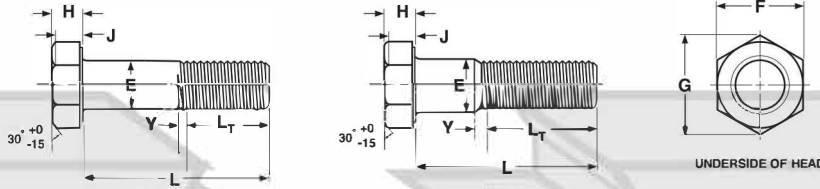


# Cap Screws & Bolts Heavy Hex Bolts

ASTM A193 Gr-B7  
ASTM A307 Gr- A & B



HEAVY HEX BOLTS															ASME B18.2.1-2010	
Nominal Size or Basic Product Diameter		E		F			G		H			R		L <sub>T</sub>		
		Body Diameter		Width Across Flats			Width Across Corners		Head Height			Radius of Fillet		Thread Length for Bolt Lengths		
		Max	Min	Basic	Max	Min	Max	Min	Basic	Max	Min	Max	Min	6 in. and shorter	Over 6 in.	
1/2	0.5000	0.515	0.482	7/8	0.875	0.850	1.010	0.969	11/32	0.364	0.302	0.03	0.01	1.250	1.500	
5/8	0.6250	0.642	0.605	1-1/16	1.062	1.031	1.227	1.175	27/64	0.444	0.378	0.06	0.02	1.500	1.750	
3/4	0.7500	0.768	0.729	1-1/4	1.250	1.212	1.443	1.383	1/2	0.524	0.455	0.06	0.02	1.750	2.000	
7/8	0.8750	0.895	0.852	1-7/16	1.438	1.394	1.660	1.589	37/64	0.604	0.531	0.06	0.02	2.000	2.250	
1	1.0000	1.022	0.976	1-5/8	1.625	1.575	1.876	1.796	43/64	0.700	0.591	0.09	0.03	2.250	2.500	
1 1/8	1.1250	1.149	1.098	1-13/16	1.812	1.756	2.093	2.002	3/4	0.780	0.658	0.09	0.03	2.500	2.750	
1 1/4	1.2500	1.277	1.223	2	2.000	1.938	2.309	2.209	27/32	0.876	0.749	0.09	0.03	2.750	3.000	
1 3/8	1.3750	1.404	1.345	2-3/16	2.188	2.119	2.526	2.416	29/32	0.940	0.810	0.09	0.03	3.000	3.250	
1 1/2	1.5000	1.531	1.470	2-3/8	2.375	2.300	2.742	2.622	1	1.036	0.902	0.09	0.03	3.250	3.500	
1 3/4	1.7500	1.785	1.716	2-3/4	2.750	2.662	3.175	3.035	1-5/32	1.196	1.054	0.12	0.04	3.750	4.000	
2	2.0000	2.039	1.964	3-1/8	3.125	3.025	3.608	3.449	1-11/32	1.388	1.175	0.12	0.04	4.250	4.500	

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 4 in., incl.		Over 4 in. to 6 in., incl.		Longer than 6 in.	
	1/4 to 3/8	+0.02	-0.03	+0.02	-0.04	+0.04	-0.06	+0.06	-0.10	+0.10	-0.18
7/16 and 1/2	+0.02	-0.03	+0.04	-0.06	+0.06	-0.08	+0.08	-0.10	+0.12	-0.18	
9/16 to 3/4	+0.02	-0.03	+0.06	-0.08	+0.08	-0.10	+0.10	-0.10	+0.14	-0.18	
7/8 and 1	....	....	+0.08	-0.10	+0.10	-0.14	+0.12	-0.16	+0.16	-0.20	
1 1/8 to 1 1/2	....	....	+0.12	-0.12	+0.16	-0.16	+0.18	-0.18	+0.22	-0.22	
Over 1-1/2	....	....	+0.18	-0.18	+0.20	-0.20	+0.22	-0.22	+0.24	-0.24	

<b>Description</b>	An externally threaded fastener with a six-sided head that is wider than that of a standard hex bolt.
<b>Applications/Advantages</b>	Offers greater wrenching area than standard hex machine bolts for use in heavy duty industrial work.
<b>Material</b>	Bolts shall be made from a carbon steel which conforms to the following chemical composition requirements-- <b>Grade A-- Phosphorus:</b> 0.06% maximum; <b>Sulfur:</b> 0.15% maximum; <b>Grade B-- Phosphorus:</b> 0.04% maximum; <b>Sulfur:</b> 0.05% maximum <b>Grade B7-- Carbon:</b> 0.37-0.49%; <b>Manganese:</b> 0.65-1.10%; <b>Phosphorus:</b> 0.035% max; <b>Sulfur:</b> 0.040% max; <b>Silicon:</b> 0.15-0.35%; <b>Chromium:</b> 0.75-1.20%; <b>Molybdenum:</b> 0.15-0.25%
<b>Hardness*</b>	<b>Bolts less than 3 times diameter in length:</b> <b>Grade A--</b> Rockwell B69 - 100; <b>Grade B--</b> Rockwell B69 - 95; Bolts 3 times diameter and longer: <b>Grade A--</b> Rockwell B100 maximum <b>Grade B--</b> Rockwell B69 - 95 <b>Grade B7--</b> Rockwell C 35 max
<b>Tensile Strength</b>	<b>Grade A:</b> 60,000 psi. minimum; <b>Grade B:</b> 60,000 - 100,000 psi.; <b>Grade B7:</b> 125,000 psi. min. (all diams thru 2 1/2")
<b>Elongation in 4D</b>	<b>Grades A &amp; B:</b> 18% minimum; <b>Grade B7:</b> 16% minimum (all diams thru 4")
<b>Plating</b>	See Appendix-A for plating information.