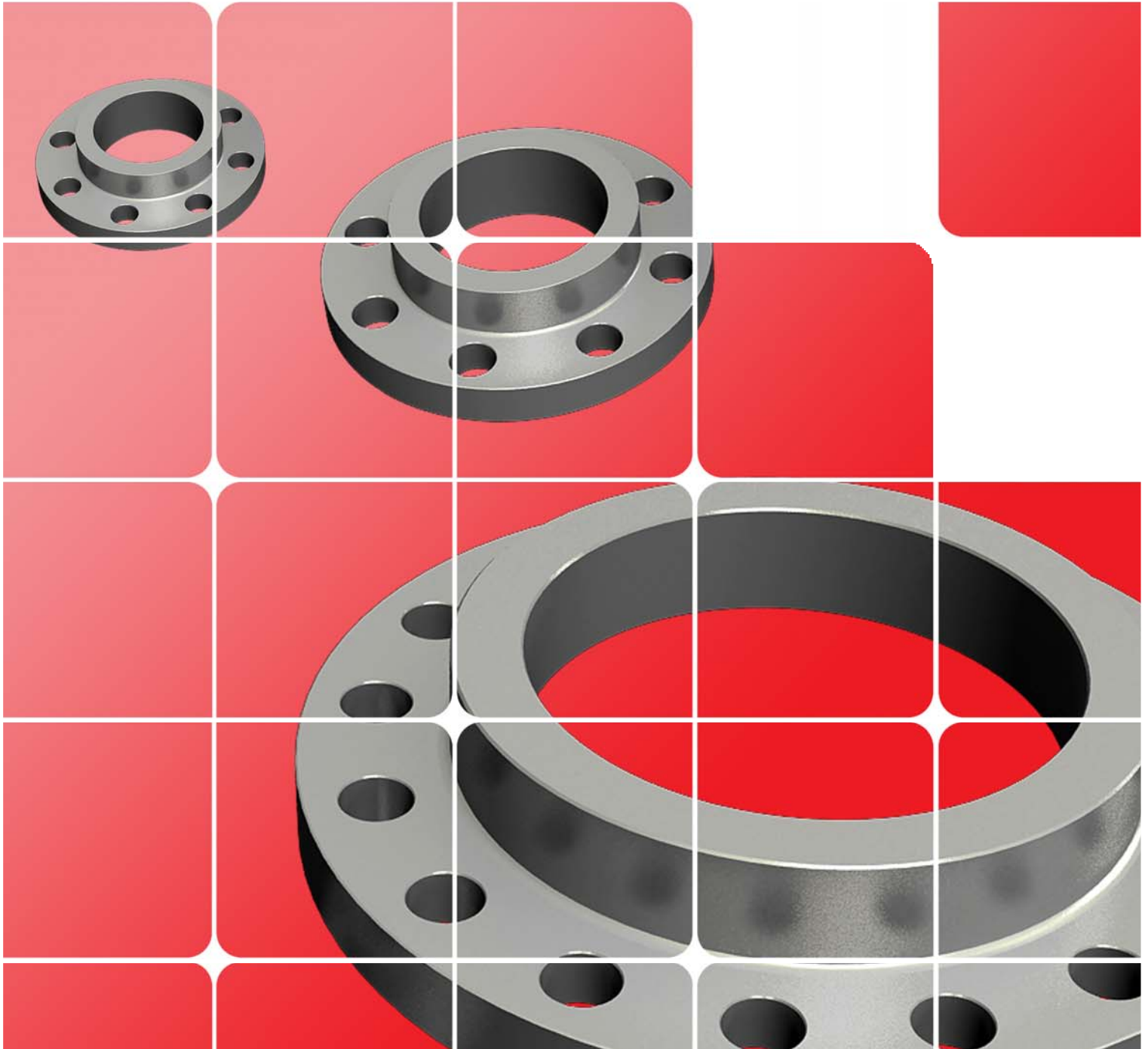


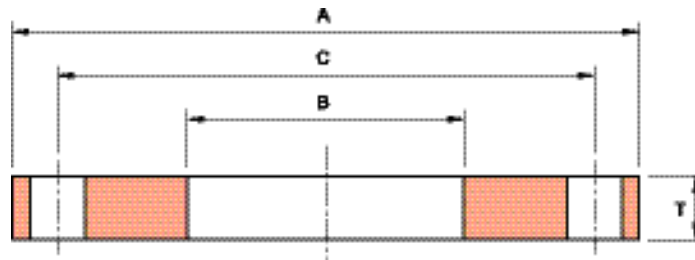
AWWA FLANGES

- Class B (86 psi) & D (175-150 psi) steel-ring Flanges
- Class D (175-150 psi) steel-hub Flanges
- Class E (275 psi) steel- hub Flanges
- Class E (275 psi) steel- ring Flanges
- Class F (300 psi) steel- ring Flanges
- Blind - Flange thickness



C207-01 STEEL-RING FLANGES

CLASS B (86PSI) & D (175-150PSI)

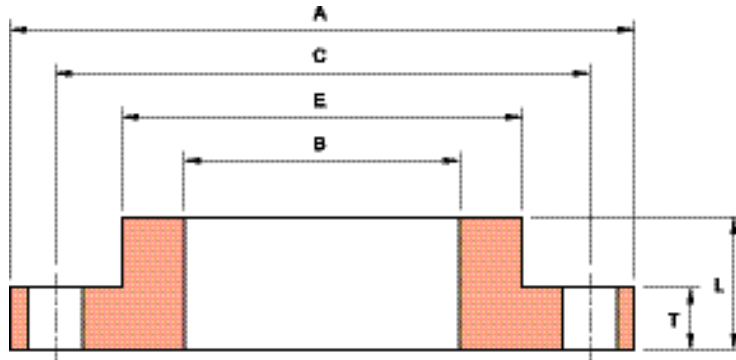


Unit : mm

Nominal Pipe Size	O.D. of Flange A	I.D. of Flange B	No. of Bolt Holes	Diam. of Bolt Circle C	Diam. of Bolt Holes	Thickness of Flange	
						Class B T	Class D T
						4	229
5	254	143.8	8	215.9	22.4	15.9	
6	279	170.7	8	241.3	22.4	17.5	
8	343	221.5	8	298.5	22.4	17.5	
10	406	276.4	12	362.0	25.4	17.5	
12	483	327.2	12	431.8	25.4	17.5	
14	533	360.4	12	476.3	28.7	17.5	
16	597	411.2	16	539.8	28.7	17.5	
18	635	462.0	16	577.9	31.8	17.5	
20	699	512.8	20	635.0	31.8	17.5	
22	749	563.6	20	692.2	35.1	19.1	
24	813	614.4	20	749.3	35.1	19.1	
26	870	To be specified by customer.	24	806.5	35.1	20.6	
28	927		28	863.6	35.1	22.2	
30	984		28	914.4	35.1	22.2	
32	1060		28	977.9	41.4	23.8	
34	1111		32	1028.7	41.4	23.8	
36	1168		32	1085.9	41.4	25.4	
38	1238		32	1149.4	41.4	25.4	
40	1289		36	1200.2	41.4	25.4	
42	1346		36	1257.3	41.4	28.6	
44	1403		40	1314.5	41.4	28.6	
46	1454		40	1365.3	41.4	28.6	
48	1511		44	1422.4	41.4	31.8	
50	1568		44	1479.6	47.6	31.8	
52	1626		44	1536.7	47.6	31.8	
54	1683		44	1593.9	47.6	34.9	
60	1854		52	1759.0	47.6	38.1	
66	2032	52	1930.4	47.6	41.3		
72	2197	60	2095.5	47.6	44.5		

C207-01 STEEL-HUB FLANGES

CLASS D (175-150PSI)

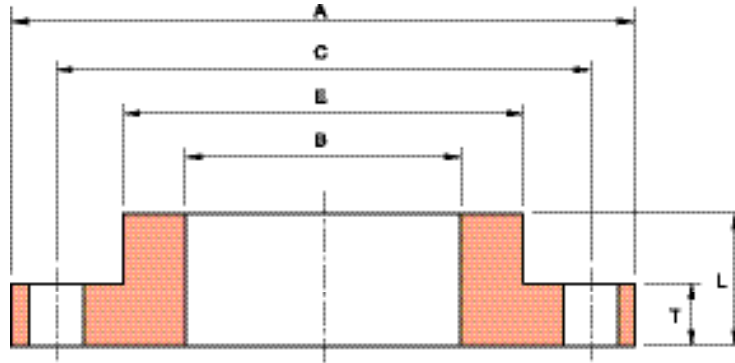


Unit : mm

Nominal Pipe Size	O.D. of Flange	I.D. of Flange	No. of Bolt Holes	Diam. of Bolt Circle	Diam. of Bolt Holes	Thickness of Flange		
	A	B		C		T	L	E
4	229	116.1	8	190.5	19.1	12.7	22.2	134.9
5	254	143.8	8	215.9	22.4	14.3	31.8	160.3
6	279	170.7	8	241.3	22.4	14.3	31.8	192.1
8	343	221.5	8	298.5	22.4	14.3	31.8	246.1
10	406	276.4	12	362.0	25.4	17.5	31.8	304.8
12	483	327.2	12	431.8	25.4	17.5	31.8	365.1
14	533	360.4	12	476.3	28.7	19.1	31.8	400.1
16	597	411.2	16	539.8	28.7	19.1	31.8	457.2
18	635	462.0	16	577.9	31.8	19.1	31.8	504.8
20	699	512.8	20	635.0	31.8	19.1	31.8	558.8
22	749	563.6	20	692.2	35.1	25.4	44.5	616.0
24	813	614.4	20	749.3	35.1	25.4	44.5	663.6
26	870	665.2	24	806.5	35.1	25.4	44.5	723.9
28	927	716.0	28	863.6	35.1	25.4	44.5	774.7
30	984	766.8	28	914.4	35.1	25.4	44.5	825.5
32	1060	817.6	28	977.9	41.4	28.6	44.5	882.7
34	1111	868.4	32	1028.7	41.4	28.6	44.5	933.5
36	1168	919.2	32	1085.9	41.4	28.6	44.5	984.3
38	1238	970.0	32	1149.4	41.4	28.6	44.5	1035.1
40	1289	1020.8	36	1200.2	41.4	28.6	44.5	1092.2
42	1346	1071.6	36	1257.3	41.4	31.8	44.5	1143.0
44	1403	1122.4	40	1314.5	41.4	31.8	57.2	1193.8
46	1454	1173.2	40	1365.3	41.4	31.8	57.2	1244.6
48	1511	1224.0	44	1422.4	41.4	34.9	63.5	1295.4
50	1568	1274.8	44	1479.6	47.6	34.9	63.5	1346.2
52	1626	1325.6	44	1536.7	47.6	34.9	63.5	1397.0
54	1683	1376.4	44	1593.9	47.6	34.9	63.5	1447.8
60	1854	1528.8	52	1759.0	47.6	38.1	69.9	1600.2
66	2032	1681.2	52	1930.4	47.6	38.1	69.9	1752.6
72	2197	1833.6	60	2095.5	47.6	38.1	69.9	1905.0

C207-01 STEEL-HUB FLANGES

CLASS E (275PSI)

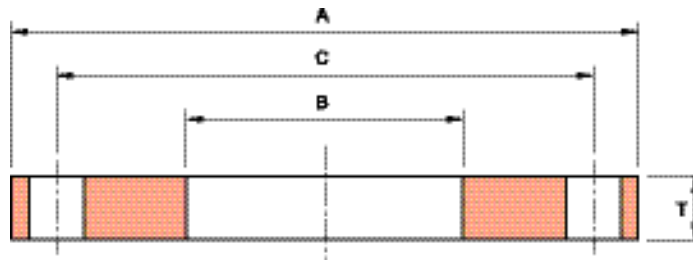


Unit : mm

Nominal Pipe Size	O.D. of Flange	I.D. of Flange	No. of Bolt Holes	Diam. of Bolt Circle	Diam. of Bolt Holes	Thickness of Flange		
	A	B		C		T	L	E
4	229	116.1	8	190.5	19.1	23.8	33.3	134.9
5	254	143.8	8	215.9	22.4	23.8	36.5	163.5
6	279	170.7	8	241.3	22.4	25.4	39.7	192.1
8	343	221.5	8	298.5	22.4	28.6	44.5	246.1
10	406	276.4	12	362.0	25.4	30.2	49.2	304.8
12	483	327.2	12	431.8	25.4	31.8	55.6	365.1
14	533	360.4	12	476.3	28.7	34.9	57.2	400.1
16	597	411.2	16	539.8	28.7	36.5	63.5	457.2
18	635	462.0	16	577.9	31.8	39.7	68.3	504.8
20	699	512.8	20	635.0	31.8	42.9	73.0	558.8
22	749	563.6	20	692.2	35.1	46.0	79.4	609.6
24	813	614.4	20	749.3	35.1	47.6	82.6	663.6
26	870	665.2	24	806.5	35.1	50.8	85.7	723.9
28	927	716.0	28	863.6	35.1	52.4	87.3	781.1
30	984	766.8	28	914.4	35.1	54.0	88.9	831.9
32	1060	817.6	28	977.9	41.4	57.2	92.1	889.0
34	1111	868.4	32	1028.7	41.4	58.7	93.7	939.8
36	1168	919.2	32	1085.9	41.4	60.3	95.3	997.0
38	1238	970.0	32	1149.4	41.4	60.3	95.3	1060.5
40	1289	1020.8	36	1200.2	41.4	63.5	98.4	1111.3
42	1346	1071.6	36	1257.3	41.4	66.7	101.6	1168.4
44	1403	1122.4	40	1314.5	41.4	66.7	101.6	1219.2
46	1454	1173.2	40	1365.3	41.4	68.3	103.2	1270.0
48	1511	1224.0	44	1422.4	41.4	69.9	104.8	1327.2
50	1568	1274.8	44	1479.6	47.6	69.9	104.8	1378.0
52	1626	1325.6	44	1536.7	47.6	73.0	108.0	1435.1
54	1683	1376.4	44	1593.9	47.6	76.2	111.1	1492.3
60	1854	1528.8	52	1759.0	47.6	79.4	114.3	1657.4
66	2032	1681.2	52	1930.4	47.6	85.7	123.8	1816.1
72	2197	1833.6	60	2095.5	47.6	88.9	127.0	1993.9

C207-01 STEEL-RING FLANGES

CLASS E (275PSI)



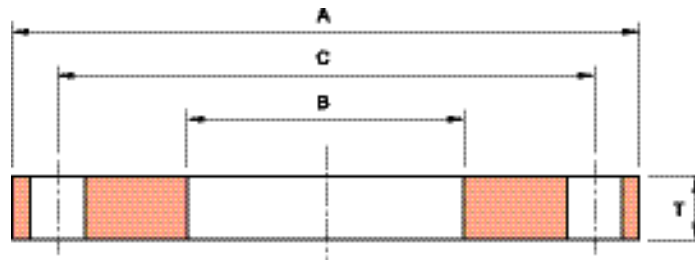
Unit : mm

Nominal Pipe Size	O.D. of Flange	I.D. of Flange	No. of Bolt Holes	Diam. of Bolt Circle	Diam. of Bolt Holes	Thickness of Flange
	A	B		C		T
4	229	116.1	8	190.5	19.1	28.6
5	254	143.8	8	215.9	22.4	30.2
6	279	170.7	8	241.3	22.4	33.4
8	343	221.5	8	298.5	22.4	38.1
10	406	276.4	12	362.0	25.4	39.7
12	483	327.2	12	431.8	25.4	44.5
14	533	360.4	12	476.3	28.7	47.6
16	597	411.2	16	539.8	28.7	50.8
18	635	462.0	16	577.9	31.8	54.0
20	699	512.8	20	635.0	31.8	60.3
22	749	563.6	20	692.2	35.1	63.5
24	813	614.4	20	749.3	35.1	66.7
26	870	To be specified by customer.	24	806.5	35.1	69.9
28	927		28	863.6	35.1	69.9
30	984		28	914.4	35.1	73.0
32	1060		28	977.9	41.4	76.2
34	1111		32	1028.7	41.4	76.2
36	1168		32	1085.9	41.4	79.4
38	1238		32	1149.4	41.4	79.4
40	1289		36	1200.2	41.4	82.6
42	1346		36	1257.3	41.4	85.7
44	1403		40	1314.5	41.4	85.7
46	1454		40	1365.3	41.4	87.3
48	1511		44	1422.4	41.4	88.9
50	1568		44	1479.6	47.6	88.9
52	1626		44	1536.7	47.6	92.1
54	1683	44	1593.9	47.6	95.3	
60	1854	52	1759.0	47.6	98.4	
66	2032	52	1930.4	47.6	108.0	
72	2197	60	2095.5	47.6	111.1	

C&N C&N INDUSTRIAL GROUP LIMITED

C207-01 STEEL-RING FLANGES

CLASS F (300PSI)



Unit : mm

Nominal Pipe Size	O.D. of Flange	I.D. of Flange	No. of Bolt Holes	Diam. of Bolt Circle	Diam. of Bolt Holes	Thickness of Flange
	A	B		C		T
4	254	116.1	8	200.2	22.4	28.7
5	279	143.8	8	235.0	22.4	30.7
6	318	170.9	12	269.8	22.4	33.3
8	381	221.7	12	330.2	25.4	33.3
10	445	276.4	16	387.4	28.7	38.1
12	521	327.2	16	450.9	31.8	41.4
14	584	360.4	20	514.4	31.8	49.3
16	648	411.2	20	571.5	35.1	54.4
18	711	462.0	24	628.7	35.1	57.2
20	775	512.8	24	685.8	35.1	59.2
22	838	563.6	24	743.0	35.1	63.5
24	914	614.4	24	812.8	41.4	68.3
26	972	666.8	28	876.3	47.8	76.2
28	1035	717.6	28	939.8	47.8	79.5
30	1092	768.4	28	997.0	47.8	80.0
32	1149	819.2	28	1054.1	47.8	82.6
34	1207	870.0	28	1104.9	47.8	85.9
36	1270	920.8	32	1168.4	54.1	87.9
38	1327	971.6	32	1219.2	54.1	88.9
40	1378	1022.4	36	1276.4	54.1	92.2
42	1448	1073.2	36	1339.9	54.1	96.8
44	1505	1124.0	36	1397.0	54.1	101.6
46	1562	1174.8	40	1454.2	54.1	104.9
48	1651	1225.6	40	1543.1	54.1	114.3

Blind - Flange thickness

Nominal Pipe Size		Minimum Thickness*									
		Mating Flange ID		Class B		Class D #		Class E		Class F	
				86 psi	(593 kPa)			275 psi	(1,896 kPa)	300 psi	(2,068 kPa)
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
4	(100)	4.57	(116)	0.625	(15.88)	0.625	(15.88)	1.125	(25.58)	1.130	(28.70)
5	(125)	5.66	(144)	0.625	(15.88)	0.650	(16.51)	1.188	(30.18)	1.210	(30.73)
6	(150)	6.72	(171)	0.688	(17.48)	0.693	(17.60)	1.313	(33.35)	1.310	(33.27)
8	(200)	8.72	(221)	0.688	(17.48)	0.812	(20.62)	1.500	(38.10)	1.310	(33.27)
10	(250)	10.88	(276)	0.688	(17.48)	0.953	(24.21)	1.563	(39.70)	1.500	(38.10)
12	(300)	12.88	(327)	0.719	(18.26)	1.117	(28.37)	1.750	(44.45)	1.630	(41.40)
14	(350)	14.19	(360)	0.791	(20.10)	1.133	(28.78)	1.875	(47.63)	1.940	(49.28)
16	(400)	16.19	(411)	0.892	(22.66)	1.265	(32.13)	2.000	(50.80)	2.140	(54.36)
18	(450)	18.19	(462)	0.950	(24.13)	1.331	(33.81)	2.125	(53.98)	2.250	(57.15)
20	(500)	20.19	(513)	1.040	(26.42)	1.448	(36.77)	2.375	(60.33)	2.330	(59.18)
22	(550)	22.19	(564)	1.132	(28.75)	1.568	(39.83)	2.500	(63.50)	2.500	(63.50)
24	(600)	25.50	(648)	1.216	(30.89)	1.661	(42.18)	2.625	(66.68)	2.690	(68.33)
26	(650)	27.50	(699)	1.307	(33.20)	1.786	(45.37)	2.750	(69.85)	3.000	(76.20)
28	(700)	29.50	(749)	1.398	(35.50)	1.906	(48.41)	2.750	(69.85)	3.130	(79.50)
30	(750)	31.50	(800)	1.477	(37.53)	2.008	(51.00)	2.875	(73.03)	3.166	(80.42)
32	(800)	33.50	(851)	1.581	(40.16)	2.150	(54.60)	3.000	(76.20)	3.332	(84.62)
34	(850)	35.50	(902)	1.661	(42.19)	2.252	(57.21)	3.050	(77.47)	3.475	(88.27)
36	(900)	37.63	(956)	1.751	(44.48)	2.370	(60.20)	3.209	(81.51)	3.671	(93.25)
38	(950)	39.63	(1006)	1.853	(47.06)	2.506	(63.66)	3.394	(86.20)	3.815	(96.90)
40	(1000)	41.63	(1057)	1.933	(49.09)	2.609	(66.28)	3.533	(89.74)	3.982	(101.14)
42	(1050)	43.63	(1108)	2.023	(51.40)	2.729	(69.32)	3.695	(93.86)	4.171	(105.94)
44	(1100)	45.63	(1159)	2.114	(53.70)	2.849	(72.36)	3.857	(97.97)	4.338	(110.19)
46	(1150)	47.63	(1210)	2.194	(55.73)	2.952	(74.99)	3.997	(101.53)	4.505	(114.43)
48	(1200)	49.63	(1260)	2.285	(58.03)	3.072	(78.03)	4.159	(105.65)	4.781	(121.44)
50	(1250)	51.75	(1314)	2.377	(60.38)	3.196	(81.17)	4.327	(109.90)		
52	(1300)	53.75	(1365)	2.468	(62.69)	3.315	(84.21)	4.489	(114.02)		
54	(1350)	55.75	(1416)	2.559	(64.99)	3.435	(87.25)	4.651	(118.14)		
60	(1500)	61.75	(1568)	2.820	(71.63)	3.779	(95.99)	5.116	(129.95)		
66	(1650)	67.88	(1724)	3.092	(78.53)	4.136	(105.06)	5.601	(142.26)		
72	(1800)	73.88	(1876)	3.353	(85.17)	4.480	(113.80)	6.066	(154.08)		

NOTE:

1. All flanges are flat faced.
2. ASTM A-36 steel used (allowable stress 16,000 psi).
3. ASTM A-307 Grade B bolts (7,000 psi allowable stress) used for class B and D.
4. ASTM A193 Grade B7 bolts (25,000psi allowable stress) used for class E and F.
5. For diameters over 48 in, designers should consider using dished heads welded to a standard flange.

* Design Method : ASME Boiler & Pressure Vessel Code, Sec, VIII, Div, 1.

Class D flanges are rated at 175 psi (1.207 kPa) for nominal pipe sizes ≤ 12 in.(600 mm), and 150 psi (1,034 kPa) for nominal pipe sizes >12 in. (600 mm)