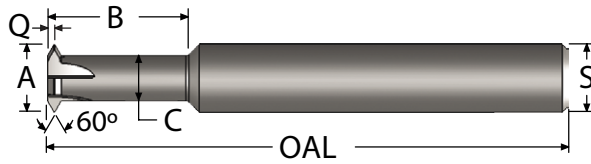


METRIC THREAD MILLS

SINGLE PROFILE (SPTM) - SOLID CARBIDE



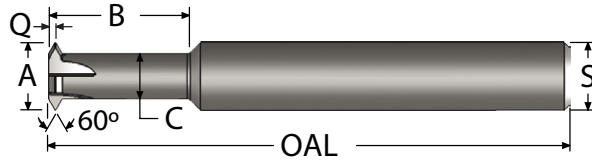
With just 19 varieties of Thread Mills, fine and coarse threads ranging from M1.2 to M30+ can be milled

Min ID THREAD*	"A" TOOL DIA.	"B" LENGTH OF CUT	"C" NECK DIA.	"Q" LENGTH	"S" SHANK DIA.	OAL	RECOM-MENDED PITCH-MM	FLUTES	ORDER #		EDP #	
									UNCOATED	AITiN+	UNCOATED	AITiN+
INTERNAL OR EXTERNAL THREADS												
M1.2	0.032	0.060	0.018	0.005	0.1250	1.50	0.20 to 0.25	2	SPTM032	SPTM032A	120001	120067
M1.2	0.032	0.100	0.018	0.005	0.1250	1.50	0.20 to 0.25	2	SPTM032L	SPTM032LA	120004	120070
M1.6	0.040	0.090	0.022	0.006	0.1250	1.50	0.20 to 0.35	2	SPTM040	SPTM040A	120007	120073
M1.6	0.040	0.109	0.022	0.006	0.1250	1.50	0.20 to 0.35	2	SPTM040ML	SPTM040MLA	120013	120079
M1.6	0.040	0.125	0.022	0.006	0.1250	1.50	0.20 to 0.35	2	SPTM040L	SPTM040LA	120010	120076
M1.8	0.050	0.100	0.028	0.007	0.1250	1.50	0.30 to 0.40	3	SPTM050	SPTM050A	120016	120082
M1.8	0.050	0.125	0.028	0.007	0.1250	1.50	0.30 to 0.40	3	SPTM050ML	SPTM050MLA	120022	120088
M1.8	0.050	0.150	0.028	0.007	0.1250	1.50	0.30 to 0.40	3	SPTM050L	SPTM050LA	120019	120085
M1.8	0.050	0.210	0.028	0.007	0.1250	1.50	0.30 to 0.40	3	SPTM050XL	SPTM050XLA	120020	120086
M2.0	0.059	0.125	0.034	0.008	0.1250	1.50	0.30 to 0.45	3	SPTM059	SPTM059A	120025	120091
M2.0	0.059	0.165	0.034	0.008	0.1250	1.50	0.30 to 0.45	3	SPTM059ML	SPTM059MLA	120031	120097
M2.0	0.059	0.200	0.034	0.008	0.1250	1.50	0.30 to 0.45	3	SPTM059L	SPTM059LA	120028	120094
M2.0	0.059	0.250	0.034	0.008	0.1250	1.50	0.30 to 0.45	3	SPTM059XL	SPTM059XLA	120029	120095
M2.0	0.060	0.125	0.034	0.009	0.1875	2.00	0.30 to 0.45	3	SPTM060	SPTM060A	120100	120214
M2.0	0.060	0.165	0.034	0.009	0.1875	2.00	0.30 to 0.45	3	SPTM060ML	SPTM060MLA	120106	120220
M2.0	0.060	0.200	0.034	0.009	0.1875	2.00	0.30 to 0.45	3	SPTM060L	SPTM060LA	120103	120217
M2.5	0.072	0.150	0.040	0.010	0.1875	2.00	0.35 to 0.50	3	SPTM072	SPTM072A	120109	120223
M2.5	0.072	0.250	0.040	0.010	0.1875	2.00	0.35 to 0.50	3	SPTM072L	SPTM072LA	120112	120226
M2.5	0.072	0.300	0.040	0.010	0.1875	2.00	0.35 to 0.50	3	SPTM072XL	SPTM072XLA	120113	120227
M3.0	0.080	0.190	0.045	0.011	0.1875	2.00	0.40 to 0.60	3	SPTM080	SPTM080A	120115	120229
M3.0	0.080	0.250	0.045	0.011	0.1875	2.00	0.40 to 0.60	3	SPTM080ML	SPTM080MLA	120121	120235
M3.0	0.080	0.300	0.045	0.011	0.1875	2.00	0.40 to 0.60	3	SPTM080L	SPTM080LA	120118	120232
M3.0	0.080	0.375	0.045	0.011	0.1875	2.00	0.40 to 0.60	3	SPTM080XL	SPTM080XLA	120119	120233
M3.0	0.090	0.200	0.048	0.013	0.1875	2.00	0.40 to 0.60	3	SPTM090	SPTM090A	120422	120425
M3.0	0.090	0.300	0.048	0.013	0.1875	2.00	0.40 to 0.60	3	SPTM090L	SPTM090LA	120431	120434
M3.0	0.090	0.400	0.048	0.013	0.1875	2.00	0.40 to 0.60	3	SPTM090XL	SPTM090XLA	120440	120443
M3.5	0.098	0.250	0.050	0.015	0.1875	2.00	0.40 to 0.80	3	SPTM098	SPTM098A	120124	120238
M3.5	0.098	0.330	0.050	0.015	0.1875	2.00	0.40 to 0.80	3	SPTM098ML	SPTM098MLA	120130	120244
M3.5	0.098	0.400	0.050	0.015	0.1875	2.00	0.40 to 0.80	3	SPTM098L	SPTM098LA	120127	120241
M4.0	0.120	0.300	0.070	0.016	0.1875	2.00	0.45 to 0.80	3	SPTM120	SPTM120A	120133	120247
M4.0	0.120	0.400	0.070	0.016	0.1875	2.00	0.45 to 0.80	3	SPTM120ML	SPTM120MLA	120139	120253
M4.0	0.120	0.500	0.070	0.016	0.1875	2.00	0.45 to 0.80	3	SPTM120L	SPTM120LA	120136	120250
M5.0	0.138	0.400	0.075	0.020	0.1875	2.00	0.45 to 1.00	3	SPTM138	SPTM138A	120142	120256
M5.0	0.138	0.500	0.075	0.020	0.1875	2.00	0.45 to 1.00	3	SPTM138ML	SPTM138MLA	120148	120262
M5.0	0.138	0.600	0.075	0.020	0.1875	2.00	0.45 to 1.00	3	SPTM138L	SPTM138LA	120145	120259
M6.0	0.160	0.400	0.080	0.025	0.1875	2.00	0.50 to 1.25	3	SPTM160	SPTM160A	120151	120265
M6.0	0.160	0.650	0.080	0.025	0.1875	2.00	0.50 to 1.25	3	SPTM160L	SPTM160LA	120154	120268

*Single profile thread mills can cut any larger size internal thread within the recommended pitch.

METRIC THREAD MILLS

SINGLE PROFILE (SPTM) - SOLID CARBIDE



- Solid carbide provides maximum tool rigidity
- Long reach tools are available from stock
- ALTiN+ coating extends tool life

Min ID THREAD*	"A" TOOL DIA.	"B" LENGTH OF CUT	"C" NECK DIA.	"Q" LENGTH	"S" SHANK DIA.	OAL	RECOM- MENDED PITCH-MM	FLUTES	ORDER #		EDP #	
									UNCOATED	ALTiN+	UNCOATED	ALTiN+
INTERNAL OR EXTERNAL THREADS												
M7.0	0.182	0.400	0.104	0.025	0.2500	2.50	0.50 to 1.25	4	SPTM182	SPTM182A	120271	120301
M7.0	0.182	0.530	0.104	0.025	0.2500	2.50	0.50 to 1.25	4	SPTM182ML	SPTM182MLA	120277	120307
M7.0	0.182	0.650	0.104	0.025	0.2500	2.50	0.50 to 1.25	4	SPTM182L	SPTM182LA	120274	120304
M7.0	0.182	0.800	0.104	0.025	0.2500	2.50	0.50 to 1.25	4	SPTM182XL	SPTM182XLA	120275	120305
M8.0	0.240	0.500	0.153	0.028	0.2500	2.50	0.50 to 1.50	4	SPTM240	SPTM240A	120280	120310
M8.0	0.240	0.800	0.153	0.028	0.2500	2.50	0.50 to 1.50	4	SPTM240L	SPTM240LA	120283	120313
M8.0	0.240	1.100	0.153	0.028	0.2500	2.50	0.50 to 1.50	4	SPTM240XL	SPTM240XLA	120284	120314
M10	0.290	0.600	0.192	0.031	0.3750	3.00	0.75 to 1.75	4	SPTM290	SPTM290A	120316	120340
M10	0.290	1.000	0.192	0.031	0.3750	3.00	0.75 to 1.75	4	SPTM290L	SPTM290LA	120319	120343
M10	0.290	1.400	0.192	0.031	0.3750	3.00	0.75 to 1.75	4	SPTM290XL	SPTM290XLA	120320	120344
M11	0.332	0.700	0.220	0.035	0.3750	3.00	0.80 to 2.00	4	SPTM332	SPTM332A	120450	120453
M11	0.332	1.100	0.220	0.035	0.3750	3.00	0.80 to 2.00	4	SPTM332L	SPTM332LA	120459	120462
M11	0.332	1.500	0.220	0.035	0.3750	3.00	0.80 to 2.00	4	SPTM332XL	SPTM332XLA	120468	120471
M12	0.372	0.850	0.240	0.041	0.3750	3.00	0.80 to 2.00	4	SPTM372	SPTM372A	120322	120346
M12	0.372	1.250	0.240	0.041	0.3750	3.00	0.80 to 2.00	4	SPTM372L	SPTM372LA	120325	120349
M12	0.372	1.750	0.240	0.041	0.3750	4.00	0.80 to 2.00	4	SPTM372XL	SPTM372XLA	120326	120350
M16	0.488	0.850	0.340	0.046	0.5000	3.50	0.80 to 2.50	5	SPTM488	SPTM488A	120352	120364
M16	0.488	1.350	0.340	0.046	0.5000	3.50	0.80 to 2.50	5	SPTM488L	SPTM488LA	120355	120367
M16	0.488	2.000	0.340	0.046	0.5000	4.00	0.80 to 2.50	5	SPTM488XL	SPTM488XLA	120356	120368
M20	0.595	1.250	0.430	0.051	0.6250	4.00	1.00 to 2.50	6	SPTM595	SPTM595A	120370	120382
M20	0.595	2.000	0.430	0.051	0.6250	4.00	1.00 to 2.50	6	SPTM595L	SPTM595LA	120373	120385
M20	0.595	2.750	0.430	0.051	0.6250	5.00	1.00 to 2.50	6	SPTM595XL	SPTM595XLA	120374	120386
M24	0.695	1.500	0.490	0.063	0.7500	5.00	1.00 to 3.00	6	SPTM695	SPTM695A	120388	120412
M24	0.695	2.500	0.490	0.063	0.7500	5.00	1.00 to 3.00	6	SPTM695L	SPTM695LA	120391	120415
M24	0.695	3.250	0.490	0.063	0.7500	6.00	1.00 to 3.00	6	SPTM695XL	SPTM695XLA	120392	120416
M30	0.745	1.500	0.400	0.107	0.7500	5.00	3.00 to 6.00	6	SPTM745	SPTM745A	120394	120418
M30	0.745	2.500	0.400	0.107	0.7500	5.00	3.00 to 6.00	6	SPTM745L	SPTM745LA	120397	120421
M30	0.745	3.250	0.400	0.107	0.7500	6.00	3.00 to 6.00	6	SPTM745XL	SPTM745XLA	120398	120423

*Single profile thread mills can cut any larger size internal thread within the recommended pitch.

THREAD MILLS
METRIC

SINGLE POINT

INDEXABLE TOOLS

PORT - CAVITY

SPECIALTY

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.