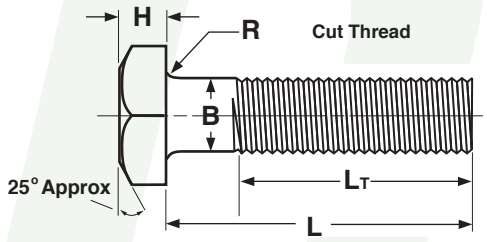
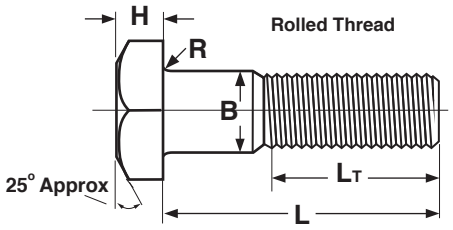
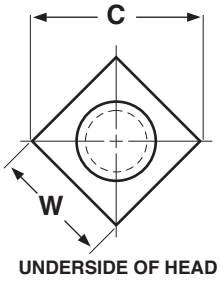
Jul. 2021

CAP SCREWS & BOLTS

SQUARE BOLTS







SQUARE BOLTS

ASME B18.2.1-2012

Nominal Size or Base Product Diameter		B		W		C		H		R		L_T	
		Full Size Body Diameter		Width Across Flats		Width Across Corners		Head Height		Radius of Fillet		Thread Length for Bolt Lengths	
												6 in. & shorter	Over 6 in.
		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Nom.	Nom.
1/4	0.2500	0.260	0.237	0.375	0.362	0.530	0.498	0.188	0.156	0.03	0.01	0.750	1.000
5/16	0.3125	0.324	0.298	0.500	0.484	0.707	0.665	0.220	0.186	0.03	0.01	0.875	1.125
3/8	0.3750	0.388	0.360	0.562	0.544	0.795	0.747	0.268	0.232	0.03	0.01	1.000	1.250
7/16	0.4375	0.452	0.421	0.625	0.603	0.884	0.828	0.316	0.278	0.03	0.01	1.125	1.375
1/2	0.5000	0.515	0.482	0.750	0.725	1.061	0.995	0.348	0.308	0.03	0.01	1.250	1.500
5/8	0.6250	0.642	0.605	0.938	0.906	1.326	1.244	0.444	0.400	0.06	0.02	1.500	1.750
3/4	0.7500	0.768	0.729	1.125	1.088	1.591	1.494	0.524	0.476	0.06	0.02	1.750	2.000
7/8	0.8750	0.895	0.852	1.312	1.269	1.856	1.742	0.620	0.568	0.06	0.02	2.000	2.250
1	1.0000	1.022	0.976	1.500	1.450	2.121	1.991	0.684	0.628	0.09	0.03	2.250	2.500
1 1/8	1.1250	1.149	1.098	1.688	1.631	2.386	2.239	0.780	0.720	0.09	0.03	2.500	2.750
1 1/4	1.2500	1.277	1.223	1.875	1.812	2.652	2.489	0.876	0.812	0.09	0.03	2.750	3.000
1 3/8	1.3750	1.404	1.345	2.062	1.994	2.917	2.738	0.940	0.872	0.09	0.03	3.000	3.250
1 1/2	1.5000	1.531	1.470	2.250	2.175	3.182	2.986	1.036	0.964	0.09	0.03	3.250	3.500

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

‡Length of a square bolt is measured from the underhead bearing surface to the extreme end of the bolt.

Description	A low or medium carbon steel, externally threaded mechanical device 1/4" diameter or larger, with a trimmed square shaped external wrenching head.
Applications/ Advantages	Offers greater bearing surface for wrenching than hex head bolts.
Material	Bolts shall be made from a carbon steel which conforms to the following chemical composition requirements-- ***Phosphorus***: 0.06% maximum; ***Sulfur***: 0.15% maximum
Hardness	***Bolts of a length less than 3 times diameter:*** Rockwell B69-100 *Bolts of a length 3 times diameter and longer:* Rockwell B100 maximum
Tensile Strength	60,000 psi. minimum
Elongation in 2 in.	18% minimum
Plating	See Appendix-A for plating information.