

ASTM A325 - Heavy Hex Bolt - Abstract - Page 1 of 2

A325 Types	
Type 1	Medium Carbon, Carbon Boron, or Medium Carbon Alloy Steel
Type 3	Weathering Steel
T	Fully Threaded A325 (restricted to 4x the diameter in length)
M	Metric A325

A325 Connection Types	
SC	Slip Critical Connection
N	Bearing Type Connection w/ Threads Included in the Shear Plane
X	Weathering Steel

A325 Mechanical Properties				
Size (inch)	Tensile, ksi	Yield, ksi	Elong. % min	RA % min
1/2 -- 1	120 min	92 min	14	35
1-1/8 -- 1-1/2	105 min	81 min	14	35

A325 Type 1 Chemical Properties		
Heat Analysis	120ksi%	150ksi%
Carbon	0.30-0.52	0.30-0.48*
Manganese	0.60 min	0.60 min
Phosphorus	0.035 max	0.035 max
Sulfur	0.040 max	0.040 max
Sillicon	0.15-0.30	-
Boron	0.003 max	0.003 max
Copper	-	-
Nickel	-	-
Chromium	-	-
Molybdenum	-	-

*Carbon 0.35-0.53% for 1-1/2" A490/150ksi bolts

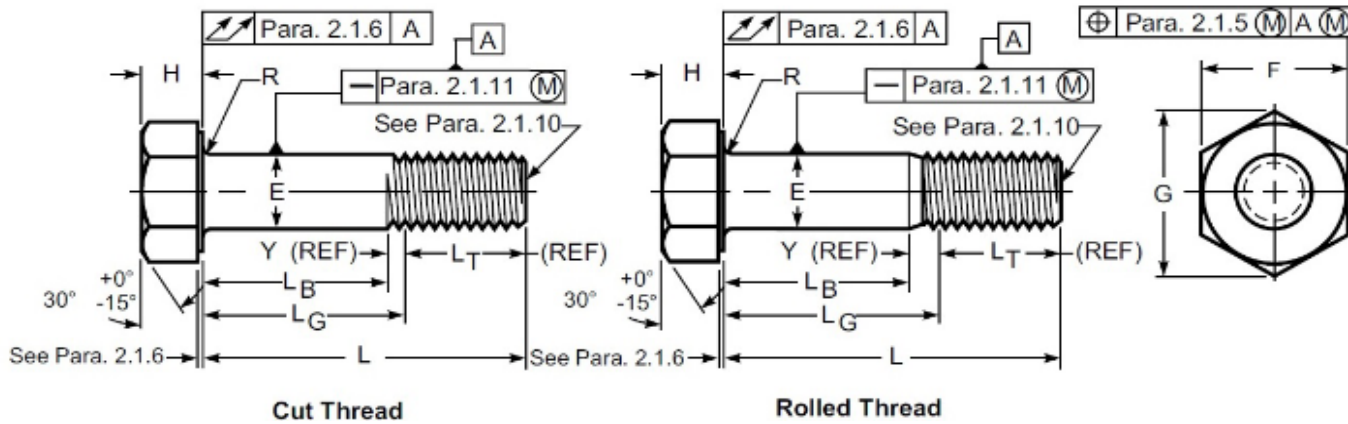
A325 Type 3 Chemical Properties				
Heat Analysis	120ksi, % Comp A	120ksi, % Comp B	120ksi, % Index	150ksi, % Index
Carbon	0.33-0.44	0.38-0.48	0.30-0.52	0.30-0.53
Manganese	0.90-1.20	0.70-0.90	0.60 min	0.60 min
Phosphorus	0.035 max	0.035 max	0.035 max	0.035 max
Sulfur	0.040 max	0.040 max	0.040 max	0.040 max
Sillicon	0.15-0.30	0.30-0.50		
Copper	0.25-0.45	0.20-0.40	0.20-0.60	0.20-0.60
Nickel	0.25-0.45	0.50-0.80	0.20 min*	0.20 min*
Chromium	0.45-0.65	0.50-0.80	0.20 min*	0.20 min*
Molybdenum		0.06 max	0.10 min*	0.10 min*

*Either Nickel or Molybdenum must be present in the amount specified *Corrosion Index based on ASTM Guide G101

This is for reference only, full specifications should be referred to from ASTM

A325 Recommended Hardware				
Nuts			Washers	
Type 1		Type 3		
Plain	Galvanized	Plain		Type 1
A563C,C3,D,DH,DH3	A563DH	A563C3,DH3		F436-1
<p>4 Grade 2H are a suitable substitute for use with A325 Heavy hex Structural Bolts. The ASTM A563 Nut Compatibility Chart has a</p>				

ASME B18.2.6-Abstract (Fasteners for Use In Structural Applications) Table 1 Dimensions



Nominal Size or Basic Product Diameter	E		F			G		H			R		L _T	Y	Total Runout of Bearing Surface FIM
	Body Diameter		Width Across Flats			Width Across Corners		Head Height			Radius of Fillet		Thread Length	Transitional Thread Length	
	Max	Min	Nom	Max	Min	Max	Min	Nom	Max	Min	Max	Min	Ref	Ref	
1/2 (0.500)	0.515	0.482	7/8	0.875	0.85	1.01	0.969	5/16	0.323	0.302	0.031	0.009	1	0.19	0.016
5/8 (0.625)	0.642	0.605	1 1/16	1.062	1.031	1.227	1.175	25/64	0.403	0.378	0.062	0.021	1.25	0.22	0.019
3/4 (0.750)	0.768	0.729	1 1/4	1.25	1.212	1.443	1.383	15/32	0.483	0.455	0.062	0.021	1.38	0.25	0.022
7/8 (0.875)	0.895	0.852	1 7/16	1.438	1.394	1.66	1.589	35/64	0.563	0.531	0.062	0.031	1.5	0.28	0.025
1 (1.000)	1.022	0.976	1 5/8	1.625	1.575	1.876	1.796	39/64	0.627	0.591	0.093	0.062	1.75	0.31	0.028
1-1/8 (1.125)	1.149	1.098	1 13/16	1.812	1.756	2.093	2.002	11/16	0.718	0.658	0.093	0.062	2	0.34	0.032
1-1/4 (1.250)	1.277	1.223	2	2	1.938	2.309	2.209	25/32	0.813	0.749	0.093	0.062	2	0.38	0.035
1-3/8 (1.375)	1.404	1.345	2 3/16	2.188	2.119	2.526	2.416	27/32	0.878	0.81	0.093	0.062	2.25	0.44	0.038
1-1/2 (1.500)	1.531	1.47	2 3/8	2.375	2.3	2.742	2.622	15/16	0.974	0.902	0.093	0.062	2.25	0.44	0.041
See Notes 1	6		2					3					4	4	5

