

Flanges

Flange Facing	Nominal Pipe Size Inches	Quantity of Stud Bolts, and Size (Inches) Required per Steel Flanged Joint					
		150-Pound	300-Pound	400-Pound	600-Pound	900-Pound	1500-Pound
Raised or Male (*)	1/2	4 - 1/2 x 2 1/4	4 - 1/2 x 2 1/2	...	4 - 1/2 x 3	...	4 - 3/4 x 4
	3/4	4 - 1/2 x 2 1/4	4 - 5/8 x 2 3/4	...	4 - 5/8 x 3 1/4	...	4 - 3/4 x 4 1/4
	1	4 - 1/2 x 2 1/2	4 - 5/8 x 3	...	4 - 5/8 x 3 1/2	...	4 - 7/8 x 4 3/4
	1 1/4	4 - 1/2 x 2 1/2	4 - 5/8 x 3	...	4 - 5/8 x 3 3/4	...	4 - 7/8 x 4 3/4
	1 1/2	4 - 1/2 x 2 3/4	4 - 3/4 x 3 1/2	...	4 - 3/4 x 4	...	4 - 1 x 5 1/4
	2	4 - 5/8 x 3	8 - 5/8 x 3 1/4	...	8 - 5/8 x 4	...	8 - 7/8 x 5 1/2
	2 1/2	4 - 5/8 x 3 1/4	8 - 3/4 x 3 3/4	...	8 - 3/4 x 4 1/2	...	8 - 1 x 6
	3	4 5/8 x 3 1/2	8 - 3/4 x 4	...	8 - 3/4 x 4 3/4	8 - 7/8 x 5 1/2	8 - 1/8 x 6 3/4
	3 1/2	8 - 5/8 x 3 1/2	8 - 3/4 x 4 1/4	...	8 - 7/8 x 5 1/4	...	...
	4	8 - 5/8 x 3 1/2	8 - 3/4 x 4 1/4	8 - 7/8 x 5 1/4	8 - 7/8 x 5 1/2	8 - 1/8 x 6 1/2	8 - 1 1/4 x 7 1/2
	5	8 - 3/4 x 3 3/4	8 - 3/4 x 4 1/2	8 - 7/8 x 5 1/2	8 - 1 x 6 1/4	8 - 1 1/4 x 7 1/4	8 - 1 1/2 x 9 1/2

	6	$8 - \frac{3}{4} \times 3 \frac{3}{4}$	$12 - \frac{3}{4} \times 4 \frac{3}{4}$	$12 - \frac{7}{8} \times 5 \frac{3}{4}$	$12 - 1 \times 6 \frac{1}{2}$	$12 - 1 \frac{1}{8} \times 7 \frac{1}{2}$	$12 - 1 \frac{3}{8} \times 10$
	8	$8 - \frac{3}{4} \times 4$	$12 - \frac{7}{8} \times 5 \frac{1}{4}$	$12 - 1 \times 6 \frac{1}{2}$	$12 - 1 \frac{1}{8} \times 7 \frac{1}{2}$	$12 - 1 \frac{3}{8} \times 8 \frac{1}{2}$	$12 - 1 \frac{5}{8} \times 11 \frac{1}{4}$
	10	$12 - \frac{7}{8} \times 4 \frac{1}{2}$	$16 - 1 \times 6$	$16 - 1 \frac{1}{8} \times 7 \frac{1}{4}$	$16 - 1 \frac{1}{4} \times 8 \frac{1}{4}$	$16 - 1 \frac{3}{8} \times 9$	$12 - 1 \frac{7}{8} \times 13 \frac{1}{4}$
	12	$12 - \frac{7}{8} \times 4 \frac{1}{2}$	$16 - 1 \frac{1}{8} \times 6 \frac{1}{2}$	$16 - 1 \frac{1}{4} \times 7 \frac{3}{4}$	$20 - 1 \frac{1}{4} \times 8 \frac{1}{2}$	$20 - 1 \frac{3}{8} \times 9 \frac{3}{4}$	$16 - 2 \times 14 \frac{3}{4}$
	14	$12 - 1 \times 5$	$20 - 1 \frac{1}{8} \times 6 \frac{3}{4}$	$20 - 1 \frac{1}{4} \times 8$	$20 - 1 \frac{3}{8} \times 9$	$20 - 1 \frac{1}{2} \times 10 \frac{1}{2}$	$16 - 2 \frac{1}{4} \times 16$
	16	$16 - 1 \times 5 \frac{1}{4}$	$20 - 1 \frac{1}{4} \times 7 \frac{1}{4}$	$20 - 1 \frac{3}{8} \times 8 \frac{1}{2}$	$20 - 1 \frac{1}{2} \times 9 \frac{3}{4}$	$20 - 1 \frac{5}{8} \times 11$	...
	18	$16 - 1 \frac{1}{8} \times 5 \frac{3}{4}$	$24 - 1 \frac{1}{4} \times 7 \frac{1}{2}$	$24 - 1 \frac{3}{8} \times 8 \frac{3}{4}$	$20 - 1 \frac{5}{8} \times 10 \frac{1}{2}$	$20 - 1 \frac{7}{8} \times 12 \frac{3}{4}$	...
	20	$20 - 1 \frac{1}{8} \times 6$	$24 - 1 \frac{1}{4} \times 8$	$24 - 1 \frac{1}{2} \times 9 \frac{1}{2}$	$24 - 1 \frac{5}{8} \times 11 \frac{1}{4}$	$20 - 2 \times 13 \frac{1}{2}$	...
	24	$20 - 1 \frac{1}{4} \times 6 \frac{3}{4}$	$24 - 1 \frac{1}{2} \times 9$	$24 - 1 \frac{3}{4} \times 10 \frac{1}{2}$	$24 - 1 \frac{7}{8} \times 12 \frac{3}{4}$	$20 - 2 \frac{1}{2} \times 17$	...
Ring Joint	1/2	...	$4 - \frac{1}{2} \times 3$	...	$4 - \frac{1}{2} \times 3$	...	$4 - \frac{3}{4} \times 4$
	3/4	...	$4 - \frac{5}{8} \times 3 \frac{1}{4}$	...	$4 - \frac{5}{8} \times 3 \frac{1}{4}$	...	$4 - \frac{3}{4} \times 4 \frac{1}{4}$
	1	$4 - \frac{1}{2} \times 3$	$4 - \frac{5}{8} \times 3 \frac{1}{2}$	...	$4 - \frac{5}{8} \times 3 \frac{1}{2}$	...	$4 - \frac{7}{8} \times 4 \frac{3}{4}$
	1 1/4	$4 - 1 \frac{1}{2} \times 3$	$4 - \frac{5}{8} \times 3 \frac{1}{2}$	...	$4 - \frac{5}{8} \times 3 \frac{3}{4}$	...	$4 - \frac{7}{8} \times 4 \frac{3}{4}$
	1 1/2	$4 - \frac{1}{2} \times 3 \frac{1}{4}$	$4 - \frac{3}{4} \times 4$	...	$4 - \frac{3}{4} \times 4$	...	$4 - 1 \times 5 \frac{1}{4}$
	2	$4 - \frac{5}{8} \times 3 \frac{1}{2}$	$8 - \frac{5}{8} \times 4$	...	$8 - \frac{5}{8} \times 4 \frac{1}{4}$	...	$8 - \frac{7}{8} \times 5 \frac{3}{4}$

	$2 \frac{1}{2}$	$4 - \frac{5}{8} \times 3 \frac{3}{4}$	$8 - \frac{3}{4} \times 4 \frac{1}{2}$	...	$8 - \frac{3}{4} \times 4 \frac{3}{4}$	...	$8 - 1 \times 6 \frac{1}{4}$
	3	$4 - \frac{5}{8} \times 4$	$8 - \frac{3}{4} \times 4 \frac{3}{4}$	...	$8 - \frac{3}{4} \times 5$	$8 - \frac{7}{8} \times 5 \frac{3}{4}$	$8 - 1 \frac{1}{8} \times 7$
	$3 \frac{1}{2}$	$8 - \frac{5}{8} \times 4$	$8 - \frac{3}{4} \times 5$	...	$8 - \frac{7}{8} \times 5 \frac{1}{2}$	...	...
	4	$8 - \frac{5}{8} \times 4$	$8 - \frac{3}{4} \times 5$	$8 - \frac{7}{8} \times 5 \frac{1}{2}$	$8 - \frac{7}{8} \times 5 \frac{3}{4}$	$8 - \frac{1}{8} \times 6 \frac{3}{4}$	$8 - 1 \frac{1}{4} \times 7 \frac{3}{4}$
	5	$8 - \frac{3}{4} \times 4 \frac{1}{4}$	$8 - \frac{3}{4} \times 5 \frac{1}{4}$	$8 - \frac{7}{8} \times 5 \frac{3}{4}$	$8 - 1 \times 6 \frac{1}{2}$	$8 - 1 \frac{1}{4} \times 7 \frac{1}{2}$	$8 - 1 \frac{1}{2} \times 9 \frac{3}{4}$
	6	$8 - \frac{3}{4} \times 4 \frac{1}{4}$	$12 - \frac{3}{4} \times 5 \frac{1}{2}$	$12 - \frac{7}{8} \times 6$	$12 - 1 \times 6 \frac{3}{4}$	$12 - \frac{1}{8} \times 7 \frac{1}{2}$	$12 - 1 \frac{3}{8} \times 10 \frac{1}{4}$
	8	$8 - \frac{3}{4} \times 4 \frac{1}{2}$	$12 - \frac{7}{8} \times 6$	$12 - 1 \times 6 \frac{3}{4}$	$12 - \frac{1}{8} \times 7 \frac{3}{4}$	$12 - \frac{1}{8} \times 8 \frac{3}{4}$	$12 - 1 \frac{5}{8} \times 11 \frac{3}{4}$
	10	$12 - \frac{7}{8} \times 5$	$16 - 1 \times 6 \frac{3}{4}$	$16 - \frac{1}{8} \times 7 \frac{1}{2}$	$16 - \frac{1}{4} \times 8 \frac{1}{2}$	$16 - \frac{1}{8} \times 9 \frac{1}{4}$	$12 - 1 \frac{7}{8} \times 13 \frac{1}{2}$
	12	$12 - \frac{7}{8} \times 5$	$16 - \frac{1}{8} \times 7 \frac{1}{4}$	$16 - \frac{1}{4} \times 8$	$20 - \frac{1}{4} \times 8 \frac{3}{4}$	$20 - \frac{1}{8} \times 10$	$16 - 2 \times 15 \frac{1}{4}$
	14	$12 - 1 \times 5 \frac{1}{2}$	$20 - \frac{1}{8} \times 7 \frac{1}{2}$	$20 - \frac{1}{4} \times 8 \frac{1}{4}$	$20 - \frac{1}{8} \times 9 \frac{1}{4}$	$20 - \frac{1}{2} \times 11$	$16 - 2 \frac{1}{4} \times 16 \frac{3}{4}$
	16	$16 - 1 \times 5 \frac{3}{4}$	$20 - \frac{1}{4} \times 8$	$20 - \frac{1}{8} \times 8 \frac{3}{4}$	$20 - \frac{1}{2} \times 10$	$20 - \frac{1}{8} \times 11 \frac{1}{2}$	...
	18	$16 - \frac{1}{8} \times 6 \frac{1}{4}$	$24 - \frac{1}{4} \times 8 \frac{1}{4}$	$24 - \frac{1}{8} \times 9 \frac{3}{8}$	$20 - \frac{1}{8} \times 10 \frac{3}{4}$	$20 - \frac{1}{8} \times 13 \frac{1}{4}$	...
	20	$20 - \frac{1}{8} \times 6 \frac{1}{2}$	$24 - \frac{1}{4} \times 8 \frac{3}{4}$	$24 - \frac{1}{2} \times 9 \frac{3}{4}$	$24 - \frac{1}{8} \times 11 \frac{1}{2}$	$20 - 2 \times 14$	...
	24	$20 - \frac{1}{4} \times 7 \frac{1}{4}$	$24 - \frac{1}{2} \times 10$	$24 - \frac{1}{4} \times 11$	$24 - \frac{1}{8} \times 13 \frac{1}{4}$	$20 - 2 \frac{1}{2} \times 17 \frac{3}{4}$	...

Male & Female or Tongue & Groove	1/2	...	...	...	4 - 1/2 x 2 3/4	...	4 - 3/4 x 3 3/4
	3/4	...	...	...	4 - 5/8 x 3	...	4 - 3/4 x 4
	1	...	...	...	4 - 5/8 x 3 1/4	...	4 - 7/8 x 4 1/2
	1 1/4	...	...	...	4 - 5 /8 x 3 1/2	...	4 - 7/8 x 4 1/2
	1 1/2	...	...	...	4 - 3/4 x 3 3/4	...	4 - 1 x 5
	2	...	...	...	8 - 5/8 x 3 3/4	...	8 - 7/8 x 5 1/4
	2 1/2	...	...	...	8 - 3/4 x 4 1/4	...	8 - 1 x 5 3/4
	3	...	...	...	8 - 3/4 x 4 1/2	8 - 7/8 x 5 1/4	8 - 1 1/8 x 6 1/2
	3 1/5	...	...	...	8 - 7/8 x 5	...	...
	4	...	...	8 - 7/8 x 5	8 - 7/8 x 5 1/4	8 - 1 1/8 x 6 1/4	8 - 1 1/4 x 7 1/4
	5	...	...	8 - 7/8 x 5 1/4	8 - 1 x 6	8 - 1 1/4 x 7	8 - 1 1/2 x 9 1/4
	6	...	...	12 - 7 /8 x 5 1/2	12 - 1 x 6 1/4	12 - 1 1/8 x 7 1/4	12 - 1 3/8 x 9 3/4
	8	...	...	12 - 1 x 6 1/4	12 - 1 1/8 x 7 1/4	12 - 1 3/8 x 8 1/4	12 - 1 5/8 x 11
	10	...	...	16 - 1 1/8 x 7	16 - 1 1/4 x 8	16 - 1 3/8 x 8 3/4	12 - 1 7/8 x 13
	12	...	...	16 - 1 1/4 x 7 1/2	20 - 1 1/4 x 8 1/4	20 - 1 3/8 x 9 1 /2	16 - 2 x 14 1/2

	14	...	...	20 - 1 1/4 x 7 3/4	20 - 1 3/8 x 8 3/4	20 - 1 1/2 x 10 1/4	16 - 2 1/4 x 15 3/4
	16	...	...	20 - 1 3/8 x 8 1/4	20 - 1 1/2 x 9 1/2	20 - 1 5/8 x 10 3/4	...
	18	...	...	24 - 1 3/8 x 8 1/2	20 - 1 5/8 x 10 1/4	20 - 1 7/8 x 12 1/2	...
	20	...	...	24 - 1 1/2 x 9 1/4	24 - 1 5/8 x 11	20 - 2 x 13 1/4	...
	24	...	...	24 - 1 3/4 x 10 1/4	24 - 1 7/8 x 12 1/2	20 - 2 1/2 x 16 3/4	...

*150 and 300-poung classes with 1/16-inch raised face and
400 to 1500-punds classes with 1/4-inch large male face.

Quantity and Sizes of Stud Bolts

For ASA Steel Flanged Joints



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