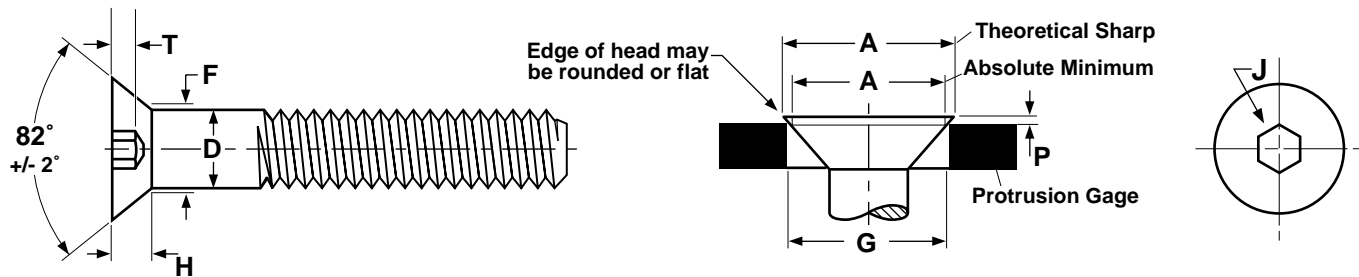


# Sockets

# Flat Head Socket Cap Screws

# Alloy Steel



**SOCKET FLAT HEAD CAP SCREWS - ALLOY STEEL**

ASME B18.3-1998,  
Blue Devil®

Nominal Size	D		A		H	G		P		J	T	F	Tensile Strength, Lbs. Min		Single Shear Strength of Body	Recommended Seating Torques, in./lbs.	
	Body Diameter		Head Diameter		Head Height	Protrusion Gage Diameter		Protrusion		Hex Socket Size	Key Engagement	Fillet Transition Diam.	UNRC	UNRF	lbs., Min	Coarse Thread	Fine Thread
	Max	Min	Theoretical Sharp Max	Abs. Min	Ref	Max	Min	Max	Min	Nom	Min	Max					
4	0.1120	0.1075	0.255	0.218	0.083	0.172	0.171	0.047	0.037	1/16	0.055	0.136	900	-	940	8.	-
5	0.1250	0.1202	0.281	0.240	0.090	0.196	0.195	0.048	0.037	5/64	0.061	0.153	1,185	-	1,180	12.	-
6	0.1380	0.1329	0.307	0.263	0.097	0.220	0.219	0.049	0.037	5/64	0.066	0.168	1,350	-	1,440	15.	-
8	0.1640	0.1585	0.359	0.311	0.112	0.267	0.266	0.051	0.039	3/32	0.076	0.194	2,085	-	2,030	30.	-
10	0.1900	0.1840	0.411	0.359	0.127	0.313	0.312	0.054	0.041	1/8	0.087	0.220	2,610	2,610	2,720	40.	45.
1/4	0.2500	0.2435	0.531	0.480	0.161	0.424	0.423	0.059	0.046	5/32	0.111	0.280	4,750	4,750	4,710	100.	110.
5/16	0.3125	0.3053	0.656	0.600	0.198	0.539	0.538	0.063	0.050	3/16	0.135	0.343	7,800	7,800	7,360	200.	220.
3/8	0.3750	0.3678	0.781	0.720	0.234	0.653	0.652	0.069	0.056	7/32	0.159	0.405	11,600	11,600	10,600	350.	400.
7/16	0.4375	0.4294	0.844	0.781	0.234	0.690	0.689	0.084	0.071	1/4	0.159	0.468	15,900	15,900	14,400	560.	-
1/2	0.5000	0.4919	0.938	0.872	0.251	0.739	0.738	0.110	0.096	5/16	0.172	0.530	21,200	21,200	18,850	850.	1,000.
5/8	0.6250	0.6163	1.188	1.112	0.324	0.962	0.961	0.123	0.108	3/8	0.220	0.655	33,800	33,800	29,450	1,700.	-
3/4	0.7500	0.7406	1.438	1.355	0.396	1.186	1.185	0.136	0.121	1/2	0.220	0.780	50,000	50,000	42,400	3,000	-

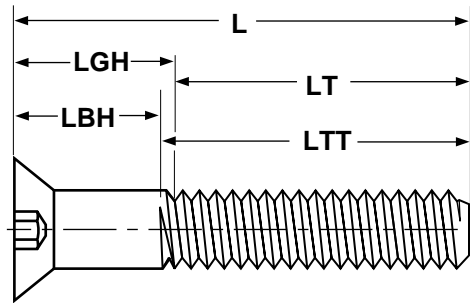
Tolerance on Length	Nominal Screw Size	Nominal Screw Length		
		Up to 1 in., Incl.	Over 1 in. to 2-1/2 in., Incl.	Over 2-1/2 in. to 3 in., Incl.
	0 thru 3/8, Inclusive	-0.03	-0.04	-0.06
7/16 thru 3/4, Inclusive	-0.03	-0.06	-0.08	

<b>Description</b>	Similar in design to a socket button head cap screw but with an 82° countersunk flat head.
<b>Applications/ Advantages</b>	Used when a flush mounting, high strength screw is required. Commonly used in tools and dies where moving parts pass over the fastened area.
<b>Material</b>	Screws shall be made from an alloy steel which conforms to the following chemical composition requirements (per product analysis)-- <i>Carbon:</i> 0.28 to 0.50%; <i>Phosphorus:</i> 0.040% maximum; <i>Sulfur:</i> 0.045% maximum. Also, one or more of the following elements shall be present in sufficient quantity to meet the performance requirements listed below: chromium, nickel, molybdenum or vanadium.
<b>Heat Treatment</b>	Screws shall be heat treated by oil quenching from above the transformation temperature and then tempered at a temperature not lower than 650°F.
<b>Hardness</b>	Rockwell C38 - 44
<b>Tensile Strength</b>	180,000 psi. minimum (material only)
<b>Yield Strength</b>	160,000 psi. minimum (material only)
<b>Elongation</b>	8% minimum (applies to machined specimens of length at least 4D where D equals the nominal diameter of the screw)
<b>Reduction of Area</b>	35% minimum (applies to machined specimens)
<b>Finish</b>	Screws are supplied with a thermal black finish.

# Body & Grip Lengths

# Flat Head Socket Cap Screws

# Sockets



For screws of nominal lengths longer than those for which LGH and LBH values tabulated in this table and for screws over 1 inch in diameter, the maximum grip gaging length LGH and the minimum body length LBH of the screws shall be determined as follows:

$$LGH = L - LT$$

$$LBH = L - LTT$$

where L = nominal length, LT = minimum thread length, and LTT = maximum total thread length.

BODY AND GRIP LENGTHS OF FLAT HEAD SOCKET CAP SCREWS											ASME B18.3-1998	
Nominal Size	4		5		6		8		10		1/4	
LT MIN.	.750		.750		.750		.875		.875		1.000	
LTT MAX	0.99		1.00		1.05		1.19		1.27		1.50	
Nominal Length	LGH	LBH	LGH	LBH	LGH	LBH	LGH	LBH	LGH	LBH	LGH	LBH
1.25	0.50	0.38	0.50	0.38	0.50	0.34	0.38	0.22				
1.50	0.50	0.38	0.50	0.38	0.50	0.34	0.38	0.22	0.62	0.42		
1.75	1.00	0.88	1.00	0.88	1.00	0.84	0.88	0.72	0.62	0.42	0.75	0.50
2.00	1.00	0.88	1.00	0.88	1.00	0.84	0.88	0.72	1.12	0.92	0.75	0.50
2.50					1.50	1.34	1.38	1.22	1.62	1.42	1.25	1.00
3.00							1.88	1.72	2.12	1.92	1.75	1.50
3.50									2.62	2.42	2.25	2.00

Nominal Size	5/16		3/8		7/16		1/2		5/8		3/4	
LT MIN.	1.125		1.250		1.375		1.500		1.750		2.000	
LTT MAX	1.71		1.94		2.17		2.38		2.82		3.25	
Nominal Length	LGH	LBH	LGH	LBH	LGH	LBH	LGH	LBH	LGH	LBH	LGH	LBH
2.00	0.88	0.60										
2.25	0.88	0.60	1.00	0.69								
2.50	1.38	1.10	1.00	0.69	1.12	0.77	1.00	0.62				
3.00	1.88	1.60	1.50	1.19	1.62	1.27	1.00	0.62				
3.50	2.38	2.10	2.00	1.69	2.12	1.77	1.75	1.36	1.50	1.04	1.50	1.00
4.00	2.88	2.60	2.50	2.19	2.62	2.27	2.50	2.12	2.25	1.80	1.50	1.00
4.50	3.38	3.10	3.00	2.69	3.12	2.77	2.50	2.12	2.25	1.80	2.50	2.00
5.00	3.88	3.60	3.50	3.19	3.62	3.27	3.25	2.86	3.00	2.54	2.50	2.00
5.50	4.38	4.10	4.00	3.69	4.12	3.77	4.00	3.62	3.75	3.30	3.50	3.00
6.00	4.88	4.60	4.50	4.19	4.62	4.27	4.00	3.62	3.75	3.30	3.50	3.00