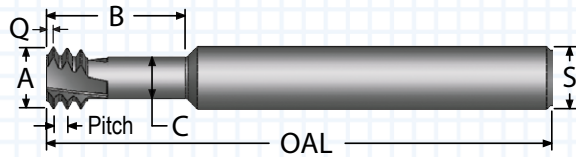


# METRIC THREAD MILLS

## LONG REACH (TMLR) - SOLID CARBIDE

### FULL PROFILE



- Small thread milling is made easy with TMLR tools
- Minimal cutting pressure
- Thread sizes starting from M1.4-.3mm

MIN ID THREAD /PITCH*	"A" TOOL DIA.	"B" LENGTH OF CUT	"C" NECK DIA.	"Q" LENGTH	"S" SHANK DIA.	OAL	FLUTES	ORDER #		EDP #	
								UNCOATED	ALTiN+	UNCOATED	ALTiN+
								INTERNAL THREADS ONLY			
M1.4-.3	0.039	0.115	0.021	0.006	0.125	1.50	3	TMLR1.4-.3MM	TMLR1.4-.3MMA	110001	110019
M1.4-.3	0.039	0.150	0.021	0.006	0.125	1.50	3	TMLR1.4-.3MMEL	TMLR1.4-.3MMELA	110004	110022
M1.6-.35	0.045	0.135	0.023	0.007	0.125	1.50	3	TMLR1.6-.35MM	TMLR1.6-.35MMA	110007	110025
M1.6-.35	0.045	0.180	0.023	0.007	0.125	1.50	3	TMLR1.6-.35MMEL	TMLR1.6-.35MMELA	110010	110028
M2-.4	0.056	0.150	0.030	0.008	0.125	1.50	3	TMLR2-.4MM	TMLR2-.4MMA	110013	110031
M2-.4	0.056	0.200	0.030	0.008	0.125	1.50	3	TMLR2-.4MMEL	TMLR2-.4MMELA	110016	110034
M2-.4	0.056	0.150	0.030	0.008	0.250	2.50	3	TMLR2-.4MM	TMLR2-.4MMA	110037	110097
M2-.4	0.056	0.200	0.030	0.008	0.250	2.50	3	TMLR2-.4MMEL	TMLR2-.4MMELA	110040	110100
M2.5-.45	0.073	0.190	0.046	0.009	0.250	2.50	3	TMLR2.5-.45MM	TMLR2.5-.45MMA	110043	110103
M2.5-.45	0.073	0.250	0.046	0.009	0.250	2.50	3	TMLR2.5-.45MMEL	TMLR2.5-.45MMELA	110046	110106
M3-.5	0.090	0.225	0.059	0.010	0.250	2.50	3	TMLR3-.5MM	TMLR3-.5MMA	110049	110109
M3-.5	0.090	0.300	0.059	0.010	0.250	2.50	3	TMLR3-.5MMEL	TMLR3-.5MMELA	110052	110112
M4-.5	0.120	0.300	0.089	0.010	0.250	2.50	3	TMLR4-.5MM	TMLR4-.5MMA	110055	110115
M4-.5	0.120	0.500	0.089	0.010	0.250	2.50	3	TMLR4-.5MMEL	TMLR4-.5MMELA	110058	110118
M4-.7	0.120	0.300	0.079	0.014	0.250	2.50	3	TMLR4-.7MM	TMLR4-.7MMA	110061	110121
M4-.7	0.120	0.500	0.079	0.014	0.250	2.50	3	TMLR4-.7MMEL	TMLR4-.7MMELA	110064	110124
M5-.8	0.150	0.400	0.103	0.016	0.250	2.50	3	TMLR5-.8MM	TMLR5-.8MMA	110067	110127
M5-.8	0.150	0.600	0.103	0.016	0.250	2.50	3	TMLR5-.8MMEL	TMLR5-.8MMELA	110070	110130
M6-1	0.180	0.500	0.120	0.020	0.250	2.50	3	TMLR6-1MM	TMLR6-1MMA	110073	110133
M6-1	0.180	0.700	0.120	0.020	0.250	2.50	3	TMLR6-1MMEL	TMLR6-1MMELA	110076	110136
M8-.75	0.234	0.600	0.190	0.015	0.250	2.50	3	TMLR8-.75MM	TMLR8-.75MMA	110079	110139
M8-.75	0.234	0.850	0.190	0.015	0.250	2.50	3	TMLR8-.75MMEL	TMLR8-.75MMELA	110082	110142
M8-1	0.234	0.600	0.175	0.020	0.250	2.50	3	TMLR8-1MM	TMLR8-1MMA	110091	110151
M8-1	0.234	0.850	0.175	0.020	0.250	2.50	3	TMLR8-1MMEL	TMLR8-1MMELA	110094	110154
M8-1.25	0.234	0.600	0.162	0.025	0.250	2.50	3	TMLR8-1.25MM	TMLR8-1.25MMA	110085	110145
M8-1.25	0.234	0.850	0.162	0.025	0.250	2.50	3	TMLR8-1.25MMEL	TMLR8-1.25MMELA	110088	110148
M10-1	0.310	0.750	0.250	0.020	0.375	3.50	3	TMLR10-1MM	TMLR10-1MMA	110163	110187
M10-1	0.310	1.000	0.250	0.020	0.375	3.50	3	TMLR10-1MMEL	TMLR10-1MMELA	110166	110190
M10-1.5	0.310	0.750	0.223	0.030	0.375	3.50	3	TMLR10-1.5MM	TMLR10-1.5MMA	110157	110181
M10-1.5	0.310	1.000	0.223	0.030	0.375	3.50	3	TMLR10-1.5MMEL	TMLR10-1.5MMELA	110160	110184
M12-1	0.370	0.800	0.310	0.020	0.375	3.50	3	TMLR12-1MM	TMLR12-1MMA	110175	110199
M12-1	0.370	1.200	0.310	0.020	0.375	3.50	3	TMLR12-1MMEL	TMLR12-1MMELA	110178	110202
M12-1.25	0.370	0.800	0.295	0.025	0.375	3.50	3	TMLR12-1.25MM	TMLR12-1.25MMA	110169	110193
M12-1.25	0.370	1.200	0.295	0.025	0.375	3.50	3	TMLR12-1.25MMEL	TMLR12-1.25MMELA	110172	110196
M14-1.5	0.450	1.200	0.360	0.030	0.500	4.00	4	TMLR14-1.5MM	TMLR14-1.5MMA	110205	110217
M14-1.5	0.450	1.650	0.360	0.030	0.500	4.00	4	TMLR14-1.5MMEL	TMLR14-1.5MMELA	110208	110220
M14-2	0.450	1.200	0.330	0.039	0.500	4.00	4	TMLR14-2MM	TMLR14-2MMA	110211	110223
M14-2	0.450	1.650	0.330	0.039	0.500	4.00	4	TMLR14-2MMEL	TMLR14-2MMELA	110214	110226

\*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	.0003-0.0005 3 Passes	.0003-.0005	.0003-.0009	.0003-.0026	.0003-.004
300 STAINLESS STEEL	150 HB	90-120	120-255	.0003-.0005 2 Passes	.0003-0.0006 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.**

Looking for the Thread Mill Locator Chart? It is now online.  
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# THREAD MILL FEED AND SPEED APPLICATION



**It may be necessary to use more radial depth passes than shown on the chart (p.31) 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.