

Table 2: Cap Screw Dimensions

Nom Dia.	E Body Diameter		F Width Across Flats			G Width Across Corners		H Head Height		J Wrenching Height	LT Thread Length		Y Transition Thread Length	F.I.M. Bearing Surface Runout
	Max	Min	Nom	Max	Min	Max	Min	Max	Min	Min	6" & Shorter	Over 6"	Max	Max
1/4	.2500	.2450	7/16	.438	.428	.505	.488	.163	.150	.106	.750	1.000	.250	.010
5/16	.3125	.3065	1/2	.500	.489	.577	.557	.211	.195	.140	.875	1.125	.278	.011
3/8	.3750	.3690	9/16	.562	.551	.650	.628	.243	.226	.160	1.000	1.250	.312	.012
7/16	.4375	.4305	5/8	.625	.612	.722	.698	.291	.272	.195	1.125	1.375	.357	.013
1/2	.5000	.4930	3/4	.750	.736	.866	.840	.323	.302	.215	1.250	1.500	.385	.014
9/16	.5625	.5545	13/16	.812	.798	.938	.910	.371	.348	.250	1.375	1.625	.417	.015
5/8	.6250	.6170	15/16	.938	.922	1.083	1.051	.403	.378	.269	1.500	1.750	.455	.017
3/4	.7500	.7410	1 1/8	1.125	1.100	1.299	1.254	.483	.455	.324	1.750	2.000	.500	.020
7/8	.8750	.8660	1 5/16	1.312	1.285	1.516	1.465	.563	.531	.378	2.000	2.250	.556	.023
1	1.0000	.9900	1 1/2	1.500	1.469	1.732	1.675	.627	.591	.416	2.250	2.500	.625	.026
1 1/8	1.1250	1.1140	1 11/16	1.688	1.631	1.949	1.859	.718	.658	.461	2.500	2.750	.714	.029
1 1/4	1.2500	1.2390	1 7/8	1.875	1.812	2.165	2.066	.813	.749	.530	2.750	3.000	.714	.033
1 3/8	1.3750	1.3630	2 1/16	2.062	1.994	2.382	2.273	.878	.810	.569	3.000	3.250	.833	.036
1 1/2	1.5000	1.4880	2 1/4	2.250	2.175	2.598	2.480	.974	.902	.640	3.250	3.500	.833	.039
1 3/4	1.7500	1.7380	2 5/8	2.625	2.538	3.031	2.893	1.134	1.054	.748	3.750	4.000	1.000	.046
2	2.0000	1.9880	3	3.000	2.900	3.464	3.306	1.263	1.175	.825	4.250	4.500	1.111	.052
2 1/4	2.2500	2.230	3 3/8	3.375	3.262	3.897	3.719	1.423	1.327	.933	-	5.000	1.111	.059
2 1/2	2.5000	2.4880	3 3/4	3.750	3.625	4.330	4.133	1.583	1.479	1.042	-	5.500	1.250	.065
2 3/4	2.7500	2.7380	4 1/8	4.125	3.988	4.763	4.546	1.744	1.632	1.151	-	6.000	1.250	.072
3	3.0000	2.9880	4 1/2	4.500	4.350	5.196	4.959	1.935	1.815	1.290	-	6.500	1.250	.079

Hex Head Cap Screws

Thread Lengths

Standard Thread Length and Body Length for Hex Head Cap Screws (per ASME/ANSI B18.2.1 – Rev 1996)

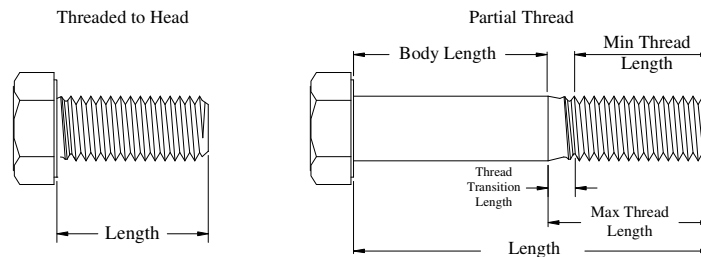
The chart below shows the thread lengths for all grades of hex and heavy hex cap screws as defined by the industry standard ASME/ANSI B18.2.1 (Rev 1996).

The minimum guaranteed thread length for lengths up to 6" long is $2 \times \text{Dia} + 1/4"$.
For lengths over 6" the guaranteed minimum thread length is $2 \times \text{Dia} + 1/2"$

- Column 2 lists the maximum lengths that are Threaded to the Head for each diameter.
- Column 4 lists the minimum thread length when the cap screw length is longer than the length listed in column 2 (for lengths up to 6" long).
- Column 5 lists the maximum Total Thread Length (full thread + thread transition length) that can be on any given lot of cap screws (for lengths up to 6").

To calculate the minimum body length, subtract the maximum thread length (column 5) from the overall length.

Example: 1/2 – 13 x 4 Hex Head Cap Screw will have
 minimum guaranteed thread length = 1.250"
 maximum possible thread length = 1.635"
 minimum possible body length = 2.365" (4" - 1.635")



Dia.	Lengths that are Threaded to Head lengths up to	Lengths that have Partial Threads lengths	Min and Max Thread Lengths (for lengths listed in column 3)		Dia	Lengths that are Threaded to Head lengths up to	Lengths that have Partial Threads lengths	Min and Max Thread Lengths (for lengths listed in column 3)	
			min	max				min	max
1/4	1 1/8	1 1/4 to 6	3/4	1.000	1 1/8	3 1/2	3 5/8 to 6	2 1/2	3.214
5/16	1 1/4	1 5/16 to 6	7/8	1.153	1 1/4	3 3/4	3 7/8 to 6	2 3/4	3.464
3/8	1 3/8	1 1/2 to 6	1	1.312	1 3/8	4 1/4	4 5/16 to 6	3	3.833
7/16	1 5/8	1 3/4 to 6	1 1/8	1.482	1 1/2	4 1/2	4 5/8 to 6	3 1/4	4.083
1/2	1 3/4	1 7/8 to 6	1 1/4	1.635	1 3/4	5 1/8	5 1/4 to 6	3 3/4	4.75
9/16	2	2 1/8 to 6	1 3/8	1.792	2	5 3/4	5 7/8 to 6	4 1/4	5.361
5/8	2 1/8	2 1/4 to 6	1 1/2	1.955	2 1/4*	6 1/2	6 5/8 to 12	5	5.861
3/4	2 1/2	2 5/8 to 6	1 3/4	2.250	2 1/2*	7 1/8	7 1/4 to 12	5 1/2	6.500
7/8	2 3/4	2 7/8 to 6	2	2.556	2 3/4*	7 5/8	7 3/4 to 12	5 3/4	7.000
1	3	3 1/8 to 6	2 1/4	2.875	3*	8 1/8	8 1/4 to 12	6 1/2	7.500

*for these diameters lengths up to 6" are threaded to head, min and max thread lengths (listed in columns 4 and 5) are based on $2 \times \text{dia} + 1/2"$

The above information is for reference only and is not intended for inspection purposes. Refer to the industrial standard for exact tolerances.