

FASTENER TECHNICAL GUIDE



UNILOC FASTENERS & HEAT TREATERS



An ISO 9001 : 2015 CERTIFIED COMPANY

Manufacturers & Exporters of
Fastners, High Tensile &
Stainless Steel, Precision Forged &
CNC Turned Components

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UNILOC FASTENERS

OUR PRODUCT RANGE

- M12 -1/2" & ABOVE ANY DIMENSION AND LENGTH
- STANDARDS: DIN, ISO, IS, ASTM, BS, JS, ANSI etc.
- PROERTY CLASS: 8.8, 10.9, 10S, 12.9, ASTM A193 B7, B7M, B8, B8M, L7, L7M, B16 etc.
- SURFACETREATMENT: PHOSPHATING, HDG, ZN ELECTROPLATTING, PTFE, TEFLONE, AUTO BLACK, CADMIUM ETC.
- SOCKET HEAD CAP SCREW
- SOCKET LOW HEAD CAP SCREW (LHCS)
- SOCKET COUNTER SUNK HEAD SCREWS
- SOCKET HEAD SHOULDER SCREW
- SOCKET SET SCREW
- HEX HEAD BOLT
- HEX NUTS
- HIGH STRENGTH STRUCTURAL BOLTS
- FIT BOLT
- TRACK SHOE BOLT
- SQUARE HEAD BOLT, D BOLT, T BOLT, & LINER BOLT
- STUD WITH HEAVY HEX NUT
- SPECIAL FORGED PRODUCT
- PRECISION CNC TURNED COMPONENTS
- **HEAT TREATMENT JOB WORK**

Hex Head Bolts and Hex Set Screws Metric ISO 4014 / 4017

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	0975*	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 differences to DIN Spec

These dimensions are for use as guide purpose only

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

Thread Size	Pitch (T.P.I)	Hexagon A/F		Head Height		Bolt T.L.
		Min	Max	Min	Max	
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 Tolerance are Din 933 (Din 931 are Reference)

These dimensions are for use as guide purpose 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	
		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 BS 1768

Thread	Pitch	Pitch	Hex	Hex	Head	Bolt
Size	UNC	UNF	Flat	Corners	Height	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
No. 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 length over 8" add 3/4" to T.L. above

* These dimensions are for use as guide purpose only

Hex Head Bolts and Hex Set Screws BSF / BSW BS 1083

Thread	Pitch	Pitch	Hex	Hex	Head	Bolt
Size	BSF	BSW	Flat	Corners	eight	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

Metric Socket Cap Screws ISO 4762 & DIN 912

Thread	Head Dia		Head Height		Socket A/F		Sket Dpth	Wall
	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
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

min

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

The dimensions that are marked * - change on Din 912

The Sket 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

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

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	10.0	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 purpose only

1960 Series Socket Cap Screws UNC / UNF

Thread	Pitch	Pitch	Head	Head	Skt	Skt	Min
Size	UNC	UNF	Height	Dia	A/F	epth	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 max max nom min min

These dimensions are for use as guide purpose only

1936 Series Socket Cap Screws UNC / UNF

Thread	Pitch	Pitch	Head	Head	Skt	Skt	Min
Size	UNC	UNF	Height	Dia	A/F	epth	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	BSF	BSW	Head	Head	Skt	Skt	Min
Size	(T.P.I)	(T.P.I)	eight	Dia	A/F	Depth	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

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	0.875	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	0.84	.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	.221	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

No.	Pitch	Shoulder Dia		Head	Head	Skt	Skt	Thread
Dia	Dia	Max	Min	Dia	Height	A/F	Depth	Length
1/4	No.10*	.1480	.1460	.375	.188	1/8	1.094	.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	Skt	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	4.3	32
M12	1.75	7.44	23.12	8.0	4.6	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	Basic	Skt	Skt	Flat &	Dog	H. Dog	F. Dog
Size	Dia	A/F	Depth	Cup Dia	Dia	Length	Length
No. 0	.060	.028	.022	.033	.040	0.17	.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	.086	.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 general 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

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
8.8	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	30-420	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	X 10 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 Steel are generally Surface Hardened

Alloy steel 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
Centimeters 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
Milimetres to Inches	Multiply by	0.0394
N/mm ² to tons f/in ²	Multiply by	0.06475
Pounds to Kilograms	Multiply by	0.4536
Square Feet to Sq. meters	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/mm ²	Multiply by	15.444
Tons to Kilograms	Multiply by	1016.0
1 metric tonne	1000 kilos	
1 inch	25.4 milimetres	
1 foot	304.8 milimetres	
1 foot	30.48 centimetres	
1 foot	12 inches	
1 milimetre	0.39370 inches	
1 metre	39.370 inches	
1 metre	1000 milimetres	
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

It Takes Months to Find A CUSTOMER...
second to lose one

Grade	Tensile N/MM2	Yield Strength Min 0.2% Offset N/MM2	Elogation in 4D Min%	Reduction of Area Min %	Hardness HRC	Impact Strength J Min
<M16-8.8	800	640	12	50	22-32	30
>M16-8.8	830	660	12	50	23-34	30
10.9	1040	940	9	48	32-39	27
12.9	1220	1100	8	44	39-44	15
B7 UPTO 2.5"	860	720	16	50	MAX 35	
B7M UPTO 4"	690	550	18	50	MAX 235 HB	
B16 UPTO 2.5"	860	725	18	50	MAX 35	
L7 UPTO 2.5" AND UNDER	860	725	16	50	277-321 HB FOR REFERENCE	20 [27] [-101° C]
L7M UPTO 2.5" AND UNDER	690	550	18	50	MAX 235 HB	27 [-73° C]

If We Don't Take Care of The CUSTOMER ...
somebody else will

“A Satisfied Customer is your Best Sales Man”



UNILOC FASTENERS

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