

Miscellaneous Information

Special Facings
Bolt and Stud Dimensions
Dimensional Tolerances
Bore Chart

Typical Facings

For Steel Pipe Flanges

Nominal Pipe Size	Outside Dia.						Inside Dia.		Ring Joint	
	Raised Face Large Male Large Tongue; also Pipe Lap	Small Male	Small Tongue	Large Female, Large Groove	Small Female	Small Groove	Large Tongue Small Tongue	Large Groove Small Groove	Pitch Dia.	Depth of Groove
	A	B	C	D	E	F	G	H	P	L
1/2 ★	1.38	0.72	1.38	1.44	0.78	1.44	1.00	0.94		
3/4 ★	1.69	0.94	1.69	1.75	1.00	1.75	1.31	1.25		
1 ★	2.00	1.19	1.88	2.06	1.25	1.94	1.50	1.44		
1 1/4 ★	2.50	1.50	2.25	2.56	1.56	2.31	1.88	1.81		
1 1/2 ★	2.88	1.75	2.50	2.94	1.81	2.56	2.12	2.06		
2 ★	3.62	2.25	3.25	3.69	2.31	3.31	2.88	2.81		
2 1/2	4.12	2.69	3.75	4.19	2.75	3.81	3.38	3.31		
3 ★	5.00	3.31	4.62	5.06	3.38	4.69	4.25	4.19		
3 1/2 ★	5.50	3.81	5.12	5.56	3.88	5.19	4.75	4.69		
4 ★	6.19	4.31	5.69	6.25	4.38	5.75	5.19	5.12		
5 ★	7.31	5.38	6.81	7.38	5.44	6.88	6.31	6.25		
6 ★	8.50	6.38	8.00	8.56	6.44	8.06	7.50	7.44		
8 ★	10.62	8.38	10.00	10.69	8.44	10.06	9.38	9.31		
10	12.75	10.50	12.00	12.81	10.56	12.06	11.25	11.19		
12	15.00	12.50	14.25	15.06	12.56	14.31	13.50	13.44		
14	16.25	13.75	15.50	16.31	13.81	15.56	14.75	14.69		
16	18.50	15.75	17.62	18.56	15.81	17.69	16.75	16.69		
18	21.00	17.75	20.12	21.06	17.81	20.19	19.25	19.19		
20	23.00	19.75	22.00	23.06	19.81	22.06	21.00	20.94		
24	27.25	23.75	26.25	27.31	23.81	26.31	25.25	25.19		

These Dimensions Vary With The Flange Pressure Rating. See Pages 82, 83, and 84.

DIMENSIONS are shown in inches.

1/8" RAISED FACE (Fig. 1) is standard for 150 and 300 lb. Welding Neck, Slip-On, Screwed and Blind Flanges, and is included in the flange thickness.

1/16" RAISED FACE (Fig. 1) is standard for 400 lb. and heavier Welding Neck, Slip-On, Screwed and Blind Flanges, and is *not* included in the flange thickness.

LAP JOINT flanges are commonly furnished without a raised face, the rolled lap on the pipe itself forming a raised contact surface (see Fig. 2).

★ Large Female and Large Groove Class 150 in these sizes will be full faced to O.D. of flange.

Typical Facings

For Steel Pipe Flanges

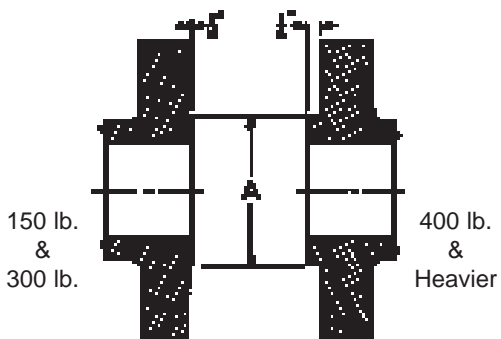


Fig. 1. RAISED FACE

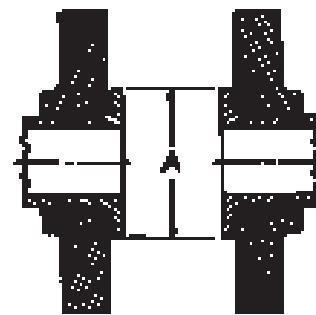


Fig. 2. LAP JOINT

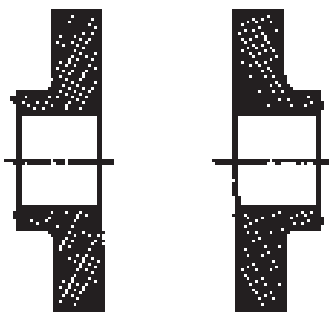


Fig. 3. FLAT FACE

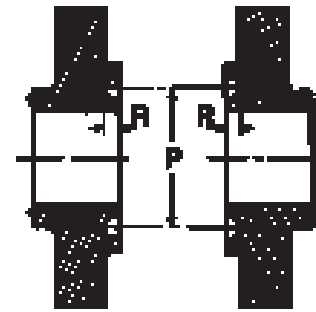


Fig. 4. RING JOINT

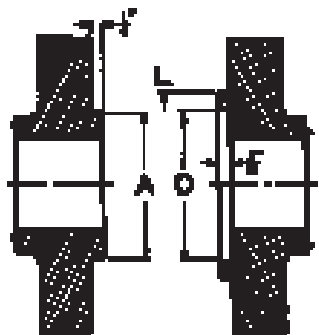


Fig. 5. LARGE MALE AND FEMALE

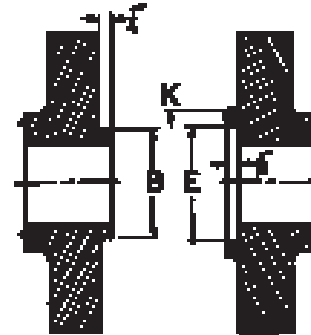


Fig. 6. SMALL MALE AND FEMALE

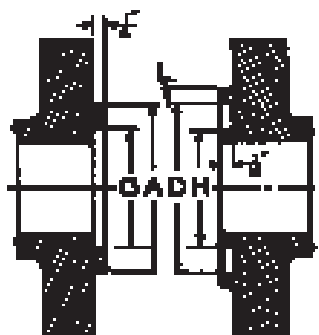


Fig. 7. LARGE TONGUE AND GROOVE

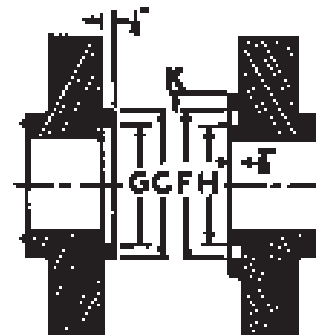
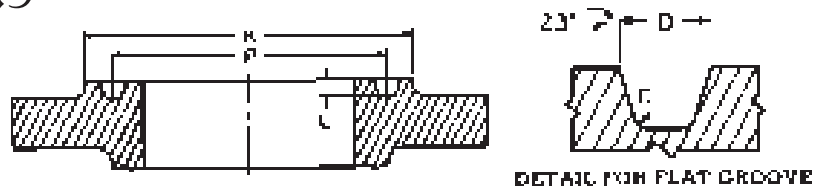


Fig. 8. SMALL TONGUE AND GROOVE

See Dimensions and Notes

Facing Dimensions for Ring Joints

ASME B16.5

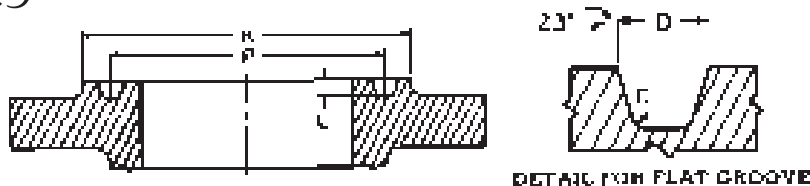


For 150 LB. Flanges						
Nominal Pipe Size	Pitch Dia. of Ring and Groove P	Dia. of Raised Face K	Groove		Ring	Approx. Distance Between Flanges When Joint is Compressed
			Width D	Depth L	Ring No.	
1	1.875	2.50	0.344	0.250	R15	0.16
1 1/4	2.250	2.88	0.344	0.250	R17	0.16
1 1/2	2.562	3.25	0.344	0.250	R19	0.16
2	3.250	4.00	0.344	0.250	R22	0.16
2 1/2	4.000	4.75	0.344	0.250	R25	0.16
3	4.500	5.25	0.344	0.250	R29	0.16
3 1/2	5.188	6.06	0.344	0.250	R33	0.16
4	5.875	6.75	0.344	0.250	R36	0.16
5	6.750	7.62	0.344	0.250	R40	0.16
6	7.625	8.62	0.344	0.250	R43	0.16
8	9.750	10.75	0.344	0.250	R48	0.16
10	12.000	13.00	0.344	0.250	R52	0.16
12	15.000	16.00	0.344	0.250	R56	0.16
14	15.625	16.75	0.344	0.250	R59	0.12
16	17.875	19.00	0.344	0.250	R64	0.12
18	20.375	21.50	0.344	0.250	R68	0.12
20	22.000	23.50	0.344	0.250	R72	0.12
24	26.500	28.00	0.344	0.250	R76	0.12

For 300, 400 and 600 LB. Flanges								
Nominal Pipe Size	Pitch Dia. of Ring and Groove P	Dia. of Raised Face K	Groove		Ring	Approx. Distance Between Flanges When Joint is Compressed		
			Width D	Depth L	Ring No.	300 lb.	400 lb.	600 lb.
1/2	1.344	2.00	0.281	0.219	R11	0.12	0.12	0.12
3/4	1.688	2.50	0.344	0.250	R13	0.16	0.16	0.16
1	2.000	2.75	0.344	0.250	R16	0.16	0.16	0.16
1 1/4	2.375	3.12	0.344	0.250	R18	0.16	0.16	0.16
1 1/2	2.688	3.56	0.344	0.250	R20	0.16	0.16	0.16
2	3.250	4.25	0.469	0.312	R23	0.22	0.19	0.19
2 1/2	4.000	5.00	0.469	0.312	R26	0.22	0.19	0.19
3	4.875	5.75	0.469	0.312	R31	0.22	0.19	0.19
3 1/2	5.188	6.25	0.469	0.312	R34	0.22	0.19	0.19
4	5.875	6.88	0.469	0.312	R37	0.22	0.22	0.19
5	7.125	8.25	0.469	0.312	R41	0.22	0.22	0.19
6	8.312	9.50	0.469	0.312	R45	0.22	0.22	0.19
8	10.625	11.88	0.469	0.312	R49	0.22	0.22	0.19
10	12.750	14.00	0.469	0.312	R53	0.22	0.22	0.19
12	15.000	16.25	0.469	0.312	R57	0.22	0.22	0.19
14	16.500	18.00	0.469	0.312	R61	0.22	0.22	0.19
16	18.500	20.00	0.469	0.312	R65	0.22	0.22	0.19
18	21.000	22.62	0.469	0.312	R69	0.22	0.22	0.19
20	23.000	25.00	0.531	0.375	R73	0.22	0.22	0.19
24	27.250	29.50	0.656	0.438	R77	0.25	0.25	0.22

Facing Dimensions for Ring Joints

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For 900 LB. Flanges						
Nominal Pipe Size	Pitch Dia. of Ring and Groove P	Dia. of Raised Face K	Groove		Ring	Approx. Distance Between Flanges When Joint is Compressed
			Width D	Depth L	Ring No.	
1/2	1.562	2.38	0.344	0.250	R12	0.16
3/4	1.750	2.62	0.344	0.250	R14	0.16
1	2.000	2.81	0.344	0.250	R16	0.16
1 1/4	2.375	3.19	0.344	0.250	R18	0.16
1 1/2	2.688	3.62	0.344	0.250	R20	0.16
2	3.750	4.88	0.469	0.312	R24	0.12
2 1/2	4.250	5.38	0.469	0.312	R27	0.12
3	4.875	6.12	0.469	0.312	R31	0.16
4	5.875	7.12	0.469	0.312	R37	0.16
5	7.125	8.50	0.469	0.312	R41	0.16
6	8.312	9.50	0.469	0.312	R45	0.16
8	10.625	12.12	0.469	0.312	R49	0.16
10	12.750	14.25	0.469	0.312	R53	0.16
12	15.000	16.50	0.469	0.312	R57	0.16
14	16.500	18.38	0.656	0.438	R62	0.16
16	18.500	20.62	0.656	0.438	R66	0.16
18	21.000	23.38	0.781	0.500	R70	0.19
20	23.000	25.50	0.781	0.500	R74	0.19
24	27.250	30.38	1.062	0.625	R78	0.22

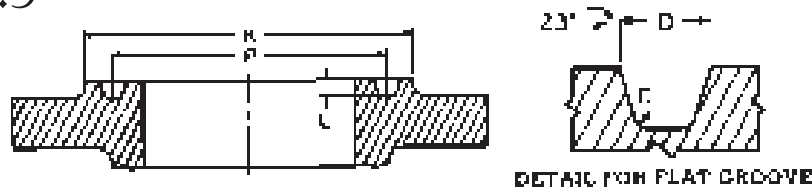
For 1500 LB. Flanges						
Nominal Pipe Size	Pitch Dia. of Ring and Groove P	Dia. of Raised Face K	Groove		Ring	Approx. Distance Between Flanges When Joint is Compressed
			Width D	Depth L	Ring No.	
1/2	1.562	2.38	0.344	0.250	R12	0.16
3/4	1.750	2.62	0.344	0.250	R14	0.16
1	2.000	2.81	0.344	0.250	R16	0.16
1 1/4	2.375	3.19	0.344	0.250	R18	0.16
1 1/2	2.688	3.62	0.344	0.250	R20	0.16
2	3.750	4.88	0.469	0.312	R24	0.12
2 1/2	4.250	5.38	0.469	0.312	R27	0.12
3	5.375	6.62	0.469	0.312	R35	0.12
4	6.375	7.62	0.469	0.312	R39	0.12
5	7.625	9.00	0.469	0.312	R44	0.12
6	8.312	9.75	0.531	0.375	R46	0.12
8	10.625	12.50	0.656	0.438	R50	0.16
10	12.750	14.62	0.656	0.438	R54	0.16
12	15.000	17.25	0.906	0.562	R58	0.19
14	16.500	19.25	1.062	0.625	R63	0.22
16	18.500	21.50	1.188	0.688	R67	0.31
18	21.000	24.12	1.188	0.688	R71	0.31
20	23.000	26.50	1.312	0.688	R75	0.38
24	27.250	31.25	1.438	0.812	R79	0.44

CORNER RADIUS "r" is 0.03" for 0.469" groove width and smaller; 0.06" for groove widths 0.531" to 0.906" inclusive and 0.09" for groove widths 1.062" and larger.

FLAT-BOTTOMED GROOVE, as shown in detail above, will be furnished unless otherwise specified.

Facing Dimensions For Ring Joints

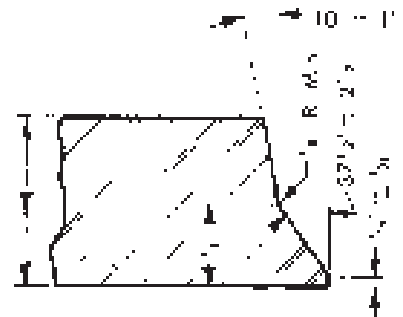
ASME B16.5



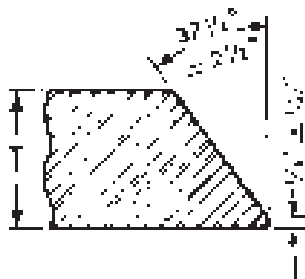
For 2500 LB. Flanges						
Nominal Pipe Size	Pitch Dia. of Ring and Groove P	Dia. of Raised Face K	Groove		Ring No.	Approx. Distance Between Flanges When Joint is Compressed
			Width D	Depth L		
1/2	1.688	2.56	0.344	0.250	R13	0.16
3/4	2.000	2.88	0.344	0.250	R16	0.16
1	2.375	3.25	0.344	0.250	R18	0.16
1 1/4	2.844	4.00	0.469	0.312	R21	0.12
1 1/2	3.250	4.50	0.469	0.312	R23	0.12
2	4.000	5.25	0.469	0.312	R26	0.12
2 1/2	4.380	5.88	0.531	0.375	R28	0.12
3	5.000	6.62	0.531	0.375	R32	0.12
4	6.188	8.00	0.656	0.438	R38	0.16
5	7.500	9.50	0.781	0.500	R42	0.16
6	9.000	11.00	0.781	0.500	R47	0.16
8	11.000	13.38	0.906	0.562	R51	0.19
10	13.500	16.75	1.188	0.688	R55	0.25
12	16.000	19.50	1.312	0.688	R60	0.31

Beveling Standards

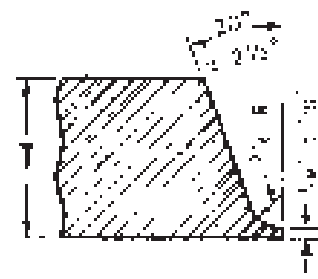
For wall thicknesses through 0.88", a straight 37.5° bevel with a 0.06" land is provided for fittings and flanges. For wall thicknesses greater than 0.88", a compound bevel is furnished. Also, for wall thicknesses above 0.75", a U bevel can be furnished if specified.



Compound bevel for thicknesses greater than 0.88"



37.5° bevel for wall thicknesses through 0.88"



20° U-bevel for all thicknesses above 0.75"

Note: All nominal Pipe Sizes in materials covered by ASME B16.9 are beveled as shown. Other bevels available upon request.

Ring Joint Dimensions

B16.47, Ser. A

Class 300, 400 and 600

Facing Dimensions Ring-Type Joint						Groove Fillet Radius
Flange Size	*Facing Dia.	Depth of Groove	Pitch Dia.	Width of Groove	Ring Number	
26	31.88	0.500	29.500	0.781	R93	0.06
28	33.88	0.500	31.500	0.781	R94	0.06
30	36.12	0.500	33.750	0.781	R95	0.06
32	38.75	0.562	36.000	0.906	R96	0.06
34	40.75	0.562	38.000	0.906	R97	0.06
36	43.00	0.562	40.250	0.906	R98	0.06

Class 900

Facing Dimensions Ring-Type Joint						Groove Fillet Radius
Flange Size	*Facing Dia.	Depth of Groove	Pitch Dia.	Width of Groove	Ring Number	
26	32.75	0.688	29.500	1.188	R100	0.09
28	35.00	0.688	31.500	1.312	R101	0.09
30	37.25	0.688	33.750	1.312	R102	0.09
32	39.50	0.688	36.000	1.312	R103	0.09
34	42.00	0.812	38.000	1.438	R104	0.09
36	44.25	0.812	40.250	1.438	R105	0.09

* Full face contour may be used.

Bolt and Stud Dimensions

ASME B16.5

Nominal Pipe Size	150 LB. Flanges ⁽³⁾				300 LB. Flanges ⁽³⁾				400 LB. Flanges ⁽⁴⁾		
	No. of Bolts or Studs	Dia. of Bolts or Studs	Length of Bolts A	Length of Studs B	No. of Bolts or Studs	Dia. of Bolts or Studs	Length of Bolts A	Length of Studs B	No. of Bolts or Studs	Dia. of Bolts or Studs	Length of Studs B
1/2	4	0.50	2.00	2.25	4	0.50	2.25	2.50	*	*	*
3/4	4	0.50	2.00	2.50	4	0.62	2.50	3.00	*	*	*
1	4	0.50	2.25	2.50	4	0.62	2.50	3.00	*	*	*
1 1/4	4	0.50	2.25	2.75	4	0.62	2.75	3.25	*	*	*
1 1/2	4	0.50	2.50	2.75	4	0.75	3.00	3.50	*	*	*
2	4	0.62	2.75	3.25	8	0.62	3.00	3.50	*	*	*
2 1/2	4	0.62	3.00	3.50	8	0.75	3.25	4.00	*	*	*
3	4	0.62	3.00	3.50	8	0.75	3.50	4.25	*	*	*
3 1/2	8	0.62	3.00	3.50	8	0.75	3.75	4.25	*	*	*
4	8	0.62	3.00	3.50	8	0.75	3.75	4.50	8	0.88	5.50
5	8	0.75	3.25	3.75	8	0.75	4.25	4.75	8	0.88	5.75
6	8	0.75	3.25	4.00	12	0.75	4.25	4.75	12	0.88	6.00
8	8	0.75	3.50	4.25	12	0.88	4.75	5.50	12	1.00	6.75
10	12	0.88	4.00	4.50	16	1.00	5.50	6.25	16	1.12	7.50
12	12	0.88	4.00	4.75	16	1.12	5.75	6.75	16	1.25	8.00
14	12	1.00	4.50	5.25	20	1.12	6.25	7.00	20	1.25	8.25
16	16	1.00	4.50	5.25	20	1.25	6.50	7.50	20	1.38	8.75
18	16	1.12	5.00	5.75	24	1.25	6.75	7.75	24	1.38	9.00
20	20	1.12	5.50	6.25	24	1.25	7.25	8.00	24	1.50	9.50
24	20	1.25	6.00	6.75	24	1.50	8.00	9.00	24	1.75	10.50

Nominal Pipe Size	600 LB. Flanges ⁽⁴⁾			900 LB. Flanges ⁽⁴⁾			1500 LB. Flanges ⁽⁴⁾			2500 LB. Flanges ⁽⁴⁾		
	No. of Bolts or Studs	Dia. of Bolts or Studs	Length of Studs B	No. of Bolts or Studs	Dia. of Bolts or Studs	Length of Studs B	No. of Bolts or Studs	Dia. of Bolts or Studs	Length of Studs B	No. of Bolts or Studs	Dia. of Bolts or Studs	Length of Studs B
1/2	4	0.50	3.00	†	†	†	4	0.75	4.25	4	0.75	4.75
3/4	4	0.62	3.50	†	†	†	4	0.75	4.50	4	0.75	5.00
1	4	0.62	3.50	†	†	†	4	0.88	5.00	4	0.88	5.50
1 1/4	4	0.62	3.75	†	†	†	4	0.88	5.00	4	1.00	6.00
1 1/2	4	0.75	4.25	†	†	†	4	1.00	5.50	4	1.12	6.75
2	8	0.62	4.25	†	†	†	8	0.88	5.75	8	1.00	7.00
2 1/2	8	0.75	4.75	†	†	†	8	1.00	6.25	8	1.13	7.75
3	8	0.75	5.00	8	0.88	5.75	8	1.12	7.00	8	1.25	8.75
3 1/2	8	0.88	5.50	—	—	—	—	—	—	—	—	—
4	8	0.88	5.75	8	1.12	6.75	8	1.25	7.75	8	1.50	10.00
5	8	1.00	6.50	8	1.25	7.50	8	1.50	9.75	8	1.75	11.75
6	12	1.00	6.75	12	1.12	7.50	12	1.38	10.25	8	2.00	13.50
8	12	1.12	7.50	12	1.38	8.75	12	1.62	11.50	12	2.00	15.00
10	16	1.25	8.50	16	1.38	9.25	12	1.88	13.25	12	2.50	19.25
12	20	1.25	8.75	20	1.38	10.00	16	2.00	14.75	12	2.75	21.25
14	20	1.38	9.25	20	1.50	10.75	16	2.25	16.00	—	—	—
16	20	1.50	10.00	20	1.62	11.25	16	2.50	17.50	—	—	—
18	20	1.62	10.75	20	1.88	12.75	16	2.75	19.50	—	—	—
20	24	1.62	11.25	20	2.00	13.75	16	3.00	21.25	—	—	—
24	24	1.88	13.00	20	2.50	17.25	16	3.50	24.25	—	—	—

(1) All dimensions in inches.

(2) Lengths include allowance for pulling-up.

(3) Length based on .06" raised faced Welding Neck, Slip-On, Screwed or Blind Flanges. For lap joint, add the thickness of both laps.

(4) Length based on 0.25" raised faced Welding Neck, Slip-On, Screwed or Blind Flanges. For lap joint, add the thickness of both laps and subtract 0.50". For male and female or tongue and groove flange faces, subtract 0.25".

* Same as 600 lb. flanges. † Same as 1500 lb. flanges.

Bore Chart

Nominal Wall Thickness														
Nominal Size	Nominal Outside Dia.	Sched 10†	Sched. 20	Sched. 30	STD§ WALL	Sched. 40	Sched. 60	EX.# STG.	Sched. 80	Sched. 100	Sched. 120	Sched. 140	Sched. 160	XX STG.
1/2	0.840	0.083	—	—	0.109	0.109	—	0.147	0.147	—	—	—	0.188	0.294
3/4	1.050	0.083	—	—	0.113	0.113	—	0.154	0.154	—	—	—	0.219	0.308
1	1.315	0.109	—	—	0.133	0.133	—	0.179	0.179	—	—	—	0.250	0.358
1 1/4	1.660	0.109	—	—	0.140	0.140	—	0.191	0.191	—	—	—	0.250	0.382
1 1/2	1.990	0.109	—	—	0.145	0.145	—	0.200	0.200	—	—	—	0.281	0.400
2	2.375	0.120	—	—	0.154	0.154	—	0.218	0.218	—	—	—	0.344	0.436
2 1/2	2.875	0.120	—	—	0.203	0.203	—	0.276	0.276	—	—	—	0.375	0.552
3	3.500	0.120	—	—	0.216	0.216	—	0.300	0.300	—	—	—	0.438	0.600
3 1/2	4.000	0.120	—	—	0.226	0.226	—	0.318	0.318	—	—	—	—	0.636
4	4.500	0.134	—	—	0.237	0.237	—	0.337	0.337	—	0.438	—	0.531	0.674
5	5.563	0.134	—	—	0.258	0.258	—	0.375	0.375	—	0.500	—	0.625	0.750
6	6.625	0.134	—	—	0.280	0.280	—	0.432	0.432	—	0.562	—	0.719	0.864
8	8.625	0.148	0.250	0.277	0.322	0.322	0.406	0.500	0.500	0.594	0.719	0.812	0.906	0.875
10	10.750	0.165	0.250	0.307	0.365	0.365	0.500	0.500	0.594	0.719	0.844	1.000	1.125	1.000
12	12.750	0.180	0.250	0.330	0.375	0.406	0.562	0.500	0.688	0.844	1.000	1.125	1.312	1.000
14	14.000	0.250	0.312	0.375	0.375	0.438	0.656	0.500	0.750	0.938	1.094	1.250	1.406	—
16	16.000	0.250	0.312	0.375	0.375	0.500	0.750	0.500	0.844	1.031	1.219	1.438	1.594	—
18	18.000	0.250	0.312	0.438	0.375	0.562	0.812	0.500	0.938	1.156	1.375	1.562	1.781	—
20	20.000	0.250	0.375	0.500	0.375	0.594	—	0.500	1.031	1.218	1.500	1.750	1.969	—
22	22.000	0.250	—	—	0.375	—	0.969	0.500	—	—	—	—	—	—
24	24.000	0.250	0.375	0.562	0.375	0.688	—	0.500	1.219	1.531	1.812	2.062	2.344	—
26	26.000	—	—	—	0.375	—	—	0.500	—	—	—	—	—	—
30	30.000	0.312	0.500	0.625	0.375	—	—	0.500	—	—	—	—	—	—
36	36.000	0.312	0.500	0.625	0.375	0.750	—	0.500	—	—	—	—	—	—
40	40.000	—	—	—	0.375	—	—	0.500	—	—	—	—	—	—
42	42.000	—	—	—	0.375	—	—	0.500	—	—	—	—	—	—
48	48.000	—	—	—	0.375	—	—	0.500	—	—	—	—	—	—

Nominal Inside Diameter														
1/2	0.840	0.674	—	—	0.622	0.622	—	0.546	0.546	—	—	—	0.464	0.252
3/4	1.050	0.884	—	—	0.824	0.824	—	0.742	0.742	—	—	—	0.612	0.434
1	1.315	1.097	—	—	1.049	1.049	—	0.957	0.957	—	—	—	0.815	0.599
1 1/4	1.660	1.442	—	—	1.380	1.380	—	1.278	1.278	—	—	—	1.160	0.896
1 1/2	1.900	1.682	—	—	1.610	1.610	—	1.500	1.500	—	—	—	1.338	1.100
2	2.375	2.157	—	—	2.067	2.067	—	1.939	1.939	—	—	—	1.687	1.503
2 1/2	2.875	2.635	—	—	2.469	2.469	—	2.323	2.323	—	—	—	2.125	1.771
3	3.500	3.260	—	—	3.068	3.068	—	2.900	2.900	—	—	—	2.624	2.300
3 1/2	4.000	3.760	—	—	3.548	3.548	—	3.364	3.364	—	—	—	—	2.726
4	4.500	4.260	—	—	4.026	4.026	—	3.826	3.826	—	3.624	—	3.438	3.152
5	5.563	5.295	—	—	5.047	5.047	—	4.813	4.813	—	4.563	—	4.313	4.063
6	6.625	6.357	—	—	6.065	6.065	—	5.761	5.761	—	5.501	—	5.187	4.897
8	8.625	8.329	8.125	8.071	7.981	7.981	7.813	7.625	7.625	7.437	7.187	7.001	6.813	6.875
10	10.750	10.420	10.250	10.136	10.020	10.020	9.750	9.750	9.562	9.312	9.062	8.750	8.500	8.750
12	12.750	12.390	12.250	12.090	12.000	11.938	11.626	11.750	13.374	11.062	10.750	10.500	10.126	10.750
14	14.000	13.500	13.376	13.250	13.250	13.124	12.812	13.000	12.500	12.124	11.812	11.500	11.188	—
16	16.000	15.500	15.376	15.250	15.250	15.000	14.688	15.000	14.312	13.938	13.562	13.124	12.812	—
18	18.000	17.500	17.376	17.124	17.250	16.876	16.500	17.000	16.124	15.688	15.250	14.876	14.438	—
20	20.000	19.500	19.250	19.000	19.250	18.812	18.376	19.000	17.938	17.438	17.000	16.500	16.062	—
22	22.000	21.500	—	—	21.250	—	—	21.000	—	—	—	—	—	—
24	24.000	23.500	23.250	22.876	23.250	22.624	22.062	23.000	21.562	20.938	20.376	19.876	19.312	—
26	26.000	—	—	—	25.250	—	—	25.000	—	—	—	—	—	—
30	30.000	29.376	29.000	28.750	29.250	—	—	29.000	—	—	—	—	—	—
36	36.000	35.376	35.000	34.750	35.250	34.500	—	35.000	—	—	—	—	—	—
40	40.000	—	—	—	39.250	—	—	39.000	—	—	—	—	—	—
42	42.000	—	—	—	41.250	—	—	41.000	—	—	—	—	—	—
48	48.000	—	—	—	47.250	—	—	47.000	—	—	—	—	—	—

† Schedule 10 for sizes 14" and larger. Sizes 12" and smaller are Light Wall Thickness, or Stainless Steel Schedule 10S.

Extra Strong Wall Thicknesses are identical to Stainless Steel Schedule 80S in sizes thru 12".

§ Standard Wall Thicknesses are identical to Stainless Steel Schedule 40S in sizes thru 12".

Dimensional Tolerances for Forged Pipe Flanges

Listed below are the Dimensional Tolerances to which flanges are manufactured. These tolerances are a part of ASME B16.5 except where noted otherwise. The limits given are maximum, and products

will normally run much closer to nominal dimensions than to these permitted extremes. Rigid inspection procedures assure the maintenance of high standards of accuracy in regular day to day production.

Threaded, Socket-Welded, Slip-On, Lap Joint and Blind			Welding Neck		
Inside Dia.	Threaded	To Standard Gauge Limits	Inside Dia.	10" and Smaller	± 0.03" (0.8mm)
	Socket-Welding Slip-On and Lap Joint	10" and Smaller + 0.03" (0.8mm), - 0" 12" and Larger + 0.06" (1.6mm), - 0"		12" thru 18"	± 0.06" (1.6mm)
Dia. of Contact Face	0.06" Raised Face	± 0.03" (0.8mm)	Dia. of Contact Face	20" thru 42"	+ 0.12" (3.2mm), - 0.06" (1.6mm)
	0.25" Raised Face Tongue and Groove Male, Female	± 0.02" (0.5mm)		Dia. of Hub at Point of Welding	0.06" Raised Face
Dia. of Counterbore	10" and Smaller	+ 0.03" (0.8mm), - 0"	Dia. of Hub at Point of Welding	0.25" Raised Face	± 0.02" (0.5mm)
	12" thru 42"	+ 0.06" (1.6mm), - 0"		5" and Smaller	Tongue and Groove Male, Female
Drilling	Bolt Circle	± 0.06" (1.6mm)	Dia. of Hub at Point of Welding	6" and Larger	+ 0.09" (2.4mm), - 0.03" (0.8mm) + 0.16" (4.0mm), - 0.03" (0.8mm)
	Bolt hole spacing	± 0.03" (0.8mm)		Drilling	Bolt Circle
	Eccentricity of Bolt Circle with Respect to Facing	2 1/2" and Smaller 0.03" Max. (0.8mm)	Bolt hole spacing		Bolt hole spacing
		3" and Larger 0.06" Max. (1.6mm)		Eccentricity of Bolt Circle with Respect to Facing	2 1/2" and Smaller 0.03" Max. (0.8mm)
Thickness	18" and Smaller	+ 0.12" (3.2mm), - 0"	Thickness	3" and Larger 0.06" Max. (1.6mm)	
	20" thru 42"	+ 0.19" (4.8mm), - 0"		18" and Smaller	+ 0.12" (3.2mm), - 0"
Ring Joint Facing			Length Thru Hub	Over 18"	+ 0.19" (4.8mm), - 0"
Depth	Dimension L	± 0.016" (0.4mm), - 0"		4" and Smaller	+ 0.06", - 0"
Width	Dimension D	± 0.008"	5" to 10" inclusive	+ 0.06", - 0.12"	
Pitch Dia.	Dimension P	± 0.005"	12" and Larger	+ 0.12", - 0.18"	
Rad. at Bottom	0.06" and Smaller Larger than 0.06"	+ 0.03" - 0" ± 0.03"	Inside and outside diameter of large and small tongue and groove and female ± 0.02".		
Angle	23° Angle	± 1/2°	For orifice flanges (not covered by ASME B16.5) the usual tolerance on the dimension 0.94" is ± 0.02" for sizes 3" and smaller, ± 0.03" for sizes 4" and larger. Regular flange tolerances apply to all other dimensions.		
B16.47 Series A Rad. @ Bottom		Max			