MULTI-START THREADS

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A multi-start thread consists of two or more intertwined threads running parallel to one another. Intertwining threads allow the lead distance of a thread to be increased without changing its pitch. A double start thread will have a lead distance double that of a single start thread of the same pitch, a triple start thread will have a lead distance three times longer than a single start thread of the same pitch, and so on.

By maintaining a constant pitch, the depth of the thread, measured from crest to root, will also remain constant. This allows multi-start threads to maintain a shallow thread depth relative to their longer lead distance. Another design advantage of a multi-start thread is that more contact surface is engaged in a single thread rotation. A common example is a cap on a plastic water bottle. The cap will screw on in one quick turn but because a multi start thread was used there are multiple threads fully engaged to securely hold the cap in place.

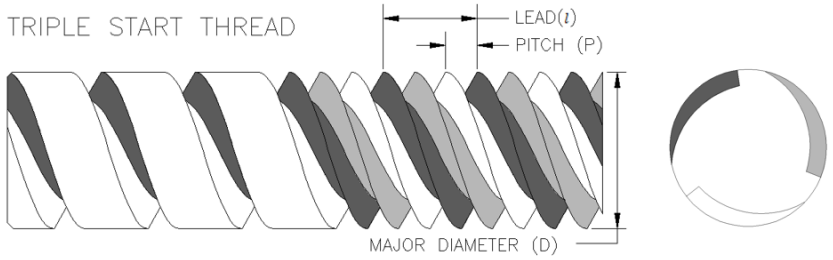

Figure 1

Figure 1 displays a triple start thread with each thread represented in a different shade. The left side of the image represents a triple start thread with just one of the three threads completed. This unfinished view shows how each individual thread is milled at a specific lead distance before the part is indexed and the remaining threads are milled. The right side of the image displays the completed triple start thread with the front view showing how the start of each thread is evenly spaced. The starting points of a double start thread begin 180° apart and the starting points of a triple start thread begin 120° apart.

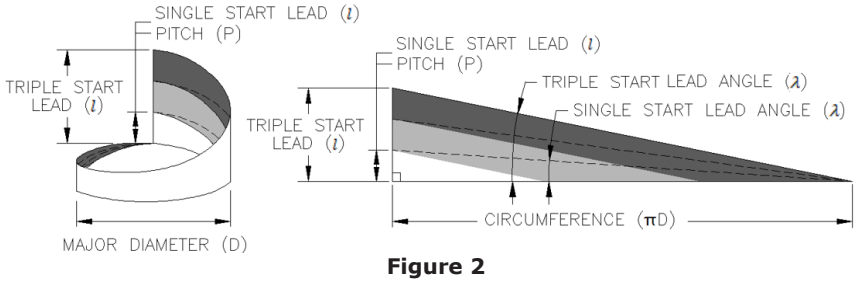

Figure 2

Figure 2 displays the triangle that can be formed using the relationship between the lead distance and the circumference of a thread. It is this relationship that determines the lead angle of a thread. The lead angle is the helix angle of the thread based on the lead distance. A single start thread has a lead distance equal to it's pitch and in turn has a relatively small lead angle. Multi-start threads have a longer lead distance and therefore a larger lead angle. The graphic depicted on the right is a view of the lead triangle if it were to be unwound to better visualize this lead angle. The dashed lines represent the lead angle of a single start thread and double start thread of the same pitch and circumference for comparison. The colors represent each of the three intertwined threads of the triple start thread depicted in **Figure 1**.

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MULTI-START THREADS: THREAD CHART

Lead Angle Formula:

$$Lead\ Angle = \lambda = \arctan\left(\frac{l}{\pi D}\right) \qquad Lead = l = P * \#\ of\ starts = \frac{\#of\ starts}{Threads\ per\ Inch} \qquad Pitch = P = \frac{1}{Threads\ per\ Inch}$$

The charts below display the information for all common UN/Metric threads as well as the lead and lead angle for double and triple start versions of each thread. The lead angle represented in the chart is a function of a thread's lead and major diameter as seen in the equation above. It is important to be aware of this lead angle when manufacturing a multi start thread. The cutting tool used to mill the thread must have a relief angle greater than the lead angle of the thread for clearance purposes. All Harvey Tool single form threadmills can mill a single, double, and triple start thread without interference.

Machining a Multi Start Thread

1. Use the table or equation to determine the pitch, lead, and lead angle of the multi-start thread.

2. Use a single form thread mill to helically interpolate the first thread at the correct lead.

***The thread mill used must have a relief angle greater than that of the multi start thread's lead angle in order to machine the thread**

3. Index to the next starting location and mill the remaining parallel thread/threads.

UN Threads				Lead (In)			Lead Angle		
Size	Diameter (In)	T.P.I.	Pitch (In)	Single Start	Double Start	Triple Start	Single Start	Double Start	Triple Start
000 - 120	0.0340	120	0.0083	0.0083	0.0167	0.0250	4.5°	8.9°	13.2°
00 - 90	0.0470	90	0.0111	0.0111	0.0222	0.0333	4.3°	8.6°	12.7°
0 - 80	0.0600	80	0.0125	0.0125	0.0250	0.0375	3.8°	7.6°	11.3°
1 - 64	0.0730	64	0.0156	0.0156	0.0313	0.0469	3.9°	7.8°	11.6°
1 - 72	0.0730	72	0.0139	0.0139	0.0278	0.0417	3.5°	6.9°	10.3°
2 - 56	0.0860	56	0.0179	0.0179	0.0357	0.0536	3.8°	7.5°	11.2°
2 - 64	0.0860	64	0.0156	0.0156	0.0313	0.0469	3.3°	6.6°	9.8°
3 - 48	0.0990	48	0.0208	0.0208	0.0417	0.0625	3.8°	7.6°	11.4°
3 - 56	0.0990	56	0.0179	0.0179	0.0357	0.0536	3.3°	6.6°	9.8°
4 - 40	0.1120	40	0.0250	0.0250	0.0500	0.0750	4.1°	8.1°	12.0°
4 - 48	0.1120	48	0.0208	0.0208	0.0417	0.0625	3.4°	6.8°	10.1°
5 - 40	0.1250	40	0.0250	0.0250	0.0500	0.0750	3.6°	7.3°	10.8°
5 - 44	0.1250	44	0.0227	0.0227	0.0455	0.0682	3.3°	6.6°	9.8°
6 - 32	0.1380	32	0.0313	0.0313	0.0625	0.0938	4.1°	8.2°	12.2°
6 - 40	0.1380	40	0.0250	0.0250	0.0500	0.0750	3.3°	6.6°	9.8°
8 - 32	0.1640	32	0.0313	0.0313	0.0625	0.0938	3.5°	6.9°	10.3°
8 - 36	0.1640	36	0.0278	0.0278	0.0556	0.0833	3.1°	6.2°	9.2°
10 - 24	0.1900	24	0.0417	0.0417	0.0833	0.1250	4.0°	7.9°	11.8°
10 - 28	0.1900	28	0.0357	0.0357	0.0714	0.1071	3.4°	6.8°	10.2°
10 - 32	0.1900	32	0.0313	0.0313	0.0625	0.0938	3.0°	6.0°	8.9°
10 - 36	0.1900	36	0.0278	0.0278	0.0556	0.0833	2.7°	5.3°	7.9°
10 - 40	0.1900	40	0.0250	0.0250	0.0500	0.0750	2.4°	4.8°	7.2°

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MULTI START THREADS: THREAD CHART

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UN Threads				Lead (In)			Lead Angle		
Size	Diameter (In)	T.P.I.	Pitch (In)	Single Start	Double Start	Triple Start	Single Start	Double Start	Triple Start
10 - 48	0.1900	48	0.0208	0.0208	0.0417	0.0625	2.0°	4.0°	6.0°
10 - 56	0.1900	56	0.0179	0.0179	0.0357	0.0536	1.7°	3.4°	5.1°
12 - 24	0.2160	24	0.0417	0.0417	0.0833	0.1250	3.5°	7.0°	10.4°
12 - 28	0.2160	28	0.0357	0.0357	0.0714	0.1071	3.0°	6.0°	9.0°
12 - 32	0.2160	32	0.0313	0.0313	0.0625	0.0938	2.6°	5.3°	7.9°
12 - 36	0.2160	36	0.0278	0.0278	0.0556	0.0833	2.3°	4.7°	7.0°
12 - 40	0.2160	40	0.0250	0.0250	0.0500	0.0750	2.1°	4.2°	6.3°
12 - 48	0.2160	48	0.0208	0.0208	0.0417	0.0625	1.8°	3.5°	5.3°
12 - 56	0.2160	56	0.0179	0.0179	0.0357	0.0536	1.5°	3.0°	4.5°
1/4 - 20	0.2500	20	0.0500	0.0500	0.1000	0.1500	3.6°	7.3°	10.8°
1/4 - 24	0.2500	24	0.0417	0.0417	0.0833	0.1250	3.0°	6.1°	9.0°
1/4 - 27	0.2500	27	0.0370	0.0370	0.0741	0.1111	2.7°	5.4°	8.1°
1/4 - 28	0.2500	28	0.0357	0.0357	0.0714	0.1071	2.6°	5.2°	7.8°
1/4 - 32	0.2500	32	0.0313	0.0313	0.0625	0.0938	2.3°	4.5°	6.8°
1/4 - 36	0.2500	36	0.0278	0.0278	0.0556	0.0833	2.0°	4.0°	6.1°
1/4 - 40	0.2500	40	0.0250	0.0250	0.0500	0.0750	1.8°	3.6°	5.5°
1/4 - 48	0.2500	48	0.0208	0.0208	0.0417	0.0625	1.5°	3.0°	4.5°
1/4 - 56	0.2500	56	0.0179	0.0179	0.0357	0.0536	1.3°	2.6°	3.9°
5/16 - 18	0.3125	18	0.0556	0.0556	0.1111	0.1667	3.2°	6.5°	9.6°
5/16 - 20	0.3125	20	0.0500	0.0500	0.1000	0.1500	2.9°	5.8°	8.7°
5/16 - 24	0.3125	24	0.0417	0.0417	0.0833	0.1250	2.4°	4.9°	7.3°
5/16 - 27	0.3125	27	0.0370	0.0370	0.0741	0.1111	2.2°	4.3°	6.5°
5/16 - 28	0.3125	28	0.0357	0.0357	0.0714	0.1071	2.1°	4.2°	6.2°
5/16 - 32	0.3125	32	0.0313	0.0313	0.0625	0.0938	1.8°	3.6°	5.5°
5/16 - 36	0.3125	36	0.0278	0.0278	0.0556	0.0833	1.6°	3.2°	4.9°
5/16 - 40	0.3125	40	0.0250	0.0250	0.0500	0.0750	1.5°	2.9°	4.4°
5/16 - 48	0.3125	48	0.0208	0.0208	0.0417	0.0625	1.2°	2.4°	3.6°
3/8 - 16	0.3750	16	0.0625	0.0625	0.1250	0.1875	3.0°	6.1°	9.0°
3/8 - 18	0.3750	18	0.0556	0.0556	0.1111	0.1667	2.7°	5.4°	8.1°
3/8 - 20	0.3750	20	0.0500	0.0500	0.1000	0.1500	2.4°	4.9°	7.3°
3/8 - 24	0.3750	24	0.0417	0.0417	0.0833	0.1250	2.0°	4.0°	6.1°
3/8 - 27	0.3750	27	0.0370	0.0370	0.0741	0.1111	1.8°	3.6°	5.4°
3/8 - 28	0.3750	28	0.0357	0.0357	0.0714	0.1071	1.7°	3.5°	5.2°
3/8 - 32	0.3750	32	0.0313	0.0313	0.0625	0.0938	1.5°	3.0°	4.5°
3/8 - 36	0.3750	36	0.0278	0.0278	0.0556	0.0833	1.4°	2.7°	4.0°
3/8 - 40	0.3750	40	0.0250	0.0250	0.0500	0.0750	1.2°	2.4°	3.6°
7/16 - 14	0.4375	14	0.0714	0.0714	0.1429	0.2143	3.0°	5.9°	8.9°
7/16 - 16	0.4375	16	0.0625	0.0625	0.1250	0.1875	2.6°	5.2°	7.8°
7/16 - 18	0.4375	18	0.0556	0.0556	0.1111	0.1667	2.3°	4.6°	6.9°
7/16 - 20	0.4375	20	0.0500	0.0500	0.1000	0.1500	2.1°	4.2°	6.2°

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MULTI START THREADS: THREAD CHART

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UN Threads				Lead (In)			Lead Angle		
Size	Diameter (In)	T.P.I.	Pitch (In)	Single Start	Double Start	Triple Start	Single Start	Double Start	Triple Start
7/16 - 24	0.4375	24	0.0417	0.0417	0.0833	0.1250	1.7°	3.5°	5.2°
7/16 - 27	0.4375	27	0.0370	0.0370	0.0741	0.1111	1.5°	3.1°	4.6°
7/16 - 28	0.4375	28	0.0357	0.0357	0.0714	0.1071	1.5°	3.0°	4.5°
7/16 - 32	0.4375	32	0.0313	0.0313	0.0625	0.0938	1.3°	2.6°	3.9°
1/2 - 12	0.5000	12	0.0833	0.0833	0.1667	0.2500	3.0°	6.1°	9.0°
1/2 - 13	0.5000	13	0.0769	0.0769	0.1538	0.2308	2.8°	5.6°	8.4°
1/2 - 14	0.5000	14	0.0714	0.0714	0.1429	0.2143	2.6°	5.2°	7.8°
1/2 - 16	0.5000	16	0.0625	0.0625	0.1250	0.1875	2.3°	4.5°	6.8°
1/2 - 18	0.5000	18	0.0556	0.0556	0.1111	0.1667	2.0°	4.0°	6.1°
1/2 - 20	0.5000	20	0.0500	0.0500	0.1000	0.1500	1.8°	3.6°	5.5°
1/2 - 24	0.5000	24	0.0417	0.0417	0.0833	0.1250	1.5°	3.0°	4.5°
1/2 - 27	0.5000	27	0.0370	0.0370	0.0741	0.1111	1.4°	2.7°	4.0°
1/2 - 28	0.5000	28	0.0357	0.0357	0.0714	0.1071	1.3°	2.6°	3.9°
1/2 - 32	0.5000	32	0.0313	0.0313	0.0625	0.0938	1.1°	2.3°	3.4°
9/16 - 12	0.5625	12	0.0833	0.0833	0.1667	0.2500	2.7°	5.4°	8.1°
9/16 - 14	0.5625	14	0.0714	0.0714	0.1429	0.2143	2.3°	4.6°	6.9°
9/16 - 16	0.5625	16	0.0625	0.0625	0.1250	0.1875	2.0°	4.0°	6.1°
9/16 - 18	0.5625	18	0.0556	0.0556	0.1111	0.1667	1.8°	3.6°	5.4°
9/16 - 20	0.5625	20	0.0500	0.0500	0.1000	0.1500	1.6°	3.2°	4.9°
9/16 - 24	0.5625	24	0.0417	0.0417	0.0833	0.1250	1.4°	2.7°	4.0°
9/16 - 27	0.5625	27	0.0370	0.0370	0.0741	0.1111	1.2°	2.4°	3.6°
9/16 - 28	0.5625	28	0.0357	0.0357	0.0714	0.1071	1.2°	2.3°	3.5°
9/16 - 32	0.5625	32	0.0313	0.0313	0.0625	0.0938	1.0°	2.0°	3.0°
5/8 - 11	0.6250	11	0.0909	0.0909	0.1818	0.2727	2.7°	5.3°	7.9°
5/8 - 12	0.6250	12	0.0833	0.0833	0.1667	0.2500	2.4°	4.9°	7.3°
5/8 - 14	0.6250	14	0.0714	0.0714	0.1429	0.2143	2.1°	4.2°	6.2°
5/8 - 16	0.6250	16	0.0625	0.0625	0.1250	0.1875	1.8°	3.6°	5.5°
5/8 - 18	0.6250	18	0.0556	0.0556	0.1111	0.1667	1.6°	3.2°	4.9°
5/8 - 20	0.6250	20	0.0500	0.0500	0.1000	0.1500	1.5°	2.9°	4.4°
5/8 - 24	0.6250	24	0.0417	0.0417	0.0833	0.1250	1.2°	2.4°	3.6°
5/8 - 27	0.6250	27	0.0370	0.0370	0.0741	0.1111	1.1°	2.2°	3.2°
5/8 - 28	0.6250	28	0.0357	0.0357	0.0714	0.1071	1.0°	2.1°	3.1°
5/8 - 32	0.6250	32	0.0313	0.0313	0.0625	0.0938	0.9°	1.8°	2.7°
11/16 - 12	0.6875	12	0.0833	0.0833	0.1667	0.2500	2.2°	4.4°	6.6°
11/16 - 16	0.6875	16	0.0625	0.0625	0.1250	0.1875	1.7°	3.3°	5.0°
11/16 - 20	0.6875	20	0.0500	0.0500	0.1000	0.1500	1.3°	2.7°	4.0°
11/16 - 24	0.6875	24	0.0417	0.0417	0.0833	0.1250	1.1°	2.2°	3.3°
11/16 - 28	0.6875	28	0.0357	0.0357	0.0714	0.1071	0.9°	1.9°	2.8°
11/16 - 32	0.6875	32	0.0313	0.0313	0.0625	0.0938	0.8°	1.7°	2.5°
3/4 - 10	0.7500	10	0.1000	0.1000	0.2000	0.3000	2.4°	4.9°	7.3°

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MULTI START THREADS: THREAD CHART

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UN Threads				Lead (In)			Lead Angle		
Size	Diameter (In)	T.P.I.	Pitch (In)	Single Start	Double Start	Triple Start	Single Start	Double Start	Triple Start
3/4 - 12	0.7500	12	0.0833	0.0833	0.1667	0.2500	2.0°	4.0°	6.1°
3/4 - 14	0.7500	14	0.0714	0.0714	0.1429	0.2143	1.7°	3.5°	5.2°
3/4 - 16	0.7500	16	0.0625	0.0625	0.1250	0.1875	1.5°	3.0°	4.5°
3/4 - 18	0.7500	18	0.0556	0.0556	0.1111	0.1667	1.4°	2.7°	4.0°
3/4 - 20	0.7500	20	0.0500	0.0500	0.1000	0.1500	1.2°	2.4°	3.6°
3/4 - 24	0.7500	24	0.0417	0.0417	0.0833	0.1250	1.0°	2.0°	3.0°
3/4 - 28	0.7500	28	0.0357	0.0357	0.0714	0.1071	0.9°	1.7°	2.6°
3/4 - 32	0.7500	32	0.0313	0.0313	0.0625	0.0938	0.8°	1.5°	2.3°
13/16 - 12	0.8125	12	0.0833	0.0833	0.1667	0.2500	1.9°	3.7°	5.6°
13/16 - 16	0.8125	16	0.0625	0.0625	0.1250	0.1875	1.4°	2.8°	4.2°
13/16 - 20	0.8125	20	0.0500	0.0500	0.1000	0.1500	1.1°	2.2°	3.4°
13/16 - 28	0.8125	28	0.0357	0.0357	0.0714	0.1071	0.8°	1.6°	2.4°
13/16 - 32	0.8125	32	0.0313	0.0313	0.0625	0.0938	0.7°	1.4°	2.1°
7/8 - 9	0.8750	9	0.1111	0.1111	0.2222	0.3333	2.3°	4.6°	6.9°
7/8 - 10	0.8750	10	0.1000	0.1000	0.2000	0.3000	2.1°	4.2°	6.2°
7/8 - 12	0.8750	12	0.0833	0.0833	0.1667	0.2500	1.7°	3.5°	5.2°
7/8 - 14	0.8750	14	0.0714	0.0714	0.1429	0.2143	1.5°	3.0°	4.5°
7/8 - 16	0.8750	16	0.0625	0.0625	0.1250	0.1875	1.3°	2.6°	3.9°
7/8 - 18	0.8750	18	0.0556	0.0556	0.1111	0.1667	1.2°	2.3°	3.5°
7/8 - 20	0.8750	20	0.0500	0.0500	0.1000	0.1500	1.0°	2.1°	3.1°
7/8 - 24	0.8750	24	0.0417	0.0417	0.0833	0.1250	0.9°	1.7°	2.6°
7/8 - 27	0.8750	27	0.0370	0.0370	0.0741	0.1111	0.8°	1.5°	2.3°
7/8 - 28	0.8750	28	0.0357	0.0357	0.0714	0.1071	0.7°	1.5°	2.2°
7/8 - 32	0.8750	32	0.0313	0.0313	0.0625	0.0938	0.7°	1.3°	2.0°
15/16 - 12	0.9375	12	0.0833	0.0833	0.1667	0.2500	1.6°	3.2°	4.9°
15/16 - 16	0.9375	16	0.0625	0.0625	0.1250	0.1875	1.2°	2.4°	3.6°
15/16 - 20	0.9375	20	0.0500	0.0500	0.1000	0.1500	1.0°	1.9°	2.9°
15/16 - 28	0.9375	28	0.0357	0.0357	0.0714	0.1071	0.7°	1.4°	2.1°
15/16 - 32	0.9375	32	0.0313	0.0313	0.0625	0.0938	0.6°	1.2°	1.8°
1 - 8	1.0000	8	0.1250	0.1250	0.2500	0.3750	2.3°	4.5°	6.8°
1 - 10	1.0000	10	0.1000	0.1000	0.2000	0.3000	1.8°	3.6°	5.5°
1 - 12	1.0000	12	0.0833	0.0833	0.1667	0.2500	1.5°	3.0°	4.5°
1 - 14	1.0000	14	0.0714	0.0714	0.1429	0.2143	1.3°	2.6°	3.9°
1 - 16	1.0000	16	0.0625	0.0625	0.1250	0.1875	1.1°	2.3°	3.4°
1 - 18	1.0000	18	0.0556	0.0556	0.1111	0.1667	1.0°	2.0°	3.0°
1 - 20	1.0000	20	0.0500	0.0500	0.1000	0.1500	0.9°	1.8°	2.7°
1 - 24	1.0000	24	0.0417	0.0417	0.0833	0.1250	0.8°	1.5°	2.3°
1 - 27	1.0000	27	0.0370	0.0370	0.0741	0.1111	0.7°	1.4°	2.0°
1 - 28	1.0000	28	0.0357	0.0357	0.0714	0.1071	0.7°	1.3°	2.0°
1 - 32	1.0000	32	0.0313	0.0313	0.0625	0.0938	0.6°	1.1°	1.7°

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MULTI START THREADS: METRIC THREAD CHART

METRIC THREADS								
UN Threads			Lead (mm)			Lead Angle		
Size	Diameter (mm)	Pitch (mm)	Single Start	Double Start	Triple Start	Single Start	Double Start	Triple Start
M1.6 x 0.35	1.6	0.35	0.35	0.70	1.05	4.0°	7.9°	11.8°
M2 x 0.40	2	0.40	0.40	0.80	1.20	3.6°	7.3°	10.8°
M2.5 x 0.45	2.5	0.45	0.45	0.90	1.35	3.3°	6.5°	9.8°
M3 x 0.50	3	0.50	0.50	1.00	1.50	3.0°	6.1°	9.0°
M3.5 x 0.60	3.5	0.60	0.60	1.20	1.80	3.1°	6.2°	9.3°
M4 x 0.70	4	0.70	0.70	1.40	2.10	3.2°	6.4°	9.5°
M5 x 0.80	5	0.80	0.80	1.60	2.40	2.9°	5.8°	8.7°
M6 x 1.00	6	1.00	1.00	2.00	3.00	3.0°	6.1°	9.0°
M8 x 1.25	8	1.25	1.25	2.50	3.75	2.8°	5.7°	8.5°
M8 x 1.00	8	1.00	1.00	2.00	3.00	2.3°	4.5°	6.8°
M10 x 1.50	10	1.50	1.50	3.00	4.50	2.7°	5.5°	8.2°
M10 x 1.25	10	1.25	1.25	2.50	3.75	2.3°	4.5°	6.8°
M10 x 0.75	10	0.75	0.75	1.50	2.25	1.4°	2.7°	4.1°
M12 x 1.75	12	1.75	1.75	3.50	5.25	2.7°	5.3°	7.9°
M12 x 1.50	12	1.50	1.50	3.00	4.50	2.3°	4.5°	6.8°
M12 x 1.25	12	1.25	1.25	2.50	3.75	1.9°	3.8°	5.7°
M12 x 1.00	12	1.00	1.00	2.00	3.00	1.5°	3.0°	4.5°
M14 x 2.00	14	2.00	2.00	4.00	6.00	2.6°	5.2°	7.8°
M14 x 1.50	14	1.50	1.50	3.00	4.50	2.0°	3.9°	5.8°
M15 x 1.00	15	1.00	1.00	2.00	3.00	1.2°	2.4°	3.6°
M16 x 2.00	16	2.00	2.00	4.00	6.00	2.3°	4.5°	6.8°
M16 x 1.50	16	1.50	1.50	3.00	4.50	1.7°	3.4°	5.1°
M17 x 1.00	17	1.00	1.00	2.00	3.00	1.1°	2.1°	3.2°
M18 x 1.50	18	1.50	1.50	3.00	4.50	1.5°	3.0°	4.5°
M20 x 2.50	20	2.50	2.50	5.00	7.50	2.3°	4.5°	6.8°
M20 x 1.50	20	1.50	1.50	3.00	4.50	1.4°	2.7°	4.1°
M20 x 1.00	20	1.00	1.00	2.00	3.00	0.9°	1.8°	2.7°
M22 x 2.50	22	2.50	2.50	5.00	7.50	2.1°	4.1°	6.2°
M22 x 2.50	22	2.50	2.50	5.00	7.50	2.1°	4.1°	6.2°
M24 x 3.00	24	3.00	3.00	6.00	9.00	2.3°	4.5°	6.8°
M24 x 2.00	24	2.00	2.00	4.00	6.00	1.5°	3.0°	4.5°
M25 x 1.50	25	1.50	1.50	3.00	4.50	1.1°	2.2°	3.3°
M27 x 3.00	27	3.00	3.00	6.00	9.00	2.0°	4.0°	6.1°
M27 x 2.00	27	2.00	2.00	4.00	6.00	1.4°	2.7°	4.0°
M30 x 3.50	30	3.50	3.50	7.00	10.50	2.1°	4.2°	6.4°
M30 x 2.00	30	2.00	2.00	4.00	6.00	1.2°	2.4°	3.6°
M30 x 1.50	30	1.50	1.50	3.00	4.50	0.9°	1.8°	2.7°
M33 x 2.00	33	2.00	2.00	4.00	6.00	1.1°	2.2°	3.3°
M35 x 1.50	35	1.50	1.50	3.00	4.50	0.8°	1.6°	2.3°
M36 x 4.00	36	4.00	4.00	8.00	12.00	2.0°	4.0°	6.1°
M36 x 2.00	36	2.00	2.00	4.00	6.00	1.0°	2.0°	3.0°
M39 x 2.00	39	2.00	2.00	4.00	6.00	0.9°	1.9°	2.8°
M40 x 1.50	40	1.50	1.50	3.00	4.50	0.7°	1.4°	2.1°
M42 x 4.50	42	4.50	4.50	9.00	13.50	2.0°	3.9°	5.8°

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