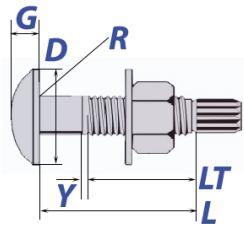
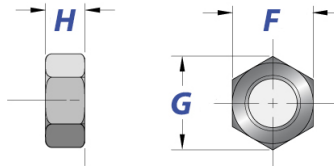


Tension Control Bolts: Dimensions & Specification



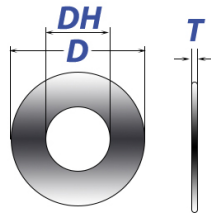
A325 High Strength Tension Control Bolts: Dimensions

Nominal Bolt Size	Body Diameter (E)		Diameter of Bearing Surface (D)		Height (H)			Radius of Fillet (R)		Thread Length (LT)	Transition Thread Length (Y)
	Max	Min	Max	Min	Basic	Max	Min	Max	Min	Basic	Max Ref
5/8	.642	.605	1.181	1.102	25/64	.403	.378	.062	.021	1.25	.22
3/4	.768	.729	1.417	1.338	15/32	.483	.455	.062	.021	1.38	.25
7/8	.895	.852	1.654	1.535	35/64	.563	.531	.062	.031	1.50	.28
1	1.022	.976	1.900	1.771	39/64	.627	.591	.093	.062	1.75	.31



Heavy Hex Nuts Used with Tension Control Bolts

Nominal Nut Size	Width Across Flats (F)			Width Across Corners (G)		Height (H)		
	Basic	Max	Min	Max	Min	Basic	Max	Min
5/8	1-1/16	1.062	1.031	1.227	1.175	39/64	.631	.587
3/4	1-1/41	1.250	1.212	1.443	1.382	47/64	.758	.710
7/8	1-7/16	1.438	1.394	1.660	1.589	55/64	.885	.833
1	1-5/8	1.625	1.575	1.876	1.796	63/64	1.012	.956



Washers Used with Tension Control Bolts

Nominal Nut Size	Outside Diameter (D)		Hole Diameter (DH)		Thickness (T)	
	Nom.	Tolerances	Nom	Tolerances	Max	Min
5/8	1-5/16	-1/32, +1/4	11/16	-0, +1/32	.177	.122
3/4	1-15/32	-1/32, +1/4	13/16	-0, +1/32	.177	.122
7/8	1-3/4	-1/32, +1/4	15/16	-0, +1/32	.177	.136
1	2	-1/32, +1/4	1-1/8	-0, +1/32	.177	.136

Tension Control Bolts: Performance & Mechanical Stats

Description	A three piece fastening system consisting of: 1) a round-head bolt with a truncated, flat surface area at the top of the bolt, and a 24-sided tip which protrudes from the opposite end. The tip is calibrated to shear off when the proper tension is achieved; 2) a 2H heavy hex nut; and 3) a structural flat washer.		
Applications	Commonly used in structural steel joints in heavy construction. Has several advantages over traditional structural bolts, including: A) No operator or tool can over torque the fastening, B) the fastening can be visually inspected - when the tip is gone, the tension is correct, C) installation is faste, easier and done by one person, D) installation process is quieter.		
	Bolt	Nut	Washer
Material	Type 1 bolts shall be made from a carbon steel, which conforms to the following chemical composition requirements: Carbon: 0.25-0.58%, Manganese: 0.60% min, Phosphorus: 0.048% max; Sulfur: 0.058% max	2H nuts shall be made from a carbon steel, which conforms to the following chemical composition requirements: Carbon: 0.40% min, Manganese: 1.00% max, Phosphorus: 0.040% max, Sulfur: 0.050% max, Silicon: 0.040% max	Type 1 washers shall be made from a steel, which conforms to the following chemical composition requirements: Phosphorus: 0.050% max, Sulfur: 0.060% max
Heat Treatment	Type 1 bolts shall be heat treated by quenching in a liquid medium from above the austenitizing temperature and then tempered by reheating to a temperature at least 800 Degrees (F).	2H nuts shall be heat treated to meet the required mechanical properties.	Washers shall be through hardened.
Hardness	5/8" - 1" D: Rockwell C24-35	Rockwell C24-38	Rockwell C38-45
Proof Load	5/8" - 1" D: 85,000 psi	175,000 psi	
Yield Strength	5/8" - 1" D: 92,000 psi		
Tensile Strength	5/8" - 1" D: 120,000 psi min		