Performance Fasteners Ltd

Manufacturing fasteners that perform in industry

The Most Comprehensive

Fastener Technical Guide

Second Edition - 2015

Conversion Tables

Imperial, Fractions, Metric, Decimal

Specifications:

Hexagon Heads, Socket Screws, Hex Nuts, Pipe Plugs
Steel Specificatons & Hardness Comparisons
Material Bar Weights for Diameter & Hexagon

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Contents

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Hex Head Bolts and Hex Set Screws
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Thread	Pitch	Hexagon A/F		Head Height		Bolt
Size	(T.P.I)	Min	Max	Min	Max	T.L.
M1.6	0.35	3.02	3.20	0.975*	1.225*	9.00
M2	0.4	3.82	4.00	1.275*	1.525*	10.00
M2.5	0.45	4.82	5.00	1.575*	1.825*	11.00
M3	0.5	5.32	5.50	1.875*	2.125*	12.00
M4	0.7	6.78	7.00	2.675*	2.925*	14.00
M5	0.8	7.78	8.00	3.350	3.650	16.00
M6	1.0	9.78	10.00	3.850	4.150	18.00
M7	1.0	~	~	~	~	~
M8	1.25	12.73	13.00	5.150*	5.450*	22.00
M10	1.5	15.73*	16.00*	6.220*	6.580*	26.00
M12	1.75	17.73*	18.00*	7.320	7.680	30.00
M14	2.0	20.67*	21.00*	8.620	8.980	34.00
M16	2.0	23.67	24.00	9.820	10.180	38.00
M18	2.5	26.67	27.00	11.285*	11.715*	42.00
M20	2.5	29.67	30.00	12.285*	12.715*	46.00
M22	2.5	33.38*	34.00*	13.785*	14.215*	50.00
M24	3.0	35.38	36.00	14.785*	15.215*	54.00
M27	3.0	40.00	41.00	16.650	17.350	60.00
M30	3.5	45.00	46.00	18.280	19.120	66.00
M33	3.5	49.00	50.00	20.580	21.420	72.00
M36	4.0	53.80	55.00	22.080	22.920	78.00
M39	4.0	58.80	60.00	24.580	25.420	84.00
M42	4.5	63.10	65.00	25.580	26.420	90.00
M48	5.0	73.10	75.00	29.580	30.420	102.00
M56	5.5	82.80	85.00	34.500	35.500	118.00
M64	6.0	92.80	95.00	39.500	40.500	134.00

For lengths 125mm to 200mm add 6mm to T.L. above

For lengths over 200mm add 19mm to T.L. above

* Indicates difference to DIN Spec

These dimensions are for use as guide purposes only

Hex Head Bolts and Hex Set Screws
Metric
DIN 931 / 933

Thread	Pitch	Hexagon A/F		Head Height		Bolt
Size	(T.P.I)	Min	Max	Min	Max	T.L.
M1.6	0.35	3.02	3.20	0.98*	1.22*	9.00
M2	0.4	3.82	4.00	1.28*	1.52*	10.00
M2.5	0.45	4.82	5.00	1.58*	1.82*	11.00
M3	0.5	5.32	5.50	1.88*	2.12*	12.00
M4	0.7	6.78	7.00	2.68*	2.92*	14.00
M5	0.8	7.78	8.00	3.35	3.65	16.00
M6	1.0	9.78	10.00	3.85	4.15	18.00
M7	1.0	10.73	11.00	4.65	4.95	20.00
M8	1.25	12.73	13.00	5.15	5.45	22.00
M10	1.5	16.73*	17.00*	6.22	6.58	26.00
M12	1.75	18.67*	19.00*	7.32	7.68	30.00
M14	2.0	21.67*	22.00*	8.62	8.98	34.00
M16	2.0	23.67	24.00	9.82	10.18	38.00
M18	2.5	26.67	27.00	11.28*	11.72*	42.00
M20	2.5	29.67	30.00	12.28*	12.72*	46.00
M22	2.5	31.61*	32.00*	13.78*	14.22*	50.00
M24	3.0	35.38	36.00	14.78*	15.22*	54.00
M27	3.0	40.00	41.00	16.65	17.35	60.00
M30	3.5	45.00	46.00	18.28	19.12	66.00
M33	3.5	49.00	50.00	20.58	21.42	72.00
M36	4.0	53.80	55.00	22.08	22.92	78.00
M39	4.0	58.80	60.00	24.58	25.42	84.00
M42	4.5	63.10	65.00	25.58	26.42	90.00
M48	5.0	73.10	75.00	29.58	30.42	102.00
M56	5.5	82.80	85.00	34.50	35.50	118.00
M64	6.0	92.80	95.00	39.50	40.50	134.00

* Indicates difference to ISO Spec

For lengths 125mm to 200mm add 6mm to T.L. above

For lengths over 200mm add 19mm to T.L. above

Head Hgt Tolerances are Din 933 (Din 931 are Reference)

These dimensions are for use as guide purposes only

DIN 934 - Metric Hexagon Full Nuts

Thread	Course	Hexagon A/F		A/C	Thickness	
Dia	Pitch	Min	Max	Min	Min	Max
M1.6	0.35	3.02	3.20	3.41	1.05	1.30
M2	0.4	3.82	4.00	4.32	1.35	1.60
M2.5	0.45	4.82	5.00	5.45	1.75	2.00
M3	0.5	5.32	5.50	6.01	2.15	2.40
M4	0.7	6.78	7.00	7.66	2.90	3.20
M5	0.8	7.78	8.00	8.79	3.70	4.00
M6	1.0	9.78	10.00	11.05	4.70*	5.00*
M7	1.0	10.73	11.00	12.12	5.20	5.50
M8	1.25	12.73	13.00	14.38	6.14*	6.50*
M10	1.5	16.73*	17.00*	18.90*	7.64*	8.00*
M12	1.75	18.67*	19.00*	21.10*	9.64*	10.00*
M14	2.0	21.67*	22.00*	24.49*	10.30*	11.00*
M16	2.0	23.67	24.00	26.75	12.30*	13.00*
M18	2.5	26.16	27.00	29.56	14.30*	15.00*
M20	2.5	29.16	30.00	32.95	14.90*	16.00*
M22	2.5	31.00*	32.00*	35.03*	16.90*	18.00*
M24	3.0	35.00	36.00	39.55	17.70*	19.00*
M27	3.0	40.00	41.00	45.20	20.70*	22.00*
M30	3.5	45.00	46.00	50.85	22.70*	24.00*
M33	3.5	49.00	50.00	55.37	24.70*	26.00*
M36	4.0	53.80	55.00	60.79	27.40*	29.00*
M39	4.0	58.80	60.00	66.44	29.40*	31.00*
M42	4.5	63.10	65.00	71.30	32.40	34.00
M45	4.5	68.10	70.00	76.95	34.40	36.00
M48	5.0	73.10	75.00	82.60	36.40	38.00
M52	5.0	78.10	80.00	88.25	40.40	42.00
M56	5.5	82.80	85.00	93.56	43.40	45.00
M60	5.5	87.80	90.00	99.21	46.40	48.00
M64	6.0	92.80	95.00	104.86	49.10	51.00
M68	6.0	97.80	100.00	110.51	52.10	54.00
M72	6.0	102.80	105.00	116.16	56.10	58.00

*** Indicates there is a different dimension for ISO 4032**

ISO 4032 - Metric Hexagon Full Nuts

Thread	Course	Hexagon A/F		A/C	Thickness	
Dia	Pitch	Min	Max	Min	Min	Max
M1.6	0.35	3.02	3.20	3.41	1.05	1.30
M2	0.4	3.82	4.00	4.32	1.35	1.60
M2.5	0.45	4.82	5.00	5.45	1.75	2.00
M3	0.5	5.32	5.50	6.01	2.15	2.40
M4	0.7	6.78	7.00	7.66	2.90	3.20
M5	0.8	7.78	8.00	8.79	4.4	4.7
M6	1.0	9.78	10.00	11.05	4.90*	5.20*
M7	~	~	~	~	~	~
M8	1.25	12.73	13.00	14.38	6.44*	6.80*
M10	1.5	15.73*	16.00*	17.77*	8.04*	8.40*
M12	1.75	17.73*	18.00*	20.03*	10.37*	10.80*
M14	2.0	20.67*	21.00*	23.35*	12.10*	12.80*
M16	2.0	23.67	24.00	26.75	14.10*	14.80*
M18	2.5	26.16	27.00	29.56	15.10*	15.80*
M20	2.5	29.16	30.00	32.95	16.90*	18.00*
M22	2.5	33.00*	34.00*	37.29*	18.10*	19.40*
M24	3.0	35.00	36.00	39.55	20.20*	21.50*
M27	3.0	40.00	41.00	45.20	22.50*	23.80*
M30	3.5	45.00	46.00	50.85	24.30*	25.60*
M33	3.5	49.00	50.00	55.37	27.40*	28.70*
M36	4.0	53.80	55.00	60.79	29.40*	31.00*
M39	4.0	58.80	60.00	66.44	31.80*	33.40*
M42	4.5	63.10	65.00	71.30	32.40	34.00
M45	4.5	68.10	70.00	76.95	34.40	36.00
M48	5.0	73.10	75.00	82.60	36.40	38.00
M52	5.0	78.10	80.00	88.25	40.40	42.00
M56	5.5	82.80	85.00	93.56	43.40	45.00
M60	5.5	87.80	90.00	99.21	46.40	48.00
M64	6.0	92.80	95.00	104.86	49.10	51.00
M68	~	~	~	~	~	~
M72	~	~	~	~	~	~

*** Indicates there is a different dimension for DIN 934**

Hex Head Bolts and Hex Set Screws
UNC / UNF
BS1768

Thread Size	Pitch UNC	Pitch UNF	Hex Flat	Hex Corners	Head Height	Bolt T.L.
No.4	40	48	.187	.216	.060	.474
No.5	40	44	.188	.217	.070	.500
No.6	32	40	.250	.289	.093	.526
No.8	32	36	.250	.289	.110	.578
N.10	24	32	.312	.360	.120	.630
1/4	20	28	.437	.505	0.163	.750
5/16	18	24	.500	.577	0.211	.875
3/8	16	24	.562	.650	0.243	1.000
7/16	14	20	.625	.722	0.291	1.125
1/2	13	20	.750	.866	0.323	1.250
9/16	11	18	.812	.938	0.371	1.375
5/8	11	18	.937	1.083	0.403	1.500
3/4	10	16	1.125	1.300	0.483	1.750
7/8	9	14	1.312	1.515	0.563	2.000
1"	8	12	1.500	1.732	0.627	2.250
1.1/8	7	12	1.687	1.948	0.718	2.500
1.1/4	7	12	1.875	2.165	0.813	2.750
1.3/8	6	12	2.062	2.382	0.878	3.00
1.1/2	6	12	2.250	2.598	0.974	3.250
1.3/4	5	12	2.625	3.031	1.134	3.750
2"	4.5	12	3.000	3.464	1.263	4.250
2.1/2	4	12	3.750	4.330	1.583	5.250
3"	4	12	4.500	5.196	1.935	6.250
3.1/2"	4	12	5.250	6.062	2.193	6.750
4"	4	12	6.000	6.928	2.576	8.250
	actual	actual	max	max	max	min

For lengths 5" to 8" add 1/4" to T.L. above
For lengths over 8" add 3/4" to T.L. above

These dimensions are for use as guide purposes only

Hex Head Bolts and Hex Set Screws
BSF / BSW
BS1083

Thread Size	Pitch BSF	Pitch BSW	Hex Flat	Hex Corners	Head Height	Bolt T.L.
1/4	26	20	.445	.510	.176	.500
5/16	22	18	.525	.610	.218	.625
3/8	20	16	.600	.690	.260	.750
7/16	18	14	.710	.820	.302	.875
1/2	16	12	.820	.950	.343	1.000
9/16	16	12	.920	1.060	.375	1.125
5/8	14	11	1.010	1.170	.417	1.250
3/4	12	10	1.200	1.390	.500	1.500
7/8	11	9	1.300	1.50	.583	1.750
1"	10	8	1.480	1.71	.666	2.000
1.1/8	9	7	1.670	1.93	.750	2.250
1.1/4	9	7	1.860	2.15	.830	2.500
1.3/8	8	6	2.050	2.37	.920	2.750
1.1/2	8	6	2.220	2.56	1.000	3.000
1.3/4	7	5	2.580	2.98	1.170	3.500
2"	7	4.5	2.760	3.19	1.330	4.000
2.1/2	6	4	3.550	4.10	1.670	5.000
3"	5	3.5	4.180	4.83	2.000	6.000
3.1/2"	4.5	3.25	4.810	5.55	2.330	6.500
4"	4.5	3.0	5.440	6.23	2.660	8.000
	actual	actual	max	max	max	min

Thread Lengths on BSF and BSW
equate to 2 x diameter minimum

Calculation From A/F To A/C =
A/F x 1.1547

These dimensions are for use as guide purposes only

Metric Socket Cap Screws
ISO 4762 & DIN 912

Thrd	Head Dia.		Head Height		Socket A/F		Skt Dpth	Wall
Size	Min	Max	Min	Max	Min	Max	Min	Dpth
M1.6	2.86	3.00	1.46	1.60	1.52	1.58*	0.70	0.55
M2	3.62	3.80	1.86	2.00	1.52	1.58*	1.00	0.55
M2.5	4.32	4.50	2.36	2.50	2.02	2.08*	1.10	0.85
M3	5.32	5.50	2.86	3.00	2.52	2.58	1.30	1.15
M4	6.78	7.00	3.82	4.00	3.02	3.08	2.00	1.4
M5	8.28	8.50	4.82	5.00	4.02	4.095	2.50	1.9
M6	9.78	10.00	5.70	6.00	5.02	5.14	3.00	2.3
(M7)	10.28	11.50	6.72	7.00	5.02	5.14	3.5	2.8
M8	12.73	13.00	7.64	8.00	6.02	6.14	4.00	3.3**
M10	15.73	16.00	9.64	10.00	8.025	8.175	5.00	4.0
M12	17.73	18.00	11.57	12.00	10.025	10.175	6.00	4.8
M14	20.67	21.00	13.57	14.00	12.032	12.212	7.00	5.8
M16	23.67	24.00	15.57	16.00	14.032	14.212	8.00	6.8
M18	26.67	27.00	17.57	18.00	14.032	14.212	9.00	7.8
M20	29.67	30.00	19.48	20.00	17.05	17.23	10.00	8.6
M22	32.61	33.00	21.48	22.00	17.05	17.23	11.00	9.4
M24	35.61	36.00	23.48	24.00	19.065	19.275	12.00	10.4
M27	39.61	40.00	26.48	27.00	19.065	19.275	13.50	11.9
M30	44.61	45.00	29.48	30.00	22.065	22.275	15.50	13.1
M36	53.54	54.00	35.38	36.00	27.065	27.275	19.00	15.3
M42	62.54	63.00	41.38	42.00	32.08	32.33	24.00	16.3
M48	71.54	72.00	47.38	48.00	36.08	36.33	28.00	17.5
M56	83.46	84.00	55.26	56.00	41.08	41.33	34.00	19.0
M64	95.46	96.00	63.26	64.00	46.08	46.33	38.00	22.0

M18, M22 & M27 relate to DIN Only - No listing for ISO Min

*The dimensions that are marked * - change on Din 912

The Skt A/F on Din 912 is a tighter tolerance where marked *

*** M1.6 = 1.56 max M2 = 1.56 max M2.5 = 2.06 max**

**** M8 Cap on Din 912 calls for Wall Thickness = 3.0 min**

(M7) : Dimensions are based on Pro-Rata

Head Diameters are for heads without knurls

Extra allowance is made for heads that are knurled

Metric Low Head Cap Screws - Din 7984

Thread	Pitch	Head Dia		Head Hgt		Skt	Skt	Min
Size	(T.P.I)	MIN	MAX	MIN	MAX	A/F	Depth	T.L.
M3	0.50	5.32	5.5	2.16	2.3	2.0	2.0	18
M4	0.70	6.78	7.0	2.62	2.8	2.5	2.3	20
M5	0.80	8.28	8.5	3.32	3.5	3.0	2.7	22
M6	1.00	9.78	10.0	3.70	4.0	4.0	3.0	24
M8	1.25	12.73	13.0	4.64	5.0	5.0	4.2	28
M10	1.50	15.73	16.0	5.64	6.0	7.0	4.8	32
M12	1.75	17.73	18.0	6.57	7.0	8.0	5.3	36
M14	2.00	20.67	21.0	7.57	8.0	10.0	5.5	40
M16	2.00	23.67	24.0	8.57	9.0	12.0	5.5	44
M18	2.50	26.67	27.0	9.57	10.0	12.0	7.5	48
M20	2.50	29.67	30.0	10.48	11.0	14.0	7.5	52
M22	2.50	32.61	33.0	11.48	12.0	14.0	8.0	56
M24	3.00	35.61	36.0	12.48	13.0	17.0	8.0	60
M27	3.00	39.61	40.0	14.48	15.0	17.0	9.0	66
						nom	min	

Metric Low Head Cap Screws - Din 6912

Thread	Pitch	Head	Head	Skt	Skt	Pilot	Pilot	Min
Size	(T.P.I)	Hgt	Dia	A/F	Depth	Dia	Depth	T.L.
M4	0.70	2.8	7.0	3.0	1.6	2.0	3.0	20
M5	0.80	3.5	8.5	4.0	2.0	2.5	4.0	22
M6	1.00	4.0	10.	5.0	2.5	3.0	5.0	24
M8	1.25	5.0	13.0	6.0	3.0	4.0	5.5	28
M10	1.50	6.5	16.0	8.0	3.5	5.0	7.5	32
M12	1.75	7.5	18.0	10.0	4.0	6.0	9.0	36
M14	2.00	8.5	21.0	12.0	4.5	7.0	10.0	40
M16	2.00	10.0	24.0	14.0	5.5	8.0	11.5	44
M18	2.50	11.0	27.0	14.0	6.0	8.0	12.5	48
M20	2.50	12.0	30.0	17.0	6.5	10.0	14.0	52
M22	2.50	13.0	33.0	17.0	7.0	10.0	15.0	56
M24	3.00	14.0	36.0	19.0	7.0	12.0	16.0	60
M27	3.00	16.0	40.0	19.0	8.5	12.0	17.0	66
	actual	max	max	nom	nom	nom	min	min

These dimensions are for use as guide purposes only

1960 Series Socket Cap Screws

UNC / UNF

Thread Size	Pitch **UNC**	Pitch **UNF**	Head Height	Head Dia	Skt A/F	Skt Depth	Min T.L.
No.3	48	56	.099	.161	5/64	.044	.625
No.4	40	48	.112	.183	3/32	.051	.750
No.5	40	44	.125	.205	3/32	.057	.750
No.6	32	40	.138	.226	7/64	.064	.750
No.8	32	36	.164	.270	9/64	.077	.875
No.10	24	32	.190	.312	5/32	.090	.875
1/4	20	28	.250	.375	3/16	.120	1.00
5/16	18	24	.312	.469	1/4	.151	1.125
3/8	16	24	.375	.562	5/16	.182	1.250
7/16	14	20	.437	.656	3/8	.213	1.375
1/2	13	20	.500	.750	3/8	.245	1.500
5/8	11	18	.625	.938	1/2	.307	1.750
3/4	10	16	.750	1.125	5/8	.370	2.000
7/8	9	14	.875	1.312	3/4	.432	2.250
1"	8	12	1.00	1.500	3/4	.495	2.500
1.1/8	7	12	1.125	1.687	7/8	.557	2.812
1.1/4	7	12	1.250	1.875	7/8	.620	3.125
1.3/8	6	12	1.375	2.062	1	.682	3.437
1.1/2	6	12	1.500	2.250	1	.745	3.750
1.5/8	5	12	1.625	2.437	1.1/4	.807	4.062
1.3/4	5	12	1.750	2.625	1.1/4	.870	4.375
2"	4.5	12	2.000	3.000	1.1/2	.995	5.000
	actual	actual	max	max	nom	min	min

These dimensions are for use as guide purposes only

1936 Series Socket Cap Screws

UNC / UNF

Thread Size	Pitch **UNC**	Pitch **UNF**	Head Height	Head Height	Skt A/F	Skt Depth	Min T.L.
No.3	48	56	.099	.161	5/64	.044	.625
No.4	40	48	.112	.183	5/64	.051	.750
No.5	40	44	.125	.205	3/32	.057	.750
No.6	32	40	.138	.226	3/32	.064	.750
No.8	32	36	.164	.270	1/8	.077	.875
No.10	24	32	.190	.312	5/32	.090	.875
1/4	20	28	.250	.375	3/16	.120	1.00
5/16	18	24	.312	.437	7/32	.151	1.125
3/8	16	24	.375	.562	5/16	.182	1.250
7/16	14	20	.437	.625	5/16	.213	1.375
1/2	13	20	.500	.750	3/8	.245	1.500
5/8	11	18	.625	.875	1/2	.307	1.750
3/4	10	16	.750	1.0	9/16	.370	2.000
7/8	9	14	.875	1.125	9/16	.432	2.250
1"	8	12	1.00	1.312	5/8	.495	2.500
	actual	actual	max	max	nom	min	min

Socket Cap Screws

BSF / BSW

Thread Size	**BSF** (T.P.I.)	**BSW** (T.P.I.)	Head Height	Head Dia	Skt A/F	Skt Depth	Min T.L.
3/16	32	24	.187	.312	5/32	.089	7/8
1/4	26	20	.250	.375	3/16	.120	1"
5/16	22	18	.312	.437	7/32	.151	1.1/8
3/8	20	16	.375	.562	5/16	.182	1.1/4
7/16	18	14	.437	.625	5/16	.213	1.3/8
1/2	16	12	.500	.750	3/8	.245	1.1/2
5/8	14	11	.625	.875	1/2	.307	1.3/4
3/4	12	10	.750	1.00	9/16	.370	2"
7/8	11	9	.875	1.125	9/16	.432	2.1/4
1"	10	8	1.00	1.312	5/8	.495	2.1/2
	actual	actual	max	max	nom	min	min

These dimensions are for use as guide purposes only

CX Socket Cap Screws
BSW / BSF

Thread	Head Dia		Head Height		Skt	Skt	Wall	Min
Size	Min	Max	Min	Max	A/F	Depth	Thick	T.L.
1/4	.425	.437	.244	.250	3/16	.120	.095	1.000
5/16	.487	.500	.306	.312	7/32	.151	.119	1.125
3/8	.611	.625	.368	.375	5/16	.182	.143	1.250
7/16	.735	.750	.430	.437	5/16	.213	.166	1.375
1/2	.858	.875	.492	.500	3/8	.245	.190	1.500
5/8	.982	1.00	.616	.625	1/2	.307	.238	1.750
3/4	1.105	1.125	.740	.750	9/16	.370	.285	2.000
7/8	1.291	1.312	.864	.875	9/16	.432	.333	2.250
1	1.479	1.50	.988	1.00	5/8	.495	.380	2.500
					nom	min	min	

Socket Cap Screws Low Head
BSW / BSF / UNC / UNF

Thread	Pitch	Pitch	Pitch	Pitch	Head	Head	Skt	Skt
Size	**BSW**	**BSF**	**UNC**	**UNF**	Height	Dia	A/F	Depth
No.8	n/a	n/a	32	36	.082	.270	5/64	.060
No.10	n/a	n/a	24	32	.095	.312	3/32	.072
3/16	24	32	n/a	n/a	.095	.312	3/32	.072
1/4	20	26	20	28	.125	.375	1/8	.094
5/16	18	22	18	24	.156	.437	5/32	.120
3/8	16	20	16	24	.187	.562	3/16	.145
7/16	14	18	14	20	.218	.625	7/32	.164
1/2	12	16	13	20	.250	.750	1/4	.184
5/8	11	14	11	18	.312	.875	5/16	.240
3/4	10	12	10	16	.375	1.00	3/8	.276
1	8	10	8	12	.500	1.312	1/2	.338
	actual	actual	actual	actual	max	max	nom	min

These dimensions are for use as guide purposes only

Socket Cap Screws
BA
(British Association)

Thread	Pitch	Head	Head	Skt	Skt	Min	Body
Size	(T.P.I.)	Height	Dia	A/F	Dpth	T.L.	Dia
8BA	59.14	.087	.140	1/16	.039	.750	.087
7BA	52.92	.098	.163	1/16	.044	.750	.098
6BA	47.91	.110	.187	5/64	.050	.750	.110
5BA	43.08	.126	.219	3/32	.058	.750	.126
4BA	38.49	.142	.219	3/32	.066	.750	.142
3BA	34.81	.161	.250	1/8	.075	.875	.161
2BA	31.36	.187	.312	5/32	.089	.875	.185
1BA	28.23	.209	.312	5/32	.100	1.00	.209
0BA	25.4	.236	.375	3/16	.113	1.00	.236
	actual	max	max	nom	min	min	max

Socket Countersunk Screws
BA
(British Association)

Thread	Pitch	Head	Head	Skt	Skt	Min	Body
Size	(T.P.I.)	Height	Dia	A/F	Dpth	T.L.	Dia
8BA	59.14	.038	.147	.050	.030	.625	.087
6BA	47.91	.050	.189	.050	.040	.750	.110
5BA	43.08	.056	.215	1/16	.045	.750	.126
4BA	38.49	.063	.243	1/16	.050	.750	.142
3BA	34.81	.072	.277	5/64	.057	.875	.161
2BA	31.36	.083	.319	3/32	.065	.875	.185
1BA	28.23	.093	.360	3/32	.072	1.000	.209
0BA	25.4	.106	.408	1/8	.080	1.000	.236
	actual	ref	min	nom	min	min	max

These dimensions are for use as guide purposes only

Socket Countersunk Screws
UNC / UNF

Thread	Pitch	Pitch	Head	Head	Skt	Skt	Min	Head
Size	**UNC**	**UNF**	Height	Dia	A/F	Depth	T.L.	Angle
No.0	n/a	80	0.046	0.117	0.035	0.025	0.500	80/82
No.1	64	72	0.057	0.143	0.050	0.031	0.625	80/82
No.2	56	64	0.066	0.168	0.050	0.038	0.625	80/82
No.3	48	56	0.075	0.193	1/16	0.044	0.625	80/82
No.4	40	48	0.085	0.218	1/16	0.055	0.750	80/82
No.5	40	44	0.093	0.240	5/64	0.061	0.750	80/82
No.6	32	40	0.100	0.263	5/64	0.066	0.750	80/82
No.8	32	36	0.116	0.311	3/32	0.076	0.875	80/82
No.10	24	32	0.131	0.359	1/8	0.087	0.875	80/82
1/4	20	28	0.167	0.476	5/32	0.111	1.000	80/82
5/16	18	24	0.205	0.589	3/16	0.135	1.125	80/82
3/8	16	24	0.241	0.704	7/32	0.159	1.250	80/82
7/16	14	20	0.242	0.755	1/4	0.159	1.375	80/82
1/2	13	20	0.260	0.857	5/16	0.172	1.500	80/82
5/8	11	18	0.335	1.065	3/8	0.220	1.750	80/82
3/4	10	16	0.410	1.293	1/2	0.220	2.000	80/82
	actual	actual	ref	min	nom	min	min	actual

Socket Countersunk Screws
BSF / BSW

Thread	Pitch	Pitch	Head	Head	Skt	Skt	Min	Head
Size	**BSF**	**BSW**	Height	Dia	A/F	Depth	T.L.	Angle
1/8	48	40	.057	.215	1/16	.043	.750	89/91
3/16	32	24	.084	.323	3/32	.065	.875	89/91
1/4	26	20	.112	.432	5/32	.093	1.000	89/91
5/16	22	18	.140	.542	3/16	.105	1.125	89/91
3/8	20	16	.168	.651	7/32	.125	1.250	89/91
7/16	18	14	.196	.761	1/4	.145	1.375	89/91
1/2	16	12	.225	.870	5/16	.165	1.500	89/91
5/8	14	11	.281	1.089	3/8	.220	1.750	89/91
3/4	12	10	.337	1.308	3/8	.220	2.000	89/91
	actual	actual	ref	min	nom	min	min	actual

These dimensions are for use as guide purposes only

Socket Shoulder Screws
UNF / UNC / BSW / BSF
BS 2470

Nom	Thread	Shoulder Dia		Head	Head	Skt	Skt	Thread
Dia	Dia	Max	Min	Dia	Height	A/F	Depth	Length
1/4	No.10*	.2480	.2460	.375	.188	1/8	.094	.375
5/16	1/4	.3105	.3085	.438	.219	5/32	.117	.438
3/8	5/16	.3730	.3710	.563	.250	3/16	.141	.500
1/2	3/8	.4980	.4960	.750	.313	1/4	.188	.625
5/8	1/2	.6230	.6210	.875	.375	5/16	.234	.750
3/4	5/8	.7480	.7460	1.00	.500	3/8	.281	.875
1	3/4	.9980	.9960	1.5/16	.625	1/2	.374	1.000
1.1/4	1	1.2480	1.2460	1.625	.750	5/8	.520	1.125
1.1/2	1.1/4	1.4980	1.4960	2.00	1.00	3/4	.640	1.312
	nom			max	max	nom	min	max

* For BSW / BSF this dimension is 3/16

Socket Shoulder Screws Metric
ISO 7379

Nom	Thread	Shoulder Dia		Head	Head	Skt	Skt	Nom
Dia	Dia	Max	Min	Dia	Hgt	A/F	Depth	T.L.
4	M3	3.99	3.96	8.0	3.5	2.0	1.8	7.0
5	M4	4.99	4.96	8.5	4.0	2.5	2.1	8.0
6	M5	5.99	5.96	10.0	4.5	3.0	2.4	9.5
8	M6	7.987	7.951	13.0	5.5	4.0	3.3	11.0
10	M8	9.987	9.951	16.0	7.0	5.0	4.2	13.0
12	M10	11.984	11.941	18.0	9.0	6.0	4.9	16.0
16	M12	15.984	15.941	24.0	11.0	8.0	6.6	18.0
20	M16	19.980	19.928	30.0	14.0	10.0	8.8	22.0
24	M20	23.980	23.928	36.0	16.0	12.0	10.0	27.0
27	M24	26.980	26.928	41.0	18	12.0	12	31.0
30	M27	29.980	29.928	46	21	14	14	35.0
				max	max	nom	min	

These dimensions are for use as guide purposes only

Metric Socket Countersunk Dimensions
90 Degree Head Diameter

Thread	Pitch	Head	Head	Socket	Socket	Min
Size	(T.P.I)	Height	Diameter	A/F	Depth	T.L.
M3	0.50	1.86	5.54	2.0	1.1	18
M4	0.70	2.48	7.53	2.5	1.5	20
M5	0.80	3.10	9.43	3.0	1.9	22
M6	1.00	3.72	11.34	4.0	2.2	24
M8	1.25	4.96	15.24	5.0	3.0	28
M10	1.50	6.20	19.22	6.0	3.6	32
M12	1.75	7.44	23.12	8.0	4.3	36
M14	2.00	8.40	26.52	10.0	4.5	40
M16	2.00	8.80	29.01	10.0	4.8	44
M18	2.5	9.40	32.53	10.0	5.2	48
M20	2.5	10.16	36.05	12.0	5.6	52
	actual	max	min	nom	min	min

Head angle can differ between 90 and 60 Degree >M20

Below are dimensions to be used as a guide only

Metric Socket Countersunk Dimensions
90 Degree Head Diameter

Thread	Pitch	Head	Head	Socket	Socket	Min
Size	(T.P.I)	Height	Diameter	A/F	Depth	T.L.
M24	3.0	11.50	45.00	14.00	6.36	60
M30	3.5	14.75	53.00	17.00	7.65	72
	actual	ref	actual	nom	min	min

Metric Socket Countersunk Dimensions
60 Degree Head Diameter

THD	Pitch	Head	Head	Socket	Socket	Min
SIZE	(T.P.I)	Height	Diameter	A/F	Depth	T.L.
M24	3.0	14.22	39.00	14.00	10.20	60
M30	3.5	21.65	48.00	17.00	12.00	72
	actual	ref	actual	nom	min	min

These dimensions are for use as guide purposes only

Socket Set Screws
UNC / UNF / BSW / BSF
BS 2470

Thread Size	Basic Dia	Skt A/F	Skt Depth	Flat & Cup Dia	Dog Dia	H.Dog Length	F.Dog Length
No.0	.060	.028	.022	.033	.040	.017	.034
No.1	.073	.035	.028	.040	.049	.021	.042
No.2	.086	.035	.028	.047	.057	.024	.048
No.3	.099	.050	.040	.054	.066	.027	.054
No.4	.112	.050	.040	.061	.075	.030	.060
No.5	.125	1/16	.050	.067	.083	.033	.066
No.6	.138	1/16	.050	.074	.092	.038	.076
No.8	.164	5/64	.062	.087	.109	.043	.086
No.10	.190	3/32	.075	.102	.127	.049	.098
1/4	.250	1/8	.100	.132	.156	.067	.134
5/16	.312	5/32	.125	.172	.203	.082	.164
3/8	.375	3/16	.150	.212	.250	.099	.198
7/16	.437	7/32	.175	.252	.297	.114	.228
1/2	.500	1/4	.200	.291	.344	.130	.260
5/8	.625	5/16	.250	.371	.469	.164	.328
3/4	.750	3/8	.300	.450	.562	.196	.392
7/8	.875	1/2	.400	.530	.656	.227	.454
1	1.00	9/16	.450	.609	.750	.260	.520
1.1/8	1.125	9/16	.650	.689	.843	.291	.582
1.1/4	1.250	5/8	.700	.767	.937	.323	.646
1.1/2	1.500	3/4	.750	.926	1.125	.385	.770
	nom	nom	min	max	max	max	max

Cone Point Socket Sets:
As a genreral rule, the cone point angle is **90** degrees.
This changes when the length is shorter than or equal to the thread diameter, for M3 diameter and above.
The cone point angle then changes to **118** degrees.

These dimensions are for use as guide purposes only

Socket Set Screws
BA

Thread	Screw	Pitch	Skt	Skt	Cup	H.Dog	H.Dog	Flat
Size	Dia	(T.P.I)	A/F	Depth	Dia	Dia	Lth	Dia
8BA	.0866	59.14	.035	.030	.047	.057	.024	.047
6BA	.1102	47.91	.050	.040	.061	.075	.030	.061
5BA	.1260	43.08	1/16	.050	.067	.083	.033	.067
4BA	.1417	38.49	1/16	.050	.074	.092	.038	.074
3BA	.1614	34.81	5/64	.062	.087	.109	.043	.087
2BA	.1850	31.36	3/32	.075	.102	.127	.049	.102
1BA	.2087	28.23	3/32	.075	.115	.140	.059	.115
0BA	.2362	25.4	1/8	.100	.132	.156	.067	.132
	actual	actual	nom	min	max	max	max	max

Socket Set Screws - Metric

Thread	Pitch	Skt	Skt	Cup	Dog	H.Dog	F.Dog	Flat
Size	(T.P.I)	A/F	Depth	Dia	Dia	Length	Length	Dia
M1.6	0.35	0.7	1.5	0.8	0.8	0.65	1.05	0.8
M2	0.4	0.9	1.7	1.0	1.0	0.75	1.25	1.0
M2.5	0.45	1.3	2.0	1.2	1.5	0.88	1.50	1.5
M3	0.5	1.5	2.0	1.4	2.0	1.00	1.75	2.0
M4	0.7	2.0	2.5	2.0	2.5	1.25	2.25	2.5
M5	0.8	2.5	3.0	2.5	3.5	1.50	2.75	3.5
M6	1.0	3.0	3.5	3.0	4.0	1.75	3.25	4.0
M8	1.25	4.0	5.0	5.0	5.5	2.25	4.30	5.5
M10	1.5	5.0	6.0	6.0	7.0	2.75	5.30	7.0
M12	1.75	6.0	8.0	8.0	8.5	3.25	6.30	8.5
M14	2.0	6.0	9.0	9.0	10.0	3.75	7.30	10.0
M16	2.0	8.0	10.0	10.0	12.0	4.30	8.36	12.0
M20	2.5	10.0	12.0	14.0	15.0	5.30	10.36	15.0
M24	3.0	12.0	15.0	16.0	18.0	6.30	12.43	18.0
M27	3.0	14.0	17.0	18.0	20.5	6.80	13.43	20.5
M30	3.5	14.0	17.0	20.0	22.5	7.30	14.52	22.5
M36	4.0	17.0	21.0	25.0	27.0	8.80	17.52	27.0
	actual	nom	min	max	max	max	max	max

Socket depths may alter on shorter lengths.

These dimensions are for use as guide purposes only

Socket Button Head - Metric - ISO 7380

THRD	Head Diameter		Head Height		SKT	SKT	Thread
SIZE	Min	Max	Min	max	A/F	DPTH	Length
M3	5.40	5.70	1.40	1.65	2.00	1.04	18.00
M4	7.24	7.60	1.95	2.20	2.50	1.30	20.00
M5	9.14	9.50	2.50	2.75	3.00	1.56	22.00
M6	10.07	10.50	3.00	3.30	4.00	2.08	24.00
M8	13.57	14.00	4.10	4.40	5.00	2.60	28.00
M10	17.07	17.50	5.20	5.50	6.00	3.12	32.00
M12	20.48	21.00	6.24	6.60	8.00	4.16	36.00
M14	24.17*	24.50*	7.20*	7.70*	10.00*	4.88*	40.00*
M16	27.48	28.00	8.44	8.80	10.00	5.20	44.00
M20	34.61*	35.00*	10.30*	11.00*	12.00*	6.87*	52.00*
M24	41.61*	42.00*	12.50*	13.20*	14.00*	8.25*	60.00*
					nom	min	min

* Items marked are calculated on a pro-rata basis

These dimensions are not listed in the ISO specification

Socket Button Heads
BA - BS 2470
(British Association)

THRD	PITCH	HEAD	HEAD	SKT	SKT	MIN	BODY
SIZE	(T.P.I.)	HGT	DIA	A/F	DPTH	T.L.	DIA.
8BA	59.14	.046	.164	.050	.028	.500	.087
6BA	47.91	.059	.213	1/16	.035	.500	.110
5BA	43.08	.066	.238	5/64	.044	.500	.126
4BA	38.49	.073	.262	5/64	.044	.625	.142
3BA	34.81	.087	.312	3/32	.052	.750	.161
2BA	31.36	.101	.361	1/8	.070	1.000	.185
1BA	28.23	.114	.395	1/8	.078	1.000	.209
0BA	25.4	.132	.437	5/32	.087	1.000	.236
	actual	max	max	nom	min	min	max

These dimensions are for use as guide purposes only

Socket Button Head Screws - Imperial

Thread	**BSF**	**BSW**	**UNF**	**UNC**	Head	Head	Skt	Skt
Size	T.P.I.	T.P.I.	T.P.I.	T.P.I.	Height	Dia	A/F	Depth
No.0	n/a	n/a	80	n/a	.032	.114	.035	.020
No.2	n/a	n/a	64	56	.046	.164	.050	.028
No.4	n/a	n/a	48	40	.059	.213	1/16	.035
No.5	n/a	n/a	44	40	.066	.238	5/64	.044
No.6	n/a	n/a	40	32	.073	.262	5/64	.044
No.8	n/a	n/a	36	32	.087	.312	3/32	.052
No.10	n/a	n/a	32	24	.101	.361	1/8	.070
1/4	26	20	28	20	.132	.437	5/32	.087
5/16	22	18	24	18	.166	.547	3/16	.105
3/8	20	16	24	16	.199	.656	7/32	.122
1/2	16	12	20	13	.265	.875	5/16	.175
5/8	14	11	18	11	.331	1.00	3/8	.210
3/4	12	10	16	10	.398	1.218	1/2	.255
	actual	actual	actual	actual	max	max	nom	min

Socket Pressure Plugs - Metric

Thread	Pitch	Skt	Skt	Skt	O/All	Wall	End
Size	T.P.I.	A/F	A/C	Depth	Length	Thick	Dia
M8	1.0	4	4.6	4	8	2	7.350
M10	1.0	5	5.7	4	8	2	9.350
M12	1.5	6	6.9	5	10	2	11.026
M14	1.5	7	8	5	10	2	13.026
M16	1.5	8	9.2	5	10	2	15.026
M18	1.5	8	9.2	5	10	2	17.026
M20	1.5	10	11.4	5	10	2	19.026
M22	1.5	10	11.4	5	10	2	21.026
M24	1.5	12	13.7	6	12	2	23.026
M26	1.5	12	13.7	6	12	2	25.026
M27	2.0	12	13.7	6	12	2	26.026
M30	2.0	17	19.4	6	12	2	29.026
	actual	nom	nom	min	nom	min	basic

Dimensions based on Din 906 Type.

BSPT Socket Pressure Plugs
3/4 Taper

Thread	Pitch	Nom	Socket	Skt	Wall	Nom	Length	
Size	T.P.I.	O/D	A/F	Depth	Thick	Lgth	Min	Max
1/8	28	.399	3/16	.225	.081	3/8	.370	.380
1/4	19	.538	1/4	.255	.112	1/2	.495	.505
3/8	19	.679	5/16	.309	.161	9/16	.557	.567
1/2	14	.853	3/8	.357	.175	11/16	.682	.692
5/8	14	.933	1/2	.385	.175	3/4	.745	.755
3/4	14	1.072	9/16	.385	.238	13/16	.807	.817
1	11	1.352	5/8	.390	.238	1	.995	1.005
1.1/4	11	1.703	3/4	.452	.350	1.1/4	1.245	1.255
	actual	nom	nom	min	min	nom		

NPTF Socket Pressure Plugs
3/4 Taper (Dry Seal) **/ 7/8 Taper** (Flush Seal)

Thread	Pitch	Skt	Skt	Wall	Nom	Nom	Nom	Nom
Size	T.P.I.	A/F	Depth	Thick	O/D	O/D	Lth	Lth
1/16	27	.156	.140	.062	.312	.307	5/16	1/4
1/8	27	.188	.140	.062	.405	.401	5/16	1/4
1/4	18	.250	.218	.073	.540	.529	7/16	13/32
3/8	18	.312	.250	.084	.675	.667	1/2	13/32
1/2	14	.375	.312	.095	.840	.830	9/16	17/32
3/4	14	.562	.312	.125	1.050	1.041	5/8	17/32
1	11.5	.625	.375	.125	1.315	1.302	3/4	21/32
1.1/4	11.5	.750	.437	.156	1.660	1.647	13/16	21/32
	actual	nom	min	min	3/4 Taper Dry Seal	7/8 Taper Flush Seal	3/4 Taper Dry Seal	7/8 Taper Flush Seal

These dimensions are for use as guide purposes only

Square Head Set Screws
UNC / UNF / BSF / BSW

Thread	Head A/F		Head Height		Cup Dia	Dog	Dog
Size	Min	Max	Min	Max	Flat Dia	Dia	Length
3/16	.180	.188	.134	.148	.102	.127	.045
1/4	.241	.250	.178	.196	.132	.156	.063
5/16	.302	.312	.224	.245	.172	.203	.078
3/8	.362	.375	.270	.293	.212	.250	.094
7/16	.423	.437	.315	.341	.252	.297	.109
1/2	.484	.500	.361	.389	.291	.344	.125
9/16	.545	.562	.407	.437	.332	.391	.140
5/8	.606	.625	.452	.485	.371	.469	.156
3/4	.729	.750	.544	.582	.450	.563	.188
7/8	.852	.875	.635	.678	.530	.656	.219
1	.974	1.000	.726	.774	.609	.750	.250
1.1/8	1.096	1.125	.817	.870	.689	.844	.281
1.1/4	1.219	1.250	.908	.966	.767	.938	.312
1.3/8	1.342	1.375	1.000	1.063	0.848	1.031	.344
1.1/2	1.464	1.500	1.091	1.159	0.926	1.125	.375
					max	max	+/- 0.1

Square Head Set - Metric - DIN 479

Thread	Pitch	Head	Head	Cup Dia	Dog	H.Dog	F.Dog
Size	T.P.I.	A/F	Height	Flat Dia	Dia	Lth	Lth
M5	0.80	5.0	5.0	2.5	3.5	1.50	2.75
M6	1.00	6.0	6.0	3.0	4.0	1.75	3.25
M8	1.25	8.0	8.0	5.0	5.5	2.25	4.30
M10	1.50	10.0	10.0	6.0	7.0	2.75	5.30
M12	1.75	12.0	12.0	8.0	8.5	3.25	6.30
M14	2.00	14.0	14.0	9.0	10.0	3.75	7.30
M16	2.00	16.0	16.0	10.0	12.0	4.30	8.36
M18	2.50	18.0	18.0	12.0	13.5	5.30	10.36
M20	2.50	20.0	20.0	14.0	15.0	6.30	12.43
M24	3.00	24.0	24.0	18.0	18.0	8.30	17.40
	actual	max	max	max	max	max	max

Dimensions based on Din 479 and similar.

These dimensions are for use as guide purposes only

BRITISH STANDARD PIPE THREADS
BSP

Dia	O. Dia	Core	Pitch	Depth	Radius	Effec	T.P.I.
1/8	.383	.337	.0357	.0229	.0049	.3601	28
1/4	.518	.451	.0526	.0335	.0072	.4845	19
3/8	.656	.589	.0526	.0335	.0072	.6225	19
1/2	.825	.734	.0714	.0457	.0098	.7793	14
5/8	.902	.811	.0714	.0457	.0098	.8563	14
3/4	1.041	.950	.0714	.0457	.0098	.9953	14
7/8	1.189	1.098	.0714	.0457	.0098	1.1433	14
1"	1.309	1.309	.0909	.0582	.0125	1.2508	11
1.1/4	1.650	1.650	.0909	.0582	.0125	1.5918	11
1.1/2	1.882	1.766	.0909	.0582	.0125	1.8238	11
1.3/4	2.116	2.000	.0909	.0582	.0125	2.0578	11
2"	2.347	2.231	.0909	.0582	.0125	2.2888	11

Brief example of materials we manufacture in include:
Steel including EN1A, EN3B, EN8, EN16, EN19 EN24, B7, L7 B16 Hiten Speed.
Stainless Steel including 303,304,316,320,420,431,B8,B8M,B8MX.
Aluminium and Yellow Metals including Brass, Phosphor Bronze, Ali Bronze, Nickel Ali Bronze.
Exotic Metals including 17/4-ph, Titanium, Hastelloy®, Inconel®, Incoloy®, Duplex and Super Duplex.

I.S.O. METRIC COARSE THREADS

Thd Dia	Pitch	Core	Depth	Flat	Effec	Tap Drill	Clear Drill
M1.6	0.35	1.1706	0.2147	0.04375	1.373	1.25	1.65
M2	0.4	1.5092	0.2454	0.05000	1.740	1.60	2.05
M2.5	0.45	1.9480	0.2760	0.05625	2.208	2.05	2.60
M3	0.5	2.3866	0.3067	0.06250	2.675	2.50	3.10
M3.5	0.6	2.7638	0.3681	0.07500	3.110	2.90	3.60
M4	0.7	3.1412	0.4294	0.08750	3.545	3.30	4.10
M5	0.8	4.0184	0.4908	0.10000	4.480	4.20	5.10
M6	1.0	4.7732	0.6134	0.12500	5.350	5.00	6.10
M7	1.0	5.7732	0.6134	0.12500	6.350	6.00	7.20
M8	1.25	6.4664	0.7668	0.15625	7.188	6.80	8.20
M10	1.5	8.1596	0.9202	0.18750	9.026	8.50	10.20
M12	1.75	9.8530	1.0735	0.21875	10.863	10.20	12.20
M14	2.0	11.5462	1.2269	0.25000	12.701	12.00	14.25
M16	2.0	13.5462	1.2269	0.25000	14.701	14.00	16.25
M18	2.5	14.9328	1.5336	0.31250	16.376	15.50	18.25
M20	2.5	16.9328	1.5336	0.31250	18.376	17.50	20.25
M22	2.5	18.9328	1.5336	0.31250	20.376	19.50	22.25
M24	3.0	20.3194	1.8403	0.37500	22.051	21.00	24.25
M27	3.0	23.3194	1.8403	0.37500	25.051	24.00	27.25
M30	3.5	25.7060	2.1470	0.43750	27.727	26.50	30.50
M33	3.5	28.7060	2.1470	0.43750	30.727	29.50	33.50
M36	4.0	31.0924	2.4538	0.50000	33.402	32.00	36.50
M39	4.0	34.0924	2.4538	0.50000	36.402	35.00	39.50
M42	4.5	36.4790	2.7605	0.56250	39.077	37.50	42.50
M48	5.0	41.8646	3.0672	0.62500	44.752	43.00	48.75
M56	5.5	49.2522	3.3739	0.68750	52.428	50.50	56.75
M64	6.0	56.6388	3.6806	0.75000	60.103	58.00	64.75

I.S.O. METRIC FINE THREADS IN M.M.

O.Dia	Core	Pitch	Depth	Flat	Effec	Tap Drill	Clear Drill
8	6.773	1.00	0.6134	0.125	7.35	7.00	9
10	8.467	1.25	0.7668	0.156	9.18	8.75	11
12	10.467	1.25	0.7668	0.156	11.18	10.75	13.5
16	14.160	1.50	0.920	0.187	15.025	14.50	17.5
20	18.160	1.50	0.920	0.187	19.025	18.50	21.5
24	21.546	2.00	1.226	0.250	22.70	22.00	25.5
30	27.546	2.00	1.226	0.250	28.70	28.00	31.5
36	32.319	3.00	1.841	0.375	34.05	32.75	38.0
42	38.265	3.00	1.841	0.375	40.05	38.75	44.0
48	44.28	3.00	1.841	0.375	46.05	44.75	51.0
56	51.093	4.00	2.455	0.500	53.40	51.75	59.0
64	59.065	4.00	2.455	0.500	61.40	59.75	67.0

Metric Across Flat Socket Sizes

Skt	Min	Max
1.5	1.52	1.61
2	2.02	2.11
2.5	2.52	2.61
3	3.02	3.11
4	4.03	4.15
5	5.03	5.15
6	6.03	6.15
8	8.04	8.19
10	10.04	10.19

Skt	Min	Max
12	12.05	12.23
14	14.05	14.23
17	17.05	17.23
19	19.065	19.275
22	22.065	22.275
24	24.065	24.275
27	27.080	27.330
32	32.080	32.330
36	36.095	36.380

These dimensions are for use as guide purposes only

U.N.C. COARSE THREAD SERIES

Dia	T.P.I.	O. Dia	Core	Core	Pitch	Depth	Effec
			Nut	Bolt			
1/4	20	.2500	.1959	.1887	.05000	.03067	.2175
5/16	18	.3125	.2524	.2443	.05556	.03408	.2764
3/8	16	.3750	.3073	.2983	.06250	.03834	.3344
7/16	14	.4375	.3602	.3499	.07143	.04382	.3911
1/2	13	.5000	.4167	.4056	0.7692	.04719	.4500
9/16	12	.5625	.4723	.4603	.08333	.05112	.5084
5/8	11	.6250	.5266	.5135	.09091	.05577	.5660
3/4	10	.7500	.6417	.6273	.10000	.06134	.6850
7/8	9	.8750	.7547	.7387	.11111	.06816	.8028
1"	8	1.0000	.8647	.8466	.12500	.07668	.9188
1.1/8	7	1.1250	.9704	.9497	.14286	.08763	1.0322
1.1/4	7	1.2500	1.0954	1.0747	.14286	.08763	1.1572
1.3/8	6	1.3750	1.1946	1.1705	.16667	.10224	1.2667
1.1/2	6	1.5000	1.3196	1.2955	1.6667	.10224	1.3917
1.3/4	5	1.7500	1.5335	1.5046	.20000	.12269	1.6201
2"	4.1/2	2.0000	1.7594	1.7274	.22222	.13632	1.8557

Imperial Across Flat Socket Sizes

Skt	Min	Max
1/16	0.625	0.635
5/64	0.0781	0.0791
3/32	0.0937	0.0952
1/8	0.1250	0.1270
5/32	0.1562	0.1587
3/16	0.1875	0.1900
7/32	0.2187	0.2217
1/4	0.2500	0.2530
5/16	0.3125	0.3160

Skt	Min	Max
3/8	0.3750	0.3790
1/2	0.5000	0.5050
9/16	0.5625	0.5680
5/8	0.6250	0.6310
3/4	0.7500	0.7570
7/8	0.8750	0.8850
1"	1.0000	1.0200
1.1/4	1.2500	1.2750
1.1/2	1.5000	1.5300

ASME B18.3-1998 + BS 2470-1973

U.N.F. FINE THREAD SERIES

Dia	T.P.I.	O. Dia	Core	Core	Pitch	Depth	Effec
			Nut	Bolt			
1/4	28	.2500	.2113	.2062	.03571	.02191	.2268
5/16	24	.3125	.2674	.2062	.04167	.02191	.2854
3/8	24	.3750	.3299	.2614	.04167	.02556	.3479
7/16	20	.4375	.3834	.3239	.05000	.02556	.4050
1/2	20	.5000	.4459	.3762	.05000	.03067	.4675
9/16	18	.5625	.5024	.4387	.05556	.03067	.5264
5/8	18	.6250	.5649	.4943	.05556	.03408	.5889
3/4	16	.7500	.6823	.5568	.06250	.03408	.7094
7/8	14	.8750	.7977	.6733	.07143	.03834	.8286
1"	12	1.0000	.9098	.7874	.08333	.04382	.9459
1.1/8	12	1.1250	1.0348	.8978	.08333	.05112	1.0709
1.1/4	12	1.2500	1.1598	1.0228	.08333	.05112	1.1959
1.3/8	12	1.3750	1.2848	1.1478	.08333	.05112	1.3209
1.1/2	12	1.5000	1.4098	1.2728	.08333	.05112	1.4459

We also offer a full range of finishes including:
Electro and Mechanical Plating, Tuflok®, Eslok®, Patchlocking, Stayblack, Zinc & Nickel, Geomet® and Delta® Branded performance finishes.

WHITWORTH THREADS (55°)

Dia	O. Dia	Core	Pitch	Depth	Radius	Effec	T.P.I.
1/8	.1250	.0930	.0250	.0160	.0034	.1090	40
3/16	.1875	.1341	.0417	.0267	.0057	.1608	24
1/4	.2500	.1860	.0500	.0320	.0069	.2180	20
5/16	.3125	.2414	.0556	.0356	.0076	.2769	18
3/8	.3750	.2950	.0625	.0400	.0086	.3350	16
7/16	.4375	.3460	.0714	.0457	.0098	.3918	14
1/2	.5000	.3933	.0833	.0534	.0114	.4466	12
9/16	.5625	.4558	.0833	.0534	.0114	.5091	12
5/8	.6250	.5086	.0909	0.582	.0125	.5668	11
3/4	.7500	.6219	.1000	.0640	.0137	.6860	10
7/8	.8750	.7327	.1111	.0711	.0153	.8039	9
1"	1.0000	.8399	.1250	.0800	.0172	.9200	8
1.1/8	1.1250	.9420	.1429	.0915	.0196	1.0335	7
1.1/4	1.2500	1.0670	.1429	.0915	.0196	1.1585	7
1.1/2	1.5000	1.2866	.1667	.1067	.0229	1.3933	6
1.3/4	1.7500	1.4939	.2000	.1281	.0275	1.6219	5
2"	2.0000	1.7154	.2222	.1423	.0305	1.8577	4.1/2

Our experienced staff can offer you Sales and Technical Knowledge which is unrivalled by any other manufacturer and we are more than pleased to extend that knowledge to help you answer those “need to know” questions.

B.S.F. THREADS (55°)

Dia	O. Dia	Core	Pitch	Depth	Radius	Effec	T.P.I.
3/16	.1875	.1475	.0312	.0200	.0046	.1675	32
7/32	.2188	.1730	.0357	.0229	.0049	.1958	28
1/4	.2500	.2008	.0385	.0246	.0053	.2254	26
5/16	.3125	.2543	.0454	.0291	.0062	.2834	22
3/8	.3750	.3110	.0500	.0320	.0069	.3430	20
7/16	.4375	.3663	.0555	.0356	.0076	.4019	18
1/2	.5000	.4200	.0625	.0400	.0086	.4600	16
9/16	.5625	.4825	.0625	.0400	.0086	.5225	16
5/8	.6250	.5336	.0714	.0457	.0098	.5793	14
3/4	.7500	.6432	.0833	.0534	.0114	.6966	12
7/8	.8750	.7586	.0909	.0582	.0125	.8168	11
1"	1.0000	.8720	.1000	.0640	.0137	.9360	10
1.1/8	1.1250	.9828	.1111	.0711	.0153	1.0539	9
1.1/4	1.2500	1.1078	.1111	.0711	.0153	1.1789	9
1.3/8	1.3750	1.2150	.1250	.0800	.0172	1.2950	8
1.1/2	1.5000	1.3400	.1250	.0800	.0172	1.4200	8
1.5/8	1.6250	1.4649	.1250	.0800	.0172	1.5450	8
1.3/4	1.7500	1.5670	.1429	.0915	.0196	1.6585	7
2"	2.0000	1.8170	.1429	.0915	.0196	1.9085	7
2.1/4	2.2500	2.0366	.1666	.1067	.0229	2.1433	6
2.1/2	2.5000	2.2866	.1666	.1067	.0229	2.3933	6
2.3/4	2.7500	2.5366	.1666	.1067	.0229	2.6433	6
3"	3.0000	2.7439	.2000	.1280	.0275	2.8719	5

These dimensions are for use as guide purposes only

Conversion Table (Metric to Inch)

mm.	inch
0.1	0.0039
0.2	0.0079
0.3	0.0118
0.4	0.0157
0.5	0.0197
0.6	0.0236
0.7	0.0276
0.8	0.0315
0.9	0.0354
1.0	0.0394
1.5	0.0591
2.0	0.0787
2.5	0.0984
3.0	0.1181
3.5	0.1378
4.0	0.1575
4.5	0.1772
5.0	0.1968
5.5	0.2165
6.0	0.2362
6.5	0.2559
7.0	0.2756
7.5	0.2953
8.0	0.315
8.5	0.3347
9.0	0.3543
9.5	0.374
10.0	0.3937
10.5	0.4134
11.0	0.4331
11.5	0.4528
12.0	0.4724

mm.	inch
12.5	0.4921
13.0	0.5118
13.5	0.5315
14.0	0.5512
14.5	0.5709
15.0	0.5906
15.5	0.6103
16.0	0.6299
16.5	0.6496
17.0	0.6693
17.5	0.6890
18.0	0.7087
18.5	0.7284
19.0	0.7480
19.5	0.7677
20.0	0.7874
20.5	0.8071
21.0	0.8268
21.5	0.8465
22.0	0.8661
22.5	0.8858
23.0	0.9055
23.5	0.9252
24.0	0.9449
24.5	0.9646
25.0	0.9843
25.5	1.0040
26.0	1.0236
26.5	1.0433
27.0	1.0630
27.5	1.0827
28.0	1.1024

mm.	inch
28.5	1.1221
29.0	1.1417
29.5	1.1614
30.0	1.1811
30.5	1.2008
31.0	1.2205
31.5	1.2402
32.0	1.2599
32.5	1.2796
33.0	1.2992
33.5	1.3189
34.0	1.3386
34.5	1.3583
35.0	1.378
35.5	1.3977
36.0	1.4173
36.5	1.4370
37.0	1.4567
37.5	1.4764
38.0	1.4961
38.5	1.5158
39.0	1.5354
39.5	1.5551
40.0	1.5748
40.5	1.5945
41.0	1.6142
41.5	1.6339
42.0	1.6536
42.5	1.6733
43.0	1.6929
43.5	1.7126
44.0	1.7323

These dimensions are for use as guide purposes only

Conversion Table (Fraction - Inch - Metric)

Fraction	inch	mm
1/64	0.01563	0.39690
1/32	0.03125	0.79380
3/64	0.04688	1.19060
1/16	0.06250	1.58750
5/64	0.07813	1.98440
3/32	0.09375	2.38120
7/64	0.10938	2.77810
1/8	0.12500	3.17500
9/64	0.14063	3.57190
5/32	0.15625	3.96880
11/64	0.17188	4.36560
3/16	0.18750	4.76250
13/64	0.20313	5.15940
7/32	0.21875	5.55620
15/64	0.23438	5.95310
1/4	0.25000	6.35000
17/64	0.26563	6.74690
9/32	0.28125	7.14380
19/64	0.29688	7.54060
5/16	0.31250	7.93750
21/64	0.32813	8.33440
11/32	0.34375	8.73120
23/64	0.35938	9.12810
3/8	0.37500	9.52500
25/64	0.39063	9.92190
13/32	0.40625	10.3188
27/64	0.42188	10.7156
7/16	0.43750	11.1125
29/64	0.45313	11.5094
15/32	0.46875	11.9062
31/64	0.48438	12.3031
1/2	0.50000	12.7000

Fraction	inch	mm.
33/64	0.51563	13.0969
17/32	0.53125	13.4938
35/64	0.54688	13.8906
9/16	0.56250	14.2875
37/64	0.57813	14.6844
19/32	0.59375	15.0812
39/64	0.60938	15.4781
5/8	0.62500	15.8750
41/64	0.64063	16.2719
21/32	0.65625	16.6688
43/64	0.67188	17.0656
11/16	0.68750	17.4625
45/64	0.70313	17.8594
23/32	0.71875	18.2562
47/64	0.73438	18.6531
3/4	0.75000	19.0500
49/64	0.76563	19.4469
25/32	0.78125	19.8438
51/64	0.79688	20.2406
13/16	0.81250	20.6375
53/64	0.82813	21.0344
27/32	0.84375	21.4312
55/64	0.85938	21.8281
7/8	0.87500	22.2250
57/64	0.89063	22.6219
29/32	0.90625	23.0188
59/64	0.92188	23.4156
15/16	0.93750	23.8125
61/64	0.95313	24.2094
31/32	0.96875	24.6062
63/64	0.98438	25.0031
1	1.00000	25.4000

These dimensions are for use as guide purposes only

Hardness Conversions For Steel

Grade	Rockwell	Brinell	Vickers	tonf / in2	kgf / mm2	Nmm2
14.9	53.5	534	569	120	*	*
14.9	52	514	547	117	*	*
14.9	51	495	528	114	*	*
14.9	49.5	477	508	105	*	*
14.9	48.5	461	491	101	160	1569
14.9	47	444	474	98	155	1520
14.9	45.5	429	455	95	150	1471
14.9	45	415	440	92	145	1422
12.9	43	401	425	88	139	1363
12.9	42	388	410	85	134	1314
12.9	40.5	375	396	82	129	1265
12.9	39	363	383	80	126	1236
10.9	38	352	372	77	121	1187
10.9	36.5	341	360	75	118	1157
10.9	35.5	331	350	73	114	1118
10.9	34.5	321	339	71	111	1089
10.9	33	311	328	68	107	1049
10.9	32	302	319	66	104	1020
10.9	31	293	309	64	101	990
8.8	30	285	301	63	99	971
8.8	29	277	292	61	96	941
8.8	27.5	269	284	59	93	912
8.8	26.5	262	276	58	91	892
8.8	25.5	255	269	56	89	873
8.8	24	248	261	55	87	853
8.8	23	241	253	53	84	824
8.8	22	235	247	51	81	794
5.8	20.5	229	241	50	79	775
5.8	20	223	235	49	77	755
5.8	19	217	228	48	76	745
5.8	18	212	223	46	73	716
	HRC	**HB**	**HV**			

These dimensions are for use as guide purposes only

Tensile Strength Ranges

Grade	ton / in2	HB	HRC
P	35-45	163-207	n/a
Q	40-50	187-229	12-20.5
R	45-55	207-248	17-24
S	50-60	229-277	20.5-29
T	55-65	248-302	24-32
U	60-70	277-321	29-34.5
V	65-75	302-341	32-36.5
W	70-80	321-363	34.5-39
X	75-85	341-388	36.5-42
Y	80-90	363-401	39-43
Z	100+	461+	48.5+

HB = Hardness Brinell / HRC = Hardness Rocwell C

Fastener Tensile Ranges

Grade	N / mm2	ton / in2	Hardness
3.6	300-420	27 max	116 HB max
4.6 / 4.8	400-520	26-34	111-156 HB
5.6 / 5.8	500-660	32-43	149-197
6.6 / 6.8	600-740	39-48	179-217
8.8	800-980	51-64	235-293
9.8	900-1025	58-66	262-302
10.9	1000-1150	65-75	293-341
12.9	1200-1375	77-88	352-401

Other Equivalents:

Nmm2 = MN / M2 = Mpa Kgf / mm2 = Kp / mm2

These dimensions are for use as guide purposes only

Steel Specifications and Related Equivalents

(For reference only - some may not be "exact" equivalent)

Steel	BS	EN	AISI	Werkstoff	Kurz
Type	970	Number	SAE	Number	Name
Carbon	070M20	3A, 3C	1023	1.0402	C22
Carbon	080M40	8	1040	1.1186	CK40
Carbon	210M15	32M	1117	~	~
Carbon	212A42	8DM	~	~	~
Carbon	216M36	15AM	1137	~	~
Carbon	220M07	1A	1113	1.0711	9S20
Carbon	240M07	1B	~	1.0736	9SMn 36
Stainless	303 S31	58M	303	1.4305	X12 Cr Ni S 18 8
Stainless	304 S11	~	304L	1.4306	X2 Cr Ni 18 9
Stainless	304 S 31	~	304	1.4301	X5 Cr Ni 18 9
Stainless	316 S 11	~	316L	1.4404	X2 Cr Ni Mo 18 10
Stainless	316 S 16	58J	316L	1.4435	X2 Cr Ni Mo 18 12
Stainless	320 S 17	58J	316Ti	1.4573	X10CrNiMoTi1812
Stainless	320 S 31	~	316Ti	1.4571	X10CrNiMoTi1810
Stainless	321 S 31	~	321	1.4541	X10 Cr Ni Ti 18 9
Stainless	410 S 21	56A	410S	1.4006	X10 Cr 13
Stainless	416 S 21	56AM	416	1.4005	X12 Cr S 13
Stainless	420 S 29	56B	420	1.4021	X20 Cr 13
Stainless	431 S 29	57	431	1.4057	X22 Cr Ni 17
Alloy	605M36	16	~	~	~
Alloy	708M40	19A	4140	1.7225	42 Cr Mo 4
Alloy	709M40	19	~	1.7225	42 Cr Mo 4
Alloy	817M40	24	4340	1.6565	40 Ni Cr Mo 6
Alloy	826M40	26		1.6745	40 Ni Mo Cr 10 5

Carbon Steels are generally Surface Hardened
Alloy Steels are generally Through Hardened
4 Series Stainless Steels can also be Through Hardened
These specs are nearest equivalents

Useful Conversion Chart

Across Corners	Multiply A/F by	1.1547
Centimetres to inches	Multiply by	0.3937
Feet to inches	Multiply by	0.3048
Gallons to litres	Multiply by	4.536
Inches to centimetres	Multiply by	2.54
Kilograms to lbs	Multiply by	2.205
Kilograms to tons	Multiply by	0.0009842
Metres to feet	Multiply by	3.281
Millimetres to inches	Multiply by	0.0394
N/mm2 to tons f/in2	Multiply by	0.06475
Pounds to kilograms	Multiply by	0.4536
Square Feet to Sq. metres	Multiply by	0.09290
Square Metres to Sq. feet	Multiply by	10.76
Tons p/sq in to kilo p/sq mm	Multiply by	1.575
Tons f/in.2 to N/mm2	Multiply by	15.444
Tons to Kilograms	Multiply by	1016.0

1 metric tonne	1000 kilos
1 inch	25.4 millimetres
1 foot	304.8 millimetres
1 foot	30.48 centimetres
1 foot	12 inches
1 millimetre	0.39370 inches
1 metre	39.370 inches
1 metre	1000 millimetres
1 metre	100 centimetres

Grade 8.8	22-32 Hrc
Grade 10.9	32-39 Hrc
Grade 12.9	39-44 Hrc
Grade 14.9	45-53 Hrc

These dimensions are for use as guide purposes only

METRIC - Material Weights - Kgs per foot

Diameter			
2	0.008	**34**	2.170
3	0.017	**35**	2.300
4	0.030	**36**	2.433
5	0.047	**37**	2.570
6	0.068	**38**	2.711
7	0.092	**39**	2.856
8	0.120	**40**	3.004
9	0.152	**41**	3.156
10	0.188	**42**	3.312
11	0.227	**44**	3.635
12	0.270	**45**	3.802
13	0.317	**46**	3.973
14	0.368	**48**	4.326
15	0.422	**50**	4.694
16	0.481	**52**	5.077
17	0.543	**54**	5.475
18	0.608	**55**	5.680
19	0.678	**56**	5.888
20	0.751	**58**	6.316
21	0.828	**60**	6.759
22	0.909	**62**	7.217
23	0.993	**64**	7.690
24	1.081	**65**	7.933
25	1.173	**66**	8.179
26	1.269	**68**	8.682
27	1.369	**70**	9.200
28	1.472	**72**	9.733
29	1.579	**74**	10.281
30	1.690	**75**	10.561
31	1.804	**76**	10.845
32	1.923	**78**	11.423
33	2.045	**80**	12.016

Hexagon			
3.5	0.025	**27**	1.511
4	0.033	**28**	1.625
4.5	0.042	**29**	1.743
5	0.052	**30**	1.865
5.5	0.063	**31**	1.992
6	0.075	**32**	2.122
6.5	0.088	**33**	2.257
7	0.102	**35**	2.539
7.5	0.117	**36**	2.686
8	0.133	**37**	2.837
8.5	0.150	**38**	2.993
9	0.168	**40**	3.316
9.5	0.187	**41**	3.484
10	0.207	**42**	3.656
10.5	0.228	**45**	4.197
11	0.251	**46**	4.386
11.5	0.274	**48**	4.775
12	0.298	**50**	5.181
13	0.350	**52**	5.604
14	0.406	**55**	6.270
15	0.466	**58**	6.972
16	0.531	**60**	7.461
17	0.599	**62**	7.967
18	0.672	**65**	8.757
19	0.748	**68**	9.584
20	0.829	**70**	10.156
21	0.914	**72**	10.744
22	1.003	**75**	11.658
23	1.096	**78**	12.609
24	1.194	**80**	13.264
25	1.295	**85**	14.974
26	1.401	**90**	16.788

Guide Purposes Only - Weights may differ between materials

IMPERIAL - Material Weights - Kgs per foot

Diameter			
3/16	0.043	**1.1/4**	1.892
7/32	0.059	**1.5/16**	2.087
1/4	0.076	**1.3/8**	2.291
9/32	0.097	**1.7/16**	2.504
5/16	0.118	**1.1/2**	2.726
11/32	0.145	**1.9/16**	2.957
3/8	0.171	**1.5/8**	3.198
13/32	0.201	**1.3/4**	3.710
7/16	0.232	**1.7/8**	4.259
15/32	0.268	**2**	4.844
1/2	0.303	**2.1/8**	5.470
9/16	0.383	**2.1/4**	6.133
5/8	0.473	**2.3/8**	6.836
11/16	0.572	**2.1/2**	7.571
3/4	0.680	**2.5/8**	8.346
13/16	0.798	**2.3/4**	9.158
7/8	0.925	**2.7/8**	10.011
15/16	1.066	**3**	10.900
1	1.211	**3.1/8**	11.830
1.1/16	1.365	**3.1/4**	12.800
1.1/8	1.533	**3.3/8**	13.798
1.3/16	1.710	**3.1/2**	14.837

Hexagon			
.248	0.084	**1.000**	1.334
.282	0.106	**1.010**	1.365
.312	0.131	**1.062**	1.506
.324	0.141	**1.100**	1.618
.338	0.152	**1.125**	1.692
.375	0.187	**1.200**	1.927
.413	0.227	**1.250**	2.087
.437	0.254	**1.300**	2.261
.445	0.268	**1.312**	2.301
.500	0.336	**1.375**	2.525
.525	0.368	**1.390**	2.580
.562	0.422	**1.437**	2.753
.600	0.483	**1.480**	2.920
.625	0.522	**1.500**	3.005
.687	0.631	**1.625**	3.527
.710	0.672	**1.670**	3.725
.750	0.753	**1.687**	3.803
.812	0.882	**1.750**	4.091
.820	0.899	**1.812**	4.388
.875	1.021	**1.860**	4.623
.920	1.128	**1.875**	4.699
.937	1.170	**2.000**	5.343
		2.050	5.602
		2.062	5.674
		2.125	6.033
		2.220	6.736
		2.375	7.539
		2.500	8.351

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