

## **Flange Dimensions**

The correct flange to use for a particular application is determined by the combination of the size of pipe to be connected and the pressure (class rating) the assembly will need to cater for.

Most of these dimensions have been standardized and published as ASME, MSS, API or other specifications, so that flanges can be used with reliability. However, there are still occasions when particular applications require bespoke flanges outside of those standards – Alloy Flanges & Fittings can provide both standard and non-standard flanges as required.

The most common dimension standard we are asked to supply to is ASME/ANSI B16.5, which provides dimensions and tolerances for flanges in pipe sizes from 1/2" through 24" and in classes ranging 150 lb through 2500 lb.

Below please find the dimension values reproduced (by pipe size within class ratings):

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Nominal Pipe Size NPS (inches)	Class 150 lb			
	Diameter of Flange (inches)	No. of Bolts	Diameter of Bolts (inches)	Bolt Circle (inches)
1/4	3-3/8	4	1/2	2-1/4
1/2	3-1/2	4	1/2	2-3/8
3/4	3-7/8	4	1/2	2-3/4
1	4-1/4	4	1/2	3-1/8
1-1/4	4-5/8	4	1/2	3-1/2
1-1/2	5	4	1/2	3-7/8
2	6	4	5/8	4-3/4
2-1/2	7	4	5/8	5-1/2
3	7-1/2	4	5/8	6
3-1/2	8-1/2	8	5/8	7
4	9	8	5/8	7-1/2
5	10	8	3/4	8-1/2
6	11	8	3/4	9-1/2
8	13-1/2	8	3/4	11-3/4
10	16	12	7/8	14-1/4
12	19	12	7/8	17
14	21	12	1	18-3/4
16	23-1/2	16	1	21-1/4
18	25	16	1-1/8	22-3/4
20	27-1/2	20	1-1/8	25
24	32	20	1-1/4	29-1/2

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Nominal Pipe Size NPS (inches)	Class 300 lb			
	Diameter of Flange (inches)	No. of Bolts	Diameter of Bolts (inches)	Bolt Circle (inches)
1/4	3-3/8	4	1/2	2-1/4
1/2	3-3/4	4	1/2	2-5/8
3/4	4-5/8	4	5/8	3-1/4
1	4-7/8	4	5/8	3-1/2
1-1/4	5-1/4	4	5/8	3-7/8
1-1/2	6-1/8	4	3/4	4-1/2
2	6-1/2	8	5/8	5
2-1/2	7-1/2	8	3/4	5-7/8
3	8-1/4	8	3/4	6-5/8
3-1/2	9	8	3/4	7-1/4
4	10	8	3/4	7-7/8
5	11	8	3/4	9-1/4
6	12-1/2	12	3/4	10-5/8
8	15	12	7/8	13
10	17-1/2	16	1	15-1/4
12	20-1/2	16	1-1/8	17-3/4
14	23	20	1-1/8	20-1/4
16	25-1/2	20	1-1/4	22-1/2
18	28	24	1-1/4	24-3/4
20	30-1/2	24	1-1/4	27
24	36	24	1-1/2	32

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Nominal Pipe Size NPS (inches)	Class 400 lb			
	Diameter of Flange (inches)	No. of Bolts	Diameter of Bolts (inches)	Bolt Circle (inches)
1/4	3-3/8	4	1/2	2-1/4
1/2	3-3/4	4	1/2	2-5/8
3/4	4-5/8	4	5/8	3-1/4
1	4-7/8	4	5/8	3-1/2
1-1/4	5-1/4	4	5/8	3-7/8
1-1/2	6-1/8	4	3/4	4-1/2
2	6-1/2	8	5/8	5
2-1/2	7-1/2	8	3/4	5-7/8
3	8-1/4	8	3/4	6-5/8
3-1/2	9	8	7/8	7-1/4
4	10	8	7/8	7-7/8
5	11	8	7/8	9-1/4
6	12-1/2	12	7/8	10-5/8
8	15	12	1	13
10	17-1/2	16	1-1/8	15-1/4
12	20-1/2	16	1-1/4	17-3/4
14	23	20	1-1/4	20-1/4
16	25-1/2	20	1-3/8	22-1/2
18	28	24	1-3/8	24-3/4
20	30-1/2	24	1-1/2	27
24	36	24	1-3/4	32

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Nominal Pipe Size NPS (inches)	Class 600 lb			
	Diameter of Flange (inches)	No. of Bolts	Diameter of Bolts (inches)	Bolt Circle (inches)
1/4	3-3/8	4	1/2	2-1/4
1/2	3-3/4	4	1/2	2-5/8
3/4	4-5/8	4	5/8	3-1/4
1	4-7/8	4	5/8	3-1/2
1-1/4	5-1/4	4	5/8	3-7/8
1-1/2	6-1/8	4	3/4	4-1/2
2	6-1/2	8	5/8	5
2-1/2	7-1/2	8	3/4	5-7/8
3	8-1/4	8	3/4	6-5/8
3-1/2	9	8	7/8	7-1/4
4	10-3/4	8	7/8	8-1/2
5	13	8	1	10-1/2
6	14	12	1	11-1/2
8	16-1/2	12	1-1/8	13-3/4
10	20	16	1-1/4	17
12	22	20	1-1/4	19-1/4
14	23-3/4	20	1-3/8	20-3/4
16	27	20	1-1/2	23-3/4
18	29-1/4	20	1-5/8	25-3/4
20	32	24	1-5/8	28-1/2
24	37	24	1-7/8	33

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Nominal Pipe Size NPS (inches)	Class 900 lb			
	Diameter of Flange (inches)	No. of Bolts	Diameter of Bolts (inches)	Bolt Circle (inches)
1/2	4-3/4	4	3/4	3-1/4
3/4	5-1/8	4	3/4	3-1/2
1	5-7/8	4	7/8	4
1-1/4	6-1/4	4	7/8	4-3/8
1-1/2	7	4	1	4-7/8
2	8-1/2	8	7/8	6-1/2
2-1/2	9-5/8	8	1	7-1/2
3	9-1/2	8	7/8	7-1/2
4	11-1/2	8	1-1/8	9-1/4
5	13-3/4	8	1-1/4	11
6	15	12	1-1/8	12-1/2
8	18-1/2	12	1-3/8	15-1/2
10	21-1/2	16	1-3/8	18-1/2
12	24	20	1-3/8	21
14	25-1/4	20	1-1/2	22
16	27-3/4	20	1-5/8	24-1/2
18	31	20	1-7/8	27
20	33-3/4	20	2	29-1/2
24	41	20	2-1/2	35-1/2

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Nominal Pipe Size NPS (inches)	Class 1500 lb			
	Diameter of Flange (inches)	No. of Bolts	Diameter of Bolts (inches)	Bolt Circle (inches)
1/2	4-3/4	4	3/4	3-1/4
3/4	5-1/8	4	3/4	3-1/2
1	5-7/8	4	7/8	4
1-1/4	6-1/4	4	7/8	4-3/8
1-1/2	7	4	1	4-7/8
2	8-1/2	8	7/8	6-1/2
2-1/2	9-5/8	8	1	7-1/2
3	10-1/2	8	1-1/8	8
4	12-1/4	8	1-1/4	9-1/2
5	14-3/4	8	1-1/2	11-1/2
6	15-1/2	12	1-3/8	12-1/2
8	19	12	1-5/8	15-1/2
10	23	12	1-7/8	19
12	26-1/2	16	2	22-1/2
14	29-1/2	16	2-1/4	25
16	32-1/2	16	2-1/2	27-3/4
18	36	16	2-3/4	30-1/2
20	38-3/4	16	3	32-3/4
24	46	16	3-1/2	39

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Nominal Pipe Size NPS (inches)	Class 2500 lb			
	Diameter of Flange (inches)	No. of Bolts	Diameter of Bolts (inches)	Bolt Circle (inches)
1/2	5-1/4	4	3/4	3-1/2
3/4	5-1/2	4	3/4	3-3/4
1	6-1/4	4	7/8	4-1/4
1-1/4	7-1/4	4	1	5-1/8
1-1/2	8	4	1-1/8	5-3/4
2	9-1/4	8	1	6-3/4
2-1/2	10-1/2	8	1-1/8	7-3/4
3	12	8	1-1/4	9
4	14	8	1-1/2	10-3/4
5	16-1/2	8	1-3/4	12-3/4
6	19	8	2	14-1/2
8	21-3/4	12	2	17-1/4
10	26-1/2	12	2-1/2	21-1/4
12	30	12	2-3/4	24-3/8

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