

Axial Thread Rolling

Lead Angles based on Basic Pitch Diameter

For UN Threads

Diameter			Threads per inch													
	Inches	mm	80	72	64	56	50	48	44	40	36	32	30	28	26	24
No. 0	0.060	1.52	4°23'	4°57'	5°42'	6°42'	7°43'	8° 8'	9° 6'	10°21'	11°55'	14° 6'				
No. 1	0.073	1.85	3°30'	3°57'	4°31'	5°17'	6° 3'	6°16'	7° 5'	8° 2'	9° 9'	10°43'				
No. 2	0.086	2.18	2°56'	3°17'	3°46'	4°22'	4°59'	5°14'	5°48'	6°31'	7°25'	8°37'	9°23'			
No. 3	0.099	2.51	2°30'	2°49'	3°12'	3°43'	4°14'	4°26'	4°55'	5°30'	6°14'	7°13'	7°44'	8°32'	9°25'	9°16'
No. 4	0.112	2.84	2°12'	2°27'	2°48'	3°14'	3°41'	3°51'	4°15'	4°45'	5°23'	6°12'	6°43'	7°18'	8° 2'	8°53'
No. 5	0.125	3.18	1°57'	2°11'	2°29'	2°52'	3°16'	3°24'	3°45'	4°11'	4°46'	5°26'	5°52'	6°22'	7° 0'	7°43'
No. 6	0.138	3.51	1°45'	1°58'	2°14'	2°34'	2°55'	3° 3'	3°21'	3°44'	4°13'	4°50'	5°13'	5°39'	6°12'	6°50'
No. 8	0.164	4.17	1°28'	1°38'	1°51'	2° 5'	2°25'	2°27'	2°43'	3° 5'	3°28'	3°58'	4°32'	4°37'	5° 2'	5°32'
No. 10	0.190	4.83	1°15'	1°24'	1°35'	1°49'	2° 5'	2° 9'	2°22'	2°37'	2°56'	3°21'	3°40'	3°54'	4°25'	4°39'
No. 12	0.216	5.49	1° 6'	1°13'	1°23'	1°36'	1°46'	1°53'	2° 3'	2°17'	2°33'	2°55'	3° 6'	3°22'	3°37'	4° 1'
1/4"	0.250	6.35	0°57'	1° 3'	1°12'	1°22'	1°33'	1°37'	1°46'	1°57'	2°11'	2°24'	2°40'	2°53'	3° 7'	3°24'
9/32"	0.281	7.14	0°50'	0°56'	1° 3'	1°12'	1°22'	1°25'	1°34'	1°43'	1°56'	2°11'	2°21'	2°31'	2°44'	3° 0'
5/16"	0.313	7.95	0°45'	0°50'	0°57'	1° 5'	1°13'	1°16'	1°24'	1°33'	1°43'	1°57'	2° 5'	2°15'	2°27'	2°40'
11/32"	0.344	8.74	0°40'	0°45'	0°51'	0°59'	1° 6'	1° 9'	1°15'	1°24'	1°34'	1°46'	1°54'	2° 2'	2°12'	2°24'
3/8"	0.375	9.53	0°37'	0°41'	0°47'	0°54'	1° 1'	1° 3'	1° 9'	1°16'	1°25'	1°37'	1°43'	1°51'	2° 0'	2°11'
13/32"	0.406	10.31	0°34'	0°38'	0°43'	0°50'	0°56'	0°58'	1° 4'	1°10'	1°18'	1°29'	1°35'	1°42'	1°50'	2° 0'
7/16"	0.438	11.13	0°32'	0°36'	0°40'	0°46'	0°52'	0°54'	0°59'	1° 5'	1°12'	1°22'	1°27'	1°34'	1°42'	1°51'
15/32"	0.469	11.91	0°30'	0°33'	0°37'	0°43'	0°48'	0°50'	0°55'	1° 1'	1° 8'	1°17'	1°22'	1°27'	1°35'	1°43'
1/2"	0.500	12.70	0°28'	0°31'	0°35'	0°40'	0°45'	0°47'	0°52'	0°57'	1° 3'	1°12'	1°16'	1°22'	1°29'	1°37'
17/32"	0.531	13.49			0°33'	0°38'	0°42'	0°44'	0°48'	0°53'	0°59'	1° 7'	1°11'	1°17'	1°24'	1°30'
9/16"	0.563	14.30			0°31'	0°36'	0°40'	0°42'	0°45'	0°50'	0°56'	1° 3'	1° 8'	1°12'	1°18'	1°25'
19/32"	0.594	15.09			0°29'	0°34'	0°38'	0°39'	0°43'	0°47'	0°53'	1° 0'	1° 4'	1° 9'	1°14'	1°20'
5/8"	0.625	15.88			0°28'	0°32'	0°36'	0°37'	0°41'	0°45'	0°50'	0°57'	1° 0'	1° 5'	1°10'	1°17'
11/16"	0.688	17.48			0°25'	0°29'	0°33'	0°34'	0°37'	0°41'	0°46'	0°51'	0°55'	0°59'	1° 4'	1° 9'
3/4"	0.750	19.05			0°23'	0°27'	0°30'	0°31'	0°34'	0°37'	0°42'	0°47'	0°50'	0°54'	0°58'	1° 3'
13/16"	0.813	20.65				0°25'	0°27'	0°29'	0°31'	0°35'	0°38'	0°43'	0°46'	0°50'	0°53'	0°58'
7/8"	0.875	22.23				0°23'	0°25'	0°27'	0°29'	0°32'	0°36'	0°40'	0°43'	0°46'	0°50'	0°54'
15/16"	0.938	23.83				0°21'	0°24'	0°25'	0°27'	0°30'	0°33'	0°37'	0°40'	0°43'	0°46'	0°50'
1"	1.000	25.40				0°20'	0°22'	0°23'	0°25'	0°28'	0°31'	0°35'	0°37'	0°40'	0°43'	0°47'
1.1/16"	1.063	27.00				0°19'	0°21'	0°22'	0°24'	0°26'	0°29'	0°33'	0°35'	0°38'	0°41'	0°44'
1.1/8"	1.125	28.58				0°18'	0°20'	0°21'	0°23'	0°25'	0°28'	0°31'	0°33'	0°36'	0°38'	0°42'
1.3/16"	1.188	30.18				0°17'	0°19'	0°20'	0°21'	0°24'	0°26'	0°29'	0°31'	0°34'	0°36'	0°39'
1.1/4"	1.250	31.75				0°16'	0°18'	0°19'	0°20'	0°22'	0°25'	0°28'	0°30'	0°32'	0°35'	0°37'
1.5/16"	1.313	33.35				0°15'	0°17'	0°18'	0°19'	0°21'	0°24'	0°26'	0°28'	0°30'	0°33'	0°36'
1.3/8"	1.375	34.93				0°14'	0°17'	0°17'	0°18'	0°20'	0°23'	0°25'	0°27'	0°29'	0°31'	0°34'
1.7/16"	1.438	36.53								0°19'	0°22'	0°24'	0°26'	0°28'	0°30'	0°32'
1.1/2"	1.500	38.10								0°18'	0°21'	0°23'	0°25'	0°27'	0°29'	0°31'
1.5/8"	1.625	41.28										0°21'	0°23'	0°24'	0°26'	0°29'
1.3/4"	1.750	44.45										0°20'	0°21'	0°22'	0°24'	0°27'
1.7/8"	1.875	47.63										0°18'	0°20'	0°21'	0°23'	0°25'
2"	2.000	50.80										0°17'	0°18'	0°20'	0°21'	0°23'



Axial Thread Rolling

Lead Angles based on Basic Pitch Diameter

For UN Threads

Diameter			Threads per inch													
	Inches	mm	20	18	16	14	13	12	11	10	9	8	7	6	5	4.5
No. 0	0.060	1.52														
No. 1	0.073	1.85														
No. 2	0.086	2.18														
No. 3	0.099	2.51														
No. 4	0.112	2.84														
No. 5	0.125	3.18	9°46'	11°16'	13°18'											
No. 6	0.138	3.51	8°35'	9°51'	11°30'											
No. 8	0.164	4.17	6°55'	7°50'	9°10'	10°57'	12° 9'	13°36'								
No. 10	0.190	4.83	5°47'	6°34'	7°36'	9° 1'	9°56'	11° 4'								
No. 12	0.216	5.49	4°58'	5°37'	6°28'	7°39'	8°24'	9°19'	10°29'							
1/4"	0.250	6.35	4°12'	4°43'	5°26'	6°23'	6°59'	7°43'	8°38'	9°47'						
9/32"	0.281	7.14	3°40'	4° 9'	4°43'	5°32'	6° 3'	6°40'	7°26'	8°23'						
5/16"	0.313	7.95	3°15'	3°40'	4°12'	4°53'	5°20'	5°52'	6°32'	7°20'	8°23'	9°46'				
11/32"	0.344	8.74	2°51'	3°17'	3°46'	4°26'	4°46'	5°15'	5°49'	6°31'	7°26'	8°38'				
3/8"	0.375	9.53	2°47'	3° 0'	3°24'	3°58'	4°20'	4°43'	5°15'	5°52'	6°40'	7°44'				
13/32"	0.406	10.31	2°27'	2°44'	3° 7'	3°37'	3°47'	4°26'	4°46'	5°20'	6° 3'	6°59'	8°16'	10° 7'		
7/16"	0.438	11.13	2°15'	2°31'	2°53'	3°20'	3°37'	3°58'	4°24'	4°53'	5°32'	6°23'	7°32'	9°10'	11°43'	
15/32"	0.469	11.91	2° 5'	2°20'	2°40'	3°00'	3°21'	3°40'	4° 3'	4°30'	5° 6'	5°52'	6°55'	8°26'	10°40'	
1/2"	0.500	12.70	1°57'	2°11'	2°29'	2°53'	3° 7'	3°24'	3°46'	4°12'	4°43'	5°26'	6°23'	7°44'	9°46'	11°16'
17/32"	0.531	13.49	1°50'	2° 3'	2°20'	2°41'	2°55'	3°12'	3°31'	3°57'	4°24'	5° 3'	5°56'	7°10'	9° 2'	10° 3'
9/16"	0.563	14.30	1°43'	1°55'	2°11'	2°31'	2°44'	3° 0'	3°17'	3°40'	4° 9'	4°44'	5°32'	6°40'	8°23'	9°37'
19/32"	0.594	15.09	1°38'	1°49'	2° 4'	2°23'	2°35'	2°49'	3° 6'	3°27'	3°59'	4°27'	5°12'	6°15'	7°50'	8°57'
5/8"	0.625	15.88	1°33'	1°43'	1°57'	2°15'	2°27'	2°40'	2°56'	3°15'	3°40'	4°11'	4°53'	5°52'	7°20'	8°23'
11/16"	0.688	17.48	1°24'	1°34'	1°46'	2° 2'	2°12'	2°24'	2°38'	2°56'	3°17'	3°46'	4°24'	5°14'	6°31'	7°26'
3/4"	0.750	19.05	1°16'	1°25'	1°37'	1°51'	2° 0'	2°11'	2°24'	2°40'	3° 0'	3°24'	3°58'	4°43'	5°52'	6°40'
13/16"	0.813	20.65	1°10'	1°18'	1°29'	1°42'	1°50'	2° 0'	2°12'	2°27'	2°44'	3° 7'	3°37'	4°20'	5°20'	6° 3'
7/8"	0.875	22.23	1° 5'	1°12'	1°22'	1°34'	1°42'	1°51'	2° 2'	2°15'	2°32'	2°53'	3°20'	3°28'	4°53'	5°32'
15/16"	0.938	23.83	1° 1'	1° 8'	1°16'	1°27'	1°35'	1°43'	1°54'	2° 5'	2°20'	2°40'	3° 6'	3°40'	4°30'	5° 6'
1"	1.000	25.40	0°57'	1° 3'	1°12'	1°22'	1°29'	1°37'	1°46'	1°57'	2°11'	2°29'	2°53'	3°24'	4°12'	4°44'
1.1/16"	1.063	27.00	0°53'	0°59'	1° 7'	1°17'	1°24'	1°31'	1°39'	1°56'	2° 3'	2°20'	2°41'	3°12'	3°55'	4°24'
1.1/8"	1.125	28.58	0°50'	0°56'	1° 3'	1°13'	1°18'	1°25'	1°34'	1°43'	1°56'	2°11'	2°32'	3° 0'	3°40'	4° 8'
1.3/16"	1.188	30.18	0°47'	0°53'	1° 0'	1° 9'	1°14'	1°21'	1°28'	1°38'	1°49'	2° 4'	2°23'	2°49'	3°27'	3°53'
1.1/4"	1.250	31.75	0°45'	0°50'	0°57'	1° 5'	1°10'	1°16'	1°24'	1°33'	1°43'	1°57'	2°15'	2°40'	3°15'	3°40'
1.5/16"	1.313	33.35	0°43'	0°48'	0°54'	1° 2'	1° 7'	1°12'	1°19'	1°27'	1°38'	1°51'	2° 8'	2°31'	3° 6'	3°29'
1.3/8"	1.375	34.93	0°41'	0°45'	0°51'	0°59'	1° 4'	1° 9'	1°15'	1°24'	1°34'	1°46'	2° 2'	2°24'	2°56'	3°17'
1.7/16"	1.438	36.53	0°39'	0°43'	0°49'	0°56'	1° 1'	1° 6'	1°12'	1°20'	1°29'	1°41'	1°56'	2°17'	2°47'	3° 8'
1.1/2"	1.500	38.10	0°37'	0°42'	0°47'	0°54'	0°58'	1° 3'	1° 9'	1°16'	1°25'	1°36'	1°51'	2°11'	2°40'	3° 0'
1.5/8"	1.625	41.28	0°34'	0°38'	0°43'	0°50'	0°53'	0°58'	1° 4'	1°10'	1°18'	1°29'	1°42'	2° 0'	2°26'	2°44'
1.3/4"	1.750	44.45	0°32'	0°36'	0°40'	0°46'	0°50'	0°54'	0°59'	1° 5'	1°12'	1°22'	1°34'	1°52'	2°15'	2°31'
1.7/8"	1.875	47.63	0°30'	0°33'	0°37'	0°43'	0°46'	0°50'	0°55'	1° 1'	1° 8'	1°17'	1°28'	1°43'	2° 5'	2°20'
2"	2.000	50.80	0°28'	0°31'	0°35'	0°40'	0°43'	0°47'	0°51'	0°57'	1° 3'	1°11'	1°22'	1°37'	1°57'	2°11'

Axial Thread Rolling

Lead Angles based on Basic Pitch Diameter

For Metric Screw Threads M Profile

Diameter		Pitch										
mm	inches	0.30	0.35	0.40	0.45	0.50	0.60	0.70	0.75	0.80	1.00	1.25
1.4	0.055	4° 32'	5° 26'	6° 22'	7° 22'							
1.6	0.063	3° 53'	4° 38'	5° 26'	6° 15'	7° 7'						
1.8	0.071	3° 24'	4° 3'	4° 44'	5° 26'	6° 9'						
2.0	0.079	3° 2'	3° 36'	4° 11'	4° 48'	5° 26'	6° 46'					
2.2	0.087	2° 44'	3° 14'	3° 45'	4° 18'	4° 51'	6° 1'	7° 17'				
2.5	0.098	2° 22'	2° 48'	3° 15'	3° 43'	4° 11'	5° 10'	6° 13'	6° 46'	7° 20'		
3.0	0.118	1° 57'	2° 18'	2° 40'	3° 2'	3° 24'	4° 11'	5° 0'	5° 26'	5° 52'		
3.5	0.138	1° 39'	1° 57'	2° 15'	2° 33'	2° 52'	3° 31'	4° 11'	4° 32'	4° 53'	6° 22'	
4.0	0.157	1° 26'	1° 41'	1° 57'	2° 13'	2° 29'	3° 2'	3° 36'	3° 53'	4° 11'	5° 26'	7° 7'
4.5	0.177	1° 16'	1° 30'	1° 43'	1° 57'	2° 11'	2° 40'	3° 9'	3° 24'	3° 40'	4° 44'	6° 9'
5.0	0.197	1° 8'	1° 20'	1° 32'	1° 45'	1° 57'	2° 22'	2° 48'	3° 2'	3° 15'	4° 11'	5° 26'
6.0	0.236	0° 57'	1° 6'	1° 16'	1° 26'	1° 36'	1° 57'	2° 18'	2° 29'	2° 40'	3° 24'	4° 23'
6.3	0.248	0° 54'	1° 3'	1° 12'	1° 22'	1° 32'	1° 51'	2° 11'	2° 21'	2° 31'	3° 13'	4° 9'
8.0	0.315	0° 42'	0° 49'	0° 57'	1° 4'	1° 11'	1° 26'	1° 41'	1° 49'	1° 57'	2° 29'	3° 10'
10.0	0.394	0° 33'	0° 39'	0° 45'	1° 51'	0° 57'	1° 8'	1° 20'	1° 26'	1° 32'	1° 57'	2° 29'
12.0	0.472	0° 28'	0° 33'	0° 37'	0° 42'	0° 47'	0° 57'	1° 6'	1° 11'	1° 16'	1° 36'	2° 2'
14.0	0.551	0° 24'	0° 28'	0° 32'	0° 36'	0° 40'	0° 48'	0° 57'	1° 1'	1° 5'	1° 22'	1° 44'
16.0	0.630	0° 21'	0° 24'	0° 28'	0° 31'	0° 35'	0° 42'	0° 49'	0° 53'	0° 57'	1° 11'	1° 30'
18.0	0.709		0° 22'	0° 25'	0° 28'	0° 31'	0° 37'	0° 44'	0° 47'	0° 50'	1° 3'	1° 20'
20.0	0.787			0° 22'	0° 25'	0° 28'	0° 33'	0° 39'	0° 42'	0° 45'	0° 57'	1° 11'
22.0	0.866			0° 20'	0° 23'	0° 25'	0° 30'	0° 36'	0° 38'	0° 41'	0° 51'	1° 5'
24.0	0.945				0° 21'	0° 23'	0° 28'	0° 33'	0° 35'	0° 37'	0° 47'	0° 59'
27.0	1.063					0° 21'	0° 25'	0° 29'	0° 31'	0° 33'	0° 42'	0° 52'
30.0	1.181						0° 22'	0° 26'	0° 28'	0° 30'	0° 37'	0° 47'
33.0	1.299						0° 20'	0° 24'	0° 25'	0° 27'	0° 34'	0° 42'
36.0	1.417							0° 22'	0° 23'	0° 25'	0° 31'	0° 39'
39.0	1.535							0° 20'	0° 21'	0° 23'	0° 29'	0° 36'
42.0	1.654								0° 20'	0° 21'	0° 26'	0° 33'
45.0	1.772									0° 20'	0° 25'	0° 31'
48.0	1.890										0° 23'	0° 29'
52.0	2.047										0° 21'	0° 27'

Axial Thread Rolling

Lead Angles based on Basic Pitch Diameter

For Metric Screw Threads M Profile

Diameter		Pitch										
mm	inches	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
1.4	0.055											
1.6	0.063											
1.8	0.071											
2.0	0.079											
2.2	0.087											
2.5	0.098											
3.0	0.118											
3.5	0.138											
4.0	0.157											
4.5	0.177											
5.0	0.197	6° 46'										
6.0	0.236	5° 26'	6° 32'									
6.3	0.248	5° 7'	6° 9'	7° 15'								
8.0	0.315	3° 53'	4° 38'	5° 26'	7° 7'							
10.0	0.394	3° 2'	3° 36'	4° 11'	5° 26'	6° 46'						
12.0	0.472	2° 29'	2° 56'	3° 24'	4° 23'	5° 26'	6° 32'					
14.0	0.551	2° 6'	2° 29'	2° 52'	3° 41'	4° 32'	5° 26'	6° 22'	7° 22'			
16.0	0.630	1° 49'	2° 9'	2° 29'	3° 10'	3° 53'	4° 38'	5° 26'	6° 15'	7° 7'		
18.0	0.709	1° 36'	1° 54'	2° 11'	2° 47'	3° 24'	4° 3'	4° 44'	5° 26'	6° 9'	6° 55'	
22.0	0.866	1° 18'	1° 32'	1° 46'	2° 14'	2° 44'	3° 14'	3° 45'	4° 18'	4° 51'	5° 26'	6° 1'
24.0	0.945	1° 11'	1° 24'	1° 36'	2° 2'	2° 29'	2° 56'	3° 24'	3° 53'	4° 23'	4° 54'	5° 26'
27.0	1.063	1° 3'	1° 14'	1° 25'	1° 48'	2° 11'	2° 35'	2° 59'	3° 24'	3° 50'	4° 16'	4° 44'
30.0	1.181	0° 57'	1° 6'	1° 16'	1° 36'	1° 57'	2° 18'	2° 40'	3° 2'	3° 24'	3° 47'	4° 11'
33.0	1.299	0° 51'	1° 0'	1° 9'	1° 27'	1° 46'	2° 5'	2° 24'	2° 44'	3° 4'	3° 24'	3° 45'
36.0	1.417	0° 47'	0° 55'	1° 3'	1° 20'	1° 36'	1° 54'	2° 11'	2° 29'	2° 47'	3° 5'	3° 24'
39.0	1.535	0° 43'	0° 51'	0° 58'	1° 13'	1° 29'	1° 44'	2° 0'	2° 16'	2° 33'	2° 50'	3° 7'
42.0	1.654	0° 40'	0° 47'	0° 54'	1° 8'	1° 22'	1° 36'	1° 51'	2° 6'	2° 21'	2° 37'	2° 52'
45.0	1.772	0° 37'	0° 44'	0° 50'	1° 3'	1° 16'	1° 30'	1° 43'	1° 57'	2° 11'	2° 25'	2° 40'
48.0	1.890	0° 35'	0° 41'	0° 47'	0° 59'	1° 11'	1° 24'	1° 36'	1° 49'	2° 2'	2° 15'	2° 29'
52.0	2.047	0° 32'	0° 38'	0° 43'	0° 54'	1° 6'	1° 17'	1° 29'	1° 40'	1° 52'	2° 4'	2° 16'