

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	
Class 150	Number		4	4	4	4	4	4	4	4	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 1/2	4	4 1/4	4 1/2	4 3/4	5 1/4	5 1/4	5 3/4	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	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		
Class 300	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	R61	R65	R69	R73	R77	
Class 400	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 3/4	6 1/2	7 1/4	7 3/4	8	8 1/2	8 3/4	9 1/4	9 3/4	10 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 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	
Class 600	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	
Class 900	Number		4	4	4	4	4	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
Class 1500	Number		4	4	4	4	4	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
Class 2500	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 stud end.