
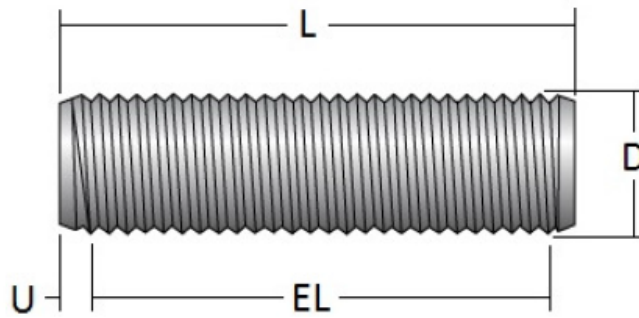


ASTM A193 Grade B16 stud bolts are **high strength fasteners** manufactured from heat treated **Chromium-Molybdenum-Vanadium steel, quenched and tempered**. Added Vanadium allows for operating temperatures higher than that of B7 stud bolts

ASTM A193 Grade B16 Chemical Composition

Elements	Range	Product Variation, Over or Under ^[Note]
Carbon	0.36 - 0.47%	0.02
Manganese, max	0.45 - 0.70%	0.03
Phosphorus, max	0.04%	0.005 over
Sulfur, max	0.04%	0.005 over
Silicon	0.15 - 0.35%	0.02
Chromium	0.80 - 1.15%	0.05
Molybdenum	0.50 - 0.65%	0.03
Vanadium	0.25 - 0.35%	0.03
Aluminium, Max	0.02%	

Specification & Grade	Size Range (in.)	Min. Tensile Strength (psi)	Min. Yield Strength (psi)	Core Hardness Rockwell (max)	Description	Grade Identification Marking
ASTM A193/A193M B16	2 1/2 & under	125,000	105,000	C35	A Chromium-Molybdenum-Vanadium alloy used for high-pressure, high-temperature service applications. Offers slightly higher temperature resistance than B7.	
	Over 2 1/2 - 4	110,000	95,000	C35		
	Over 4 - 8	100,000	85,000	C35		



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

EL	
Effective Length	Tolerance
< 12 inch	+/- 0.062"
12 ≤ 18 inch	+/- 0.125"
18 inch <	+/- 0.250"

Thread Requirements:

ASME B1.1, 2A

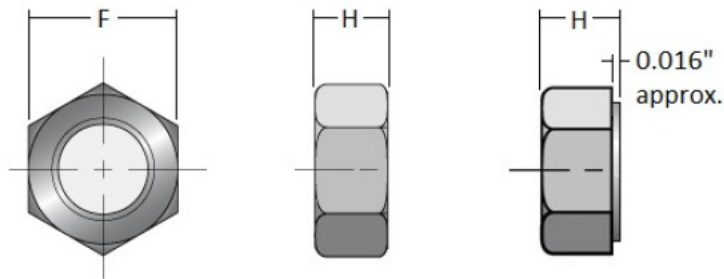
- UNC for all stud diameters 1" and smaller
- UN8 for all stud diameters greater than 1

Finish: Black, Galvanized, Xylan Coating

Product Marking:

Grade and manufacturer's ID marking applied to one end of studs

A194 grade 4/7 Heave Hex Nuts



Nominal Size	F		H	
	Width Across Flats		Thickness	
	Max.	Min.	Max.	Min.
1/4	.500	.488	.250	.218
5/16	.562	.546	.314	.280
3/8	.688	.669	.377	.341
7/16	.750	.728	.441	.403
1/2	.875	.850	.504	.464
9/16	.938	.909	.568	.526
5/8	1.062	1.031	.631	.587
3/4	1.250	1.212	.758	.710
7/8	1.438	1.394	.885	.833
1	1.625	1.575	1.012	.956
1 1/8	1.812	1.756	1.139	1.079
1 1/4	2.000	1.938	1.251	1.187
1 3/8	2.188	2.119	1.378	1.310
1 1/2	2.375	2.300	1.505	1.433

Nut Specification Requirements:

- Dimensions: ASME B18.2.2 Heavy Hex
- Thread Requirements: ASME B1.1, 2B
 - UNC for all stud diameters 1" and smaller
 - UN8 for all stud diameters greater than 1"
- Nut Material & Mechanical Properties: Grade 4 per ASTM A194/A194M and ASME SA194/SA194M
- Finish: Black, Galvanized, Xylan Coating