

MILLING RECOMMENDATIONS

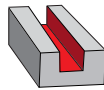


PROFILING

		Surface Feet Per Minute (SFM)					Radial Depth of Cut (RDOC)									
		SFM based on RDOC					Inches Per Tooth (IPT)									
Workpiece Material Group	Hardness	Cutting Diameter Engaged					IPT* (BASELINE)						*CHIP THINNING Adjustments			
		5%	10%	20%	30%	50%	5/16	3/8	1/2	5/8	3/4	1	RDOC	Increase IPT		
Steels Free Machining & Low Carbon: 10XX, 11XX, 12XX, 12LXX, ASTM A27, ASTM A36 Medium Carbon, High Carbon Steels, Alloy Steels & Easy to Machine Tool: 13XX, 41XX, 43XX, 51XX, 86XX, 93XX	≤ 28 Rc	1050	700	385	375	350										
	28 - 38 Rc	630	420	320	250	210	0.0027	0.0032	0.0045	0.0054	0.0063	0.0090				
Tool & Die Steels A2, H13, L6, P20, S7	≤ 28 Rc	525	350	300	275	250	0.0027	0.0032	0.0045	0.0054	0.0063	0.0090				
	28 - 44 Rc	525	350	300	275	250	0.0027	0.0032	0.0045	0.0054	0.0063	0.0090				
Stainless Steel Easy to Machine, 430F, 301, 303, 410, 416 Annealed, 420F, 430, 430F Moderately Difficult to Machine, Nitronic 50, Nitronic 60, 301, 303, 304, 304L Incoloy 27-7MO, 316, 316L, 321, 347 Difficult to Machine, 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics	≤ 28 Rc	650	600	550	500	450	0.0027	0.0032	0.0045	0.0054	0.0063	0.0090				
	≤ 28 Rc	525	400	350	300	250	0.0027	0.0032	0.0045	0.0054	0.0063	0.0090				
Super Alloys High Temp, Nimonic, Inconel, Monel, Hastelloy Titanium: Ti 3Al-2.5V, Ti 6Al-4V Ti 10V-2Fe-3Al	≤ 42 Rc	265	200	175	150	100	0.0014	0.0016	0.0023	0.0027	0.0032	0.0045				
	≤ 42 Rc	230	200	175	150	125	0.0018	0.0021	0.0030	0.0036	0.0042	0.0060				
Hardened Materials	45-55 Rc	250	240	230	210	200	0.0018	0.0021	0.0030	0.0036	0.0042	0.0060				
	55-65 Rc	200	180	160	150	100	0.0013	0.0014	0.0021	0.0024	0.0029	0.0041				
Cast-Iron Gray: SAE J431, ASTM A48 Ductile & Malleable: ASTM A536, ASTM 897, ASTM A47, ASTM A220 ASTM A602	≤ 240 HB	425	400	375	350	300	0.0027	0.0032	0.0045	0.0054	0.0063	0.0090				
	> 240 HB	320	300	250	225	200	0.0027	0.0032	0.0045	0.0054	0.0063	0.0090				
Non-Ferrous Aluminum, Brass, Bronze, Copper, Plastics, Graphite		1000	960	920	880	840	0.0027	0.0032	0.0045	0.0054	0.0063	0.0090				

RDOC	Increase IPT
50%	None
30%	1.1 x
25%	1.2 x
20%	1.3 x
15%	1.4 x
10%	1.8 x
7%	2.0 x
5%	2.3 x
3%	3.0 x
2%	3.5 x
1%	5.0 x

†1/4" AND SMALLER DIAMETERS: Use caution when Profiling more than 50% or Slotting more than 25%

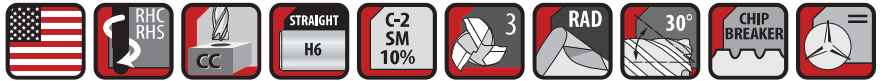


SLOTING

		Surface Feet Per Minute (SFM)			Radial Depth of Cut (RDOC)							
		SFM			Inches Per Tooth (IPT)							
Workpiece Material Group	Hardness	Cutting Diameter Engaged			IPT* (BASELINE)							
		25%	50%	100%	5/16	3/8	1/2	5/8	3/4	1		
Steels Free Machining & Low Carbon: 10XX, 11XX, 12XX, 12LXX, ASTM A27, ASTM A36 Medium Carbon, High Carbon Steels, Alloy Steels & Easy to Machine Tool: 13XX, 41XX, 43XX, 51XX, 86XX, 93XX	≤ 28 Rc	385	370	350	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050		
	28 - 38 Rc	245	230	2210	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050		
Tool & Die Steels A2, H13, L6, P20, S7	≤ 28 Rc	210	195	175	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050		
	28 - 44 Rc	210	195	175	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050		
Stainless Steel Easy to Machine, 430F, 301, 303, 410, 416 Annealed, 420F, 430, 430F Moderately Difficult to Machine, Nitronic 50, Nitronic 60, 301, 303, 304, 304L Incoloy 27-7MO, 316, 316L, 321, 347 Difficult to Machine, 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics	≤ 28 Rc	385	370	350	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050		
	≤ 28 Rc	245	210	175	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050		
Super Alloys High Temp, Nimonic, Inconel, Monel, Hastelloy Titanium: Ti 3Al-2.5V, Ti 6Al-4V Ti 10V-2Fe-3Al	≤ 42 Rc	125	105	90	0.0008	0.0010	0.0013	0.0016	0.0017	0.0026		
	≤ 42 Rc	100	90	80	0.0008	0.0010	0.0013	0.0016	0.0017	0.0026		
Hardened Materials	34-45 Rc	245	230	210	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050		
	45-55 Rc	175	160	140	0.0008	0.0010	0.0013	0.0016	0.0020	0.0025		
Cast-Iron Gray: SAE J431, ASTM A48 Ductile & Malleable: ASTM A536, ASTM 897, ASTM A47, ASTM A220 ASTM A602	≤ 240 HB	150	125	100	0.0004	0.0005	0.0008	0.0008	0.0010	0.0012		
	≤ 240 HB	450	400	350	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050		
Non-Ferrous Aluminum, Brass, Bronze, Copper, Plastics, Graphite	> 240 HB	300	250	225	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050		
		750	600	450	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050		



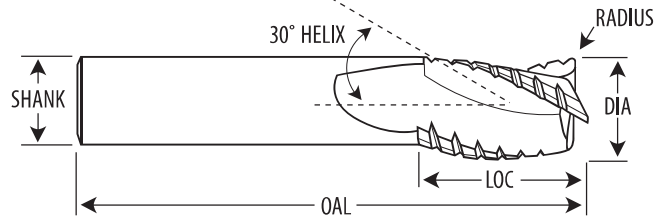
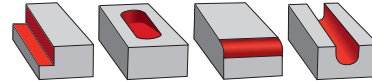
ATACKER³



Optional AlTiN coating excels in both wet and dry machining environments

Chipbreaker profile creates smaller chips for less edge build up and lower power usage

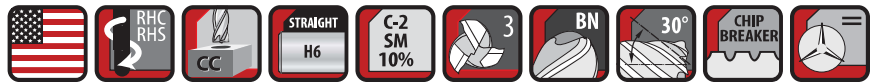
Designed for heavy material removal applications where cycle times are critical



DIA TOLERANCE: +0.000 / -0.002" SHANK TOLERANCE: +0.0000 / -0.0004"

DIA	DEC IN	LOC	SHANK	OAL	LENGTH	RADIUS	BRIGHT	ALTiN
1/8	0.1250	1/2	1/8	1-1/2	Regular	0.010	267-125500	267-125503
3/16	0.1875	5/8	3/16	2	Regular	0.010	267-187625	267-187628
1/4	0.2500	3/4	1/4	2-1/2	Regular	0.010	267-250750	267-250753
5/16	0.3125	13/16	5/16	2-1/2	Regular	0.010	267-312812	267-312815
3/8	0.3750	1	3/8	2-1/2	Regular	0.015	267-375875	267-375878
7/16	0.4375	1	7/16	2-3/4	Regular	0.015	267-437100	267-437103
1/2	0.5000	1	1/2	3	Regular	0.015	267-500100	267-500103
5/8	0.6250	1-1/4	5/8	3-1/2	Regular	0.020	267-625114	267-625117
3/4	0.7500	1-1/2	3/4	4	Regular	0.020	267-750112	267-750115
1	1.0000	1-1/2	1	4	Regular	0.020	267-100112	267-100115

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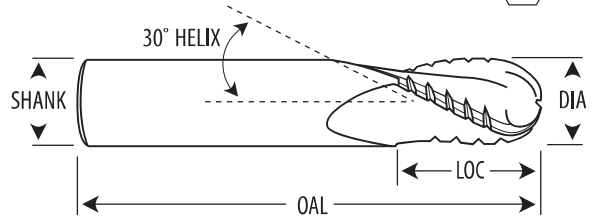
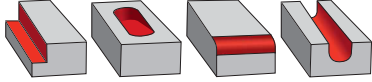
Designed for heavy material removal applications where cycle times are critical



Virtually perfect ball radius end

Chipbreaker profile creates smaller chips for less edge build up and lower power usage

Optional AlTiN coating excels in both wet and dry machining environments



DIA TOLERANCE: +0.000 / -0.002" SHANK TOLERANCE: +0.0000 / -0.0004"

DIA	DEC IN	LOC	SHANK	OAL	LENGTH	BRIGHT	ALTiN
1/8	0.1250	1/2	1/8	1-1/2	Regular	268-125500	268-125503
3/16	0.1875	5/8	3/16	2	Regular	268-187625	268-187628
1/4	0.2500	3/4	1/4	2-1/2	Regular	268-250750	268-250753
5/16	0.3125	13/16	5/16	2-1/2	Regular	268-312812	268-312815
3/8	0.3750	1	3/8	2-1/2	Regular	268-375875	268-375878
7/16	0.4375	1	7/16	2-3/4	Regular	268-437100	268-437103
1/2	0.5000	1	1/2	3	Regular	268-500100	268-500103
5/8	0.6250	1-1/4	5/8	3-1/2	Regular	268-625114	268-625117
3/4	0.7500	1-1/2	3/4	4	Regular	268-750112	268-750115
1	1.0000	1-1/2	1	4	Regular	268-100112	268-100115