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AWWA Flange Catalog

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All Dimensions in Inches

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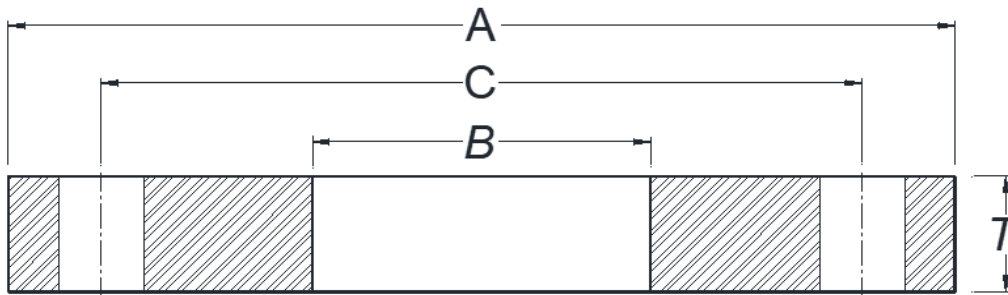
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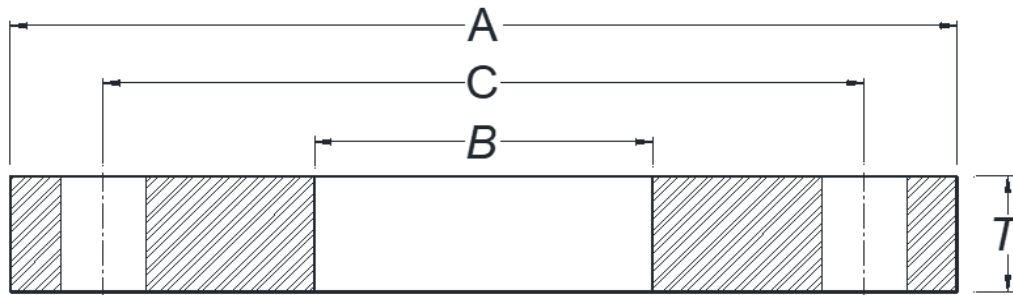
301 Brown Avenue
Sanford, FL 32771
Phone 407-323-0940
Fax 321-257-1005

AWWA C207 Standard Steel Ring Flanges Class B (86 psi) and Class D (175-150 psi)



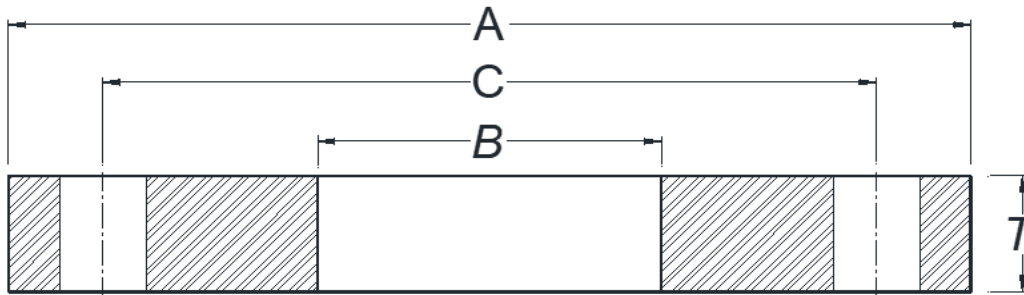
Nominal Pipe Size in.	Outside Diameter of Flange, A in.	Inside Diameter of Flange, B in.	Number of Bolts	Drilling		Thickness of Flange	
				Diameter of Bolt Circle, C in.	Diameter of Bolt Holes in.	Class B T in.	Class D T in.
4	9.00	4.57	8	7.50	0.750	0.625	0.625
5	10.00	5.66	8	8.50	0.875	0.625	0.625
6	11.00	6.72	8	9.50	0.875	0.688	0.688
8	13.50	8.72	8	11.75	0.875	0.688	0.688
10	16.00	10.88	12	14.25	1.000	0.688	0.688
12	19.00	12.88	12	17.00	1.000	0.688	0.812
14	21.00	14.19	12	18.75	1.125	0.688	0.938
16	23.50	16.19	16	21.25	1.125	0.688	1.000
18	25.00	18.19	16	22.75	1.250	0.688	1.062
20	27.50	20.19	20	25.00	1.250	0.688	1.125
22	29.50	22.19	20	27.25	1.375	0.750	1.188
24	32.00	24.19	20	29.50	1.375	0.750	1.250
26	34.25		24	31.75	1.375	0.812	1.312
28	36.50		28	34.00	1.375	0.875	1.312
30	38.75		28	36.00	1.375	0.875	1.375
32	41.75		28	38.50	1.625	0.938	1.500
34	43.75		32	40.50	1.625	0.938	1.500
36	46.00		32	42.75	1.625	1.000	1.625
38	48.75		32	45.25	1.625	1.000	1.625
40	50.75		36	47.25	1.625	1.000	1.625
42	53.00		36	49.50	1.625	1.125	1.750
44	55.25		40	51.75	1.625	1.125	1.750
46	57.25		40	53.75	1.625	1.125	1.750
48	59.50		44	56.00	1.625	1.250	1.875
50	61.75		44	58.25	1.875	1.250	2.000
52	64.00		44	60.50	1.875	1.250	2.000
54	66.25		44	62.75	1.875	1.375	2.125

AWWA C207 Standard Steel Ring Flanges Class B (86 psi) and Class D (175-150 psi)



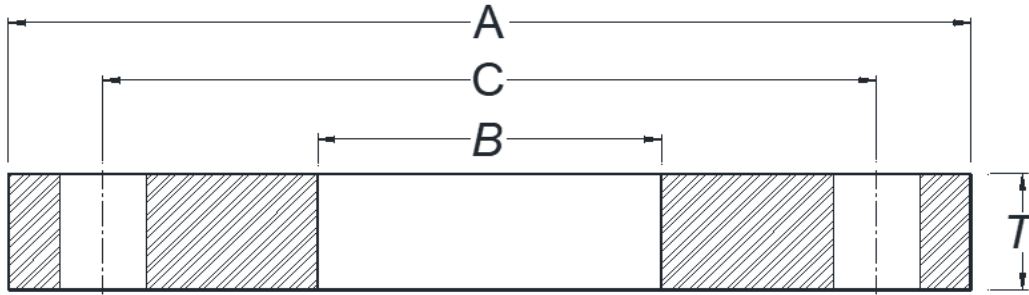
Nominal Pipe Size <i>in.</i>	Outside Diameter of Flange, A <i>in.</i>	Inside Diameter of Flange, B <i>in.</i>	Number of Bolts	Drilling		Thickness of Flange	
				Diameter of Bolt Circle, C <i>in.</i>	Diameter of Bolt Holes <i>in.</i>	Class B T <i>in.</i>	Class D T <i>in.</i>
60	73.00		52	69.25	1.875	1.500	2.250
66	80.00		52	76.00	1.875	1.625	2.500
72	86.50		60	82.50	1.875	1.750	2.625
78	93.00		64	89.00	2.125	2.000	2.750
84	99.75		64	95.50	2.125	2.000	2.875
90	106.50		68	102.00	2.375	2.250	3.000
96	113.25		38	108.50	2.375	2.250	3.250
102	120.00		72	114.50	2.625	2.500	3.250
108	126.75		72	120.75	2.625	2.500	3.375
114	133.50		76	126.75	2.875	2.750	3.500
120	140.25		76	132.75	2.875	2.750	3.500
126	147.00		80	139.25	3.125	3.000	3.750
132	153.75		80	145.75	3.125	3.000	3.875
144	167.25		84	158.28	3.375	3.250	4.125

AWWA C207 Standard Steel Ring Flanges Class E (275 psi)



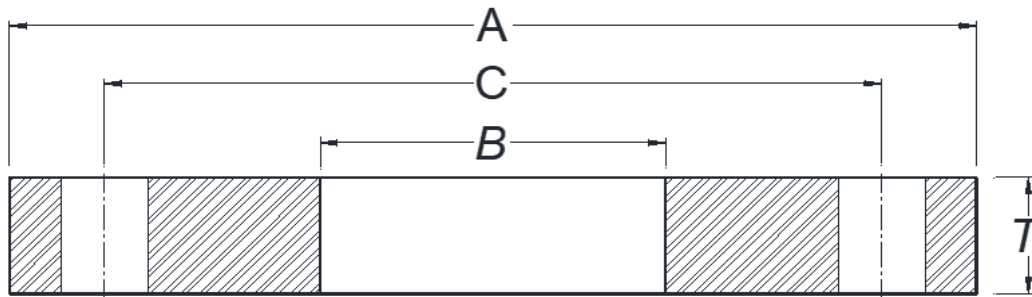
Nominal Pipe Size in.	Outside Diameter of Flange, A in.	Inside Diameter of Flange, B in.	Number of Bolts	Drilling		Thickness of Flange, T in.
				Diameter of Bolt Circle, C in.	Diameter of Bolt Holes in.	
4	9.00	4.57	8	7.50	0.750	1.125
5	10.00	5.66	8	8.50	0.875	1.188
6	11.00	6.72	8	9.50	0.875	1.313
8	13.50	8.72	8	11.75	0.875	1.500
10	16.00	10.88	12	14.25	1.000	1.563
12	19.00	12.88	12	17.00	1.000	1.750
14	21.00	14.19	12	18.75	1.125	1.875
16	23.50	16.19	16	21.25	1.125	2.000
18	25.00	18.19	16	22.75	1.250	2.125
20	27.50	20.19	20	25.00	1.250	2.375
22	29.50	22.19	20	27.25	1.375	2.500
24	32.00	24.19	20	29.50	1.375	2.625
26	34.25		24	31.75	1.375	2.750
28	36.50		28	34.00	1.375	2.750
30	38.75		28	36.00	1.375	2.875
32	41.75		28	38.50	1.625	3.000
34	43.75		32	40.50	1.625	3.000
36	46.00		32	42.75	1.625	3.125
38	48.75		32	45.25	1.625	3.125
40	50.75		36	47.25	1.625	3.250
42	53.00		36	49.50	1.625	3.375
44	55.25		40	51.75	1.625	3.375
46	57.25		40	53.75	1.625	3.438
48	59.50		44	56.00	1.625	3.500
50	61.75		44	58.25	1.875	3.500
52	64.00		44	60.50	1.875	3.625
54	66.25		44	62.75	1.875	3.750

AWWA C207 Standard Steel Ring Flanges Class E (275 psi)



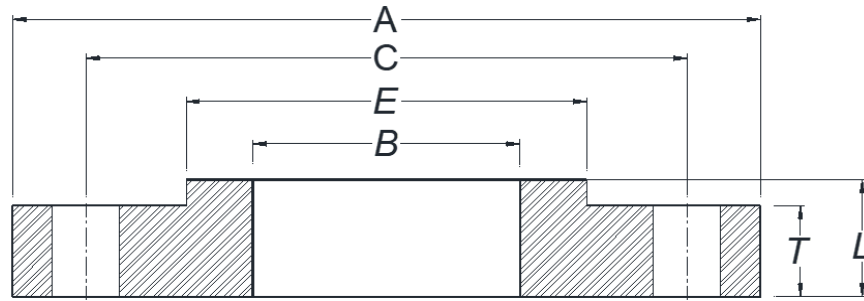
Nominal Pipe Size <i>in.</i>	Outside Diameter of Flange, A <i>in.</i>	Inside Diameter of Flange, B <i>in.</i>	Number of Bolts	Drilling		Thickness of Flange, T <i>in.</i>
				Diameter of Bolt Circle, C <i>in.</i>	Diameter of Bolt Holes <i>in.</i>	
60	73.00		52	69.25	1.875	3.875
66	80.00		52	76.00	1.875	4.250
72	86.50		60	82.50	1.875	4.375
78	93.00		64	89.00	2.125	4.750
84	99.75		64	95.50	2.125	4.750
90	106.50		68	102.00	1.375	5.125
96	113.25		68	108.50	2.375	5.125
102	120.00		72	114.50	1.625	5.500
108	126.75		72	120.75	2.625	5.500
114	133.50		76	126.75	2.875	5.875
120	140.25		76	132.75	1.875	5.875
126	147.00		80	139.25	3.125	6.250
132	153.75		80	145.75	3.125	6.250
144	167.25		84	158.28	3.375	6.750

AWWA C207 Standard Steel Ring Flanges Class F (300 psi)



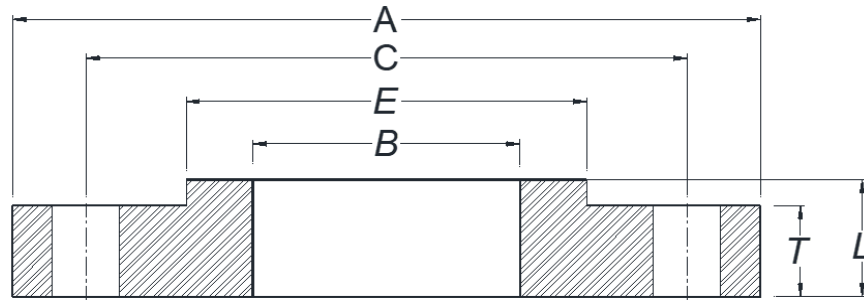
Nominal Pipe Size <i>in.</i>	Outside Diameter of Flange, A <i>in.</i>	Inside Diameter of Flange, B <i>in.</i>	Number of Bolts	Drilling		Thickness of Flange, T <i>in.</i>
				Diameter of Bolt Circle, C <i>in.</i>	Diameter of Bolt Holes <i>in.</i>	
4	10.00	4.57	8	7.88	0.875	1.130
5	11.00	5.66	8	9.25	0.875	1.210
6	12.50	6.73	12	10.62	0.875	1.310
8	15.00	8.73	12	13.00	1.000	1.310
10	17.50	10.88	16	15.25	1.125	1.500
12	20.50	12.88	16	17.75	1.250	1.630
14	23.00	14.19	20	20.25	1.250	1.940
16	25.50	16.19	20	22.50	1.375	2.140
18	28.00	18.19	24	24.75	1.375	2.250
20	30.50	20.19	24	27.00	1.375	2.330
22	33.00	22.19	24	29.25	1.375	2.500
24	36.00	24.19	24	32.00	1.625	2.690
26	38.25		28	34.50	1.875	3.000
28	40.75		28	37.00	1.875	3.130
30	43.00		28	39.25	1.875	3.150
32	45.25		28	41.50	1.875	3.250
34	47.50		28	43.50	1.875	3.380
36	50.00		32	46.00	2.125	3.460
38	52.25		32	48.00	2.125	3.500
40	54.25		36	50.25	2.125	3.630
42	57.00		36	52.75	2.125	3.810
44	59.25		36	55.00	2.125	4.000
46	61.50		40	57.25	2.125	4.130
48	65.00		40	60.75	2.125	4.500

AWWA C207 Standard Steel Hub Flanges Class D (175-150 psi)



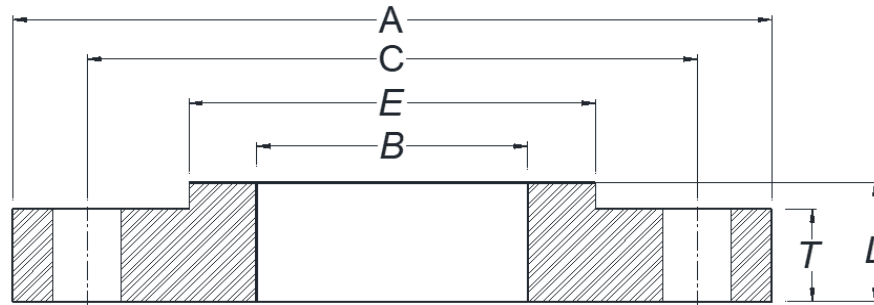
Nominal Pipe Size in.	Outside Diameter of Flange, A in.	Inside Diameter of Flange, B in.	Number of Bolts	Drilling		Flange Dimensions		
				Diameter of Bolt Circle, C in.	Diameter of Bolt Holes in.	Minimum Thickness of Flange, T in.	Length Through Hub, L in.	Diameter of Hub, E in.
4	9.00	4.57	8	7.50	0.750	0.500	0.875	5.312
5	10.00	5.66	8	8.50	0.875	0.562	1.250	6.312
6	11.00	6.72	8	9.50	0.875	0.562	1.250	7.562
8	13.50	8.72	8	11.75	0.875	0.562	1.250	9.688
10	16.00	10.88	12	14.25	1.000	0.688	1.250	12.000
12	19.00	12.88	12	17.00	1.000	0.688	1.250	14.375
14	21.00	14.19	12	18.75	1.125	0.750	1.250	15.750
16	23.50	16.19	16	21.25	1.125	0.750	1.250	18.000
18	25.00	18.19	16	22.75	1.250	0.750	1.250	19.875
20	27.50	20.19	20	25.00	1.250	0.750	1.250	22.000
22	29.50	22.19	20	27.25	1.375	1.000	1.750	24.250
24	32.00	24.19	20	29.50	1.375	1.000	1.750	26.125
26	34.25	26.19	24	31.75	1.375	1.000	1.750	28.500
28	36.50	28.19	28	34.00	1.375	1.000	1.750	30.500
30	38.75	30.19	28	36.00	1.375	1.000	1.750	32.500
32	41.75	32.19	28	38.50	1.625	1.125	1.750	34.750
34	43.75	34.19	32	40.50	1.625	1.125	1.750	36.750
36	46.00	36.19	32	42.75	1.625	1.125	1.750	38.750
38	48.75	38.19	32	45.25	1.625	1.125	1.750	40.750
40	50.75	40.19	36	47.25	1.625	1.125	1.750	43.000
42	53.00	42.19	36	49.50	1.625	1.250	1.750	45.000
44	55.25	44.19	40	51.75	1.625	1.250	2.250	47.000
46	57.25	46.19	40	53.75	1.625	1.250	2.250	49.000
48	59.50	48.19	44	56.00	1.625	1.375	2.500	51.000
50	61.75	50.19	44	58.25	1.875	1.375	2.500	53.000
52	64.00	52.19	44	60.50	1.875	1.375	2.500	55.000
54	66.25	54.19	44	62.75	1.875	1.375	2.500	57.000

AWWA C207 Standard Steel Hub Flanges Class D (175-150 psi)



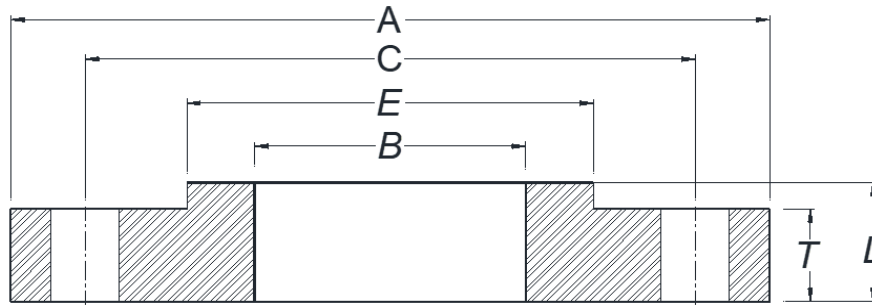
Nominal Pipe Size in.	Outside Diameter of Flange, A in.	Inside Diameter of Flange, B in.	Number of Bolts	Drilling		Flange Dimensions		
				Diameter of Bolt Circle, C in.	Diameter of Bolt Holes in.	Minimum Thickness of Flange, T in.	Length Through Hub, L in.	Diameter of Hub, E in.
60	73.00	60.19	52	69.25	1.875	1.500	2.750	63.000
66	80.00	66.19	52	76.00	1.875	1.500	2.750	69.000
72	86.50	72.19	60	82.50	1.875	1.500	2.750	75.000
78	93.00	78.19	64	89.00	2.125	1.750	3.000	81.250
84	99.75	84.19	64	95.50	2.125	1.750	3.000	87.500
90	106.50	90.19	68	102.00	2.375	2.000	3.250	93.750
96	113.25	96.19	68	108.50	2.375	2.000	3.250	100.000

AWWA C207 Standard Steel Hub Flanges Class E (275 psi)



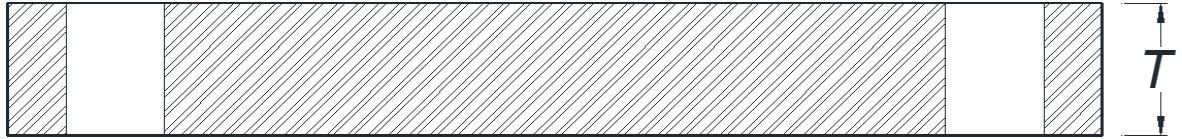
Nominal Pipe Size in.	Outside Diameter of Flange, A in.	Inside Diameter of Flange, B in.	Number of Bolts	Drilling		Flange Dimensions		
				Diameter of Bolt Circle, C in.	Diameter of Bolt Holes in.	Minimum Thickness of Flange, T in.	Length Through Hub, L in.	Diameter of Hub, E in.
4	9.00	4.57	8	7.50	0.750	0.938	1.312	5.312
5	10.00	5.66	8	8.50	0.875	0.938	1.438	6.438
6	11.00	6.72	8	9.50	0.875	1.000	1.562	7.562
8	13.50	8.72	8	11.75	0.875	1.125	1.750	9.688
10	16.00	10.88	12	14.25	1.000	1.188	1.938	12.000
12	19.00	12.88	12	17.00	1.000	1.250	2.188	14.375
14	21.00	14.19	12	18.75	1.125	1.375	2.250	15.750
16	23.50	16.19	16	21.25	1.125	1.438	2.500	18.000
18	25.00	18.19	16	22.75	1.250	1.562	2.688	19.875
20	27.50	20.19	20	25.00	1.250	1.688	2.875	22.000
22	29.50	22.19	20	27.25	1.375	1.812	3.125	24.000
24	32.00	24.19	20	29.50	1.375	1.875	3.250	26.125
26	34.25	26.19	24	31.75	1.375	2.000	3.375	28.500
28	36.50	28.19	28	34.00	1.375	2.062	3.438	30.750
30	38.75	30.19	28	36.00	1.375	2.125	3.500	32.750
32	41.75	32.19	28	38.50	1.625	2.250	3.625	35.000
34	43.75	34.19	32	40.50	1.625	2.312	3.688	37.000
36	46.00	36.19	32	42.75	1.625	2.375	3.750	39.250
38	48.75	38.19	32	45.25	1.625	2.375	3.750	41.750
40	50.75	40.19	36	47.25	1.625	2.500	3.875	43.750
42	53.00	42.19	36	49.50	1.625	2.625	4.000	46.000
44	55.25	44.19	40	51.75	1.625	2.625	4.000	48.000
46	57.25	46.19	40	53.75	1.625	2.688	4.062	50.000
48	59.50	48.19	44	56.00	1.625	2.750	4.125	52.250
50	61.75	50.19	44	58.25	1.875	2.750	4.125	54.250
52	64.00	52.19	44	60.50	1.875	2.875	4.250	56.500
54	66.25	54.19	44	62.75	1.875	3.000	4.375	58.750

AWWA C207 Standard Steel Hub Flanges Class E (275 psi)



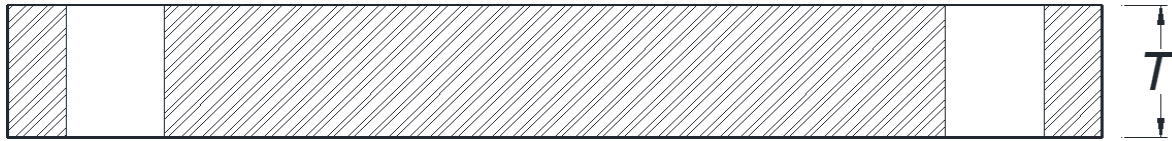
Nominal Pipe Size in.	Outside Diameter of Flange, A in.	Inside Diameter of Flange, B in.	Number of Bolts	Drilling		Flange Dimensions		
				Diameter of Bolt Circle, C in.	Diameter of Bolt Holes in.	Minimum Thickness of Flange, T in.	Length Through Hub, L in.	Diameter of Hub, E in.
60	73.00	60.19	52	69.25	1.875	3.125	4.500	65.250
66	80.00	66.19	52	76.00	1.875	3.375	4.875	71.500
72	86.50	72.19	60	82.50	1.875	3.500	5.000	78.500
78	93.00	78.19	64	89.00	2.125	3.875	5.375	84.500
84	99.75	84.19	64	95.50	2.125	3.875	5.375	90.500
90	106.50	90.19	68	102.00	2.375	4.250	5.750	96.750
96	113.25	96.19	68	108.50	2.375	4.250	5.750	102.750

AWWA C207 Standard Steel Blind Flange Thickness



Nominal Pipe Size <i>in.</i>	Minimum Thickness*			
	Class B [†] (86 psi) Max P [‡] = 129 psi <i>in.</i>	Class D [§] <i>in.</i>	Class E ^{**} (275 psi) Max P = 412.5 psi <i>in.</i>	Class F ^{††} (300 psi) Max P = 450 psi <i>in.</i>
4	0.625	0.625	1.125	1.130
5	0.625	0.650	1.188	1.210
6	0.688	0.693	1.313	1.310
8	0.688	0.812	1.500	1.310
10	0.688	0.953	1.563	1.500
12	0.719	1.117	1.750	1.630
14	0.791	1.133	1.875	1.940
16	0.892	1.265	2.000	2.140
18	0.950	1.331	2.125	2.250
20	1.040	1.448	2.375	2.330
22	1.132	1.568	2.500	2.500
24	1.216	1.661	2.625	2.690
26	1.307	1.786	2.750	3.000
28	1.398	1.906	2.750	3.130
30	1.477	2.008	2.875	3.166
32	1.581	2.150	3.000	3.332
34	1.661	2.252	3.050	3.475
36	1.751	2.370	3.209	3.671
38	1.853	2.506	3.394	3.815
40	1.933	2.609	3.533	3.982
42	2.023	2.729	3.695	4.171
44	2.114	2.849	3.857	4.338
46	2.194	2.952	3.997	4.505
48	2.285	3.072	4.159	4.781

AWWA C207 Standard Steel Blind Flange Thickness



Nominal Pipe Size <i>in.</i>	Minimum Thickness*			
	Class B [†] (86 psi) Max P [‡] = 129 psi <i>in.</i>	Class D [§] <i>in.</i>	Class E ^{**} (275 psi) Max P = 412.5 psi <i>in.</i>	Class F ^{††} (300 psi) Max P = 450 psi <i>in.</i>
50	2.377	3.196	4.327	
52	2.468	3.315	4.489	
54	2.559	3.435	4.651	
60	2.820	3.779	5.116	
66	3.092	4.136	5.601	
72	3.353	4.480	6.066	

Notes:

1. All flanges are flat faced.
2. Minimum thickness based on allowable stress of 16,000 psi.
3. Minimum thickness based on 7,000 psi allowable bolt stress for Classes B and D.
4. Minimum thickness based on 25,000 psi allowable bolt stress for Classes E and F.
5. For diameters over 48 in., see recommendation in Section 4.2.5.
6. Metric conversion: nominal pipe size: in. × 25 = mm; dimensions: in. × 25.4 = mm; psi × 6.895

*Design Method: ASME Boiler & Pressure Vessel Code, Sec. VIII, Div. 1, UG-34, Eq 2 (2010), or corresponding ring-flange thickness, whichever is greater.

†Working pressure limit at water service temperature is 86 psi. These flanges have the same OD and drilling pattern as Class 125 cast-iron flanges (ASME B16.1). In sizes 24 in. and smaller, they also match ASME B16.5 Class 150 psi drilling for steel flanges.

‡Max P = maximum pressure (test or transient)

§Class D flanges have a working pressure limit at water service temperature of 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). Maximum pressure (test or transient) for nominal pipe sizes up through 12 in. are 260 psi and 225 psi for sizes larger than 12 in.

**Working pressure limit at water service temperature is 275 psi. These flanges have the same OD, and drilling pattern as ASME B16.1 Class 125 cast-iron flanges. In sizes 24 in. and smaller, they also match ASME B16.5 Class 150-psi standard for steel flanges.

††Working pressure limit at water service temperature is 300 psi. These flanges have the same OD, and drilling pattern as ASME B16.1 Class 250 cast-iron pipe and flanged fittings and ASME B16.5 Class 300 for steel flanges.

AWWA C207 Tolerances

		Tolerance
Outside Diameter	NPS 4" - 144"	± 0.12"
Inside Diameter	NPS 4" - 144"	± 0.06"
Overall Length	NPS 4" - 144"	+0.12" / - 0.19"
Flange Thickness	NPS ≤ 18"	+ 0.12" / -0.00"
	NPS ≥ 20"	+ 0.19" / -0.00"
Bolt Circle Diameter	NPS 4" - 144"	± 0.06"
Center to Center of Adjacent Bolt Holes	NPS 4" - 144"	± 0.03"
Concentricity Between Bolt Circle Diameter and Machined Face Diameter	NPS 4" - 144"	± 0.06"