

HYDRAULIC BOLT TENSIONING

Tool Selection Tables ANSI B16.5 Welding Neck Flanges



Class 150				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
10	12	7/8	1	21
12	12	7/8	1	21
14	12	1	2, 3	21
16	16	1	2, 3	21
18	16	1-1/8	2, 3	21
20	20	1-1/8	2, 3, 4	21
24	20	1-1/4	3, 4, 5	22

Class 300				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
4	8	3/4	1	21
5	8	3/4	1	21
6	12	3/4	1	21
8	12	7/8	1, 2	21
10	16	1	2, 3	21
12	16	1-1/8	2, 3, 4	21
14	20	1-1/8	2, 3, 4	21
16	20	1-1/4	3, 4, 5	22
18	24	1-1/4	3, 4, 5	22
20	24	1-1/4	3, 4, 5	22
24	24	1-1/2	5, 6, 7	22

Class 400				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
4	8	7/8	1	21
5	8	7/8	1	21
6	12	7/8	1, 2	21
8	12	1	2, 3	21
10	16	1-1/8	2, 3	21
12	16	1-1/4	3, 4	22
14	20	1-1/4	3, 4, 5	22
16	20	1-3/8	4, 5, 6	22
18	24	1-3/8	4, 5, 6	22
20	24	1-1/2	5, 6, 7	22
24	24	1-3/4	7, 8, 9	23

Class 600				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
3-1/2	8	7/8	1	21
4	8	7/8	1, 2	21
5	8	1	2, 3	21
6	12	1	2, 3	21
8	12	1-1/8	2, 3, 4	21
10	16	1-1/4	3, 4, 5	22
12	20	1-1/4	3, 4, 5	22
14	20	1-3/8	4, 5, 6	22
16	20	1-1/2	5, 6, 7	22
18	20	1-5/8	6, 7, 8	23
20	24	1-5/8	6, 7, 8	23
24	24	1-7/8	8, 9, 10	23

Class 900				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
3	8	7/8	1, 2	21
4	8	1-1/8	2, 3, 4	21
5	8	1-1/4	3, 4, 5	22
6	12	1-1/8	2, 3, 4	21
8	12	1-3/8	4, 5, 6	22
10	16	1-3/8	4, 5, 6	22
12	20	1-3/8	4, 5, 6	22
14	20	1-1/2	5, 6, 7	22
16	20	1-5/8	6, 7, 8	23
18	20	1-7/8	8, 9	23
20	20	2	9, 10	23
24	20	2-1/2	11, 12	24

Class 1500				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
2	8	7/8	1	21
2-1/2	8	1	2, 3	21
3	8	1-1/8	2, 3	21
4	8	1-1/4	3, 4	22
5	8	1-1/2	5, 6	22
6	12	1-3/8	4, 5, 6	22
8	12	1-5/8	6, 7, 8	23
10	12	1-7/8	8, 9, 10	23
12	16	2	9, 10	23
14	16	2-1/4	10, 11	24
16	16	2-1/2	11, 12	24
18	16	2-3/4	12, 13	25
20	16	3	13, 14, 15	25
24	16	3-1/2	15	26

Class 2500				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
1-1/2	4	1-1/8	2	21
2	8	1	2, 3	21
2-1/2	8	1-1/8	2, 3, 4	21
3	8	1-1/4	3, 4, 5	22
4	8	1-1/2	5, 6, 7	22
5	8	1-3/4	7, 8, 9	23
6	8	2	9, 10	23
8	12	2	9, 10	23
10	12	2-1/2	11, 12	24
12	12	2-3/4	12, 13	25



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Tool Selection Tables MSS SP44 Welding Neck Flanges



Class 150				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
12	12	7/8	1	21
14	12	1	2, 3	21
16	16	1	2, 3	21
18	16	1-1/8	2, 3	21
20	20	1-1/4	2, 3, 4	22
22	20	1-1/4	3, 4, 5	22
24	20	1-1/4	3, 4, 5	22
26	24	1-1/4	3, 4, 5	22
28	28	1-1/4	3, 4, 5	22
30	28	1-1/4	3, 4, 5	22
32	28	1-1/2	5, 6, 7	22
34	32	1-1/2	5, 6, 7	22
36	32	1-1/2	5, 6, 7	22
38	32	1-1/2	5, 6	22
40	36	1-1/2	5, 6, 7	22
42	36	1-1/2	5, 6, 7	22
44	40	1-1/2	5, 6, 7	22
46	40	1-1/2	5, 6, 7	22
48	44	1-1/2	5, 6, 7	22
50	44	1-3/4	7, 8, 9	23
52	44	1-3/4	7, 8, 9	23
54	44	1-3/4	7, 8, 9	23
56	48	1-3/4	7, 8, 9	23
58	48	1-3/4	7, 8, 9	23
60	52	1-3/4	7, 8, 9	23

Class 400				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
12	16	1-1/4	3, 4	
14	20	1-1/4	3, 4, 5	
16	20	1-3/8	4, 5, 6	
18	24	1-3/8	4, 5, 6	
20	24	1-1/2	5, 6, 7	
22	24	1-5/8	6, 7, 8	
24	24	1-3/4	7, 8, 9	
26	28	1-3/4	7, 8, 9	
28	28	1-7/8	8, 9	
30	28	2	9, 10	
32	28	2	9, 10	
34	28	2	9, 10, 10	
36	32	2	9, 10	
38	32	1-3/4	7, 8, 9	
40	32	1-7/8	8, 9	
42	32	1-7/8	8, 9	
44	32	2	9	
46	36	2	9, 10	
48	28	2-1/4	10	
50	32	2-1/4	10, 11	
52	32	2-1/4	10, 11	
54	28	2-1/2	11, 12	
56	32	2-1/2	11, 12	
58	32	2-1/2	11	
60	32	2-3/4	12, 13	

Class 300				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
12	16	1-1/8	2, 3, 4	21
14	20	1-1/8	2, 3, 4	21
16	20	1-1/4	3, 4, 5	22
18	24	1-1/4	3, 4, 5	22
20	24	1-1/4	3, 4, 5	22
22	24	1-1/2	5, 6, 7	22
24	24	1-1/2	5, 6, 7	22
26	28	1-5/8	6, 7, 8	23
28	28	1-5/8	6, 7, 8	23
30	28	1-3/4	7, 8, 9	23
32	28	1-7/8	8, 9, 10	23
34	28	1-7/8	8, 9, 10	23
36	32	2	9, 10	23
38	32	1-1/2	5, 6, 7	22
40	32	1-5/8	6, 7	23
42	32	1-5/8	6, 7, 8	23
44	32	1-3/4	7, 8	23
46	28	1-7/8	8, 9	23
48	32	1-7/8	8, 9	23
50	32	2	9	23
52	32	2	9	23
54	28	2-1/4	10	24
56	28	2-1/4	10	24
58	32	2-1/4	10	24
60	32	2-1/4	10	24

Class 600				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
12	20	1-1/4	3, 4, 5	22
14	20	1-3/8	4, 5, 6	22
16	20	1-1/2	5, 6, 7	22
18	20	1-5/8	6, 7, 8	23
20	24	1-5/8	6, 7, 8	23
22	24	1-3/4	7, 8, 9	23
24	24	1-7/8	8, 9, 10	23
26	28	1-7/8	8, 9	23
28	28	2	9	23
30	28	2	9, 10	23
32	28	2-1/4	10	24
34	28	2-1/4	10, 11	24
36	28	2-1/2	11, 12	24
38	28	2-1/4	10, 11	24
40	32	2-1/4	10	24
42	28	2-1/2	11, 12	24
44	32	2-1/2	11	24
46	32	2-1/2	11, 12	24
48	32	2-3/4	12	25
50	28	3	13, 14	25
52	32	3	13	25
54	32	3	13, 14	25
56	32	3-1/4	14, 15	26
58	32	3-1/4	14, 15	26
60	28	3-1/2	15	26



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Tool Selection Tables MSS SP44 Welding Neck Flanges



Class 900				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
12	20	1-3/8	4, 5, 6	22
14	20	1-1/2	5, 6, 7	22
16	20	1-5/8	6, 7, 8	23
18	20	1-7/8	8, 9	23
20	20	2	9, 10	23
24	20	2-1/2	11, 12	24
26	20	2-3/4	12, 13	25
28	20	3	13, 14	25
30	20	3	13, 14, 15	25
32	20	3-1/4	14, 15	26
34	20	3-1/2	15	26
36	20	3-1/2	15	26
38	20	3-1/2	15	26
40	24	3-1/2	15	26
42	24	3-1/2	15	26



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Tool Selection Tables API 605 Welding Neck Flanges

Class 75				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
36	40	3/4	1	21
42	48	3/4	1	21
48	44	7/8	1	21
54	48	7/8	1	21
60	44	1	use 1500 bar	21

Class 150				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
26	36	3/4	1	21
28	40	3/4	1	21
30	44	3/4	1	21
32	48	3/4	1	21
34	40	7/8	1, 2	21
36	44	7/8	1, 2	21
42	48	1	2	21
54	56	1-1/8	2, 3, 4	21
60	52	1-1/4	3, 4, 5	22

Class 300				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
26	32	1-1/4	3, 4, 5	22
28	36	1-1/4	3, 4	22
30	36	1-3/8	4, 5, 6	22
32	32	1-1/2	5, 6, 7	22
34	36	1-1/2	5, 6, 7	22
36	32	1-5/8	6, 7, 8	23
42	36	1-3/4	7, 8, 9	23
48	40	1-7/8	8, 9, 10	23
54	48	1-7/8	8, 9	23
60	40	2-1/4	10, 11, 12	24



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Tool Selection Tables API 605 Welding Neck Flanges

Class 2000 psi			
Pipe Size inch	No of Bolts	Bolt Dia Inch	1500 bar Tool No's
2-1/16	8	5/8	20
2-9/16	8	3/4	21
3-1/8	8	3/4	21
4-1/16	8	7/8	21
5-1/8	8	1	21
7-1/16	12	1	21
9	12	1-1/8	21
11	16	1-1/4	22

Class 3000 psi			
Pipe Size inch	No of Bolts	Bolt Dia Inch	1500 bar Tool No's
2-1/16	8	7/8	21
2-9/16	8	1	21
3-1/8	8	7/8	21
4-1/16	8	1-1/8	21
5-1/8	8	1-1/4	22
7-1/16	12	1-1/8	21
9	12	1-3/8	22
11	16	1-3/4	22

Class 5000 psi			
Pipe Size inch	No of Bolts	Bolt Dia Inch	1500 bar Tool No's
2-1/16	8	7/8	21
2-9/16	8	1	21
3-1/8	8	1-1/8	21
4-1/16	8	1-1/4	22
5-1/8	8	1-1/2	22
7-1/16	12	1-3/8	22
9	12	1-5/8	23
11	12	1-7/8	23

Tool Selection Tables API 17SS Welding Neck Flanges

Class 5000 psi			
Pipe Size inch	No of Bolts	Bolt Dia Inch	1500 bar Tool No's
2-1/16	8	7/8	21
2-9/16	8	1	21
3-1/8	8	1-1/8	21
4-1/16	8	1-1/4	22
5-1/8	8	1-1/2	22
7-1/16	12	1-3/8	22
9	12	1-5/8	23
11	12	1-7/8	23



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