,000	130,000
13,500	13,500	27,000	40,500	54,000	67,500	81,000	94,500	108,000	121,500	135,000
14,000	14,000	28,000	42,000	56,000	70,000	84,000	98,000	112,000	126,000	140,000
14,500	14,500	29,000	43,500	58,000	72,500	87,000	101,500	116,000	130,500	145,000
15,000	15,000	30,000	45,000	60,000	75,000	90,000	105,000	120,000	135,000	150,000

- STEP 1** USING THE RPM FIGURE FROM CHART B, GO ACROSS THE ROW TO THE COLUMN INDICATING THE NUMBER OF BLADES IN YOUR CUTTER
- STEP 2** THE RESULTING FIGURE IS THE BLADES PER MINUTE.
- STEP 3** GO TO THE FEED RATE CHART (CHART D).

PER MIN	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.011	0.012	0.013	0.014	0.015	0.016	0.017	0.018	0.019	0.020
50	0.050	0.100	0.150	0.200	0.250	0.300	0.350	0.400	0.450	0.500	0.550	0.600	0.650	0.700	0.750	0.800	0.850	0.900	0.950	1.000
100	0.100	0.200	0.300	0.400	0.500	0.600	0.700	0.800	0.900	1.000	1.100	1.200	1.300	1.400	1.500	1.600	1.700	1.800	1.900	2.000
200	0.200	0.400	0.600	0.800	1.000	1.200	1.400	1.600	1.800	2.000	2.200	2.400	2.600	2.800	3.000	3.200	3.400	3.600	3.800	4.000
300	0.300	0.600	0.900	1.200	1.500	1.800	2.100	2.400	2.700	3.000	3.300	3.600	3.900	4.200	4.500	4.800	5.100	5.400	5.700	6.000
400	0.400	0.800	1.200	1.600	2.000	2.400	2.800	3.200	3.600	4.000	4.400	4.800	5.200	5.600	6.000	6.400	6.800	7.200	7.600	8.000
500	0.500	1.000	1.500	2.000	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000	6.500	7.000	7.500	8.000	8.500	9.000	9.500	10.000
1,000	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000	10.000	11.000	12.000	13.000	14.000	15.000	16.000	17.000	18.000	19.000	20.000
2,000	2.000	4.000	6.000	8.000	10.000	12.000	14.000	16.000	18.000	20.000	22.000	24.000	26.000	28.000	30.000	32.000	34.000	36.000	38.000	40.000
3,000	3.000	6.000	9.000	12.000	15.000	18.000	21.000	24.000	27.000	30.000	33.000	36.000	39.000	42.000	45.000	48.000	51.000	54.000	57.000	60.000
4,000	4.000	8.000	12.000	16.000	20.000	24.000	28.000	32.000	36.000	40.000	44.000	48.000	52.000	56.000	60.000	64.000	68.000	72.000	76.000	80.000
5,000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000	70.000	75.000	80.000	85.000	90.000	95.000	100.000
6,000	6.000	12.000	18.000	24.000	30.000	36.000	42.000	48.000	54.000	60.000	66.000	72.000	78.000	84.000	90.000	96.000	102.000			