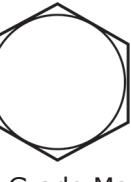
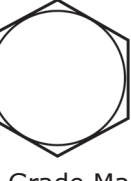





































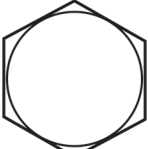

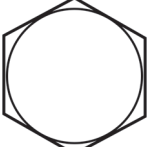
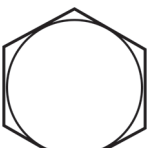




# Bolt Identification Markings

Identification Grade Mark	Specification	Fastener Description	Material	Nominal Size Range (in.)	Mechanical Properties						
					Proof Load (psi)	Yield Strength Min (psi)	Tensile Strength Min (psi)				
 No Grade Mark	SAE J429 Grade 1	Bolts, Screws, Studs	Low- or Medium-Carbon Steel	¼ thru 1½	33,000	36,000	60,000				
	ASTM A307 Grades A&B		Low-Carbon Steel	¼ thru 4	—	—					
	SAE J429 Grade 2		Low- or Medium-Carbon Steel	¼ thru ¾ Over ¾ thru 1½	55,000 33,000	57,000 36,000	74,000 60,000				
 No Grade Mark	SAE J429 Grade 4	Studs	Medium-Carbon Cold-Drawn Steel	¼ thru 1½	—	100,000	115,000				
 <b>B5</b>	ASTM A193 Grade B5	Bolts, Screws, Studs for High-Temperature Service	AISI 501	¼ thru 4	—	80,000	100,000				
 <b>B6</b>	ASTM A193 Grade B6		AISI 410	¼ thru 4	—	85,000	110,000				
 <b>B7</b>	ASTM A193 Grade B7		AISI 4140, 4142, or 4145	¼ thru 2½ Over 2½ thru 4 Over 4 thru 7	— — —	105,000 95,000 75,000	125,000 115,000 100,000				
 <b>B16</b>	ASTM A193 Grade B16		CrMoVa Alloy Steel	¼ thru 2½ Over 2½ thru 4 Over 4 thru 7	— — —	105,000 95,000 85,000	125,000 115,000 100,000				
 <b>B8</b>	ASTM A193 Grade B8		AISI 304	¼ and Larger	—	30,000	75,000				
 <b>B8C</b>	ASTM A193 Grade B8C		AISI 347								
 <b>B8M</b>	ASTM A193 Grade B8M		AISI 316								
 <b>B8T</b>	ASTM A193 Grade B8T		AISI 321								
 <b>B8</b>	ASTM A193 Grade B8		AISI 304 Strain-Hardened								
 <b>B8C</b>	ASTM A193 Grade B8C		AISI 347 Strain-Hardened	¼ thru ¾ Over ¾ thru 1 Over 1 thru 1¼ Over 1¼ thru 1½	— — — —	100,000 80,000 65,000 50,000	125,000 115,000 105,000 100,000				
 <b>B8M</b>	ASTM A193 Grade B8M		AISI 316 Strain-Hardened								
 <b>B8T</b>	ASTM A193 Grade B8T		AISI 321 Strain-Hardened								
 <b>B8</b>	ASTM A193 Grade B8		AISI 304 Strain-Hardened								
 <b>L7</b>	ASTM A320 Grade L7	Bolts, Screws, Studs for Low-Temperature Service	AISI 4140, 4142, or 4145	¼ thru 2½	—	105,000	125,000				
 <b>L7A</b>	ASTM A320 Grade L7A		AISI 4037								
 <b>L7B</b>	ASTM A320 Grade L7B		AISI 4137								
 <b>L7C</b>	ASTM A320 Grade L7C		AISI 8740								
 <b>L43</b>	ASTM A320 Grade L43		AISI 4340					¼ thru 4	—	105,000	125,000

# Bolt Identification Markings

Identification Grade Mark	Specification	Fastener Description	Material	Nominal Size Range (in.)	Mechanical Properties		
					Proof Load (psi)	Yield Strength Min (psi)	Tensile Strength Min (psi)
	ASTM A320 Grade B8	Bolts, Screws, Studs for Low-Temperature Service	AISI 304	1/4 and Larger	—	30,000	75,000
	ASTM A320 Grade B8C		AISI 347				
	ASTM A320 Grade B8T		AISI 321				
	ASTM A320 Grade B8F		AISI 303 or 303Se				
	ASTM A320 Grade B8M		AISI 316				
	ASTM A320 Grade B8		AISI 304	1/4 thru 3/4 Over 3/4 thru 1 Over 1 thru 1 1/4 Over 1 1/4 thru 1 1/2	— — — —	100,000 80,000 65,000 50,000	100,000 80,000 65,000 50,000
	ASTM A320 Grade B8C		AISI 347				
	ASTM A320 Grade B8T		AISI 316				
	ASTM A320 Grade B8F		AISI 321				
	ASTM A320 Grade B8M		AISI 303 or 303Se				
	SAE J429 Grade 5	Bolts, Screws, Studs	Medium-Carbon Steel, Quenched and Tempered	1/4 thru 1	85,000	92,000	120,000
	ASTM A449			Over 1 thru 1 1/2	74,000	81,000	105,000
	SAE J429 Grade 5	Bolts, Screws, Studs	Low-Carbon Martensitic Steel, Quenched and Tempered	1/4 thru 1	85,000	92,000	120,000
	SAE J429 Grade 5.2			Over 1 thru 1 1/2	74,000	81,000	105,000
	ASTM A325 Type 1	High-Strength Structural Bolts	Medium-Carbon Steel, Quenched and Tempered	1/2 thru 1	85,000	92,000	120,000
	ASTM A325 Type 2		Low-Carbon Martensitic Steel, Quenched and Tempered	1/2 thru 1	85,000	92,000	120,000
	ASTM A325 Type 3		Atmospheric-Corrosion-Resisting Steel, Quenched and Tempered	1/2 thru 1	85,000	92,000	120,000
	ASTM A354 Grade BB	Bolts, Studs	Alloy Steel, Quenched and Tempered	1/4 thru 2 1/2	80,000	83,000	105,000
	ASTM A354 Grade BC			2 3/4 thru 4	75,000	78,000	100,000
	ASTM A354 Grade BC	Bolts, Studs	Alloy Steel, Quenched and Tempered	1/4 thru 2 1/2	105,000	109,000	125,000
	ASTM A354 Grade BD			2 3/4 thru 4	95,000	99,000	115,000
	ASTM J429 Grade 7	Bolts and Screws	Medium-Carbon Alloy Steel, Quenched and Tempered	1/4 thru 1 1/2	105,000	115,000	133,000
	SAE J429 Grade 8	Bolts, Screws, Studs	Alloy Steel, Quenched and Tempered	1/4 thru 1 1/2	120,000	130,000	150,000
	ASTM A354 Grade BD						

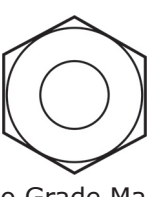




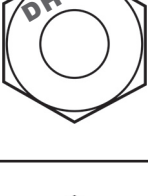
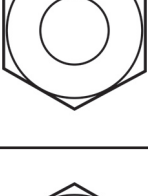
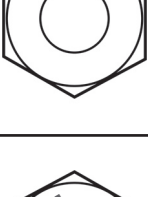
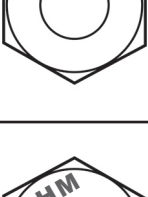
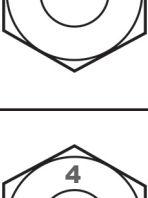

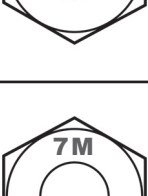
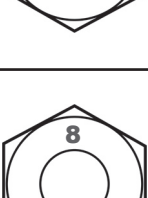
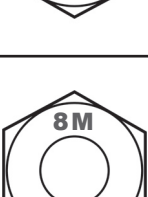
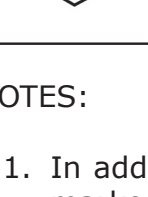
# Bolt Identification Markings

Identification Grade Mark	Specification	Fastener Description	Material	Nominal Size Range (in.)	Mechanical Properties		
					Proof Load (psi)	Yield Strength Min (psi)	Tensile Strength Min (psi)
 No Grade Mark	SAE J429 Grade 8.1	Studs	Medium-Carbon Alloy or SAE 1041 Modified Elevated-Temperature Drawn Steel	1/4 thru 1 1/2	120,000	130,000	150,000
	ASTM A490	High-Strength Structural Bolts	Alloy Steel, Quenched and Tempered	1/2 thru 1 1/2	120,000	130,000	150,000 min 170,000 max
 No Grade Mark	ISO R898 Class 4.6	Bolts, Screws, Studs	Low- or Medium-Carbon Steel, Quenched and Tempered	All sizes thru 1 1/2	33,000	36,000	60,000
 No Grade Mark	ISO R898 Class 5.8				55,000	57,000	74,000
	ISO R898 Class 8.8		Medium-Carbon Steel, Quenched and Tempered		85,000	92,000	120,000
							
	ISO R898 Class 10.9		Alloy Steel, Quenched and Tempered		120,000	130,000	150,000
							

***Nut Identification Markings begin on the following page.***

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# Nut Identification Markings

Identification Grade Mark	Specification	Material	Nominal Size Range (in.)	Proof Load (ksi)	Hardness Rockwell		See Note
					Min	Max	
 No Grade Mark	ASTM A563 Grade O	Carbon Steel	¼ thru 1½	69	B55	C32	3, 4
	ASTM A563 Grade A			69	B55	C32	
	ASTM A563 Grade B		¼ thru 1 Over 1 thru 1½	120 105	B69	C32	
	ASTM A563 Grade C	Carbon Steel; May be Quenched and Tempered	¼ thru 4	144	B78	C38	5
	ASTM A563 Grade C3	Atmospheric-Corrosion-Resistant Steel; May be Quenched and Tempered	¼ thru 4	144	B78	C38	5, 9
	ASTM A563 Grade D	Carbon Steel; May be Quenched and Tempered	¼ thru 4	150	B84	C38	6
	ASTM A563 Grade DH	Carbon Steel, Quenched and Tempered	¼ thru 4	175	C24	C38	6
	ASTM A563 Grade DH3	Atmospheric-Corrosion-Resistant Steel, Quenched and Tempered	¼ thru 4	175	C24	C38	5, 9
	ASTM A194 Grade 1	Carbon Steel	¼ thru 4	130	B70	—	7
	ASTM A194 Grade 2	Medium-Carbon Steel	¼ thru 4	150	159	352	7, 8
	ASTM A194 Grade 2H	Medium-Carbon Steel, Quenched and Tempered	¼ thru 4	175	C24	C38	7
	ASTM A194 Grade 2HM	Medium-Carbon Steel, Quenched and Tempered	¼ thru 4	150	159	237	7, 8
	ASTM A194 Grade 4	Medium-Carbon Alloy Steel, Quenched and Tempered	¼ thru 4	175	C24	C38	7
	ASTM A194 Grade 7	Medium-Carbon Alloy Steel, Quenched and Tempered	¼ thru 4	175	C24	C38	7
	ASTM A194 Grade 7M	Medium-Carbon Alloy Steel, Quenched and Tempered	¼ thru 4	150	159	237	7
	ASTM A194 Grade 8	Stainless AISI 304	¼ thru 4	80	126	300	10
	ASTM A194 Grade 8M	Stainless AISI 316	¼ thru 4	80	126	300	10

**NOTES:**

1. In addition to the indicated grade marking, all grades, except A563 Grades O, A, and B, must be marked for manufacturer identification.
2. The markings shown for all grades of A194 nuts are for cold-formed and hot-forged nuts. When nuts are machined from bar stock the nut must be additionally marked with the letter "B."
3. Nuts are not required to be marked unless specified by the purchaser. When marked, the identification marking shall be the grade letter O, A, or B.
4. Properties shown are those of non-plated or non-coated coarse-thread hex nuts.
5. Properties shown are those of coarse-thread heavy hex nuts.
6. Properties shown are those of coarse-thread heavy hex nuts.
7. Properties shown are those of coarse 8-thread heavy hex nuts.
8. Hardnesses are Brinell Hardness numbers.
9. The nut manufacturer, at his option, may add other markings to indicate the use of atmospheric-corrosion-resistant steel.
10. Nuts that are carbide-solution-treated require additional letter A-8A or 8MA.
11. Specifications:  
 ASTM A563: *Carbon and Alloy Steel Nuts*  
 ASTM A194/A194M: *Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service*

Other, less common, grades exist but are not listed here.