

# CLASS FLANGES BOLT TORQUE LOADS

CLASS 150 – FLANGE INFORMATION				
Nom. Flg. Size Ins. (mm)	Bolting No. x Dia. ins	A/F Ins.	Torque lbf.ft (Nm)	
			Bolt Lubricant Copperslip (μ=0.1)	Bolt Lubricant Molycote 1000 (μ=0.13)
1/2 (15)	4 x 1/2	7/8	20 (30)	25 (35)
3/4 (20)	4 x 1/2	7/8	25 (35)	30 (40)
1 (25)	4 x 1/2	7/8	30 (40)	35 (50)
1-1/2 (40)	4 x 1/2	7/8	40 (55)	50 (70)
2 (50)	4 x 5/8	1-1/16	75 (100)	95 (130)
3 (80)	4 x 5/8	1-1/16	75 (100)	95 (130)
4 (100)	8 x 5/8	1-1/16	75 (100)	95 (130)
6 (150)	8 x 3/4	1-1/4	120 (165)	150 (205)
8 (200)	8 x 3/4	1-1/4	120 (165)	150 (205)
10 (250)	12 x 7/8	1-7/16	175 (240)	220 (300)
12 (300)	12 x 7/8	1-7/16	180 (245)	230 (310)
14 (350)	12 x 1	1-5/8	295 (400)	370 (500)
16 (400)	16 x 1	1-5/8	240 (325)	300 (405)
18 (450)	16 x 1-1/8	1-13/16	415 (565)	520 (705)
20 (500)	20 x 1-1/8	1-13/16	415 (565)	520 (705)
24 (600)	20 x 1-1/4	2	575 (780)	725 (985)
30 (750)	28 x 1-1/4	2	360 (490)	455 (615)
36 (900)	32 x 1-1/2	2-3/8	630 (855)	800 (1085)
42 (1070)	36 x 1-1/2	2-3/8	-	-
48 (1220)	44 x 1-1/2	2-3/8	-	-

**Flange Rating:** ANSI B16.5, Class 150  
**Flange Materials:** ASTM A105, ASTM A182 grades F50 and F51, ASTM A350 grades LF2 and LF3, ASTM A694 grade F52  
**Bolting Materials:** ASTM A193 grades B7 and B7M, ASTM A320 grades L7, L7M and L43  
**Gasket Type:** Compressed Asbestos Fibre  
**Service Temperature Range:** Minus 101 thru' plus 400°C (Per Piping Class)

CLASS 300 – FLANGE INFORMATION				
Nom. Flg. Size Ins. (mm)	Bolting No. x Dia. ins	A/F Ins.	Torque lbf.ft (Nm)	
			Bolt Lubricant Copperslip (μ=0.1)	Bolt Lubricant Molycote 1000 (μ=0.13)
1/2 (15)	4 x 1/2	7/8	20 (30)	30 (40)
3/4 (20)	4 x 5/8	1-1/16	40 (55)	50 (70)
1 (25)	4 x 5/8	1-1/16	45 (60)	55 (75)
1-1/2 (40)	4 x 3/4	1-1/4	85 (115)	105 (145)
2 (50)	8 x 5/8	1-1/16	55 (75)	70 (95)
3 (80)	8 x 3/4	1-1/4	120 (165)	150 (205)
4 (100)	8 x 3/4	1-1/4	120 (165)	150 (205)
6 (150)	12 x 3/4	1-1/4	120 (165)	150 (205)
8 (200)	12 x 7/8	1-7/16	190 (260)	240 (325)
10 (250)	16 x 1	1-5/8	320 (435)	405 (550)
12 (300)	16 x 1-1/8	1-13/16	450 (610)	565 (765)
14 (350)	20 x 1-1/8	1-13/16	355 (480)	450 (610)
16 (400)	20 x 1-1/4	2	435 (590)	550 (745)
18 (450)	24 x 1-1/4	2	490 (665)	620 (840)
20 (500)	24x 1-1/4	2	575 (780)	725 (983)
24 (600)	24x 1-1/2	2-3/8	785 (1065)	995 (1350)
30 (750)	28 x 1-3/4	2-3/4	1210 (1640)	1545 (2095)
36 (900)	32 x 2	3-1/8	1820 (2465)	2325 (3150)
42 (1070)	32 x 1-5/8	2-9/16	-	-
48 (1220)	32 x 1-7/8	2-15/16	-	-

**Flange Rating:** ANSI B16.5, Class 300  
**Flange Materials:** ASTM A105, ASTM A182 grades F50 and F51, ASTM A350 grades LF2 and LF3, ASTM A694 grade F52  
**Bolting Materials:** ASTM A193 grades B7 and B7M, ASTM A320 grades L7, L7M and L43  
**Gasket Type:** Spiral Wound and Ring Joint  
**Service Temperature Range:** Minus 101 thru' plus 400°C (Per Piping Class)

CLASS 600 – FLANGE INFORMATION				
Nom. Flg. Size Ins. (mm)	Bolting No. x Dia. ins	A/F Ins.	Torque lbf.ft (Nm)	
			Bolt Lubricant Copperslip (μ=0.1)	Bolt Lubricant Molycote 1000 (μ=0.13)
1/2 (15)	4 x 1/2	7/8	20 (30)	30 (40)
3/4 (20)	4 x 5/8	1-1/16	40 (55)	50 (70)
1 (25)	4 x 5/8	1-1/16	45 (60)	60 (80)
1-1/2 (40)	4 x 3/4	1-1/4	105 (145)	130 (175)
2 (50)	8 x 5/8	1-1/16	75 (100)	95 (130)
3 (80)	8 x 3/4	1-1/4	120 (165)	150 (205)
4 (100)	8 x 7/8	1-7/16	195 (265)	245 (335)
6 (150)	12 x 1	1-5/8	320 (435)	405 (550)
8 (200)	12 x 1-1/8	1-13/16	470 (635)	590 (800)
10 (250)	16 x 1-1/4	2	575 (780)	725 (980)
12 (300)	20 x 1-1/4	2	575 (780)	725 (980)
14 (350)	20 x 1-3/8	2-3/16	695 (940)	880 (1190)
16 (400)	20 x 1-1/2	2-3/8	885 (1200)	1120 (1515)
18 (450)	20 x 1-5/8	2-9/16	1295 (1755)	1645 (2230)
20 (500)	24 x 1-5/8	2-9/16	1295 (1755)	1645 (2230)
24 (600)	24 x 1-7/8	2-15/16	1850 (2505)	2360 (3200)
30 (750)	28 x 2	3-1/8	2185 (2960)	2790 (3780)
36 (900)	28 x 2-1/2	3-7/8	3710 (5030)	4755 (6445)
42 (1070)	28 x 2-1/2	3-7/8	-	-
48 (1220)	32 x 2-3/4	4-1/4	-	-

**Flange Rating:** ANSI B16.5, Class 600  
**Flange Materials:** ASTM A105, ASTM A182 grades F50 and F51, ASTM A350 grades LF2 and LF3, ASTM A694 grades F52 and F60  
**Bolting Materials:** ASTM A193 grades B7 and B7M, ASTM A320 grades L7, L7M and L43  
**Gasket Type:** Spiral Wound and Ring Joint  
**Service Temperature Range:** Minus 101 thru' plus 400°C (Per Piping Class)



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## CLASS FLANGES BOLT TORQUE LOADS

CLASS 900 – FLANGE INFORMATION				
Nom. Fig. Size Ins. (mm)	Bolting No. x Dia. ins	A/F Ins.	Torque lbf.ft (Nm)	
			Bolt Lubricant Copperslip (μ=0.1)	Bolt Lubricant Molycote 1000 (μ=0.13)
1/2 (15)	4 x 3/4	1-1/4	65 (90)	80 (110)
3/4 (20)	4 x 3/4	1-1/4	85 (115)	105 (145)
1 (25)	4 x 7/8	1-7/16	140 (190)	175 (240)
1-1/2 (40)	4 x 1	1-5/8	225 (305)	285 (390)
2 (50)	8 x 7/8	1-7/16	150 (205)	190 (260)
3 (80)	8 x 7/8	1-7/16	195 (265)	245 (335)
4 (100)	8 x 1-1/8	1-13/16	375 (505)	470 (635)
6 (150)	12 x 1-1/8	1-13/16	415 (560)	525 (710)
8 (200)	12 x 1-3/8	2-3/16	675 (915)	860 (1165)
10 (250)	16 x 1-3/8	2-3/16	675 (915)	860 (1165)
12 (300)	20 x 1-3/8	2-3/16	735 (995)	930 (1260)
14 (350)	20 x 1-1/2	2-3/8	935 (1265)	1185 (1605)
16 (400)	20 x 1-5/8	2-9/16	1295 (1755)	1645 (2230)
18 (450)	20 x 1-7/8	2-15/16	1850 (2505)	2360 (3200)
20 (500)	20 x 2	3-1/8	2245 (3040)	2865 (3885)
24 (600)	20 x 2-1/2	3-7/8	4190 (5680)	5370 (7280)
30 (750)	20 x 3	4-5/8	7070 (9585)	9085 (12315)
36 (900)	20 x 3-1/2	5-3/8	10935 (14825)	14065 (19070)

**Flange Rating:** ANSI B16.5, Class 900

**Flange Materials:** ASTM A105, ASTM A182 grades F50 and F51, ASTM A350 grades LF2 and LF3, ASTM A694 grades F52 and F60

**Bolting Materials:** ASTM A193 grades B7 and B7M, ASTM A320 grades L7, L7M and L43

**Gasket Type:** Spiral Wound and Ring Joint

**Service Temperature Range:** Minus 101 thru' plus 400°C (Per Piping Class)

CLASS 1500 – FLANGE INFORMATION				
Nom. Fig. Size Ins. (mm)	Bolting No. x Dia. ins	A/F Ins.	Torque lbf.ft (Nm)	
			Bolt Lubricant Copperslip (μ=0.1)	Bolt Lubricant Molycote 1000 (μ=0.13)
1/2 (15)	4 x 3/4	1-1/4	65 (90)	80 (110)
3/4 (20)	4 x 3/4	1-1/4	85 (115)	105 (145)
1 (25)	4 x 7/8	1-7/16	140 (190)	175 (240)
1-1/2 (40)	4 x 1	1-5/8	260 (350)	330 (445)
2 (50)	8 x 7/8	1-7/16	160 (215)	200 (270)
3 (80)	8 x 1-1/8	1-13/16	395 (535)	500 (675)
4 (100)	8 x 1-1/4	2	575 (780)	730 (990)
6 (150)	12 x 1-3/8	2-3/16	770 (1040)	980 (1325)
8 (200)	12 x 1-5/8	2-9/16	1295 (1755)	1645 (2230)
10 (250)	12 x 1-7/8	2-15/16	2000 (2710)	2550 (3455)
12 (300)	16 x 2	3-1/8	2125 (2880)	2710 (3670)
14 (350)	16 x 2-1/4	3-1/2	3040 (4120)	3890 (5270)
16 (400)	16 x 2-1/2	3-7/8	4190 (5680)	5370 (7280)
18 (450)	16 x 2-3/4	4-1/4	5585 (7570)	7170 (9720)
20 (500)	16 x 3	4-5/8	7280 (9870)	9350 (12675)
24 (600)	16 x 3-1/2	5-3/8	11600 (1570)	14920 (20230)

**Flange Rating:** ANSI B16.5, Class 1500

**Flange Materials:** ASTM A105, ASTM A182 grades F50 and F51, ASTM A350 grades LF2 and LF3, ASTM A694 grades F52, F60 and F65

**Bolting Materials:** ASTM A193 grades B7 and B7M, ASTM A320 grades L7, L7M and L43

**Gasket Type:** Spiral Wound and Ring Joint

**Service Temperature Range:** Minus 101 thru' plus 400°C (Per Piping Class)

CLASS 2500 – FLANGE INFORMATION				
Nom. Fig. Size Ins. (mm)	Bolting No. x Dia. ins	A/F Ins.	Torque lbf.ft (Nm)	
			Bolt Lubricant Copperslip (μ=0.1)	Bolt Lubricant Molycote 1000 (μ=0.13)
1/2 (15)	4 x 3/4	1-1/4	95 (130)	120 (165)
3/4 (20)	4 x 3/4	1-1/4	120 (165)	150 (205)
1 (25)	4 x 7/8	1-7/16	210 (285)	265 (360)
1-1/2 (40)	4 x 1-1/8	1-13/16	470 (635)	590 (800)
2 (50)	8 x 1	1-5/8	320 (435)	405 (550)
3 (80)	8 x 1-1/4	2	650 (880)	820 (1110)
4 (100)	8 x 1-1/2	2-3/8	1060 (1435)	1350 (1830)
6 (150)	8 x 2	3-1/8	2425 (3285)	3100 (4200)
8 (200)	12 x 2	3-1/8	2425 (3285)	3100 (4200)
10 (250)	12 x 2-1/2	3-7/8	4190 (5680)	5370 (7280)
12 (300)	12 x 2-3/4	4-1/4	6385 (8655)	8195 (11110)

**Flange Rating:** ANSI B16.5, Class 2500

**Flange Materials:** ASTM A105, ASTM A182 grades F50 and F51, ASTM A350 grade LF2

**Bolting Materials:** ASTM A193 grades B7 and B7M, ASTM A320 grades L7, L7M and L43

**Gasket Type:** Spiral Wound and Ring Joint

**Service Temperature Range:** Minus 101 thru' plus 400°C (Per Piping Class)

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