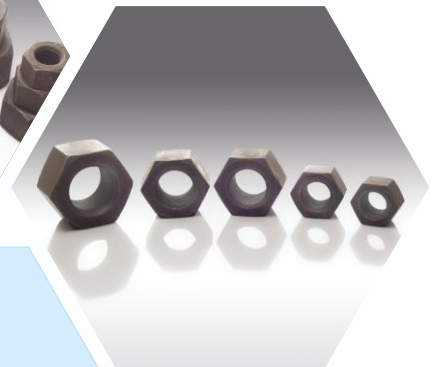
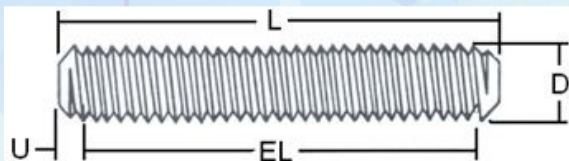
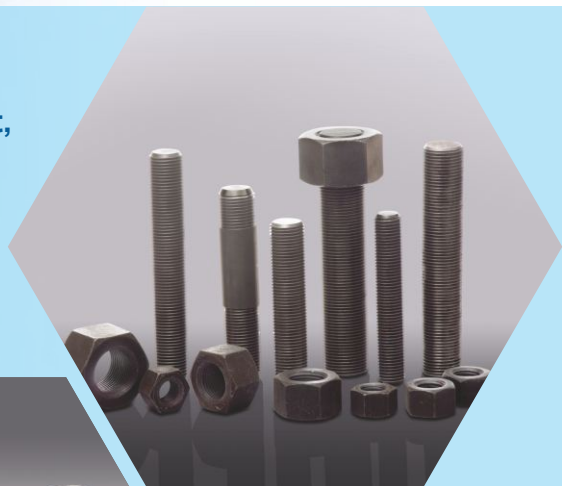


Stud Bolts, ASTM A193 B7 Stud w/ 2H Heavy Hex Nut, Blue Fluoropolymer Coated, Assembly

The information below lists the required dimensional, chemical and physical characteristics of the fasteners in this purchase order. If the order received does not meet these requirements, it may result in a supplier corrective action request, which could jeopardize your status as an approved vendor. Unless otherwise specified, all referenced consensus standards must be adhered to in their entirety.



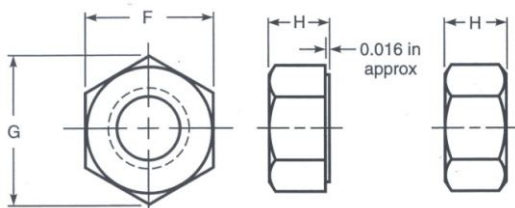
Nominal Size	D (inch)		EL	
	Major Diameter	Min	Max	Tolerance
1/4"	.2408	.2408	.2489	+/- 0.062"
5/16"	.3026	.3026	.3113	+/- 0.125"
3/8"	.3643	.3643	.3737	+/- 0.250"
7/16"	.4258	.4258	.4361	
1/2"	.4876	.4876	.4985	
9/16"	.5459	.5459	.5609	
5/8"	.6112	.6112	.6233	
3/4"	.7353	.7353	.7482	
7/8"	.8592	.8592	.8731	
1"	.9830	.9830	.9980	
1-1/8"	1.1079	1.1079	1.1229	
1-1/4"	1.2329	1.2329	1.2479	
1-3/8"	1.3578	1.3578	1.3728	
1-1/2"	1.4828	1.4828	1.4978	

Specification Requirements :

- Dimensions : See tolerance table above
- Stud Ends (U length) : Both ends of the stud shall be pointed. Points may be flat and chamfered, rounded or sheared at the manufacturer's option; except that the U length shall not exceed 2 thread pitches in length at each end.
- EL Diameters : Diameters within the Effective Length shall be of full thread form throughout its entire length and shall conform to System 21, thread gaging per ASME B1.3

Mechanical & Chemical Properties : ASTM A193/A193M; B7

- Thread Requirements : ASME B1.1, 2A: (prior to coating)
 - UNC for all stud diameters 1" and smaller
 - UN8 for all stud diameters greater than 1"
- Coating : Blue Fluoropolymer coated to a thickness of .0008" to .002", rated to 1000 hrs minimum to Red Rust
- Product Marking : In accordance with ASTM A193 / A193M : Manufacturer ID and B7 Grade marking applied to one end for studs less than or equal to 3/8" nominal diameter; and manufacturer ID on one end and grade marking on the other end for studs larger than 3/8" nominal diameter.
- Material Test Reports : The MTR must have documented lot traceability, including full chemical and mechanical figures, to the specification(s) above.



Nut Specification Requirements :

- Dimensions : ASME B18.2.2 Heavy Hex
- Thread Requirements : ASME B1.1, 2B (prior to coating, over tapping may be necessary for assembly and mechanical testing)
 - UNC for all stud diameters 1" and smaller
 - UN8 for all stud diameters greater than 1"

Nut Material & Mechanical Properties : Grade 2H per ASTM A194/A194M;

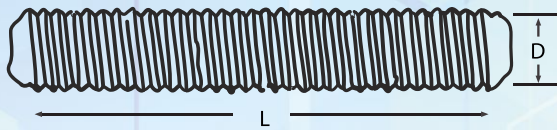
- Nut Product Marking : Manufacturer ID and 2H for forged, or 2HB if machined from bar stock
- Finish : Blue Fluoropolymer coated to a thickness of .0008" to .002", rated to 1000 hrs. minimum to Red Rust
- Material Test Reports : The MTR must have documented lot traceability, including full chemical and mechanical figures, to the specification(s) above, for the entire assembly

Nominal Size	F		G		H	
	With Across Flat	With Across Corners	Min	Max	Min	Max
1/4"	.500	.488	.577	.556	.250	.218
5/16"	.562	.546	.650	.622	.314	.280
3/8"	.688	.669	.794	.763	.377	.341
7/16"	.750	.728	.866	.830	.441	.403
1/2"	.875	.850	1.010	.969	.504	.464
9/16"	.938	.909	1.083	1.037	.568	.526
5/8"	1.062	1.031	1.227	1.175	.631	.587
3/4"	1.250	1.212	1.443	1.382	.758	.710
7/8"	1.438	1.394	1.660	1.589	.885	.833
1"	1.625	1.575	1.876	1.796	1.012	.956
1-1/8"	1.812	1.756	2.093	2.002	1.139	1.079
1-1/4"	2.000	1.938	2.309	2.209	1.251	1.187
1-3/8"	2.188	2.119	2.526	2.416	1.378	1.310
1-1/2"	2.375	2.300	2.742	2.622	1.505	1.433



Stud Bolts ASTM A193

Inch Series, UNC/UN – Dimensions



Notes :

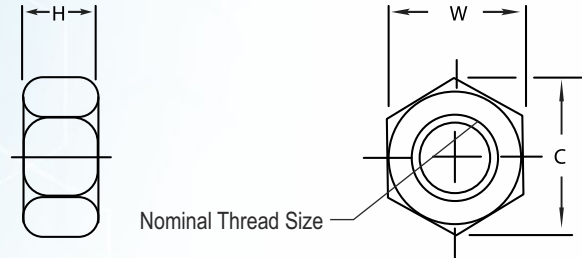
1. The stud Bolts will generally conform to ASTM A193 Gr : B7
2. Thread will conform to Class 2A unified coarse threads as per ANSI B1.1
3. Material : Medium Carbon Chromium Molybdenum Steel, CR-Mo Alloy Steel (Cr-Mo).
4. Heat treatment: As per Grade 'B7'
5. All dimensions are in inches.

Nominal Thread Size 'D'	TPI		Length Range 'L'	Nominal Thread Size 'D'	TPI		Length Range 'L'
	UNC	UN			UNC	UN	
1/2"	13	-	up to 120"	2 3/8"	-	8	up to 50"
5/8"	11	-	up to 120"	2 1/2"	-	8"	up to 60"
3/4"	10	-	up to 120"	2 5/8"	-	8	up to 60"
7/8"	9	-	up to 120"	2 3/4"	-	8	up to 60"
1"	8	-	up to 120"	2 7/8"	-	8	up to 60"
1 1/8"	-	8	up to 120"	3"	-	8	up to 48"
1 1/4"	-	8	up to 120"	3 1/8"	-	8	up to 48"
1 3/8"	-	8	up to 120"	3 1/4"	-	8	up to 48"
1 1/2"	-	8	up to 120"	3 3/8"	-	8	up to 48"
1 5/8"	-	8	up to 120"	3 1/2"	-	8	up to 48"
1 3/4"	-	8	up to 120"	3 5/8"	-	8	up to 48"
1 7/8"	-	8	up to 120"	3 3/4"	-	8	up to 48"
2"	-	8	up to 120"	3 7/8"	-	8	up to 48"
2 1/8"	-	8	up to 120"	4"	-	8	up to 48"
2 1/4"	-	8	up to 120"	-	-	-	-

Physical Properties

Physical Properties	Diameter Range	Grade 'B7'
Tensile Strength (mm.)	2 1/2" and under	125,000 (860)
psi (N/mm2)	Over 2 1/2" to 4"	115,000 (795)
Yield Strength (min).	2 1/2" and under	105,000 (720)
psi (N/mm2)	Over 2 1/2" to 4"	95,000 (655)
Elongation % on GL	2 1/2" and under	16%
4D (min.)	Over 2 1/2" to 4"	16%
Reduction of Area	2 1/2" and under	50%
% (min.)	Over 2 1/2" to 4"	50%

Heavy Hexagon Nuts - ASTM A 194



Notes :

1. The nuts will generally conform to ANSI/ASME B18.2.2. Heavy Nuts
2. Thread will conform to Class 2B of ANSI B1.1
3. Material & Heat Treatment :
To achieve mechanical properties of Grade 2H which conform to the requirement of ASTM A194.
4. In Bolt/Nut assembly, tightening should be done by rotation of nut.
Torque Value as recommended in tables for bolts.
5. All dimensions are in inches.

Thrade Size	T.P.I. UNC/UN	W Max.	C Max.	H Norm.
1/2"	13	0.875"	1.010"	0.484"
9/16"	12	0.938"	1.083"	0.547"
5/8"	11	1.061"	1.227"	0.609"
3/4"	10	1.250"	1.443"	0.734"
7/8"	9	1.438"	1.660"	0.859"
1"	8	1.625"	1.876"	0.984"
1 1/8"	8	1.812"	2.093"	1.109"
1 1/4"	8	2.000"	2.309"	1.219"
1 3/8"	8	2.188"	2.526"	1.344"
1 1/2"	8	2.375"	2.742"	1.469"
1 5/8"	8	2.562"	2.959"	1.594"
1 3/4"	8	2.750"	3.175"	1.719"
1 7/4"	8	2.938"	3.392"	1.844"
2"	8	3.125"	3.608"	1.969"
2 1/4"	8	3.500"	4.041"	2.203"
2 1/2"	8	3.875"	4.474"	2.453"
2 3/4"	8	4.250"	4.907"	2.953"
3"	8	4.625"	5.340"	2.953"
3 1/4"	8	5.000"	5.774"	3.188"
3 1/2"	8	5.375"	6.207"	3.438"

Grade	Size	For use with Bolts/Stud Bolts of Grade	Proof Load Stress (psi)	Rockwell Hardness (HR)
2H	up to 1 1/2" incl	ASTMA325 T-1	175,000	C24 - C38
2H	Over 1 1/2" A	ASTMA 193 B7	175,000	B95 - C38