

## NUMBER AND SIZE OF BOLTS FOR FLANGED JOINTS – ASME B16.5

PRIMARY SERVICE PRESSURE RATING	BOLTING	FLANGE FACING	NOMINAL PIPE SIZE																			
			1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
<b>Class 150</b>	Number		4	4	4	4	4	4	4	4	8	8	8	8	8	12	12	12	16	16	20	20
	Diameter		1/2	1/2	1/2	1/2	1/2	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8	1	1	1 1/8	1 1/8	1 1/4
	Length of Stud Bolts	1/16" RF	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	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
		RTJ			3	3 1/4	3 1/4	3 3/4	4	4	4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 3/4	5 3/4	6 1/4	6 3/4	7 1/4
	Length of Mach. Bolts	1/16" RF	2	2	2 1/4	2 1/4	2 1/2	2 3/4	3	3	3	3	3 1/4	3 1/4	3 1/2	4	4	4 1/2	4 1/2	5	5 1/2	6
Ring No.				R15	R17	R19	R22	R25	R29	R33	R36	R40	R43	R48	R52	R56	R59	R64	R68	R72	R76	
<b>Class 300</b>	Number		4	4	4	4	4	8	8	8	8	8	8	12	12	16	16	20	20	24	24	24
	Diameter		1/2	5/8	5/8	5/8	3/4	5/8	3/4	3/4	3/4	3/4	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
	Length of Stud Bolts	1/16" RF	2 1/2	3	3	3 1/4	3 1/2	3 1/2	4	4 1/4	4 1/4	4 1/2	4 3/4	4 3/4	5 1/2	6 1/4	6 3/4	7	7 1/2	7 3/4	8	9
		RTJ	3	3 1/2	3 1/2	3 3/4	4	4	4 1/2	4 3/4	5	5	5 1/4	5 1/2	6	6 3/4	7 1/4	7 1/2	8	8 1/4	8 3/4	10
	Length of Mach. Bolts	1/16" RF	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	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
Ring No.		R11	R13	R16	R18	R20	R23	R26	R31	R34	R37	R41	R45	R49	R53	R57	561	R65	R69	R73	R77	
<b>Class 400</b>	Number		4	4	4	4	4	8	8	8	8	8	8	12	12	16	16	20	20	24	24	24
	Diameter		1/2	5/8	5/8	5/8	3/4	5/8	3/4	3/4	7/8	7/8	7/8	7/8	1	1 1/8	1 1/4	1 1/4	1 3/8	1 3/8	1 1/2	1 3/4
	Length of Stud Bolts	1/4" RF	3	3 1/2	3 1/2	3 3/4	4 1/4	4 1/4	4 3/4	5	5 1/2	5 1/2	5 3/4	6	6 3/4	7 1/2	8	8 1/4	8 3/4	9	9 1/2	10 1/2
		M & F T & G	2 3/4	3 1/4	3 1/4	3 1/2	4	4	4 1/2	4 3/4	5 1/4	5 1/4	5 1/4	5 3/4	6 1/2	7 1/4	7 3/4	8	8 1/2	8 3/4	9 1/4	10 1/4
		RTJ	3	3 1/2	3 1/2	3 3/4	4 1/4	4 1/4	4 3/4	5	5 1/2	5 1/2	5 3/4	6	6 3/4	7 1/2	8	8 1/4	8 3/4	9	9 3/4	11
Ring No.		R11	R13	R16	R18	R20	R23	R26	R31	R34	R37	R41	R45	R49	R53	R57	R61	R65	R69	R73	R77	
<b>Class 600</b>	Number		4	4	4	4	4	8	8	8	8	8	8	12	12	16	20	20	20	20	24	24
	Diameter		1/2	5/8	5/8	5/8	3/4	5/8	3/4	3/4	7/8	7/8	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
	Length of Stud Bolts	1/4" RF	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	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
		M & F T & G	2 3/4	3 1/4	3 1/4	3 1/2	4	4	4 1/2	4 3/4	5 1/4	5 1/2	6 1/4	6 1/2	7 1/4	8 1/4	8 1/2	9	9 3/4	10 1/2	11	12 3/4
		RTJ	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	6 1/2	6 3/4	7 3/4	8 1/2	8 3/4	9 1/4	10	10 3/4	11 1/2	13 1/4
Ring No.		R11	R13	R16	R18	R20	R23	R26	R31	R34	R37	R41	R45	R49	R53	R57	R61	R65	R69	R73	R77	
<b>Class 900</b>	Number		4	4	4	4	4	8	8	8	8	8	8	12	12	16	20	20	20	20	20	20
	Diameter		3/4	3/4	7/8	7/8	1	7/8	1	7/8		1 1/8	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
	Length of Stud Bolts	1/4" RF	4 1/4	4 1/2	5	5	5 1/2	5 3/4	6 1/4	5 3/4		6 3/4	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
		M & F T & G	4	4 1/4	4 3/4	4 3/4	5 1/4	5 1/2	6	5 1/2		6 1/2	7 1/4	7 1/4	8 1/2	9	9 3/4	10 1/2	11	12 1/2	13 1/2	17
		RTJ	4 1/4	4 1/2	5	5	5 1/2	5 3/4	6 1/4	5 3/4		6 3/4	7 1/2	7 3/4	8 3/4	9 1/4	10	11	11 1/2	13 1/4	14 1/4	18
Ring No.		R12	R14	R16	R18	R20	R24	R27	R31		R37	R41	R45	R49	R53	R57	R62	R66	R70	R74	R78	
<b>Class 1500</b>	Number		4	4	4	4	4	8	8	8	8	8	8	12	12	12	16	16	16	16	16	16
	Diameter		3/4	3/4	7/8	7/8	1	7/8	1	1 1/8		1 1/4	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
	Length of Stud Bolts	1/4" RF	4 1/4	4 1/2	5	5	5 1/2	5 3/4	6 1/4	7		7 3/4	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
		M & F T & G	4	4 1/4	4 3/4	4 3/4	5 1/4	5 1/2	6	6 3/4		7 1/2	9 1/2	10	11 1/4	13	14 1/2	15 3/4	17 1/4	19 1/4	21	24
		RTJ	4 1/4	4 1/2	5	5	5 1/2	5 3/4	6 1/4	7		7 3/4	9 3/4	10 1/2	12 3/4	13 1/2	15 1/4	16 3/4	18 1/2	20 3/4	22 1/4	25 1/2
Ring No.		R12	R14	R16	R18	R20	R24	R27	R35		R39	R44	R46	R50	R54	R58	R63	R67	R71	R75	R79	
<b>Class 2500</b>	Number		4	4	4	4	4	8	8	8	8	8	8	12	12	12						
	Diameter		3/4	3/4	7/8	1	1 1/8	1	1 1/8	1 1/4		1 1/2	1 3/4	2	2	2 1/2	2 3/4					
	Length of Stud Bolts	1/4" RF	4 3/4	5	5 1/2	6	6 3/4	7	7 3/4	8 3/4		10	11 3/4	13 1/2	15	19 1/4	21 1/4					
		M & F T & G	4 1/2	4 3/4	5 1/4	5 3/4	6 1/2	6 3/4	7 1/2	8 1/2		9 3/4	11 1/2	13 1/4	14 3/4	19	21					
		RTJ	4 3/4	5	5 1/2	6	6 3/4	7	8	9		10 1/4	12 1/4	14	15 1/2	20	22					
Ring No.		R13	R16	R18	R21	R23	R26	R28	R32		R38	R42	R47	R51	R55	R60						

Stud-Bolt lengths do not include the height of the points.

Lengths of studs and bolts, when used with lap joint flanges, are dependent upon the thickness of the lap of the stub end.

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