

Porteous Fastener Company

Product Information Sheet

A490 Heavy Hex Structural Bolts



- PFC Product Categories: 00160 (U.S. made) & 00161
- Material: Alloy Steel
- Material and Mechanical Properties: Purchased to meet ASTM A490 Type 1
- Dimensions: ASME B18.2.6, Rolled Threads
- Available only in plain. Hot-dip galvanize is prohibited on A490 bolts
- Typical Hardness: HRC 33-39 on sizes 1/2 to 1 inch less than 2D in length and HRC 39 max 2D and greater in length; HRC 33-39 on sizes 1 1/8 to 1 1/2 inches less than 3D in length, HRC 39 max 3D and longer lengths.
- Tensile Strength: 150,000 to 173,000 PSI
- For detailed information on structural bolting, please go to the Research Council on Structural Connections (RCSC) website at www.boltcouncil.org where the RCSC Specification for Structural Joints Using High-Strength Bolts can be downloaded at no cost.

Tensile Strength - A490		
Size	PSI	Pounds
1/2-13	150,000 - 173,000	21,300 - 24,600
5/8-11	150,000 - 173,000	33,900 - 39,100
3/4-10	150,000 - 173,000	50,100 - 57,800
7/8-9	150,000 - 173,000	69,300 - 79,950
1-8	150,000 - 173,000	90,900 - 104,850
1 1/8-7	150,000 - 173,000	114,450 - 132,000
1 1/4-7	150,000 - 173,000	145,350 - 167,650
1 3/8-6	150,000 - 173,000	173,250 - 199,850
1 1/2-6	150,000 - 173,000	210,750 - 243,100

Bolt Size	Socket Size
1/2-13	7/8
5/8-11	1 1/16
3/4-10	1 1/4
7/8-9	1 7/16
1-8	1 5/8
1 1/8-7	1 13/16
1 1/4-7	2
1 3/8-6	2 3/16
1 1/2-6	2 3/8

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Structural Bolt Max Grip / Min Body Length									
Nominal Diameter	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8-6	1 1/2-6
Nominal length	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min
Up to 1 1/4"	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
1 1/2	0.50/0.31	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
1 3/4	0.75/0.56	0.50/0.28	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
2	1.00/0.81	0.75/0.53	0.62/0.37	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
2 1/4	1.25/1.06	1.00/0.78	0.87/0.62	0.75/0.47	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
2 1/2	1.50/1.31	1.25/1.03	1.12/0.87	1.00/0.72	0.75/0.44	Full Thread	Full Thread	Full Thread	Full Thread
2 3/4	1.75/1.56	1.50/1.28	1.37/1.12	1.25/0.97	1.00/0.69	Full Thread	Full Thread	Full Thread	Full Thread
3	2.00/1.81	1.75/1.53	1.62/1.37	1.50/1.22	1.25/0.94	1.00/0.66	1.00/0.62	Full Thread	Full Thread
3 1/4	2.25/2.06	2.00/1.78	1.87/1.62	1.75/1.47	1.50/1.19	1.25/0.91	1.25/0.87	Full Thread	Full Thread
3 1/2	2.50/2.31	2.25/2.03	2.12/1.87	2.00/1.72	1.75/1.44	1.5/1.16	1.50/1.12	1.25/0.81	1.25/0.81
3 3/4	2.75/2.56	2.50/2.28	2.37/2.12	2.25/1.97	2.00/1.69	1.75/1.41	1.75/1.37	1.50/1.06	1.50/1.06
4	3.00/2.81	2.75/2.53	2.62/2.37	2.50/2.22	2.25/1.94	2.00/1.66	2.00/1.62	1.75/1.31	1.75/1.31
4 1/2	3.50/3.31	3.25/3.03	3.12/2.87	3.00/2.72	2.75/2.44	2.50/2.16	2.50/2.12	2.25/1.81	2.25/1.81
5	4.00/3.81	3.75/3.53	3.62/3.37	3.50/3.22	3.25/2.94	3.00/2.66	3.00/2.62	2.75/2.31	2.75/2.31
5 1/2	4.50/4.31	4.25/4.03	4.12/3.87	4.00/3.72	3.75/3.44	3.50/3.16	3.50/3.12	3.25/2.81	3.25/2.81
6	5.00/4.81	4.75/4.53	4.62/4.37	4.50/4.22	4.25/3.94	4.00/3.66	4.00/3.62	3.75/3.31	3.75/3.31
6 1/2	5.50/5.31	5.25/5.03	5.12/4.87	5.00/4.72	4.75/4.44	4.50/4.16	4.50/4.12	4.25/3.81	4.25/3.81
7	6.00/5.81	5.75/5.53	5.62/5.37	5.50/5.22	5.25/4.94	5.00/4.66	5.00/4.62	4.75/4.31	4.75/4.31
7 1/2	6.50/6.31	6.25/6.03	6.12/5.87	6.00/5.72	5.75/5.44	5.50/5.16	5.50/5.12	5.25/4.81	5.25/4.81
8	7.00/6.81	6.75/6.53	6.62/6.37	6.50/6.22	6.25/5.94	6.00/5.66	6.00/5.62	5.75/5.31	5.75/5.31
8 1/2	7.50/7.31	7.25/7.03	7.12/6.87	7.00/6.72	6.75/6.44	6.50/6.16	6.50/6.12	6.25/5.81	6.25/5.81
9	8.00/7.81	7.75/7.53	7.62/7.37	7.50/7.22	7.25/6.94	7.00/6.66	7.00/6.62	6.75/6.31	6.75/6.31
9 1/2	8.50/8.31	8.25/8.03	8.12/7.87	8.00/7.72	7.75/7.44	7.50/7.16	7.50/7.12	7.25/6.81	7.25/6.81
10	9.00/8.81	8.75/8.53	8.62/8.37	8.50/8.22	8.25/7.94	8.00/7.66	8.00/7.62	7.75/7.31	7.75/7.31

This table represents the grip / body lengths of standard Structural Bolts. To calculate thread length, subtract the Max/Min Grip Lengths from the nominal bolt length. This will give you the thread length. Please note the actual length of the cap screw will affect thread length calculations, but will not affect the grip / body length.

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Length Tolerance for Structural Bolts				
Nominal Bolt Size	1/2"	5/8"	3/4" through 1"	1 1/8" through 1 1/2"
Nominal Screw Length	Tolerance on Length			
Up to 6 inches	-0.12 (1/8")	-0.12 (1/8")	-0.19 (3/16")	-0.25 (1/4")
Over 6 inches	-0.19 (3/16")	-0.25 (1/4")	-0.25 (1/4")	-0.25 (1/4")

Note: Length tolerance on structural bolts is only a minus tolerance from nominal length.