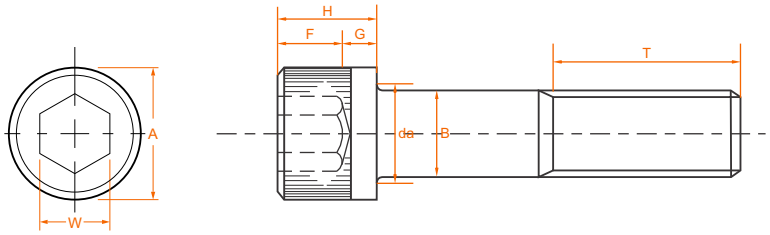
Socket Head Cap Screws - 1960 series
#0 to 1/2 - UNRC/UNRF



Suitable for all high tensile applications. Up to 190,000 psi highest of any socket cap screw. Use Stainless for corrosive, cryogenic or elevated temperature environments.

Equivalent Standards

ASME B18.3

Mechanical Properties

Screw Size	≥ 1/2	<1/2
Heat Treatment	39-43 RC	39-43 RC
Tensile Strength	190 ksi	180 ksi
Yield Strength	170 ksi	162 ksi
Shear Strength	114 ksi	108 ksi

Material: Unbrako High Grade Alloy Steel
Elongation is 2 inches - 10% min.
Reduction of area - 35% min.

Length 'L' Tolerance (in)

Diameter	up to 1" incl.	over 1" to 2 1/2" incl.	over 2 1/2" to 6" incl.	over 6"
#0 thru 3/8 incl.	–.03	–.04	–.06	–.12
7/16 to 3/4 incl.	–.03	–.06	–.08	–.12
7/8 to 1-1/2 incl.	–.05	–.10	–.14	–.20
over 1 1/2		–.18	–.20	–.24

NOTES:

1. Thread Class: #0 to 1": 3A, over 1": 2A
2. Working Temperature: -50°C to +300°C
3. Torques calculated in accordance with VDI 2230 "Systematic calculation of high duty bolted joints" with σ 0.2 = 155 K.S.I. and μ = 0.125 for plain finish and μ = 0.094 for plated. Above 0.625" dia. σ 0.2 = 140 K.S.I.
4. The following diameters are fully interchangeable between 1936 and 1960 series:- No 10, 1/4", 3/8", 1/2" for both UNC and UNF

Head Marking

'X' represents Lot Traceability E-CODE

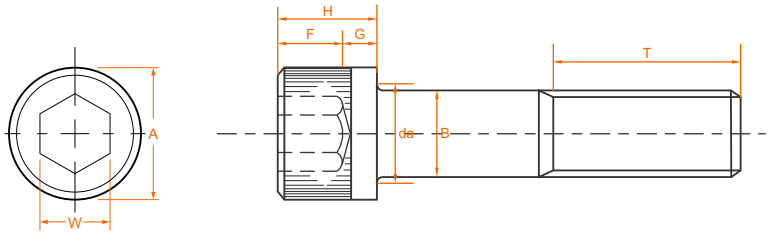
Product Dimensions

Thread Size nom.	Threads per Inch UNRC	UNRF	Head Diameter A max	min	Hex Socket Size W nom	Head Height H max	min	Key Depth F min	G min
#0	–	80	.096	.091	.050	.060	.057	.025	.020
#1	64	72	.118	.112	.062	.073	.070	.031	.025
#2	56	64	.140	.134	.078	.086	.083	.038	.029
#3	48	56	.161	.154	.078	.099	.095	.044	.034
#4	40	48	.183	.176	.094	.112	.108	.051	.038
#5	40	44	.205	.198	.094	.125	.121	.057	.043
#6	32	40	.226	.218	.109	.138	.134	.064	.047
#8	32	36	.270	.262	.141	.164	.159	.077	.056
#10	24	32	.312	.303	.156	.190	.185	.090	.065
1/4	20	28	.375	.365	.188	.250	.244	.120	.095
5/16	18	24	.469	.457	.250	.312	.306	.151	.119
3/8	16	24	.562	.550	.312	.375	.368	.182	.143
7/16	14	20	.656	.642	.375	.437	.430	.213	.166
1/2	13	20	.750	.735	.375	.500	.492	.245	.190

Thread Size nom	Body Diameter B max	min	Transition Diameter da max	min	Thread Length T min	Recommended seating torque (in-lbs) UNRC	UNRF
#0	.060	.0568	.074	.051	.500	–	3
#1	.073	.0695	.087	.061	.625	5	5
#2	.086	.0822	.102	.073	.625	7	8
#3	.099	.0949	.115	.084	.625	12	13
#4	.112	.1075	.130	.094	.750	18	19
#5	.125	.1202	.145	.107	.750	24	25
#6	.138	.1329	.158	.116	.750	34	36
#8	.164	.1585	.188	.142	.875	59	60
#10	.190	.1840	.218	.160	.875	77	91
1/4	.250	.2435	.278	.215	1.000	200	240
5/16	.3125	.3053	.347	.273	1.125	425	475
3/8	.375	.3678	.415	.331	1.250	750	850
7/16	.4375	.4294	.484	.388	1.375	1,200	1,350
1/2	.500	.4919	.552	.446	1.500	1,850	2,150

Socket Head Cap Screws - 1960 series
5/8 to 3 - UNRC/UNRF

Inch



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NOTES:

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2. Working Temperature: -50°C to +300°C
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Head Marking

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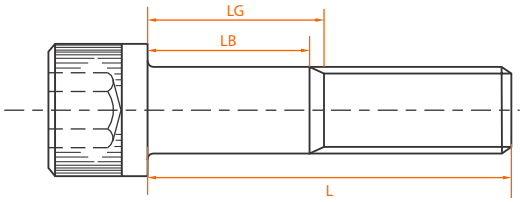
Product Dimensions

Thread Size nom.	Threads per Inch UNRC	UNRF	Head Diameter A max	min	Hex Socket Size W nom.	Head Height H max	min	Key Depth F min.	G min.
5/8	11	18	.938	.921	.500	.625	.616	.307	.238
3/4	10	16	1.125	1.107	.625	.750	.740	.370	.285
7/8	9	14	1.312	1.293	.750	.875	.864	.432	.333
1	8	12	1.500	1.479	.750	1.000	.988	.495	.380
1	–	14*	1.500	1.479	.750	1.000	.988	.495	.380
1 1/8	7	12	1.688	1.665	.875	1.125	1.111	.557	.428
1 1/4	7	12	1.875	1.852	.875	1.250	1.236	.620	.475
1 3/8	6	12	2.062	2.038	1.000	1.375	1.360	.682	.523
1 1/2	6	12	2.250	2.224	1.000	1.500	1.485	.745	.570
1 3/4	5	12	2.625	2.597	1.250	1.750	1.734	.870	.665
2	4 1/2	12	3.000	2.970	1.500	2.000	1.983	.995	.760
2 1/4	4 1/2	12	3.375	3.344	1.750	2.250	2.232	1.120	.855
2 1/2	4	12	3.750	3.717	1.750	2.500	2.481	1.245	.950
2 3/4	4	12	4.125	4.090	2.000	2.750	2.730	1.370	1.045
3	4	12	4.500	4.464	2.250	3.000	2.979	1.495	1.140

Thread Size nom.	Body Diameter B max	min	Transition Diameter da max	min	Thread Length T min	Recommended seating torque (in-lbs) UNRC	UNRF
5/8	.625	.6163	.689	.562	1.750	3,400	3,820
3/4	.750	.7406	.828	.681	2.000	6,000	6,800
7/8	.875	.8647	.963	.798	2.250	8,400	9,120
1	1.000	.9886	1.100	.914	2.500	12,500	13,200
1	1.000	.9886	1.100	.914	2.500	–	13,900
1 1/8	1.125	1.1086	1.235	1.023	2.812	14,900	16,600
1 1/4	1.250	1.2336	1.370	1.148	3.125	25,000	27,000
1 3/8	1.375	1.3568	1.505	1.256	3.437	33,000	35,000
1 1/2	1.500	1.4818	1.640	1.381	3.750	43,500	47,000
1 3/4	1.750	1.7295	1.910	1.609	4.375	71,500	82,500
2	2.000	1.9780	2.180	1.843	5.000	108,000	125,000
2 1/4	2.250	2.2280	2.450	2.093	5.625	155,000	186,000
2 1/2	2.500	2.4762	2.720	2.324	6.250	215,000	248,000
2 3/4	2.750	2.7262	2.990	2.574	6.875	290,000	330,000
3	3.000	2.9762	3.260	2.824	7.500	375,000	430,000

Socket Head Cap Screws - 1960 series
Body and Grip Lengths



Length	#0		#1		#2		#3		#4		#5		#6		#8		#10		#1/4	
L Nom.	L_G	L_B	L_G	L_B	L_G	L_B	L_G	L_B	L_G	L_B	L_G	L_B	L_G	L_B	L_G	L_B	L_G	L_B	L_G	L_B
3/4	.250	.187																		
7/8	.250	.187	.250	.172	.250	.161	.250	.146												
1	.500	.437	.250	.172	.250	.161	.250	.146	.250	.125	.250	.125								
1 1/4	.750	.687	.625	.547	.625	.536	.625	.521	.250	.125	.250	.125	.500	.344	.375	.219	.375	.167		
1 1/2			.875	.797	.875	.786	.875	.771	.750	.625	.750	.625	.500	.344	.375	.219	.375	.167	.500	.250
1 3/4					1.125	1.036	1.125	1.021	.750	.625	.750	.625	1.000	.844	.875	.719	.875	.667	.500	.250
2							1.375	1.271	1.250	1.125	1.250	1.125	1.000	.844	.875	.719	.875	.667	1.000	.750
2 1/4									1.250	1.125	1.250	1.125	1.500	1.344	1.375	1.219	1.375	1.167	1.000	.750
2 1/2											1.750	1.625	1.500	1.344	1.375	1.219	1.375	1.167	1.500	1.250
2 3/4													2.000	1.844	1.875	1.719	1.875	1.667	1.500	1.250
3															1.875	1.719	1.875	1.667	2.000	1.750
3 1/4															2.375	2.219	2.375	2.167	2.000	1.750
3 1/2																	2.375	2.167	2.500	2.250
3 3/4																	2.875	2.667	2.500	2.250
4																	2.875	2.667	3.000	2.750
4 1/4																			3.000	2.750
4 1/2																			3.500	3.250
4 3/4																			3.500	3.250
5																			4.000	3.750
5 1/4																				
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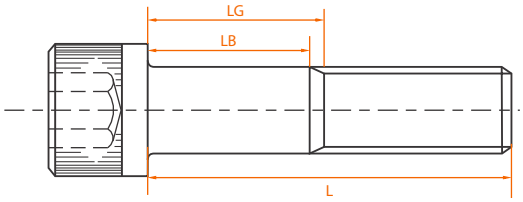
Length Tolerance

Diameter	up to 1" incl.	over 1" to 2 1/2" incl.	over 2 1/2" to 6" incl.	over 6"
#0 thru 3/8 incl.	–.03	–.04	–.06	–.12
7/16 to 3/4 incl.	–.03	–.06	–.08	–.12
7/8 to 1-1/2 incl.	–.05	–.10	–.14	–.20
over 1 1/2		–.18	–.20	–.24

LG is the maximum grip length and is the distance from the bearing surface to the first complete thread. LB is the minimum body length and is the length of the unthreaded cylindrical portion of the shank. Thread length for the sizes up to and including 1" diameter shall be controlled by the grip length and body length as shown in the table. For sizes larger than 1" the minimum complete thread length shall be equal to the basic thread length, and the total thread length including imperfect threads shall be basic thread length plus five pitches. Lengths too short to apply formula shall be threaded to head. Complete threads shall extend within two pitches of the head lengths above the heavy line on sizes up to and including 5/8" dia. Larger diameters shall be threaded as close to the head as practicable. Screws of longer lengths than those tabulated shall have a thread length conforming to the formula for sizes larger than 1".

Socket Head Cap Screws - 1960 series
Body and Grip Lengths



Length	5/16		3/8		7/16		1/2		5/8		3/4		7/8		1	
L Nom.	L_G	L_B	L_G	L_B	L_G	L_B	L_G	L_B	L_G	L_B	L_G	L_B	L_G	L_B	L_G	L_B
3/4																
7/8																
1																
1 1/4																
1 1/2																
1 3/4	.625	.347	.500	.187												
2	.625	.347	.500	.187	.625	.268										
2 1/4	1.125	.847	1.000	.687	.625	.268	.750	.365								
2 1/2	1.125	.847	1.000	.687	1.125	.768	.750	.365	.750	.295						
2 3/4	1.625	1.187	1.500	1.187	1.125	.768	.750	.365	.750	.295						
3	1.625	1.347	1.500	1.187	1.625	1.268	1.500	1.115	.750	.295	1.000	.500				
3 1/4	2.125	1.847	2.000	1.687	1.625	1.268	1.500	1.115	1.500	1.045	1.000	.500	1.000	.444		
3 1/2	2.125	1.847	2.000	1.687	2.125	1.768	1.500	1.115	1.500	1.045	1.000	.500	1.000	.444	1.000	.375
3 3/4	2.625	2.347	2.500	2.187	2.125	1.768	2.250	1.865	1.500	1.045	1.000	.500	1.000	.444	1.000	.375
4	2.625	2.347	2.500	2.187	2.625	2.268	2.250	1.865	2.250	1.795	2.000	1.500	1.000	.444	1.000	.375
4 1/4	3.125	2.847	3.000	2.687	2.625	2.268	2.250	1.865	2.250	1.795	2.000	1.500	2.000	1.444	1.000	.375
4 1/2	3.125	2.847	3.000	2.687	3.125	2.768	3.000	2.615	2.250	1.795	2.000	1.500	2.000	1.444	2.000	1.375
4 3/4	3.625	3.347	3.500	3.187	3.125	2.768	3.000	2.615	3.000	2.545	2.000	1.500	2.000	1.444	2.000	1.375
5	3.625	3.347	3.500	3.187	3.625	3.268	3.000	2.615	3.000	2.545	3.000	2.500	2.000	1.444	2.000	1.375
5 1/4	4.125	3.847	4.000	3.687	3.625	3.268	3.750	3.365	3.000	2.545	3.000	2.500	3.000	2.444	2.000	1.375
5 1/2	4.125	3.847	4.000	3.687	4.125	3.768	3.750	3.365	3.750	3.295	3.000	2.500	3.000	2.444	3.000	2.375
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6 1/2			5.000	4.687	5.125	4.768	4.500	4.115	4.500	4.045	4.000	3.500	4.000	3.444	4.000	3.375
6 3/4			5.500	5.187	5.125	4.768	5.250	4.865	4.500	4.045	4.000	3.500	4.000	3.444	4.000	3.375
7			5.500	5.187	5.625	5.268	5.250	4.865	5.250	4.795	5.000	4.500	4.000	3.444	4.000	3.375
7 1/4			6.000	5.687	5.625	5.268	5.250	4.865	5.250	4.795	5.000	4.500	5.000	4.444	4.000	4.375
7 1/2			6.000	5.687	6.125	5.768	6.000	5.615	5.250	4.795	5.000	4.500	5.000	4.444	5.000	4.375
7 3/4					6.125	5.768	6.000	5.615	6.000	5.545	5.000	4.500	5.000	4.444	5.000	4.375
8					6.625	6.268	6.000	5.615	6.000	5.545	6.000	5.500	5.000	4.444	5.000	4.375
8 1/2					7.125	6.768	7.000	6.615	6.750	6.295	6.000	5.500	6.000	5.444	6.000	5.375
9					7.625	7.268	7.000	6.615	6.750	6.295	7.000	6.500	6.000	5.444	6.000	5.375
9 1/2							8.000	7.615	7.750	7.295	7.000	6.500	7.000	6.444	7.000	6.375
10							8.000	7.615	7.750	7.295	8.000	7.500	7.000	6.444	7.000	6.375
11									9.250	8.795	9.000	8.500	8.000	7.444	8.000	7.375
12									10.250	9.795	10.000	9.000	9.000	8.444	9.000	8.375
13											11.000	10.500	10.000	9.444	10.000	9.375
14											12.000	11.500	11.000	10.444	11.000	10.375
15											13.000	12.500	12.000	11.444	12.000	11.375
16													13.000	12.444	13.000	12.375
17													14.000	13.444	14.000	13.375
18													15.000	14.444	15.000	14.375
19															16.000	15.375
20															17.000	16.375