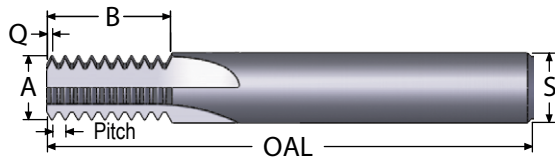


# UN THREAD MILLS

## STRAIGHT FLUTE - SOLID CARBIDE

### FULL PROFILE



- Optional short length-of-cut for ideal length-to-diameter ratio
- Cuts UNC, UNF, UNEF, UNS, and UNJ (internal only)
- Internal crest cutting design provides strongest possible tooling

MIN ID THREAD/ PITCH*	"A" TOOL DIA.	"B" LENGTH OF CUT	"Q" LENGTH	"S" SHANK DIA.	OAL	FLUTES	ORDER #		EDP #	
							UNCOATED	ALTiN+	UNCOATED	ALTiN+
<b>INTERNAL THREADS ONLY</b>										
4-40	0.080	0.210	0.011	0.250	2.50	3	TM080-40	TM080-40A	101501	101675
4-40	0.080	0.136	0.011	0.250	2.50	3	TM080-40S	TM080-40SA	102051	102189
6-32	0.098	0.263	0.013	0.250	2.50	3	TM098-32	TM098-32A	101504	101678
6-32	0.098	0.201	0.013	0.250	2.50	3	TM098-32S	TM098-32SA	102054	102192
6-40	0.098	0.260	0.011	0.250	2.50	3	TM098-40	TM098-40A	101507	101681
6-40	0.098	0.186	0.011	0.250	2.50	3	TM098-40S	TM098-40SA	102057	102195
8-32	0.110	0.325	0.013	0.250	2.50	3	TM110-32	TM110-32A	101510	101684
8-32	0.110	0.232	0.013	0.250	2.50	3	TM110-32S	TM110-32SA	102060	102198
8-36	0.110	0.345	0.012	0.250	2.50	3	TM110-36	TM110-36A	101513	101687
8-36	0.110	0.234	0.012	0.250	2.50	3	TM110-36S	TM110-36SA	102063	102201
8-24	0.125	0.350	0.017	0.250	2.50	3	TM125-24	TM125-24A	101516	101690
8-24	0.125	0.226	0.017	0.250	2.50	3	TM125-24S	TM125-24SA	102066	102204
8-32	0.125	0.355	0.013	0.250	2.50	3	TM125-32	TM125-32A	101519	101693
8-32	0.125	0.232	0.013	0.250	2.50	3	TM125-32S	TM125-32SA	102069	102207
10-24	0.140	0.392	0.017	0.250	2.50	3	TM140-24	TM140-24A	101522	101696
10-24	0.140	0.268	0.017	0.250	2.50	3	TM140-24S	TM140-24SA	102072	102210
10-28	0.140	0.409	0.015	0.250	2.50	3	TM140-28	TM140-28A	101525	101699
10-28	0.140	0.265	0.015	0.250	2.50	3	TM140-28S	TM140-28SA	102075	102213
10-32	0.140	0.388	0.013	0.250	2.50	3	TM140-32	TM140-32A	101528	101702
10-32	0.140	0.263	0.013	0.250	2.50	3	TM140-32S	TM140-32SA	102078	102216
10-48	0.140	0.383	0.009	0.250	2.50	3	TM140-48	TM140-48A	101531	101705
10-48	0.140	0.259	0.009	0.250	2.50	3	TM140-48S	TM140-48SA	102081	102219
1/4-20	0.170	0.570	0.021	0.250	2.50	3	TM170-20	TM170-20A	101534	101708
1/4-20	0.170	0.371	0.021	0.250	2.50	3	TM170-20S	TM170-20SA	102084	102222
1/4-24	0.170	0.559	0.017	0.250	2.50	3	TM170-24	TM170-24A	101537	101711
1/4-24	0.170	0.393	0.017	0.250	2.50	3	TM170-24S	TM170-24SA	102087	102225
1/4-28	0.170	0.552	0.015	0.250	2.50	3	TM170-28	TM170-28A	101540	101714
1/4-28	0.170	0.372	0.015	0.250	2.50	3	TM170-28S	TM170-28SA	102090	102228
1/4-32	0.170	0.545	0.013	0.250	2.50	3	TM170-32	TM170-32A	101543	101717
1/4-32	0.170	0.388	0.013	0.250	2.50	3	TM170-32S	TM170-32SA	102093	102231
1/4-36	0.170	0.540	0.012	0.250	2.50	3	TM170-36	TM170-36A	101546	101720
1/4-36	0.170	0.373	0.012	0.250	2.50	3	TM170-36S	TM170-36SA	102096	102234
1/4-20	0.187	0.570	0.021	0.250	2.50	3	TM187-20	TM187-20A	101549	101723
1/4-20	0.187	0.371	0.021	0.250	2.50	3	TM187-20S	TM187-20SA	102099	102237
1/4-24	0.187	0.559	0.017	0.250	2.50	3	TM187-24	TM187-24A	101552	101726
1/4-24	0.187	0.393	0.017	0.250	2.50	3	TM187-24S	TM187-24SA	102102	102240
1/4-28	0.187	0.551	0.015	0.250	2.50	3	TM187-28	TM187-28A	101555	101729
1/4-28	0.187	0.372	0.015	0.250	2.50	3	TM187-28S	TM187-28SA	102105	102243

\*Single profile thread mills can cut any larger size internal thread within the recommended TPI

THREAD MILLS  
UN

SINGLE POINT

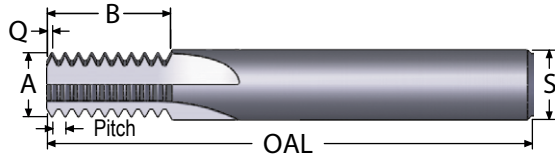
INDEXABLE TOOLS

PORT - CAVITY

SPECIALTY

# UN THREAD MILLS

## STRAIGHT FLUTE - SOLID CARBIDE



- ALTiN+ coating extends tool life
- Internal threads only
- Full Profile

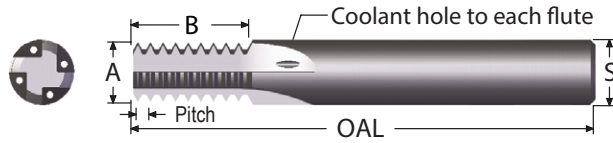
MIN ID THREAD / PITCH*	"A" TOOL DIA.	"B" LENGTH OF CUT	"Q" LENGTH	"S" SHANK DIA.	OAL	FLUTES	ORDER #		EDP #	
							UNCOATED	ALTiN+	UNCOATED	ALTiN+
							INTERNAL THREADS ONLY			
1/4-32	0.187	0.545	0.013	0.250	2.50	3	TM187-32	TM187-32A	101558	101732
1/4-32	0.187	0.388	0.013	0.250	2.50	3	TM187-32S	TM187-32SA	102108	102246
1/4-36	0.187	0.540	0.012	0.250	2.50	3	TM187-36	TM187-36A	101561	101735
1/4-36	0.187	0.373	0.012	0.250	2.50	3	TM187-36S	TM187-36SA	102111	102249
1/4-40	0.187	0.560	0.011	0.250	2.50	3	TM187-40	TM187-40A	101564	101738
1/4-40	0.187	0.386	0.011	0.250	2.50	3	TM187-40S	TM187-40SA	102114	102252
1/4-48	0.187	0.551	0.009	0.250	2.50	3	TM187-48	TM187-48A	101567	101741
1/4-48	0.187	0.384	0.009	0.250	2.50	3	TM187-48S	TM187-48SA	102117	102255
5/16-18	0.235	0.689	0.023	0.250	2.50	3	TM235-18	TM235-18A	101570	101744
5/16-20	0.235	0.670	0.021	0.250	2.50	3	TM235-20	TM235-20A	101573	101747
5/16-24	0.235	0.684	0.017	0.250	2.50	3	TM235-24	TM235-24A	101576	101750
5/16-28	0.235	0.657	0.015	0.250	2.50	3	TM235-28	TM235-28A	101579	101753
5/16-32	0.235	0.669	0.013	0.250	2.50	3	TM235-32	TM235-32A	101582	101756
5/16-40	0.235	0.660	0.011	0.250	2.50	3	TM235-40	TM235-40A	101585	101759
3/8-16	0.290	0.775	0.026	0.3125	3.50	4	TM290-16	TM290-16A	101777	101792
3/8-20	0.290	0.820	0.021	0.3125	3.50	4	TM290-20	TM290-20A	101780	101795
3/8-24	0.290	0.809	0.017	0.3125	3.50	4	TM290-24	TM290-24A	101783	101798
3/8-27	0.290	0.794	0.015	0.3125	3.50	4	TM290-27	TM290-27A	101786	101801
3/8-32	0.290	0.794	0.013	0.3125	3.50	4	TM290-32	TM290-32A	101789	101804
7/16-14	0.345	0.816	0.030	0.375	3.50	4	TM345-14	TM345-14A	101807	101837
7/16-18	0.345	0.800	0.023	0.375	3.50	4	TM345-18	TM345-18A	101810	101840
7/16-20	0.345	0.821	0.021	0.375	3.50	4	TM345-20	TM345-20A	101813	101843
7/16-24	0.345	0.809	0.017	0.375	3.50	4	TM345-24	TM345-24A	101816	101846
7/16-28	0.345	0.800	0.015	0.375	3.50	4	TM345-28	TM345-28A	101819	101849
9/16-12	0.400	1.117	0.035	0.500	3.50	4	TM400-12	TM400-12A	101852	101948
1/2-13	0.400	1.108	0.032	0.500	3.50	4	TM400-13	TM400-13A	101855	101951
1/2-16	0.400	1.087	0.026	0.500	3.50	4	TM400-16	TM400-16A	101858	101954
1/2-20	0.400	1.120	0.021	0.500	3.50	4	TM400-20	TM400-20A	101861	101957
1/2-24	0.400	1.100	0.017	0.500	3.50	4	TM400-24	TM400-24A	101864	101960
1/2-28	0.400	1.087	0.015	0.500	3.50	4	TM400-28	TM400-28A	101867	101963
1/2-32	0.400	1.106	0.013	0.500	3.50	4	TM400-32	TM400-32A	101870	101966
3/4-10	0.450	1.140	0.042	0.500	3.50	4	TM450-10	TM450-10A	101873	101969
5/8-11	0.450	1.127	0.039	0.500	3.50	4	TM450-11	TM450-11A	101876	101972
5/8-12	0.450	1.117	0.035	0.500	3.50	4	TM450-12	TM450-12A	101879	101975
9/16-16	0.450	1.087	0.026	0.500	3.50	4	TM450-16	TM450-16A	101882	101978
9/16-18	0.450	1.134	0.023	0.500	3.50	4	TM450-18	TM450-18A	101885	101981
9/16-20	0.450	1.120	0.021	0.500	3.50	4	TM450-20	TM450-20A	101888	101984
3/4-12	0.490	1.117	0.035	0.500	3.50	6	TM490-12	TM490-12A	101891	101987
5/8-14	0.490	1.100	0.030	0.500	3.50	6	TM490-14	TM490-14A	101894	101990
5/8-16	0.490	1.087	0.026	0.500	3.50	6	TM490-16	TM490-16A	101897	101993
1.0-8	0.620	1.177	0.052	0.625	3.50	6	TM620-8	TM620-8A	102005	102035
7/8-9	0.620	1.157	0.046	0.625	3.50	6	TM620-9	TM620-9A	102008	102038
7/8-12	0.620	1.117	0.035	0.625	3.50	6	TM620-12	TM620-12A	101996	102026
7/8-14	0.620	1.100	0.030	0.625	3.50	6	TM620-14	TM620-14A	101999	102029
7/8-16	0.620	1.087	0.026	0.625	3.50	6	TM620-16	TM620-16A	102002	102032

\*Single profile thread mills can cut any larger size internal thread within the recommended TPI

# UN THREAD MILLS

## COOLANT THROUGH - SOLID CARBIDE

### FULL PROFILE



- ALTiN+ coating for higher cutting speed
- Coolant to each flute
- Cuts UNC, UNF, UNEF, and UNS threads
- Cuts UNJ threads (internal only)

MIN ID THREAD /PITCH*	"A" TOOL DIA.	"B" LENGTH OF CUT	"Q" LENGTH	"S" SHANK DIA.	OAL	FLUTES	ORDER #		EDP #	
							UNCOATED	AITIN	UNCOATED	AITIN
							INTERNAL THREADS ONLY			
4-40	0.080	0.210	0.011	0.250	2.50	3	TMC080-40	TMC080-40A	102301	102355
6-32	0.098	0.263	0.013	0.250	2.50	3	TMC098-32	TMC098-32A	102304	102358
6-40	0.098	0.260	0.011	0.250	2.50	3	TMC098-40	TMC098-40A	102307	102361
8-32	0.125	0.355	0.013	0.250	2.50	3	TMC125-32	TMC125-32A	102310	102364
10-24	0.140	0.392	0.017	0.250	2.50	3	TMC140-24	TMC140-24A	102313	102367
10-28	0.140	0.409	0.015	0.250	2.50	3	TMC140-28	TMC140-28A	102316	102370
10-32	0.140	0.388	0.013	0.250	2.50	3	TMC140-32	TMC140-32A	102319	102373
10-48	0.140	0.383	0.009	0.250	2.50	3	TMC140-48	TMC140-48A	102322	102376
1/4-20	0.170	0.570	0.021	0.250	2.50	3	TMC170-20	TMC170-20A	102325	102379
1/4-28	0.170	0.552	0.015	0.250	2.50	3	TMC170-28	TMC170-28A	102328	102382
1/4-32	0.170	0.545	0.013	0.250	2.50	3	TMC170-32	TMC170-32A	102331	102385
1/4-36	0.170	0.540	0.012	0.250	2.50	3	TMC170-36	TMC170-36A	102334	102388
5/16-18	0.235	0.689	0.023	0.250	2.50	3	TMC235-18	TMC235-18A	102337	102391
5/16-20	0.235	0.670	0.021	0.250	2.50	3	TMC235-20	TMC235-20A	102340	102394
5/16-24	0.235	0.684	0.017	0.250	2.50	3	TMC235-24	TMC235-24A	102343	102397
5/16-28	0.235	0.657	0.015	0.250	2.50	3	TMC235-28	TMC235-28A	102346	102400
5/16-32	0.235	0.669	0.013	0.250	2.50	3	TMC235-32	TMC235-32A	102349	102403
5/16-40	0.235	0.660	0.011	0.250	2.50	3	TMC235-40	TMC235-40A	102352	102406
3/8-16	0.290	0.775	0.026	0.3125	3.50	4	TMC290-16	TMC290-16A	102409	102418
3/8-20	0.290	0.820	0.021	0.3125	3.50	4	TMC290-20	TMC290-20A	102412	102421
3/8-24	0.290	0.809	0.017	0.3125	3.50	4	TMC290-24	TMC290-24A	102415	102424
7/16-14	0.345	0.816	0.030	0.375	3.50	4	TMC345-14	TMC345-14A	102427	102439
7/16-18	0.345	0.800	0.023	0.375	3.50	4	TMC345-18	TMC345-18A	102430	102442
7/16-20	0.345	0.821	0.021	0.375	3.50	4	TMC345-20	TMC345-20A	102433	102445
7/16-28	0.345	0.800	0.015	0.375	3.50	4	TMC345-28	TMC345-28A	102436	102448
1/2-13	0.400	1.108	0.032	0.500	3.50	4	TMC400-13	TMC400-13A	102451	102481
1/2-20	0.400	1.120	0.021	0.500	3.50	4	TMC400-20	TMC400-20A	102454	102484
1/2-28	0.400	1.087	0.015	0.500	3.50	4	TMC400-28	TMC400-28A	102457	102487
1/2-32	0.400	1.106	0.013	0.500	3.50	4	TMC400-32	TMC400-32A	102460	102490

\*Single profile thread mills can cut any larger size internal thread within the recommended TPI

THREAD MILLS  
UN

SINGLE POINT

INDEXABLE TOOLS

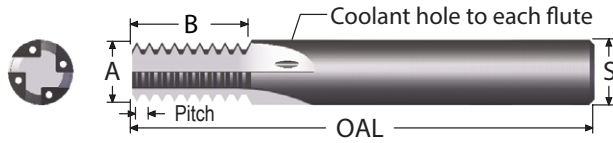
PORT - CAVITY

SPECIALTY

# UN THREAD MILLS

## COOLANT THROUGH - SOLID CARBIDE

### FULL PROFILE



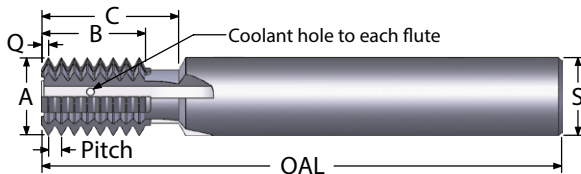
- ALTiN+ coating for higher cutting speed
- Coolant to each flute
- Cuts UNC, UNF, UNEF, and UNS threads
- Cuts UNJ threads (internal only)

MIN ID THREAD / PITCH*	"A" TOOL DIA.	"B" LENGTH OF CUT	"Q" LENGTH	"S" SHANK DIA.	OAL	FLUTES	ORDER #		EDP #	
							UNCOATED	ALTiN+	UNCOATED	ALTiN+
							INTERNAL THREADS ONLY			
3/4-10	0.450	1.140	0.042	0.500	3.50	4	TMC450-10	TMC450-10A	102463	102493
5/8-11	0.450	1.127	0.039	0.500	3.50	4	TMC450-11	TMC450-11A	102466	102496
5/8-12	0.450	1.117	0.035	0.500	3.50	4	TMC450-12	TMC450-12A	102469	102499
9/16-16	0.450	1.087	0.026	0.500	3.50	4	TMC450-16	TMC450-16A	102472	102502
9/16-18	0.450	1.134	0.023	0.500	3.50	4	TMC450-18	TMC450-18A	102475	102505
9/16-20	0.450	1.120	0.021	0.500	3.50	4	TMC450-20	TMC450-20A	102478	102508
7/8-12	0.620	1.117	0.035	0.625	3.50	6	TMC620-12	TMC620-12A	102511	102520
7/8-14	0.620	1.100	0.030	0.625	3.50	6	TMC620-14	TMC620-14A	102514	102523
7/8-16	0.620	1.087	0.026	0.625	3.50	6	TMC620-16	TMC620-16A	102517	102526

\*Thread mills can cut any larger size internal thread of the same pitch

# UN THREAD MILLS

## COOLANT THROUGH - CARBIDE TIPPED



- ALTiN+ coating for higher cutting speed
- Coolant to each flute
- Cuts UNC, UNF, UNEF, and UNS threads
- Cuts UNJ threads (internal only)

MIN ID THREAD / PITCH*	"A" TOOL DIA.	"B" LENGTH OF CUT	"C" TOOL REACH	"Q" LENGTH	"S" SHANK DIA.	OAL	FLUTES	ORDER #		EDP #	
								UNCOATED	ALTiN	UNCOATED	ALTiN+
								INTERNAL OR EXTERNAL THREADS			
1¼-7	0.740	1.130	1.370	0.065	0.750	6.00	4	TMC740-7	TMC740-7A	102541	102577
1-8	0.740	1.122	1.370	0.057	0.750	6.00	4	TMC740-8	TMC740-8A	102544	102580
1-12	0.740	1.076	1.370	0.038	0.750	6.00	4	TMC740-12	TMC740-12A	102529	102565
1-14	0.740	1.135	1.370	0.032	0.750	6.00	4	TMC740-14	TMC740-14A	102532	102568
1-16	0.740	1.119	1.370	0.028	0.750	6.00	4	TMC740-16	TMC740-16A	102535	102571
1-20	0.740	1.096	1.370	0.023	0.750	6.00	4	TMC740-20	TMC740-20A	102538	102574
1½-6	0.990	1.152	2.000	0.076	1.000	6.00	6	TMC990-6	TMC990-6A	102589	102613
1½-8	0.990	1.122	2.000	0.061	1.000	6.00	6	TMC990-8	TMC990-8A	102592	102616
1½-12	0.990	1.166	2.000	0.041	1.000	6.00	6	TMC990-12	TMC990-12A	102583	102607
1½-16	0.990	1.122	2.000	0.029	1.000	6.00	6	TMC990-16	TMC990-16A	102586	102610

\*Thread mills can cut any larger size internal thread of the same pitch

# THREAD MILL FEED AND SPEED CHART

MATERIAL	HB/Rc	SPEED SFM* UNCOATED	SPEED SFM ALTiN+	FEED ( INCHES PER TOOTH)					
				TOOL DIAMETER					
				.032 - .056	.059 - .090	.100 - .190	.200 - .350	.370 - .595	.600+
CAST IRON	160 HB	100-220	200-425	.0004-.001	.0004-.0008	.0004-.0014	.0004-.002	.0004-.0035	.0004-.006
CARBON STEEL	18 Rc	100-200	190-425	.0003-.001	.0003-.0008	.0003-.0014	.0003-.002	.0003-.005	.0003-.006
ALLOY STEEL	20 Rc	80-200	200-375	.0003-.001 2 Passes	.0003-.0008 3 Passes	.0003-.0014	.0003-.0024	.0003-.005	.0003-.006
TOOL STEEL	20 Rc	80-175	175-250	.0003-.0004 2 Passes	.0003-.0005 3 Passes	.0003-.0005	.0003-.0009	.0003-.0026	.0003-.004
300 STAINLESS STEEL	150 HB	90-120	120-255	.0003-.0005 2 Passes	.0003-.0006 3 Passes	.0003-.0007	.0003-.002	.0003-.0035	.0003-.0045
400 STAINLESS STEEL	195 HB	90-150	140-375	.0003-.0005 2 Passes	.0003-.0006 3 Passes	.0003-.0007	.0003-.002	.0003-.0026	.0003-.0045
HIGH TEMP ALLOY (Ni & Co BASE)	20 Rc	50-125	100-125	.0003-.0004 3 Passes	.0003-.00045 3 Passes	.0003-.0005 2 Passes	.0003-.0009	.0003-.0026	.0003-.004
TITANIUM	25 Rc	50-130	100-170	.0003-.0004 3 Passes	.0003-.00045 3 Passes	.0003-.001 2 Passes	.0003-.0009	.0003-.0015	.0003-.003
HEAT TREATED ALLOYS (38-45Rc)	40 Rc	50-90	90-150	.0003-.0004 3 Passes	.0003-.00045 3 Passes	.0003-.0005 2 Passes	.0003-.0008	.0003-.001	.0003-.0025
ALUMINUM	100 HB	100-800	100-1200	.0005-.0015	.0005-.002	.0005-.0025	.0005-.003	.0005-.006	.0005-.009
BRASS, ZINC	80 HB	200-350	200-750	.0005-.0015	.0005-.002	.0005-.0025	.0005-.003	.0005-.006	.0005-.009

\*SFM = Surface Feet per Minute

**Parameters are a starting point based on machinability rating at hardness listed.  
Check machinability rating of the material to be machined and adjust accordingly.**

# THREAD MILL FEED AND SPEED APPLICATION



**It may be necessary to use more radial depth passes than shown on the chart when cutting an unfavorable length-to-diameter ratio, coarse pitches, or hard materials.** When cutting a thread with two passes, cut approximately **65% of the thread on the first pass and 35 percent on the finish pass.** For three passes, use a **50/30/20** ratio. For four passes, use a **40/27/20/13** ratio. The idea is to equalize the side cutting pressure.

Thread mills can sometimes be used to cut multiple start threads. Call engineering for assistance.

Thread mills can be cut off for shorter thread depths or necked back for deeper thread depths. Call for price and delivery.

In order to apply the Feed and Speed chart appropriately, it is necessary to understand that machining centers will apply the feed rate at the centerline of the spindle. It is correct to use a normal calculation and the following Feed & Speed Chart when cutting in a straight line; however, it is incorrect when cutting an internal thread. Therefore, the feed rate must be recalculated.

*The following is an example of how to apply the feed rate correctly:*

The tool is a TM290-24A cutting a 3/8-24 thread in stainless steel.

The outside diameter of the tool is 0.290.

The surface foot per minute (SFM) is 150.

The chip per tooth is 0.001. The tool has four flutes.

The revolutions per minute (RPM) equal the SFM x 3.82 divided by the outside diameter of the tool.

In this example:  **$(150 \times 3.82) / 0.290$** , which equals 1975 RPM.

The RPM x feed (chip per tooth) x the number of flutes equals the Non-Adjusted Feed Rate or NAFR.

In this example:  **$1975 \times 0.001 \times 4 = 7.9$  NAFR**

The major diameter of the thread is 0.375. We will call this D.

The outside diameter of the tool is 0.290. We will call this d.

We will call the Adjusted Feed Rate the AFR.

The formula for the AFR for internal interpolation is  **$AFR = NAFR \times (D-d) \div D$**

In this example:  **$AFR = 7.9 \times (0.375 - 0.290) \div 0.375$**

Therefore, the Adjusted Feed Rate equals 1.79. This is the feed rate that will equal 0.001 chip per tooth in the above example. This is the feed rate that must be used in the CNC program.