

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	1¼	1½	2	2½	3	3½	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	8	12	12	12	16	16	20	20	
	Diameter		½	½	½	½	½	5/8	5/8	5/8	5/8	5/8	¾	¾	¾	7/8	7/8	1	1	1½	1½	1½	1½
	Length of Stud Bolts	1/16" RF	2¼	2½	2½	2¾	2¾	3¼	3½	3½	3½	3½	3½	3¾	4	4¼	4½	4¾	5 1/4	5 1/4	5¾	6¼	6¾
		RTJ			3	3¼	3¼	3¾	4	4	4	4	4	4¼	4½	4¾	5	5¼	5¼	5¾	6¼	6¾	7¼
	Lth Mach Bolts	1/16" RF	2	2	2¼	2¼	2½	2¾	3	3	3	3	3 1/4	3 1/4	3½	4	4	4½	4½	5	5½	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		½	5/8	5/8	5/8	¾	5/8	¾	¾	¾	¾	¾	¾	7/8	1	1½	1½	1½	1½	1½	1½	1½
	Length of Stud Bolts	1/16" RF	2½	3	3	3¼	3½	3½	4	4¼	4¼	4¼	4½	4 3/4	4¾	5½	6¼	6¾	7	7½	7¾	8	9
		RTJ	3	3½	3½	3¾	4	4	4 1/2	4¾	5	5	5¼	5½	6	6¼	7¼	7½	8	8¼	8¼	8¼	10
	Lth Mach Bolts	1/16" RF	2¼	2½	2½	2¾	3	3	3¼	3½	3¾	3¾	4¼	4¼	4¼	5½	5½	6¼	6½	6½	7¼	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		½	5/8	5/8	5/8	¾	5/8	¾	¾	¾	¾	¾	¾	7/8	1	1½	1½	1½	1½	1½	1½	1½
	Length of Stud Bolts	¼" RF	3	3½	3½	3¾	4¼	4¼	4¼	5	5½	5½	5¾	6	6¼	7½	8	8¼	8¼	9	9½	10½	
		M&F T&G	2¾	3¼	3¼	3 1/2	4	4	4½	4¾	5¼	5¼	5¼	5¼	6½	7¼	7¾	8	8½	8¾	9¼	10¼	
	RTJ	3	3½	3½	3¾	4¼	4¼	4¼	5	5½	5½	5¾	6	6¼	7 1/2	8	8¼	8¼	9	9¼	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		½	5/8	5/8	5/8	¾	5/8	¾	¾	¾	¾	¾	¾	7/8	1	1½	1½	1½	1½	1½	1½	1½
	Length of Stud Bolts	¼" RF	3	3½	3½	3¾	4¼	4¼	4¼	5	5½	5¼	6½	6¼	7½	8	8¼	8¼	9	9¼	10½	11¼	13
		M&F T&G	2¾	3¼	3¼	3½	4	4	4½	4¾	5¼	5½	6¼	6½	7¼	8¼	8½	9	9¼	10½	11	12¾	
	RTJ	3	3½	3½	3¾	4¼	4¼	4¼	5	5½	5¼	6½	6¼	7¼	8¼	8¼	9¼	10	10¼	11½	13¼		
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	8	12	12	16	20	20	20	20	20	20	
	Diameter		¾	¾	7/8	7/8	1	7/8	1	7/8	1	1½	1¼	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½
	Length of Stud Bolts	¼" RF	4¼	4½	5	5	5½	5¼	6¼	5¼		6¼	7½	7½	8¼	9¼	10	10¼	11¼	12¼	13¼	17¼	
		M&F T&G	4	4¼	4¼	4¼	5¼	5½	6	5½		6½	7¼	7¼	8½	9	9¼	10½	11	12½	13½	17	
	RTJ	4¼	4½	5	5	5½	5¼	6¼	5¼		6¼	7½	7¼	8¼	9¼	10	11	11½	13¼	14¼	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	8	12	12	12	16	16	16	16	16	16	
	Diameter		¾	¾	7/8	7/8	1	7/8	1	1½	1¼	1½	1½	1½	1½	1½	2	2¼	2½	2¼	3	3½	
	Length of Stud Bolts	¼" RF	4¼	4½	5	5	5½	5¼	6¼	7		7¼	9¼	10 1/4	11½	13 1/4	14¼	16	17½	19½	21¼	24¼	
		M&F T&G	4	4¼	4¼	4¼	5¼	5½	6	6¼		7½	9½	10	11¼	13	14½	15¼	17¼	19¼	21	24	
	RTJ	4¼	4½	5	5	5½	5¼	6¼	7		7¼	9¼	10½	12¼	13½	15¼	16¾	18½	20¼	22¼	25½		
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		¾	¾	7/8	1	1½	1	1½	1¼		1½	1¼	2	2	2½	2¼						
	Length of Stud Bolts	¼" RF	4¼	5	5½	6	6¼	7	7¼	8¼		10	11¼	13½	15	19¼	21¼						
		M&F T&G	4½	4¼	5¼	5¼	6½	6¼	7½	8½		9¼	11½	13¼	14¼	19	21						
	RTJ	4¼	5	5½	6	6¼	7	8	9		10¼	12¼	14	15½	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 joints flanges, are dependent upon the thickness of the lap of the stud end.

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