

Porteous Fastener Company

Product Information Sheet

Hex Cap Screws, Inch Series, Grade 8



- PFC Product Categories: 00080 & 00081 (these categories are made in USA)
- Typical Material: Medium Carbon Alloy Steel
- Material and Mechanical Properties: ¼ to 1 ½ are purchased to meet SAE J429 Grade 8. Diameters over 1 ½ are purchased to meet ASTM A354 Grade BD.
- Dimensions: ASME B18.2.1 Hex Cap Screw exceptions below, Rolled Threads
 - 1 3/8 to 2 inch diameters are Hex Bolts
 - Over 2 inches diameter are Heavy Hex Bolts
- Zinc-Yellow Plating: Purchased to meet ASTM F1941 FeZn5C
- Typical Hardness: HRC 33-39 on sizes ¼ to 2 ½ inches; HRC 31-39 on sizes over 2 ½ inches.
- Tensile Strength: 150,000 PSI Minimum on sizes ¼ to 2 ½ inches; 140,000 PSI Minimum on sizes over 2 ½ inches.

Tensile Strength - NC Threads		
Size	PSI	Pounds
1/4-20	150,000	4750
5/16-18	150,000	7850
3/8-16	150,000	11,600
7/16-14	150,000	15,900
1/2-13	150,000	21,300
9/16-12	150,000	27,300
5/8-11	150,000	33,900
3/4-10	150,000	50,100
7/8-9	150,000	69,300
1-8	150,000	90,900
1 1/8-7	150,000	114,400
1 1/4-7	150,000	145,400
1 3/8-6	150,000	173,200
1 1/2-6	150,000	210,800
1 3/4-5	150,000	285,000
2-4 1/2	150,000	375,000
2 1/4-4 1/2	150,000	487,000
2 1/2-4	150,000	600,000

Tensile Strength - NF Threads		
Size	PSI	Pounds
1/4-28	150,000	5450
5/16-24	150,000	8700
3/8-24	150,000	13,200
7/16-20	150,000	17,800
1/2-20	150,000	24,000
9/16-18	150,000	30,400
5/8-18	150,000	38,400
3/4-16	150,000	56,000
7/8-14	150,000	76,400
1-12	150,000	99,400
1-14	150,000	101,900
1 1/8-12	150,000	128,400
1 1/4-12	150,000	161,000
1 3/8-12	150,000	197,200
1 1/2-12	150,000	237,200

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Cap Screw Grip Length												
Nominal Diameter	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1	1 1/8	1 1/4
Nominal length	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min
Up to 1 1/8"	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
1 1/4	0.50/0.25	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
1 3/8	0.63/0.38	0.50/0.22	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
1 1/2	0.75/0.50	0.62/0.35	0.50/0.19	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
1 5/8	0.88/0.62	0.75/0.47	0.62/0.31	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
1 3/4	1.00/0.75	0.88/0.60	0.75/0.44	0.63/0.27	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
1 7/8	1.12/0.88	1.00/0.72	0.88/0.56	0.75/0.39	0.63/0.24	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
2	1.25/1.00	1.12/0.85	1.00/0.69	0.88/0.52	0.75/0.38	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
2 1/4	1.50/1.25	1.38/1.10	1.25/0.94	1.12/0.77	1.00/0.52	0.88/0.46	0.75/0.33	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
2 1/2	1.75/1.50	1.62/1.35	1.50/1.19	1.38/1.02	1.25/0.86	1.12/0.75	1.00/0.55	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
2 3/4	2.00/1.75	1.88/1.60	1.75/1.44	1.62/1.27	1.50/1.12	1.38/0.96	1.25/0.80	1.00/0.50	Full Thread	Full Thread	Full Thread	Full Thread
3	2.25/2.00	2.12/1.85	2.00/1.69	1.88/1.52	1.75/1.36	1.62/1.21	1.50/1.05	1.25/0.75	1.00/0.44	Full Thread	Full Thread	Full Thread
3 1/2	2.75/2.50	2.62/2.35	2.50/2.19	2.38/2.02	2.25/1.86	2.12/1.71	2.00/1.55	1.75/1.25	1.50/0.94	1.25/0.62	Full Thread	Full Thread
4	3.25/3.00	3.12/2.85	3.00/2.69	2.88/2.52	2.75/2.36	2.62/2.21	2.50/2.05	2.25/1.75	2.00/1.44	1.75/1.12	1.50/0.79	1.25/0.54
4 1/2	3.75/3.50	3.62/3.35	3.50/3.19	3.38/3.02	3.25/2.86	3.12/2.71	3.00/2.55	2.75/2.25	2.50/1.94	2.25/1.62	2.00/1.29	1.75/1.04
5	4.25/4.00	4.12/3.85	4.00/3.69	3.88/3.52	3.75/3.36	3.62/3.21	3.50/3.05	3.25/2.75	3.00/2.44	2.75/2.12	2.50/1.79	2.25/1.54
5 1/2	4.75/4.50	4.62/4.35	4.50/4.19	4.38/4.02	4.25/3.87	4.12/3.71	4.00/3.55	3.75/3.25	3.50/2.94	3.25/2.62	3.00/2.29	2.75/2.04
6	5.25/5.00	5.12/4.85	5.00/4.69	4.88/4.52	4.75/4.36	4.62/4.21	4.50/4.05	4.25/3.75	4.00/3.44	3.75/3.12	3.50/2.79	3.25/2.54
6 1/2	5.50/5.25	5.38/5.10	5.25/4.94	5.12/4.77	5.00/4.62	4.88/5.46	4.75/4.30	4.50/4.00	4.25/3.69	4.00/3.38	3.75/3.04	3.50/2.79
7	6.00/5.75	5.88/5.60	5.75/5.44	5.62/5.27	5.50/5.12	5.38/4.96	5.25/4.80	5.00/4.50	4.75/4.19	4.50/3.88	4.25/3.54	4.00/3.29
7 1/2	6.50/6.25	6.38/6.10	6.25/5.94	6.12/5.77	6.00/5.62	5.88/5.46	5.75/5.30	5.50/5.00	5.25/4.69	5.00/4.38	4.75/4.04	4.50/3.79
8	7.00/6.75	6.88/6.60	6.75/6.44	6.62/6.27	6.50/6.12	6.38/5.96	6.25/5.80	6.00/5.50	5.75/5.19	5.50/4.88	5.25/4.54	5.00/4.29
8 1/2	7.50/7.25	7.38/7.10	7.25/6.94	7.12/6.77	7.00/6.62	6.88/6.46	6.75/6.30	6.50/6.00	6.25/5.69	6.00/5.38	5.75/5.04	5.50/4.79
9	8.00/7.75	7.88/7.60	7.75/7.44	7.62/7.27	7.50/7.12	7.38/6.96	7.25/7.05	7.00/6.50	6.75/6.19	6.50/5.88	6.25/5.54	6.00/5.29
9 1/2	8.50/8.25	8.38/8.10	8.25/7.94	8.12/7.77	8.00/7.62	7.88/7.46	7.75/7.30	7.50/7.00	7.25/6.69	7.00/6.38	6.75/6.04	6.50/5.79
10	9.00/8.75	8.88/8.60	8.75/8.44	8.62/8.27	8.50/8.12	8.38/7.96	8.25/7.80	8.00/7.50	7.75/7.19	7.50/6.88	7.25/6.54	7.00/6.29

This table represents the grip / body lengths of standard cap screws and is in accordance with ASME B18.2.1. It does not apply to Hex Bolts / Hex Machine Bolts. To calculate thread length, subtract the Max/Min Grip Lengths from the nominal cap screw 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.

Length Tolerances for Cap Screws						
Nominal Length	Nominal Size					
	1/4 to 3/8	7/16 & 1/2	9/16 to 3/4	7/8 to 1	1 1/8 to 1 1/2	Over 1 1/2
Up to & incl 1"	-0.03	-0.03	-0.03			
Over 1" to 2 1/2", incl.	-0.04	-0.06	-0.08	-0.10	-0.12	-0.18
Over 2 1/2" to 4", incl.	-0.06	-0.08	-0.10	-0.14	-0.16	-0.20
Over 4" to 6", incl.	-0.10	-0.10	-0.10	-0.16	-0.18	-0.22
Over 6"	-0.18	-0.18	-0.18	-0.20	-0.22	-0.24

All cap screws have a minus tolerance only.

Wrench / Socket Sizes							
Bolt Size	Socket Size	Bolt Size	Socket Size	Bolt Size	Socket Size	Bolt Size	Socket Size
1/4	7/16	9/16	13/16	1 1/8	1 11/16	2	3
5/16	1/2	5/8	15/16	1 1/4	1 7/8	2 1/4	3 3/8
3/8	9/16	3/4	1 1/8	1 3/8	2 1/16	2 1/2	3 3/4
7/16	5/8	7/8	1 5/16	1 1/2	2 1/4	2 3/4	4 1/8
1/2	3/4	1	1 1/2	1 3/4	2 5/8	3	4 1/2