

Bolt Strength Requirements by Grade

Grade Marking	Specification	Material & Treatment	Nominal Size (inches)	Mechanical Properties					Hardness Rockwell	
				Proof Load Min. (ksi)	Yield Strength Min. (ksi)	Tensile Strength Min. (ksi)	Elong % Min.	RA % Min.	Min.	Max.
PB	SAE J429 Grade 1	Low or Medium Carbon Steel	1/4" – 1 1/2"	33	36	60	18	35	B70	B100
307A PB	A307 Grade A		1/4" – 4"	-	-	60	18	-	B69	B100
307B PB	A307 Grade B			-	-	60 min. 100 max.	18	-	B69	B100
307C PB	A307 Grade C			-	36	58 min. 80 max.	23	-	-	-
AB36 PB	F1554 Grade 36			-	36	58 min. 80 max.	23	40	-	-
AB55 PB	F1554 Grade 55			1/4" - 2"	-	55	75 min. 95 max.	21	30	-
			2-1/4" – 2-1/2"	21	22					
			2-3/4" – 3"	21	20					
			3-1/4" – 4"	21	18					
PB	SAE J429 Grade 2		1/4" – 3/4"	55	57	74	18	35	B80	B100
		7/8" – 1-1/2"	33	36	60	18	35	B70	B100	
B8 PB	A193 / A320 Grade B8	AISI SS304 Stainless	No Restrictions	-	30	75	30	50	-	B96
B8M PB	A193 / A320 Grade B8M	AISI SS316 Stainless								

Bolt Strength Requirements by Grade

Grade Marking	Specification	Material & Treatment	Nominal Size (inches)	Mechanical Properties					Hardness Rockwell	
				Proof Load Min. (ksi)	Yield Strength Min. (ksi)	Tensile Strength Min. (ksi)	Elong % Min.	RA % Min.	Min.	Max.
A325 PB	A325 Type 1	Medium Carbon Steel, Q & T	1/2" - 1"	85	92	120	14	35	C24	C35
A325 PB	A325 Type 3	Atmospheric Corrosion Resistant Steel, Q & T	1-1/8" - 1-1/2"	74	81	105			C19	C31
PB	SAE J429 Grade 5	Medium Carbon Steel, Q & T	1/4" - 1"	85	92	120	14	14	C25	C34
			1-1/8" - 1-1/2"	74	81	105	35	35	C19	C30
A449 PB	A449 Type 1 or Type 3		1/4"-1"	85	92	120	14	35	C25	C34
			1-1/8" - 1-1/2"	74	81	105			C19	C30
			1-5/8" - 3"	55	58	90			B91	B100
B7 PB	A193 Grade B7		1/4" - 2-1/2"	-	105	125	16	50	-	C35
		2-5/8" - 4"	-	95	115	-			C35	
		4-1/8" - 7"	-	75	100	-			C35	
BC PB	A354 Grade BC	1/4" - 2-1/2"	105	109	125	16	50	C26	C36	
		2-5/8" - 4"	95	94	115		45	C22	C33	
AB105 PB	F1554 Grade 105		1/4" - 3"	-	105	125 min. 150 max.	15	45	-	-
L7 PB	A320 Grade L7	AISI 4140, 4142, or 4145	1/4" - 2-1/2"	-	105	125	16	50	-	-
L43 PB	A320 Grade L43	ASIS 4340	1/4" - 4"	-	105	125	16	50	-	-

Bolt Strength Requirements by Grade

Grade Marking	Specification	Material & Treatment	Nominal Size (inches)	Mechanical Properties					Hardness Rockwell	
				Proof Load Min. (ksi)	Yield Strength Min. (ksi)	Tensile Strength Min. (ksi)	Elong % Min.	RA % Min.	Min.	Max.
A490 PB	A490 Type 1	Medium Carbon Alloy Steel, Q & T	1/2" - 1-1/2"	120	130	150 min. 173 max.	14	40	C33	C38
A490 PB	A490 Type 3	Atmospheric Corrosion Resistant Steel, Q & T								
PB	SAE J429 Grade 8	Medium Carbon Alloy Steel, Q & T	1/4" - 1-1/2"	120	130	150	12	35	C33	C39
BD PB	A354 Grade BD		1/4" - 2-1/2"	120	130	150	14	40	C33	C39
			2-5/8" - 4"	105	115	140			C31	

- All specifications are ASTM unless otherwise noted.
- All specifications shall be marked by the manufacturer with a unique identifier to identify the manufacturer or private label distributor, as appropriate.
- Q & T – Quenched and Tempered.
- Stamping of F1554 and A307 Grade C bolts is a supplemental requirement while color coding is required.
- Although markings are shown on hex heads, grade markings apply equally to products with other head configurations.
- All Grade BD products shall be marked “BD”. In addition to the “BD” marking, the product may be marked with 6 radial lines 60° apart.
- Hex cap screws and bolts and one end of studs shall be marked “A449”. In addition, Fasteners shall be permitted to be marked with three radial lines 120° apart.
- ASTM A307 Grade C has been replaced by ASTM F1554 Grade 36.
- Elong % Min. + Percent Elongation
- RA % Min. = Percent Reduction of Area