

# KEY TO NUT AND BOLT SIZES

Nut Sizes Across Flats			British Sizes				Unified Sizes		American Sizes		Nut Sizes Across Flats			British Sizes				Unified Sizes		American Sizes	
inches	mm	AF inch	BA	BS inch	W inch	Nor inch	Hvy inch	SAE inch	USS inch	inches	mm	AF inch	BA	BS inch	W inch	Nor inch	Hvy inch	SAE inch	USS inch		
0.187		3/16						2.3		1.625		1 5/8					1	1 1/8	1		
0.193			6							1.653	42										
0.197	5									1.671				1 1/8	1						
0.217	5.5									1.687		1 11/16				1 1/8					
0.220			5							1.772	45										
0.236	6									1.812	46	1 13/16					1 1/8	1 1/4	1 1/8		
0.248			4					4		1.860				1 1/4	1 1/8						
0.250		1/4								1.875		1 7/8				1 1/4					
0.276	7									1.969	50										
0.282			3							2.000		2					1 1/4	1 3/8	1 1/4		
0.312		5/16						5.6	1/8	2.050	52			1 3/8	1 1/4						
0.316	8									2.062		2 1/16				1 3/8					
0.324			2							2.165	55										
0.340				3/16	1/8					2.187		2 3/16					1 3/8	1 1/2	1 3/8		
0.343		11/32								2.220				1 1/2	1 3/8						
0.354	9									2.250		2 1/4				1 1/2					
0.365			1							2.362	60										
0.375		3/8								2.375		2 3/8					1 1/2		1 1/2		
0.394	10									2.410				1 5/8	1 1/2						
0.412			0							2.437		2 7/16				1 5/8		1 5/8			
0.433	11									2.562	65	2 9/16					1 5/8		1 5/8		
0.437		7/16						1/4	1/4	2.580				1 3/4	1 5/8						
0.445				1/4	3/16					2.625		2 5/8				1 3/4		1 3/4			
0.472	12									2.750							1 3/4		1 3/4		
0.500		1/2						5/16	1/4	2.756	70										
0.512	13									2.760				2	1 3/4						
0.525				5/16	1/4					2.812		2 13/16				1 7/8		1 7/8			
0.551	14									2.937		2 15/16					1 7/8		1 7/8		
0.562		9/16						3/8	5/16	2.953	75										
0.590	15									3.000		3				2		2	2		
0.600				3/8	5/16					3.125		3 1/8					2		2		
0.625		5/8								3.150	80			2 1/4	2						
0.629	16									3.346	85										
0.669	17									3.375		3 3/8				2 1/4		2 1/4			
0.687		11/16								3.500		3 1/2					2 1/4		2 1/4		
0.708	18									3.543	90										
0.710				7/16	3/8					3.550				2 1/2	2 1/4						
0.748	19									3.740	95										
0.750		3/4						1/2	7/16	3.750		3 3/4				2 1/2		2 1/2			
0.787	20									3.875							2 1/2		2 1/2		
0.812		13/16								3.890				2 3/4	2 1/2						
0.820				1/2	7/16					3.937	100										
0.826	21									4.000		4									
0.866	22									4.015	102										
0.875		7/8								4.055	103										
0.905	23									4.062		4 1/16				2 5/8					
0.920				9/16	1/2					4.125		4 1/8									
0.937		15/16								4.133	105										
0.944	24									4.187		4 3/16				3	2 3/4				
0.984	25									4.250	108							2 3/4	2 3/4		
1.000		1								4.312		4 5/16									
1.010				5/8	9/16					4.330	110					2 7/8					
1.023	26									4.375	111										
1.062	27	1 1/16								4.437		4 7/16									
1.100				11/16	5/8					4.448	113										
1.102	28									4.500		4 1/2									
1.125		1 1/8								4.530	115			3 1/4	3						
1.141	29									4.562		4 9/16									
1.181	30									4.625		4 5/8					3		3		
1.200				3/4	11/16					4.724	120										
1.220	31									4.750		4 3/4									
1.250		1 1/4								4.842	123										
1.259	32									4.855				3 1/2	3 1/4						
1.300	33			7/8	3/4					5.000	127	5					3 1/4		3 1/4		
1.312		1 5/16								5.100											
1.375	35	1 3/8								5.118	130										
1.390				15/16	13/16					5.187		5 3/16		3 3/4	3 1/2						
1.417	36									5.314	135										
1.437		1 7/16								5.375		5 3/8					3 1/2		3 1/2		
1.480				1	7/8					5.562		5 9/16		4	3 3/4						
1.495	38									5.708	145										
1.500		1 1/2								5.750		5 3/4					3 3/4		3 3/4		
1.535	39									5.875		5 7/8									
1.574	40									5.905	150										
1.580										5.944	151										
1.614	41				15/16					5.955				4 1/4	4						
										6.102	155										

B = Bolt N = Nut

## ISO METRIC HEXAGON SIZES

Nominal size thread diameter M	1.6	2	2.5	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30	33	36	39	42	45	48	52	56	60	64	68
Nominal size across flats mm	3.2	4	5	5.5	7	8	10	13	17	19	22	24	27	30	32	36	41	46	50	55	60	65	70	75	80	85	90	95	100

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# TAPPING DRILL CHARTS

## I.S.O. METRIC COARSE THREAD

Nominal diameter	Pitch	Basic major diameter	Basic effective diameter	Basic minor diameter external threads	Basic minor diameter internal threads	Recommended Tapping Drill	Clearance Drill
mm	mm	mm	mm	mm	mm	mm	mm
1	0.25	1.000	0.838	0.693	0.729	0.75	1.05
1.1	0.25	1.100	0.938	0.793	0.829	0.85	1.15
1.2	0.25	1.200	1.038	0.893	0.929	0.95	1.25
1.4	0.30	1.400	1.205	1.032	1.075	1.10	1.45
1.6	0.35	1.600	1.373	1.170	1.221	1.25	1.65
1.8	0.35	1.800	1.573	1.370	1.421	1.45	1.85
2	0.40	2.000	1.740	1.509	1.567	1.60	2.05
2.2	0.45	2.200	1.908	1.648	1.713	1.75	2.25
2.5	0.45	2.500	2.208	1.948	2.013	2.05	2.60
3	0.50	3.000	2.675	2.387	2.459	2.50	3.10
3.5	0.60	3.500	3.110	2.764	2.850	2.90	3.60
4	0.70	4.000	3.545	3.141	3.242	3.30	4.10
4.5	0.75	4.500	4.013	3.580	3.688	3.70	4.60
5	0.80	5.000	4.480	4.019	4.134	4.20	5.10
6	1.00	6.000	5.350	4.773	4.917	5.00	6.10
7	1.00	7.000	6.350	5.773	5.917	6.00	7.20
8	1.25	8.000	7.188	6.466	6.647	6.80	8.20
9	1.25	9.000	8.188	7.466	7.647	7.80	9.20
10	1.50	10.000	9.026	8.160	8.376	8.50	10.20
11	1.50	11.000	10.026	9.160	9.376	9.50	11.20
12	1.75	12.000	10.863	9.853	10.106	10.20	12.20
14	2.00	14.000	12.701	11.546	11.835	12.00	14.25
16	2.00	16.000	14.701	13.546	13.835	14.00	16.25
18	2.50	18.000	16.376	14.933	15.294	15.50	18.25
20	2.50	20.000	18.376	16.933	17.294	17.50	20.25
22	2.50	22.000	20.376	18.933	19.294	19.50	22.25
24	3.00	24.000	22.051	20.319	20.752	21.00	24.25
27	3.00	27.000	25.051	23.319	23.752	24.00	27.25
30	3.50	30.000	27.727	25.706	26.211	26.50	30.50
33	3.50	33.000	30.727	28.706	29.211	29.50	33.50
36	4.00	36.000	33.402	31.093	31.670	32.00	36.50
39	4.00	39.000	36.402	34.093	34.670	35.00	39.50
42	4.50	42.000	39.077	36.479	37.129	37.50	42.50
45	4.50	45.000	42.077	39.479	40.129	40.50	45.50
48	5.00	48.000	44.752	41.866	42.587	43.00	48.50
52	5.00	52.000	48.752	45.866	46.587	47.00	52.00
56	5.50	56.000	52.428	49.252	50.046	50.50	57.00

## U.N.C. (Unified Coarse) THREAD

Size	TPI	OD in inches	Effective diameter inches	Core diameter inches	Pitch	Depth of Thread	Tapping Drill	Clearance Drill
1	64	0.0730	0.063	0.054	0.016	0.010	1.55 mm	1.95 mm
2	56	0.0860	0.074	0.064	0.018	0.011	1.85 mm	2.30 mm
3	48	0.0990	0.086	0.073	0.021	0.013	2.10 mm	2.65 mm
4	40	0.1120	0.096	0.081	0.025	0.015	2.35 mm	2.95 mm
5	40	0.1250	0.109	0.094	0.025	0.015	2.65 mm	3.30 mm
6	32	0.1380	0.118	0.100	0.032	0.019	2.85 mm	3.60 mm
8	32	0.1640	0.144	0.126	0.032	0.019	3.50 mm	4.30 mm
10	24	0.1900	0.163	0.139	0.042	0.026	3.90 mm	5.00 mm
12	24	0.2160	0.189	0.165	0.042	0.026	4.50 mm	5.60 mm
1/4"	20	0.2500	0.218	0.189	0.050	0.031	5.20 mm	6.50 mm
5/16"	18	0.3125	0.276	0.244	0.056	0.034	6.60 mm	8.10 mm
3/8"	16	0.3750	0.334	0.298	0.063	0.038	8.00 mm	9.70 mm
7/16"	14	0.4375	0.391	0.350	0.071	0.044	9.40 mm	11.30 mm
1/2"	13	0.5000	0.450	0.406	0.077	0.047	10.80 mm	12.90 mm
9/16"	12	0.5625	0.508	0.460	0.083	0.051	12.20 mm	14.50 mm
5/8"	11	0.6250	0.566	0.514	0.091	0.056	13.50 mm	14.64"
3/4"	10	0.7500	0.685	0.627	0.100	0.061	16.50 mm	49/64"
7/8"	9	0.8750	0.803	0.739	0.111	0.068	49/64"	57/64"
1"	8	1.0000	0.919	0.847	0.125	0.077	22.25"	1 1/64"
1 1/8"	7	1.1250	1.032	0.950	0.143	0.088	63/64"	1 9/64"
1 1/4"	7	1.2500	1.157	1.075	0.143	0.088	1 7/64"	1 17/64"
1 3/8"	6	1.3750	1.287	1.171	0.167	0.102	1 13/64"	1 25/64"
1 1/2"	6	1.5000	1.392	1.296	0.157	0.102	1 21/64"	1 33/64"
1 3/4"	5	1.7500	1.620	1.505	0.200	0.123	1 35/64"	1 49/64"
2"	4.5	2.0000	1.856	1.727	0.222	0.136	1 25/32"	2 1/64"

## U.N.F. (Unified Fine) THREAD

Size	TPI	OD in inches	Effective diameter inches	Core diameter inches	Pitch	Depth of Thread	Tapping Drill	Clearance Drill
0	80	0.0600	0.052	0.045	0.013	0.008	1.25 mm	1.65 mm
1	72	0.0730	0.064	0.056	0.014	0.009	1.55 mm	1.95 mm
2	64	0.0860	0.076	0.067	0.016	0.010	1.90 mm	2.30 mm
3	56	0.0990	0.087	0.077	0.018	0.011	2.15 mm	2.65 mm
4	48	0.1120	0.099	0.086	0.021	0.013	2.40 mm	2.95 mm
5	44	0.1250	0.110	0.097	0.023	0.014	2.70 mm	3.30 mm
6	40	0.1380	0.122	0.107	0.025	0.015	2.95 mm	3.60 mm
8	36	0.1640	0.146	0.130	0.028	0.017	9/64"	4.30 mm
10	32	0.1900	0.170	0.152	0.031	0.019	4.10 mm	5.00 mm
12	28	0.2160	0.193	0.172	0.036	0.022	4.70 mm	5.60 mm
1/4"	28	0.2500	0.227	0.206	0.036	0.022	5.50 mm	6.50 mm
5/16"	24	0.3125	0.285	0.261	0.042	0.026	6.90 mm	8.10 mm
3/8"	24	0.3750	0.348	0.324	0.042	0.026	8.50 mm	9.70 mm
7/16"	20	0.4375	0.405	0.376	0.050	0.031	9.90 mm	11.30 mm
1/2"	20	0.5000	0.468	0.439	0.050	0.031	11.50 mm	12.90 mm
9/16"	18	0.5625	0.526	0.494	0.056	0.034	12.90 mm	14.50 mm
5/8"	18	0.6250	0.589	0.557	0.056	0.034	14.50 mm	41/64"
3/4"	16	0.7500	0.709	0.673	0.063	0.038	11/16"	49/64"
7/8"	14	0.8750	0.829	0.787	0.071	0.044	8.00"	57/64"
1"	12	1.0000	0.946	0.898	0.083	0.051	23.25 mm	1 1/64"
1 1/8"	12	1.1250	1.071	1.023	0.083	0.051	26.50 mm	1 9/64"
1 1/4"	12	1.2500	1.196	1.148	0.083	0.051	29.50 mm	1 17/64"
1 3/8"	12	1.3750	1.321	1.273	0.083	0.051	1.290"	1 26/64"
1 1/2"	12	1.5000	1.446	1.398	0.083	0.051	36.00 mm	1 33/64"

## U.N.E.F. (Unified Extra Fine) THREAD

Size	TPI	OD in inches	Effective diameter inches	Core diameter inches	Pitch in inches	Depth of Thread	Tapping Drill	Clearance Drill
12	32	0.2160	0.196	0.178	0.031	0.019	4.70 mm	5.60 mm
1/4"	32	0.2500	0.230	0.212	0.031	0.019	7/32"	6.50 mm
5/16"	32	0.3125	0.292	0.274	0.031	0.019	9/32"	8.10 mm
3/8"	32	0.3750	0.355	0.337	0.031	0.019	11/32"	9.70 mm
7/16"	28	0.4375	0.414	0.394	0.036	0.022	10.20 mm	11.30 mm
1/2"	28	0.5000	0.477	0.456	0.036	0.022	10.80 mm	12.90 mm
9/16"	24	0.5625	0.535	0.511	0.042	0.026	13.20 mm	14.50 mm
5/8"	24	0.6250	0.598	0.574	0.042	0.026	15.00 mm	41/64"
11/16"	24	0.6875	0.660	0.636	0.042	0.026	16.50 mm	45/64"
3/4"	20	0.7500	0.718	0.689	0.050	0.031	45/64"	49/64"
13/16"	20	0.8125	0.780	0.751	0.050	0.031	49/64"	53/64"
7/8"	20	0.8750	0.843	0.814	0.050	0.031	21.00 mm	57/64"
15/16"	20	0.9375	0.905	0.876	0.050	0.031	22.50 mm	63/64"
1"	20	1.0000	0.968	0.939	0.050	0.031	61/64"	1 1/64"

## B.S.W. (British Standard Whitworth) THREAD

Diameter	Outside diameter	Core diameter	Threads per inch	Pitch	Depth	Radius	Tapping Drill	Clearance Drill
1/16"	0.0625	0.0412	60	0.01670	0.0107	0.0023	1.25 mm	1.85 mm
3/32"	0.0937	0.0670	48	0.02080	0.0133	0.0029	1.95 mm	2.60 mm
1/8"	0.1250	0.0930	40	0.02500	0.0160	0.0034	2.55 mm	3.50 mm
5/32"	0.1562	0.1162	32	0.03125	0.0200	0.0043	1/8"	4.30 mm
3/16"	0.1875	0.1341	24	0.04167	0.0267	0.0057	3.70 mm	5.10 mm
7/32"	0.2187	0.1653	24	0.04167	0.0267	0.0057	4.50 mm	5.90 mm
1/4"	0.2500	0.1860	20	0.05000	0.0320	0.0069	5.10 mm	6.70 mm
5/16"	0.3125	0.2414	18	0.05560	0.0356	0.0076	6.50 mm	8.30 mm
3/8"	0.3750	0.2950	16	0.06250	0.0400	0.0086	5/16"	25/64"
7/16"	0.4375	0.3460	14	0.07143	0.0457	0.0098	9.30 mm	11.50 mm
1/2"	0.5000	0.3933	12	0.08330	0.0534	0.0114	10.50 mm	33/64"
9/16"	0.5625	0.4558	12	0.08330	0.0534	0.0114	12.10 mm	14.75 mm
5/8"	0.6250	0.5086	11	0.09090	0.0582	0.0125	13.50 mm	16.50 mm
11/16"	0.6875	0.5711	11	0.09090	0.0582	0.0125	15.25 mm	18.00 mm
3/4"	0.7500	0.6219	10	0.10000	0.0640	0.0137	41/64"	19.50 mm
13/16"	0.8125	0.6844	10	0.10000	0.0640	0.0137	18.00 mm	21.25 mm
7/8"	0.8750	0.7327	9	0.11110	0.0711	0.0153	19.25 mm	22.75 mm
15/16"	0.9375	0.7952	9	0.11110	0.0711	0.0153	21.00 mm	24.25 mm
1"	1.0000	0.8399	8	0.12500	0.0800	0.0172	22.00 mm	1 1/32"
1 1/8"	1.1250	0.9420	7	0.14280	0.0915	0.0196	24.75 mm	1 5/32"
1 1/4"	1.2500	1.0670	7	0.14280	0.0915	0.0196	1 3/32"	1 9/32"
1 3/8"	1.3750	1.1616	6	0.15850	0.1067	0.0229	31.00 mm	1 13/32"
1 1/2"	1.5000	1.2866	6	0.16667	0.1067	0.0229	33.50 mm	1 17/32"
1 5/8"	1.6250	1.3689	5	0.20000	0.1281	0.0275	36.50 mm	1 21/32"
1 3/4"	1.7500	1.4939	5	0.20000	0.1281	0.0275	39.00 mm	1 25/32"
1 7/8"	1.8750	1.5904	4 1/2	0.22220	0.1423	0.0305	41.50 mm	1 29/32"
2"	2.0000							