

### ASTM A320 GRADE L7 STUD BOLTS

#### GOVERNING STANDARDS:

ASTM A320/A320M	Standard specification for alloy-steel and stainless steel bolting for low temperature service.
ASME B16.5	Covers recommended stud bolt quantity, diameter, and length for use in flanged pipe fittings.
ASME B1.1 Class 2A	Specifies the thread form, series, class, allowance, tolerance, and designation for unified screw threads. UNC for 1" diameter and smaller. UN8 (8 threads per inch) for 1-1/8" diameter and larger.



Product to be marked with the manufacturer's marking and grade marking on one end of each stud 3/8" diameter and larger. Manufacturer's marking may be placed on other end if insufficient space.

#### APPLICATIONS:

A320 L7 stud bolts are intended for low temperature service. It has the same chemical and physical properties as [ASTM A193 Grade B7](#), but must meet a Charpy impact value of 20 lb-ft at -150°F to ensure satisfactory performance in low temperature services.

#### COMPATIBLE NUTS

ASTM A194 Grade 7 Heavy Hex

#### SIMILAR GRADES

[ASTM A193 Grade B7 Stud Bolts](#)

#### MATERIAL PROPERTIES:

AISI 4140/4142 Quenched and Tempered

DIAMETER	PROOF LOAD	YIELD STRENGTH	TENSILE STRENGTH	CORE HARDNESS
up through 2-1/2"	—	105,000 psi	125,000 psi	Max
Elongation	16% Minimum (All Diameters)			
Reduction of Area	50% Minimum (All Diameters)			

Material strengths listed are minimum acceptable per governing standard. Core hardness based on Rockwell scale.

## STUD REFERENCE CHART:

The chart below gives the recommended stud bolt diameter, length, and quantity for a given flange size.

FLANGE		NOMINAL PIPE DIAMETER (in.)									
RATING	BOLTING	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
150#	Number	4	4	4	4	4	4	4	4	8	8
	Diameter	1/2	1/2	1/2	1/2	1/2	5/8	5/8	5/8	5/8	5/8
	Stud Bolt Length	2-1/4	2-1/2	2-1/2	2-3/4	2-3/4	3-1/4	3-1/2	3-1/2	3-1/2	3-1/2
	Mach Bolt Length	2	2	2-1/4	2-1/4	2-1/2	2-3/4	3	3	3	3
300#	Number	4	4	4	4	4	8	8	8	8	8
	Diameter	1/2	5/8	5/8	5/8	3/4	5/8	3/4	3/4	3/4	3/4
	Stud Bolt Length	2-1/2	3	3	3-1/4	3-1/2	3-1/2	4	4-1/4	4-1/4	4-1/2
	Mach Bolt Length	2-1/4	2-1/2	2-1/2	2-3/4	3	3	3-1/4	3-1/2	3-3/4	3-3/4
600#	Number	4	4	4	4	4	8	8	8	8	8
	Diameter	1/2	5/8	5/8	5/8	3/4	5/8	3/4	3/4	7/8	7/8
	Stud Bolt Length	3	3-1/2	3-1/2	3-3/4	4-1/4	4-1/4	4-3/4	5	5-1/2	5-3/4
900#	Number	4	4	4	4	4	8	8	8	-	8
	Diameter	3/4	3/4	7/8	7/8	1	7/8	1	7/8	-	1-1/8
	Stud Bolt Length	4-1/4	4-1/2	5	5	5-1/2	5-3/4	6-1/4	5-3/4	-	6-3/4
1500#	Number	4	4	4	4	4	8	8	8	-	8
	Diameter	3/4	3/4	7/8	7/8	1	7/8	1	1-1/8	-	1-1/4
	Stud Bolt Length	4-1/4	4-1/2	5	5	5-1/2	5-3/4	6-1/4	7	-	7-3/4
2500#	Number	4	4	4	4	4	8	8	8	-	8
	Diameter	3/4	3/4	7/8	1	1-1/8	1	1-1/8	1-1/4	-	1-1/2
	Stud Bolt	4-	5	5-	6	6-3/4	7	7-3/4	8-3/4	-	10
	Length	3/4		1/2							

FLANGE		NOMINAL PIPE DIAMETER (in.)									
RATING	BOLTING	5	6	8	10	12	14	16	18	20	24
150#	Number	8	8	8	12	12	12	16	16	20	20
	Diameter	3/4	3/4	3/4	7/8	7/8	1	1	1-1/8	1-1/8	1-1/4
	Stud Bolt Length	3-3/4	4	4-1/4	4-1/2	4-3/4	5-1/4	5-1/4	5-3/4	6-1/4	6-3/4
	Mach Bolt Length	3-1/4	3-1/4	3-1/2	4	4	4-1/2	4-1/2	5	5-1/2	6
300#	Number	8	12	12	16	16	20	20	24	24	24
	Diameter	3/4	3/4	7/8	1	1-1/8	1-1/8	1-1/4	1-1/4	1-1/4	1-1/2
	Stud Bolt Length	4-3/4	4-3/4	5-1/2	6-1/4	6-3/4	7	7-1/2	7-3/4	8	9
	Mach Bolt Length	4-1/4	4-1/4	4-3/4	5-1/2	5-3/4	6-1/4	6-1/2	6-3/4	7-1/4	8
600#	Number	8	12	12	16	20	20	20	20	24	24
	Diameter	1	1	1-1/8	1-1/4	1-1/4	1-3/8	1-1/2	1-5/8	1-5/8	1-7/8
	Stud Bolt Length	6-1/2	6-3/4	7-1/2	8-1/2	8-3/4	9-1/4	10	10-3/4	11-1/4	13
900#	Number	8	12	12	16	20	20	20	20	20	20
	Diameter	1-1/4	1-1/8	1-3/8	1-3/8	1-3/8	1-1/2	1-5/8	1-7/8	2	2-1/2
	Stud Bolt Length	7-1/2	7-1/2	8-3/4	9-1/4	10	10-3/4	11-1/4	12-3/4	13-3/4	17-1/4
1500#	Number	8	12	12	12	16	16	16	16	16	16
	Diameter	1-1/2	1-3/8	1-5/8	1-7/8	2	2-1/4	2-1/2	2-3/4	3	3-1/2
	Stud Bolt Length	9-3/4	10-1/4	11-1/2	13-1/4	14-3/4	16	17-1/2	19-1/2	21-1/4	24-1/4
2500#	Number	8	8	12	12	12	-	-	-	-	-
	Diameter	1-3/4	2	2	2-1/2	2-3/4	-	-	-	-	-
	Stud Bolt Length	11-3/4	13-1/2	15	19-1/4	21-1/4	-	-	-	-	-