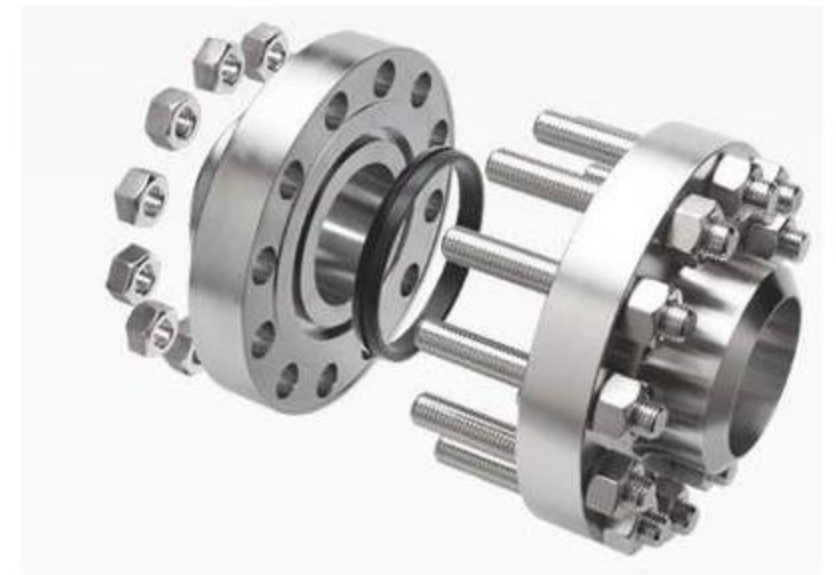




AL SAAD CO
ENGINEERING CONSULTING

Flange



All the Flanges
made by
best manufactures
the catalogue for reviewing



AL SAAD CO

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Materials	Flange Specifications	Types of Flange
Carbon steel Stainless steel Alloy steel Special steel Others as specified	ANSI B16.5 JIS MSS SP 44 API 605 DIN BS EN 1092-2007 Many other specs	Weldneck Socket weld Blind Threaded Slip on and special types

Flanges



Blind Flange



Plate Flange



Forged Ring



Forging



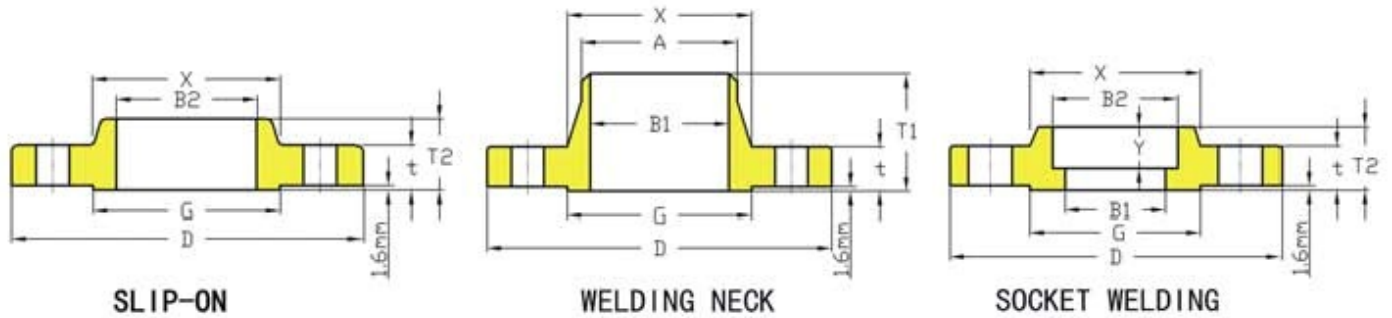
Forged Nozzle

Weld Neck Flanges



ANSI B 16.5

CLASS 150 FLANGES



Unit: mm

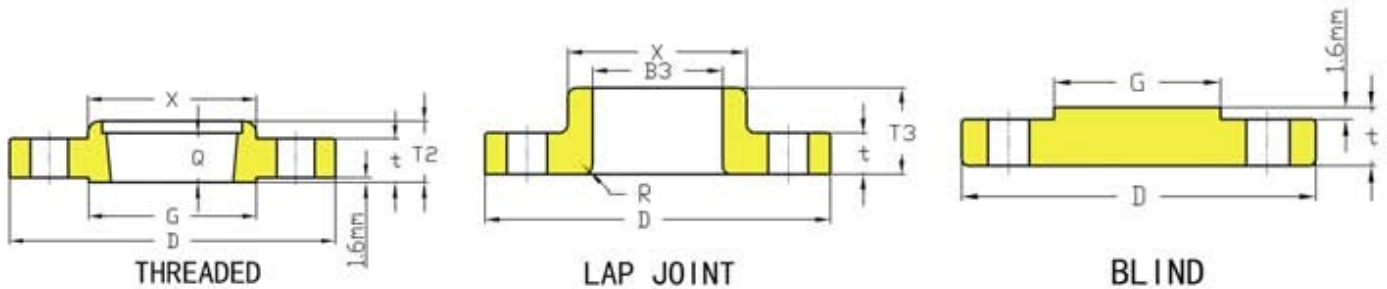
Nominal Pipe Size	Outside Diam.	O.D. of Raised Face	Diam. at Base of Hub	Thickness	BORE			LENGTH THRU HUB			Diam. of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket Welding	Slip-on Socket Welding	Lap Joint	Welding Neck	Slip-on Threaded Socket Welding	Lap Joint			
					B1	B2	B3	T1	T2	T3			
1/2	89	35.1	30.2	11.2	15.7	22.4	22.9	47.8	15.7	15.7	21.3	3.0	15.7
3/4	99	42.9	38.1	12.7	20.8	27.7	28.2	52.3	15.7	15.7	26.7	3.0	15.7
1	108	50.8	49.3	14.2	26.7	34.5	35.1	55.6	17.5	17.5	33.5	3.0	17.5
1 1/4	117	63.5	58.7	15.7	35.1	43.2	43.7	57.2	20.6	20.6	42.2	4.8	20.6
1 1/2	127	73.2	65.0	17.5	40.9	49.5	50.0	62.0	22.4	22.4	48.3	6.4	22.4
2	152	91.9	77.7	19.1	52.6	62.0	62.5	63.5	25.4	25.4	60.5	7.9	25.4
2 1/2	178	104.6	90.4	22.4	62.7	74.7	75.4	69.9	28.4	28.4	73.2	7.9	28.4
3	191	127.0	108.0	23.9	78.0	90.7	91.4	69.9	30.2	30.2	88.9	9.7	30.2
3 1/2	216	139.7	122.2	23.9	90.2	103.4	104.1	71.4	31.8	31.8	101.6	9.7	31.8
4	229	157.2	134.9	23.9	102.4	116.1	116.8	76.2	33.3	33.3	114.3	11.2	33.3
5	254	185.7	163.6	23.9	128.3	143.8	144.5	88.9	36.6	36.6	141.2	11.2	36.6
6	279	215.9	192.0	25.4	154.2	170.7	171.5	88.9	39.6	39.6	168.4	12.7	39.6
8	343	269.7	246.1	28.4	202.7	221.5	222.3	101.6	44.5	44.5	219.2	12.7	44.5
10	406	323.9	304.8	30.2	254.5	276.4	277.4	101.6	49.3	49.3	273.1	12.7	49.3
12	483	381.0	365.3	31.8	304.8	327.2	328.2	114.3	55.6	55.6	323.9	12.7	55.6
14	533	412.8	400.1	35.1	336.6	359.2	360.2	127.0	57.2	79.2	355.6	12.7	57.2
16	597	469.9	457.2	36.6	387.4	410.5	411.2	127.0	63.5	87.4	406.4	12.7	63.5
18	635	533.4	505.0	39.6	438.2	461.8	462.3	139.7	68.3	96.8	457.2	12.7	68.3
20	699	584.2	558.8	42.9	489.0	513.1	514.4	144.5	73.2	103.1	508.0	12.7	73.2
24	813	692.2	663.4	47.8	590.6	616.0	616.0	152.4	82.6	111.3	609.6	12.7	82.6

Notes:

- (1) Class 150 flanges except Lap Joint will be furnished with 0.05*(1.6mm) raised face, which is included in 'Thickness'(t) and 'Length through Hub' (T1), (T2)
- (2) For Slip-on, Threaded, Socket Welding and Lap Joint Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees

ANSI B 16.5

CLASS 150 FLANGES



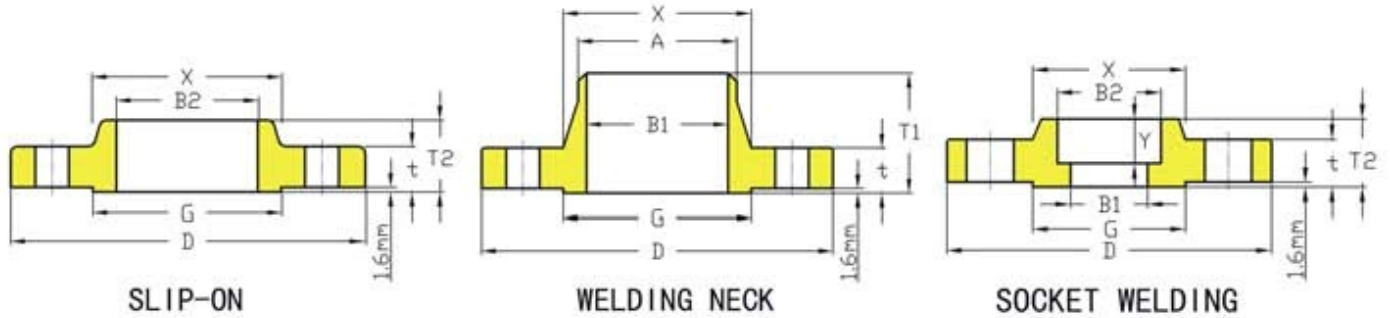
Unit: mm

Nominal Pipe Size	Depth of Socket Y	DRILLING			BOLTING			APPROXIMATE WEIGHT										
		Bolt Circle Diam.	Number of Holes	Diam. of Holes	Diam. of Bolts (inch)	Machine Bolt Length		Stud Bolt Length	Welding Neck		Slip-on and Threaded		Lap Joint		Blind		Socket Welding	
						Raised Face	Raised Face		Ring Joint	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg
1/2	9.7	60.5	4	15.7	1/2	50.8	57.2	-	0.51	1.10	0.47	1.00	0.51	1.00	0.47	1.00	0.47	1.00
3/4	11.2	69.9	4	15.7	1/2	50.8	63.5	-	0.74	1.62	0.58	1.30	0.64	1.40	0.63	1.40	0.59	1.30
1	12.7	79.2	4	15.7	1/2	57.2	63.5	76.2	1.07	2.40	0.86	1.90	0.93	1.80	0.94	2.10	0.87	1.90
1 1/4	14.2	88.9	4	15.7	1/2	57.2	69.9	82.6	1.40	3.10	1.08	2.40	1.16	2.00	1.23	2.70	1.11	2.40
1 1/2	15.7	98.6	4	15.7	1/2	63.5	69.9	82.6	1.81	4.00	1.41	3.10	1.51	3.30	1.62	3.60	1.45	3.20
2	17.5	120.7	4	19.1	5/8	69.9	82.6	95.3	2.64	5.70	2.26	5.00	2.38	5.20	2.64	5.80	2.33	5.00
2 1/2	19.1	139.7	4	19.1	5/8	76.2	88.9	101.6	4.28	9.40	3.43	7.60	3.60	7.90	4.06	9.00	3.55	7.80
3	20.6	152.4	4	19.1	5/8	76.2	88.9	101.6	5.18	11.40	3.90	8.50	4.06	8.90	4.98	10.80	4.02	8.90
3 1/2	22.4	177.8	8	19.1	5/8	76.2	88.9	101.6	6.30	13.88	4.99	11.00	4.99	11.00	6.21	13.00	4.99	11.00
4	23.9	190.5	8	19.1	5/8	76.2	88.9	101.6	7.32	16.10	5.75	12.70	5.96	13.00	7.41	16.30	5.99	13.20
5	23.9	215.9	8	22.4	3/4	82.6	95.3	108.0	8.95	19.60	6.22	13.70	6.44	14.00	8.76	19.30	6.68	14.70
6	26.9	241.3	8	22.4	3/4	82.6	101.6	114.3	11.26	24.80	7.41	16.32	7.61	16.70	11.31	24.90	7.99	17.60
8	31.8	298.5	8	22.4	3/4	88.9	108.0	120.7	18.20	40.09	12.36	27.30	12.66	27.90	19.92	43.90	13.29	29.30
10	33.3	362.0	12	25.4	7/8	101.6	114.3	127.0	24.94	54.96	17.10	37.70	16.78	37.00	29.39	64.80	19.50	43.00
12	39.6	431.8	12	25.4	7/8	101.6	120.7	133.4	38.98	85.90	27.68	61.00	28.30	62.40	43.70	96.30	29.03	64.00
14	41.4	476.3	12	28.4	1	114.3	133.4	146.1	51.71	114.00	35.20	77.60	41.50	91.50	59.42	140.00	38.56	85.00
16	44.5	539.8	16	28.4	1	114.3	133.4	146.1	64.41	142.00	45.03	99.19	52.98	116.80	77.11	170.00	47.19	103.94
18	49.3	577.9	16	31.8	1 1/8	127.0	146.1	158.8	74.84	165.00	49.71	109.60	59.00	130.00	94.80	209.00	54.43	120.00
20	54.1	635.0	20	31.8	1 1/8	139.7	158.8	171.5	89.36	197.00	65.50	140.00	72.12	159.00	123.38	272.00	70.31	155.00
24	63.5	749.3	20	35.1	1 1/4	152.4	171.5	184.2	119.66	263.80	90.50	199.50	99.52	218.30	188.24	415.00	95.25	210.00

- (3) Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub
- (4) The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree. To accomplish parallelism, spot facing is carried out according to MSS SP-9, without reducing thickness(t).
- (5) Depth of Socket (Y) is covered by ANSI B16.5 only in sizes through 3 inch, over 3 inch is at the manufacturer's option.

ANSI B 16.5

CLASS 300 FLANGES



Unit: mm

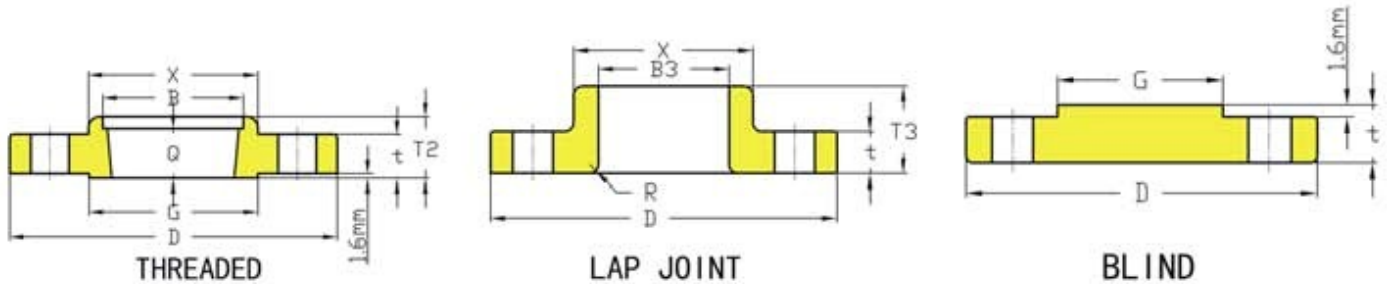
Nominal Pipe Size	Outside Diam.	O.D. of Raised Face	Diam. at Base of Hub	Thickness	BORE				LENGTH THRU HUB			Diam. of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket Welding	Slip-on Socket Welding	Lap Joint	Counter Bore Threaded Min.	Welding Neck	Slip-on Threaded Socket Welding	Lap Joint			
					B1	B2	B3	B	T1	T2	T3			
1/2	95	35.1	38.1	14.2	15.7	22.4	22.9	23.6	52.3	22.4	22.4	21.3	3.0	15.7
3/4	117	42.9	47.8	15.7	20.8	27.7	28.2	29.0	57.2	25.4	25.4	26.7	3.0	15.7
1	124	50.8	53.8	17.5	26.7	34.5	35.1	35.8	62.0	26.9	26.9	33.5	3.0	17.5
1 1/4	133	63.5	63.5	19.1	35.1	43.2	43.7	44.5	65.0	26.9	26.9	42.2	4.8	20.6
1 1/2	155	73.2	69.9	20.6	40.9	49.5	50.0	50.5	68.3	30.2	30.2	48.3	6.4	22.4
2	165	91.9	84.1	22.4	52.6	62.0	62.5	63.5	69.9	33.3	33.3	60.5	7.9	28.4
2 1/2	191	104.6	100.1	25.4	62.7	74.7	75.4	76.2	76.2	38.1	38.1	73.2	7.9	31.8
3	210	127.0	117.3	28.4	78.0	90.7	91.4	92.2	79.2	42.9	42.9	88.9	9.7	31.8
3 1/2	229	139.7	133.4	30.2	90.2	103.4	104.1	104.9	81.0	44.5	44.5	101.6	9.7	36.6
4	254	157.2	146.1	31.8	102.4	116.1	116.8	117.6	85.9	47.8	47.8	114.3	11.2	36.6
5	279	185.7	177.8	35.1	128.3	143.8	144.5	144.5	98.6	50.8	50.8	141.2	11.2	42.9
6	318	215.9	206.2	36.6	154.2	170.7	171.5	171.5	98.6	52.3	52.3	168.4	12.7	46.0
8	381	269.7	260.4	41.1	202.7	221.5	222.3	222.3	111.3	62.0	62.0	219.2	12.7	50.8
10	445	323.9	320.5	47.8	254.5	276.4	277.4	276.4	117.3	66.5	95.3	273.1	12.7	55.6
12	521	381.0	374.7	50.8	304.8	327.2	328.2	328.7	130.0	73.2	101.6	323.9	12.7	60.5
14	584	412.8	425.5	53.8	336.6	359.2	360.2	360.4	142.7	76.2	111.3	355.6	12.7	63.5
16	648	469.9	482.6	57.2	387.4	410.5	411.2	411.2	146.1	82.6	120.7	406.4	12.7	68.3
18	711	533.4	533.4	60.5	438.2	461.8	462.3	462.0	158.8	88.9	130.0	457.2	12.7	69.9
20	775	584.2	587.2	63.5	489.0	513.1	514.4	512.8	162.1	95.3	139.7	508.0	12.7	73.2
24	914	692.2	701.5	69.9	590.6	616.0	616.0	614.4	168.1	106.4	152.4	609.6	12.7	82.6

Notes:

- (1) Class 300 flanges except Lap Joint will be furnished with 0.06*(1.6mm) raised face, which is included in 'Thickness'(t) and 'Length through Hub' (T1),(T2)
- (2) For Slip-on, Threaded, Socket Welding and Lap Joint Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees

ANSI B 16.5

CLASS 300 FLANGES



Unit: mm

Nominal Pipe Size	Depth of Socket Y	DRILLING			BOLTING			APPROXIMATE WEIGHT										
		Bolt Circle Diam.	Number of Holes	Diam. of Holes	Diam. of Bolts (inch)	Machine Bolt Length		Stud Bolt Length	Welding Neck		Slip-on and Threaded		Lap Joint		Blind		Socket Welding	
						Raised Face	Raised Face		Ring Joint	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg
1/2	9.7	66.5	4	15.7	1/2	57.2	63.5	76.2	0.78	1.70	0.64	1.40	0.71	1.30	0.64	1.40	0.66	1.40
3/4	11.2	82.6	4	19.1	5/8	63.5	76.2	88.9	1.34	3.00	1.15	2.50	1.20	2.50	1.16	2.50	1.19	2.60
1	12.7	88.9	4	19.1	5/8	63.5	76.2	88.9	1.64	3.60	1.39	3.10	1.47	3.00	1.42	3.00	1.44	3.20
1 1/4	14.2	98.6	4	19.1	5/8	69.9	82.6	95.3	2.06	4.50	1.67	3.70	1.79	3.70	1.79	3.90	1.73	3.80
1 1/2	15.7	114.3	4	22.4	3/4	76.2	88.9	101.6	3.06	6.70	2.53	5.60	2.62	5.60	2.68	5.90	2.62	5.80
2	17.5	127.0	8	19.1	5/8	76.2	88.9	101.6	3.54	7.50	2.89	6.20	3.03	6.20	3.20	6.80	2.99	6.50
2 1/2	19.1	149.4	8	22.4	3/4	82.6	101.6	114.3	5.38	11.70	4.35	9.40	4.54	9.30	4.88	10.50	4.54	9.90
3	20.6	168.1	8	22.4	3/4	88.9	108.0	120.7	7.32	16.10	5.84	12.80	6.04	12.70	6.79	14.90	6.20	13.70
3 1/2	22.4	184.2	8	22.4	3/4	95.3	108.0	127.0	9.00	18.00	7.72	17.00	7.72	17.00	9.53	21.00		
4	23.9	200.2	8	22.4	3/4	95.3	114.3	127.0	11.62	24.90	10.13	22.30	10.07	22.20	12.00	26.50		
5	23.9	235.0	8	22.4	3/4	108.0	120.7	133.4	15.55	33.30	12.58	27.70	12.52	27.60	15.96	35.20		
6	26.9	269.7	12	22.4	3/4	108.0	120.7	139.7	19.95	43.40	16.04	35.40	16.15	35.20	21.20	46.70		
8	31.8	330.2	12	25.4	7/8	120.7	139.7	152.4	30.90	67.20	24.50	54.00	24.69	53.70	34.60	76.30		
10	33.3	387.4	16	28.4	1	139.7	158.8	171.5	44.70	96.40	34.16	75.30	39.92	88.00	55.34	122.00		
12	39.6	450.9	16	31.8	1 1/8	146.1	171.5	184.2	64.41	142.00	51.26	113.00	58.70	129.40	78.90	174.00		
14	41.4	514.4	20	31.8	1 1/8	158.8	177.8	190.5	88.92	194.70	72.12	159.00	83.46	184.00	107.05	236.00		
16	44.5	571.5	20	35.1	1 1/4	165.1	190.5	203.2	112.94	249.00	90.40	199.30	106.14	234.00	139.25	307.00		
18	49.3	628.7	24	35.1	1 1/4	171.5	196.9	209.6	138.34	305.00	109.00	240.30	133.95	295.30	176.90	396.00		
20	54.1	685.8	24	35.1	1 1/4	184.2	203.2	222.3	167.37	369.00	136.00	300.00	157.65	347.60	223.17	492.00		
24	63.5	812.8	24	41.1	1 1/2	203.2	228.6	254.0	238.40	525.67	204.00	449.70	240.40	530.00	342.00	754.00		

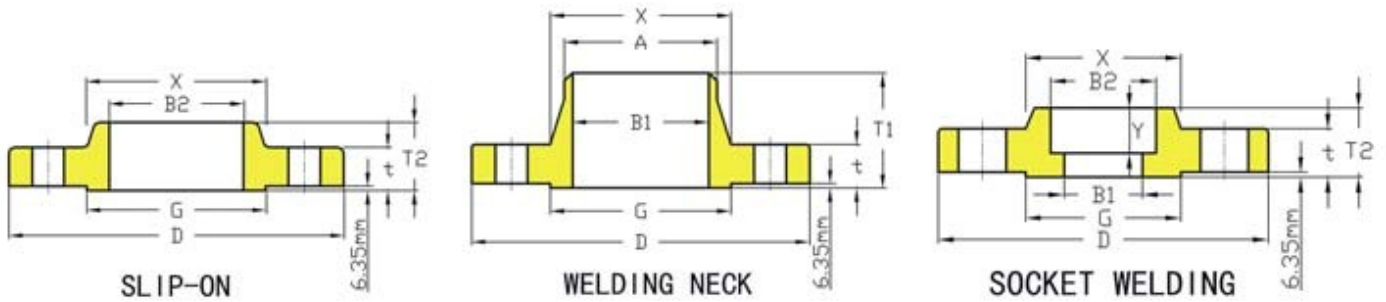
(3) Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub

(4) The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree. To accomplish parallelism, spot facing is carried out according to MSS SP-9, without reducing thickness(t).

(5) Depth of Socket (Y) is covered by ANSI B16.5 only in sizes through 3 inch, over 3 inch is at the manufacturer's option.

ANSI B 16.5

CLASS 600 FLANGES



Unit: mm

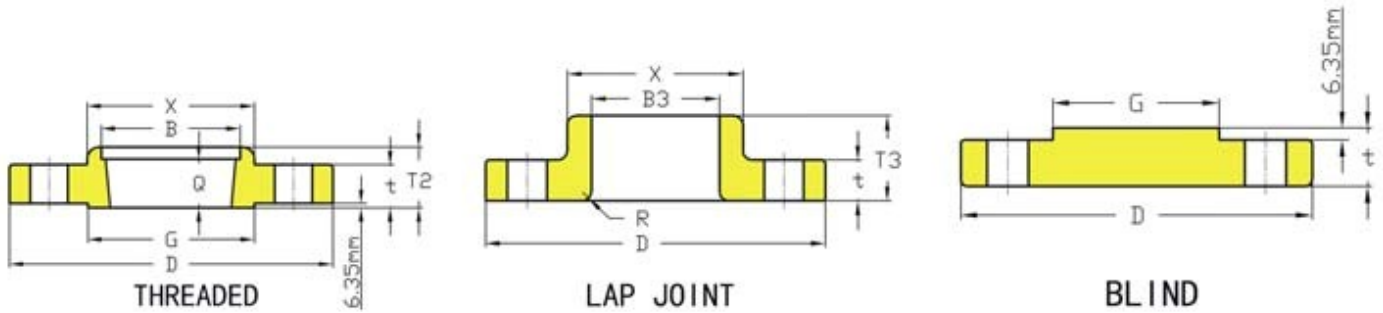
Nominal Pipe Size	Diam. Outside	O.D. of Raised Face	Diam. at Base of Hub	Thickness	BORE				LENGTH THRU HUB			Diam. of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket Welding	Slip-on Socket Welding	Lap Joint	Counter Bore Min.	Welding Neck	Slip-on Threaded Socket Welding	Lap Joint			
					B1	B2	B3	B	T1	T2	T3			
1/2	95	35.1	38.1	14.2	See Note (1) To be specified by purchaser	22.4	22.9	23.6	52.3	22.4	22.4	21.3	3.0	15.7
3/4	117	42.9	47.8	15.7		27.7	28.2	29.0	57.2	25.4	25.4	26.7	3.0	15.7
1	124	50.8	53.8	17.5		34.5	35.1	35.8	62.0	26.9	26.9	33.5	3.0	17.5
1 1/4	133	63.5	63.5	20.6		43.2	43.7	44.5	66.5	28.4	28.4	42.2	4.8	20.6
1 1/2	155	73.2	69.9	22.4		49.5	50.0	50.5	69.9	31.8	31.8	48.3	6.4	22.4
2	165	91.9	84.1	25.4		62.0	62.5	63.5	73.2	36.6	36.6	60.5	7.9	28.4
2 1/2	191	104.6	100.1	28.4		74.7	75.4	76.2	79.2	41.1	41.1	73.2	7.9	31.8
3	210	127.0	117.3	31.8		90.7	91.4	92.2	82.6	46.0	46.0	88.9	9.7	35.1
3 1/2	229	139.7	133.4	35.1		103.4	104.1	104.9	85.9	49.3	49.3	101.6	9.7	39.6
4	273	157.2	152.4	38.1		116.1	116.8	117.6	101.6	53.8	53.8	114.3	11.2	41.1
5	330	185.7	189.0	44.5		143.8	144.5	144.5	114.3	60.5	60.5	141.2	11.2	47.8
6	356	215.9	222.3	47.8		170.7	171.5	171.5	117.3	66.5	66.5	168.4	12.7	50.8
8	419	269.7	273.1	55.6		221.5	222.3	222.3	133.4	76.2	76.2	219.2	12.7	57.2
10	508	323.9	342.9	63.5		276.4	277.4	276.4	152.4	85.9	111.3	273.1	12.7	65.0
12	559	381.0	400.1	66.5		327.2	328.2	328.7	155.4	91.9	117.3	323.9	12.7	69.9
14	603	412.8	431.8	69.9		359.2	360.2	360.4	165.1	93.7	127.0	355.6	12.7	73.2
16	686	469.9	495.3	76.2		410.5	411.2	411.2	177.8	106.4	139.7	406.4	12.7	77.7
18	743	533.4	546.1	82.6		461.8	462.3	462.0	184.2	117.3	152.4	457.2	12.7	79.2
20	813	584.2	609.6	88.9		513.1	514.4	512.8	190.5	127.0	165.1	508.0	12.7	82.6
24	940	692.2	717.6	101.6		616.0	616.0	614.4	203.2	139.7	184.2	609.6	12.7	91.9

Notes:

- (1) Class 600 flanges except Lap Joint will be furnished with 0.25"(6.35mm) raised face, which is not included in 'Thickness'(t) and 'Length through Hub' (T1),(T2)
- (2) For Slip-on, Threaded, Lap Joint and Socket Welding Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees

ANSI B 16.5

CLASS 600 FLANGES



Unit: mm

Nominal Pipe Size	Depth of Socket Y	DRILLING			BOLTING				APPROXIMATE WEIGHT									
		Bolt Circle Diam.	Number of Holes	Diam. of Holes	Diam. of Bolts (inch)	Stud Bolt Length			Welding Neck		Slip-on and Threaded		Lap Joint		Blind		Socket Welding	
						0.25" Raised Face	Male-Female Tongue-Groove	Ring Joint	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb
1/2	9.7	66.5	4	15.7	1/2	76.2	69.9	76.2	0.90	2.00	0.91	2.00	0.80	1.80	0.91	2.00	0.91	2.00
3/4	11.2	82.6	4	19.1	5/8	88.9	82.6	88.9	1.59	3.50	1.40	3.00	1.36	3.00	1.40	3.00	1.36	3.00
1	12.7	88.9	4	19.1	5/8	88.9	82.6	88.9	1.90	4.00	1.70	3.70	1.59	3.50	1.81	4.00	1.81	4.00
1 1/4	14.2	98.6	4	19.1	5/8	95.3	88.9	95.3	2.49	5.50	2.27	5.00	2.04	4.50	2.40	5.30	2.60	5.70
1 1/2	15.7	114.3	4	22.4	3/4	108.0	101.6	108.0	3.63	8.00	3.10	6.80	2.95	6.50	3.40	7.50	3.18	7.00
2	17.5	127.0	8	19.1	5/8	108.0	101.6	108.0	4.54	10.00	3.63	8.00	3.63	8.00	4.40	9.70	3.90	8.60
2 1/2	19.1	149.4	8	22.4	3/4	120.7	114.3	120.7	6.40	14.44	5.44	12.00	5.03	11.00	6.80	15.00	5.90	13.00
3	20.6	168.1	8	22.4	3/4	127.0	120.7	127.0	8.50	19.10	7.26	16.00	6.70	14.74	8.90	19.60	7.40	16.30
3 1/2	22.4	184.2	8	25.4	7/8	139.7	133.4	139.7	11.80	26.00	9.53	21.00	9.08	20.00	13.17	29.00		
4	23.9	215.9	8	25.4	7/8	146.1	139.7	146.1	17.27	38.52	14.97	33.00	14.06	31.00	18.60	41.00		
5	23.9	266.7	8	28.4	1	165.1	158.8	165.1	30.87	68.00	28.50	62.80	27.50	60.60	30.84	68.00		
6	26.9	292.1	12	28.4	1	171.5	165.1	171.5	36.77	81.00	36.32	80.00	35.38	78.00	38.00	83.80		
8	31.8	349.3	12	31.8	1 1/8	190.5	184.2	196.9	52.57	116.97	44.00	97.00	50.80	112.00	62.20	137.00		
10	33.3	431.8	16	35.1	1 1/4	215.9	209.6	215.9	86.26	191.52	76.20	168.00	74.00	163.00	102.00	224.90		
12	39.6	489.0	20	35.1	1 1/4	222.3	215.9	222.3	102.95	229.14	97.52	215.00	108.86	240.00	132.00	291.00		
14	41.4	527.1	20	38.1	1 3/8	235.0	228.6	235.0	122.16	271.88	102.00	224.80	111.00	244.70	158.00	348.304		
16	44.5	603.3	20	41.1	1 1/2	254.0	247.7	254.0	177.06	390.42	149.82	330.20	165.71	365.30	224.73	495.40		
18	49.3	654.1	20	44.5	1 5/8	273.1	266.7	273.1	215.65	475.40	180.10	396.00	194.00	427.70	285.00	628.30		
20	54.1	723.9	24	44.5	1 5/8	285.8	279.4	292.1	267.86	590.50	231.54	510.50	258.78	570.50	365.00	804.70		
24	63.5	838.2	24	50.8	1 7/8	330.2	323.9	336.6	372.00	818.40	330.00	725.50	362.00	798.00	533.45	1176.0		

(3) Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub

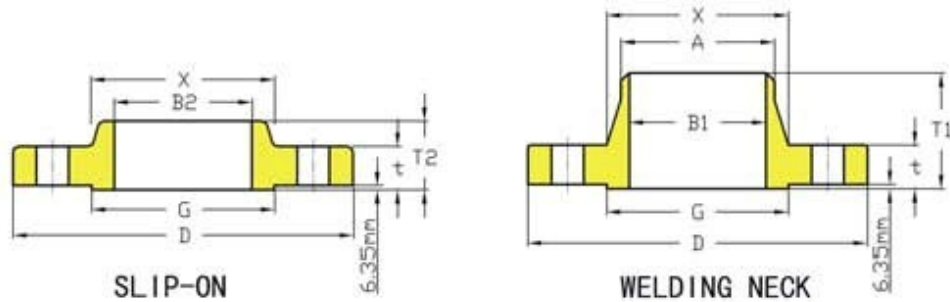
(4) The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree. To accomplish parallelism, spot facing is carried out according to MSS SP-9, without reducing thickness(t).

(5) Dimensions of sizes 1/2" through 3 1/2" are the same as for Class 400 Flanges

(6) Depth of Socket (Y) is covered by ANSI B16.5 only in size through 3 inch, over 3 inch is at the manufacturer's option.

ANSI B 16.5

CLASS 900 FLANGES



Unit: mm

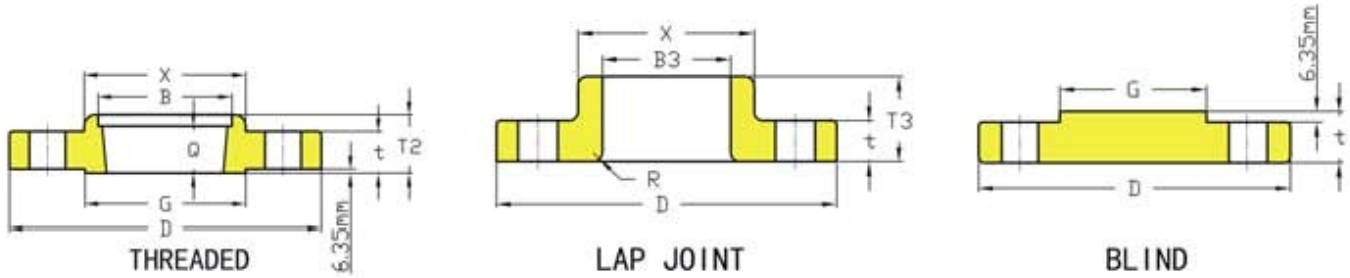
Nominal Pipe Size	Outside Diam. D	O.D.of Raised Face G	Diam. at Base of Hub X	Thick-ness t	BORE				LENGTH THRU HUB			Diam.of Hub at Bevel A
					Welding Neck	Slip-on	Lap Joint	Counter Bore Min.	Welding Neck	Slip-on and Threaded	Lap Joint	
					B1	B2	B3	B	T1	T2	T3	
1/2	121	35.1	38.1	22.4	See Note (1) To be specified by purchaser	22.4	22.9	23.6	60.5	31.8	31.8	21.3
3/4	130	42.9	44.5	25.4		27.7	28.2	29.0	69.9	35.1	35.1	26.7
1	149	50.8	52.3	28.4		34.5	35.1	35.8	73.2	41.1	41.1	33.5
1 1/4	159	63.5	63.5	28.4		43.2	43.7	44.5	73.2	41.1	41.1	42.2
1 1/2	178	73.2	69.9	31.8		49.5	50.0	50.5	82.6	44.5	44.5	48.3
2	216	91.9	104.6	38.1		62.0	62.5	63.5	101.6	57.2	57.2	60.5
2 1/2	244	104.6	124.0	41.1		74.7	75.4	76.2	104.6	63.5	63.5	73.2
3	241	127.0	127.0	38.1		90.7	91.4	92.2	101.6	53.8	53.8	88.9
4	292	157.2	158.8	44.5		116.1	116.8	117.6	114.3	69.9	69.9	114.3
5	349	185.7	190.5	50.8		143.8	144.5	144.5	127.0	79.2	79.2	141.2
6	381	215.9	235.0	55.6		170.7	171.5	171.5	139.7	85.9	85.9	168.4
8	470	269.7	298.5	63.5		221.5	222.3	222.3	162.1	101.6	114.3	219.2
10	546	323.9	368.3	69.9		276.4	277.4	276.4	184.2	108.0	127.0	273.1
12	610	381.0	419.1	79.2		327.2	328.2	328.7	200.2	117.3	142.7	323.9
14	641	412.8	450.9	85.9		359.2	360.2	360.4	212.9	130.0	155.4	355.6
16	705	469.9	508.0	88.9		410.5	411.2	411.2	215.9	133.4	165.1	406.4
18	787	533.4	565.2	101.6		461.8	462.3	462.0	228.6	152.4	190.5	457.2
20	857	584.2	622.3	108.0		513.1	514.4	512.8	247.7	158.8	209.6	508.0
24	1041	692.2	749.3	139.7		616.0	616.0	614.4	292.1	203.2	266.7	609.6

Notes:

- (1) For the inside diameter of pipes (corresponding to 'Bore (B1) of Welding Neck Flanges, refer to page 33.
- (2) Class 900 flanges except Lap Joint will be furnished with 0.25" (6.35mm) raised face, which is not included in 'Thickness'(t) and 'Length through Hub' (T1), (T2)
- (3) For Slip-on, Threaded and Lap Joint Flanges, the hubs can be shaped either vertical from base to top or tapered within the Limits of 7 degrees.

ANSI B 16.5

CLASS 900 FLANGES



Unit: mm

Nominal Pipe Size	Radius of Fillet R	Thread Length Q	DRILLING			BOLTING				APPROXIMATE WEIGHT							
			Bolt Circle Diam.	Number of Holes	Diam. of Holes	Diam. of Bolts (inch)	Stud Bolt Length			Welding Neck		Slip-on and Threaded		Lap Joint		Blind	
							0.25" Raised Face	Male-Female Tongue-Groove	Ring Joint								
										Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb
1/2	3.0	22.4	82.6	4	22.4	3/4	108.0	101.6	108.0	2.10	4.60	1.81	4.00	1.81	4.00	1.90	4.20
3/4	3.0	25.4	88.9	4	22.4	3/4	114.3	108.0	114.3	2.72	6.00	2.40	5.30	2.30	5.00	2.70	6.00
1	3.0	28.4	101.6	4	25.4	7/8	127.0	120.7	127.0	3.86	8.50	3.41	7.50	3.40	7.50	4.09	9.00
1 1/4	4.8	30.2	111.3	4	25.4	7/8	127.0	120.7	127.0	4.54	10.00	4.10	9.00	4.09	9.00	4.54	10.00
1 1/2	6.4	31.8	124.0	4	28.4	1	139.7	133.4	139.7	5.97	13.45	5.45	12.00	5.40	11.90	5.90	13.00
2	7.9	38.1	165.1	8	25.4	7/8	146.1	139.7	146.1	10.92	24.52	9.98	22.00	9.67	21.32	11.34	25.00
2 1/2	7.9	47.8	190.5	8	28.4	1	158.8	152.4	158.8	16.33	36.00	15.80	34.80	13.36	29.46	16.00	35.30
3	9.7	41.1	190.5	8	25.4	7/8	146.1	139.7	146.1	15.00	33.00	11.80	26.00	11.34	25.00	13.17	29.00
4	11.2	47.8	235.0	8	31.8	1 1/8	171.5	165.1	171.5	23.13	51.00	23.20	51.00	22.60	48.50	24.50	54.00
5	11.2	53.8	279.4	8	35.1	1 1/4	190.5	184.2	190.5	38.50	84.90	37.65	83.00	36.74	81.00	39.46	87.00
6	12.7	57.2	317.5	12	31.8	1 1/8	190.5	184.2	196.9	49.89	110.00	48.30	106.50	47.50	104.70	51.50	113.50
8	12.7	63.5	393.7	12	38.1	1 3/8	222.3	215.9	222.3	80.63	179.29	75.00	166.30	86.00	189.60	89.00	106.20
10	12.7	71.4	469.9	16	38.1	1 3/8	235.0	228.6	235.0	119.05	264.60	111.13	245.00	125.64	277.00	131.54	290.00
12	12.7	76.2	533.4	20	38.1	1 3/8	254.0	247.7	254.0	157.97	346.00	146.00	321.80	167.00	368.00	187.00	412.30
14	12.7	82.6	558.8	20	41.1	1 1/2	273.1	266.7	292.1	181.60	400.40	172.36	380.00	180.07	397.00	224.07	494.00
16	12.7	85.9	616.0	20	44.5	1 5/8	285.8	279.4	298.5	224.73	495.50	192.95	425.40	211.11	465.40	272.40	600.50
18	12.7	88.9	685.8	20	50.8	1 7/8	323.9	317.5	333.6	308.72	680.60	272.40	600.50	295.10	650.60	385.90	850.80
20	12.7	91.9	749.3	20	53.8	2	349.3	342.9	362.0	376.82	830.70	331.42	730.60	367.74	810.70	488.00	1076.0
24	12.7	101.6	901.7	20	66.5	2 1/2	438.2	431.8	457.2	685.00	1510.0	632.00	1393.30	700.00	1543.0	905.00	1995.0

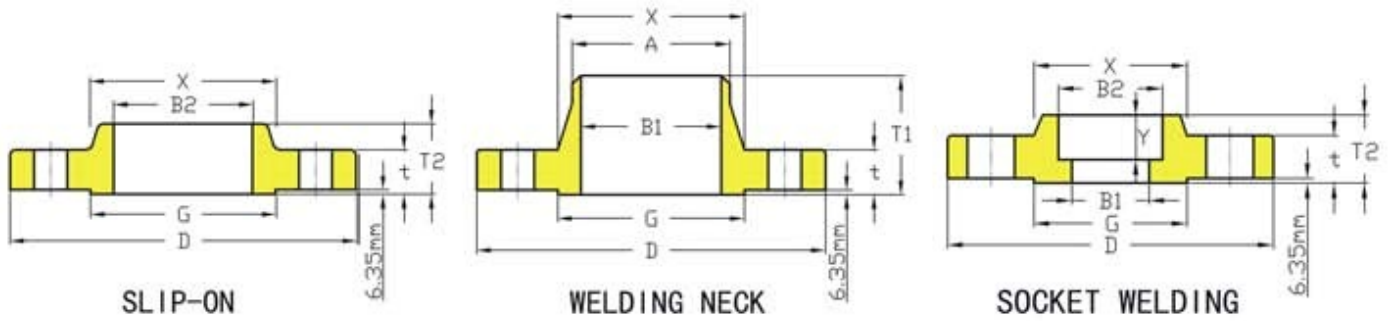
(4) Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub

(5) The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree. To accomplish parallelism, spot facing is carried out according to MSS SP-9, without reducing thickness (t)

(6) Dimensions of size 1/2" through 2 1/2" are the same as for Class 1500 Flanges.

ANSI B 16.5

CLASS 1500 FLANGES



Unit: mm

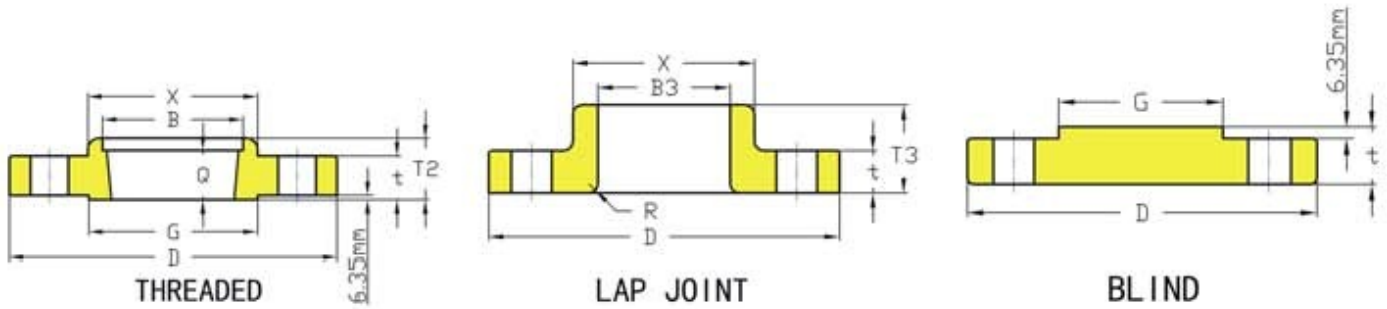
Nominal Pipe Size	Outside Diam.	O.D. of Raised Face	Diam. at Base of Hub	Thickness	BORE				LENGTH THRU HUB			Diam. of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket Welding	Slip-on Socket Welding	Lap Joint	Counter Bore Min.	Welding Neck	Slip-on Threaded Socket Welding	Lap Joint			
					B1	B2	B3	B	T1	T2	T3			
1/2	121	35.1	38.1	22.4	See Note (1) To be specified by purchaser	22.4	22.9	23.6	60.5	31.8	31.8	21.3	3.0	22.4
3/4	130	42.9	44.5	25.4		27.7	28.2	29.0	69.9	35.1	35.1	26.7	3.0	25.4
1	149	50.8	52.3	28.4		34.5	35.1	35.8	73.2	41.1	41.1	33.5	3.0	28.4
1 1/4	159	63.5	63.5	28.4		43.2	43.7	44.5	73.2	41.1	41.1	42.2	4.8	30.2
1 1/2	178	73.2	69.9	31.8		49.5	50.0	50.5	82.6	44.5	44.5	48.3	6.4	31.8
2	216	91.9	104.6	38.1		62.0	62.5	63.5	101.6	57.2	57.2	60.5	7.9	38.1
2 1/2	244	104.6	124.0	41.1		74.7	75.4	76.2	104.6	63.5	63.5	73.2	7.9	47.8
3	267	127.0	133.4	47.8		90.7	91.4	92.2	117.3	73.2	73.2	88.9	9.7	50.8
4	311	157.2	162.1	53.8		116.1	116.8	117.6	124.0	90.4	90.4	114.3	11.2	57.2
5	375	185.7	196.9	73.2		143.8	144.5	144.5	155.4	104.6	104.6	141.2	11.2	63.5
6	394	215.9	228.6	82.6		170.7	171.5	171.5	171.5	119.1	119.1	168.4	12.7	69.9
8	483	269.7	292.1	91.9		221.5	222.3	222.3	212.9	142.7	142.7	219.2	12.7	76.2
10	584	323.9	368.3	108.0		276.4	277.4	276.4	254.0	158.8	177.8	273.1	12.7	84.1
12	673	381.0	450.9	124.0		327.2	328.2	328.7	282.4	180.8	218.9	323.9	12.7	91.9
14	749	412.8	495.3	133.4		359.2	360.2	360.4	298.5	-	241.3	355.6	12.7	-
16	826	469.9	552.5	146.1	410.5	411.2	411.2	311.2	-	260.4	406.4	12.7	-	
18	914	533.4	596.9	162.1	461.8	462.3	462.0	327.2	-	276.4	457.2	12.7	-	
20	984	584.2	641.4	177.8	513.1	514.4	512.8	355.6	-	292.1	508.0	12.7	-	
24	1168	692.2	762.0	203.2	616.0	616.0	614.4	406.4	-	330.2	609.6	12.7	-	

Notes:

- (1) For the inside diameter of pipes (corresponding to 'Bore (B1)' of Welding Neck Flanges), refer to page 33.
- (2) Class 1500 flanges except Lap Joint will be furnished with 0.25" (6.35mm) raised face, which is not included in 'Thickness'(t) and 'Length through Hub' (T1), (T2)
- (3) For Slip-on, Threaded, Lap Joint and Socket Welding Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees.

ANSI B 16.5

CLASS 1500 FLANGES



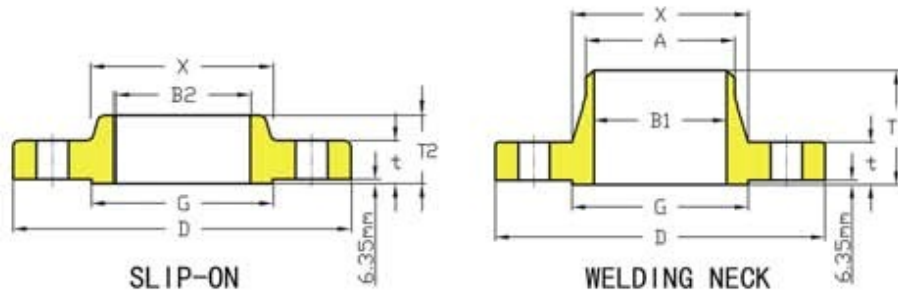
Unit: mm

Nominal Pipe Size	Depth of Socket Y	DRILLING			BOLTING			APPROXIMATE WEIGHT										
		Bolt Circle Diam.	Number of Holes	Diam. of Holes	Diam. of Bolts (inch)	Stud Bolt Length			Welding Neck		Slip-on and Threaded		Lap Joint		Blind		Socket Welding	
						0.25" Raised Face	Male-Female Tongue-Groove	Ring Joint	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb
1/2	9.7	82.6	4	22.4	3/4	108.0	101.6	108.0	2.10	4.60	1.80	4.00	1.80	4.00	1.90	4.18	1.81	4.00
3/4	11.2	88.9	4	22.4	3/4	114.3	108.0	114.3	2.72	6.00	2.33	5.00	2.28	5.00	2.72	6.00	2.81	6.20
1	12.7	101.6	4	25.4	7/8	127.0	120.7	127.0	3.86	8.50	3.41	7.50	3.40	7.50	4.08	9.00	3.61	8.00
1 1/4	14.2	111.3	4	25.4	7/8	127.0	120.7	127.0	4.54	10.00	4.10	9.00	4.09	10.80	4.30	9.50	4.99	11.00
1 1/2	15.7	124.0	4	28.4	1	139.7	133.4	139.7	5.97	13.00	5.45	12.00	5.40	11.90	5.90	13.00	6.76	14.90
2	17.5	165.1	8	25.4	7/8	146.1	139.7	146.1	10.92	24.00	10.50	23.00	9.67	21.32	11.30	25.00	10.89	24.00
2 1/2	19.1	190.5	8	28.4	1	158.8	152.4	158.8	16.34	36.00	15.80	34.80	13.35	29.46	16.00	35.30	16.34	36.00
3	20.6	203.2	8	31.8	1 1/8	177.8	171.5	177.8	21.79	48.00	21.77	48.00	17.65	38.00	21.79	48.00		
4	23.9	241.3	8	35.1	1 1/4	196.9	190.5	196.9	31.30	70.25	31.00	68.40	29.00	63.90	33.11	73.00		
5	23.9	292.1	8	41.1	1 1/2	247.7	241.3	247.7	59.02	139.35	58.80	129.60	54.00	119.00	60.00	132.30		
6	26.9	317.5	12	38.1	1 3/8	260.4	254.0	266.7	74.91	167.90	74.00	163.00	62.00	136.70	75.00	165.30		
8	31.8	393.7	12	44.5	1 5/8	292.1	285.8	323.9	123.83	306.34	117.73	258.00	129.73	236.00	136.98	302.00		
10	33.3	482.6	12	50.8	1 7/8	336.6	330.2	342.9	205.93	524.92	197.49	435.40	220.19	485.40	229.97	507.00		
12	39.6	571.5	16	53.8	2	374.7	368.3	387.4	306.00	769.74	264.41	582.00	286.02	630.60	316.78	698.50		
14	41.4	635.0	16	60.5	2 1/4	406.4	400.1	425.5	416.00	950.75	-	-	404.06	890.80	421.00	928.00		
16	44.5	704.9	16	66.5	2 1/2	444.5	438.2	469.9	567.50	1264.67	-	-	522.10	1151.00	559.90	1234.58		
18	49.3	774.7	16	73.2	2 3/4	495.3	489.0	527.1	736.00	1628.14	-	-	669.65	1476.30	761.00	1677.70		
20	54.1	831.9	16	79.2	3	539.8	533.4	565.2	929.00	2048.00	-	-	805.85	1776.60	967.00	2131.80		
24	63.5	990.6	16	91.9	3 1/2	616.0	609.6	647.7	1504.00	3408.36	-	-	1285.55	2834.00	1568.00	3456.80		

- (4) Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub
- (5) The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree. To accomplish parallelism, spot facing is carried out according to MSS SP-9, without reducing thickness (t)
- (6) Dimensions of size 1/2" through 2 1/2" are the same as for Class 900 Flanges.
- (7) Depth of Socket (Y) is covered by ANSI B16.5 only in sizes through 2 1/2" inch, over 2 1/2" inch is at the manufacturer's option.

ANSI B 16.5

CLASS 2500 FLANGES



Unit: mm

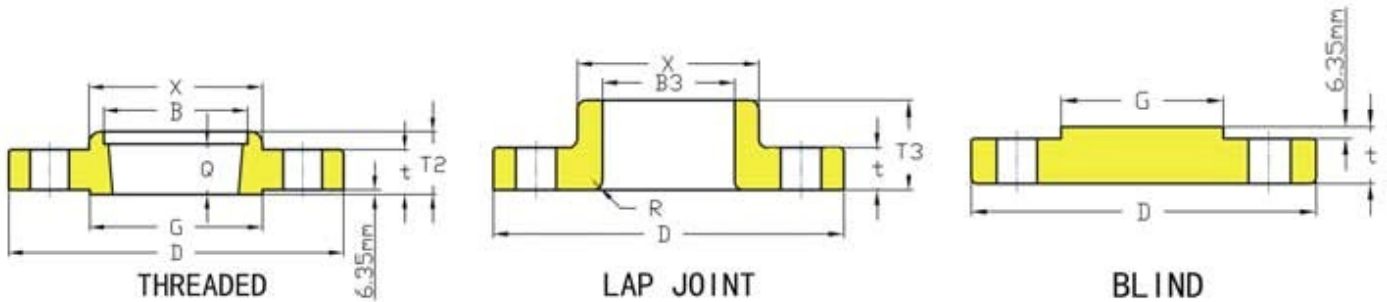
Nominal Pipe Size	Outside Diam.	O.D.of Raised Face	Diam. at Base of Hub	Thick-ness	BORE				LENGTH THRU HUB			Diam.of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck	Slip-on	Lap Joint	Counter Bore Min.	Welding Neck	Slip-on and Threaded	Lap Joint			
					B1	B2	B3	B	T1	T2	T3			
1/2	133	35.1	42.9	30.2	To be specified by purchaser	22.4	22.9	23.6	73.2	39.6	39.6	21.3	3.0	28.4
3/4	140	42.9	50.8	31.8		27.7	28.2	29.0	79.2	42.9	42.9	26.7	3.0	31.8
1	159	50.8	57.2	35.1		34.5	35.1	35.8	88.9	47.8	47.8	33.5	3.0	35.1
1 1/4	184	63.5	73.2	38.1		43.2	43.7	44.5	95.3	52.3	52.3	42.2	4.8	38.1
1 1/2	203	73.2	79.2	44.5		49.5	50.0	50.5	111.3	60.5	60.5	48.3	6.4	44.5
2	235	91.9	95.3	50.8		62.0	62.5	63.5	127.0	69.9	69.9	60.5	7.9	50.8
2 1/2	267	104.6	114.3	57.2		74.7	75.4	76.2	142.7	79.2	79.2	73.2	7.9	57.2
3	305	127.0	133.4	66.5		90.7	91.4	92.2	168.1	91.9	91.9	88.9	9.7	63.5
4	356	157.2	165.1	76.2		116.1	116.8	117.6	190.5	108.0	108.0	114.3	11.2	69.9
5	419	185.7	203.2	91.9		143.8	144.5	144.5	228.6	130.0	130.0	141.2	11.2	76.2
6	483	215.9	235.0	108.0		170.7	171.5	171.5	273.1	152.4	152.4	168.4	12.7	82.6
8	552	269.7	304.8	127.0		221.5	222.3	222.3	317.5	177.8	177.8	219.2	12.7	95.3
10	673	323.9	374.7	165.1	276.4	277.4	276.4	419.1	228.6	228.6	273.1	12.7	108.0	
12	762	381.0	441.5	184.2	327.2	328.2	328.7	463.6	254.0	254.0	323.9	12.7	120.7	

Notes:

- (1) For the inside diameter of pipes (corresponding to 'Bore (B1) of Welding Neck Flanges), refer to page 33.
- (2) Class 2500 flanges except Lap Joint will be furnished with 0.25" (6.35mm) raised face, which is not included in 'Thickness'(t) and 'Length through Hub' (T1), (T2)
- (3) For Slip-on, Threaded and Lap Joint Flanges, the hubs can be shaped either vertical from base to top or tapered with in the limits of 7 degrees.

ANSI B 16.5

CLASS 2500 FLANGES



Unit: mm

Nominal Pipe Size	DRILLING			BOLTING				APPROXIMATE WEIGHT							
	Bolt Circle Diam.	Number of Holes	Diam. of Holes	Diam. of Bolts (inch)	Stud Bolt Length			Welding Neck		Slip-on and Threaded		Lap Joint		Blind	
					0.25* Raised Face	Male-Female Tongue-Groove	Ring Joint								
	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb							
1/2	88.9	4	22.4	3/4	120.7	114.3	120.7	3.18	7.00	3.18	7.00	3.00	6.60	3.18	7.00
3/4	95.3	4	22.4	3/4	127.0	120.7	127.0	4.08	9.00	4.08	9.00	3.63	8.00	4.54	10.00
1	108.0	4	25.4	7/8	139.7	133.4	139.7	5.45	12.00	5.44	12.00	4.99	11.00	5.44	12.00
1 1/4	130.0	4	28.4	1	152.4	146.1	152.4	9.07	20.00	8.16	18.00	7.26	16.00	8.16	18.00
1 1/2	146.1	4	31.8	1 1/8	171.5	165.1	171.5	11.35	25.00	11.00	24.30	9.99	22.00	10.44	23.00
2	171.5	8	28.4	1	177.8	171.5	177.8	19.07	42.00	17.25	38.00	16.80	37.00	17.71	39.00
2 1/2	196.9	8	31.8	1 1/8	196.9	190.5	203.2	23.61	52.00	24.97	55.00	24.06	53.00	25.42	56.00
3	228.6	8	35.1	1 1/4	222.3	215.9	228.6	42.68	94.00	37.68	83.00	36.32	80.00	39.04	86.00
4	273.1	8	41.1	1 1/2	254.0	247.7	260.4	64.00	141.00	58.00	127.90	54.48	120.00	60.38	133.00
5	323.9	8	47.8	1 3/4	298.5	292.1	311.2	110.68	244.00	95.25	210.00	92.53	204.00	101.15	223.00
6	368.3	8	53.8	2	342.9	336.6	355.6	176.46	378.00	146.51	323.00	143.01	315.30	156.63	345.30
8	438.2	12	53.8	2	381.0	374.7	393.7	261.27	576.00	219.99	485.00	213.38	470.40	240.62	530.50
10	539.8	12	66.5	2 1/2	489.0	482.6	508.0	484.43	1068.00	419.57	925.00	408.60	900.80	465.36	1026.00
12	619.3	12	73.2	2 3/4	539.8	533.4	558.8	692.35	1526.00	590.20	1301.00	572.95	1263.00	664.06	1464.00

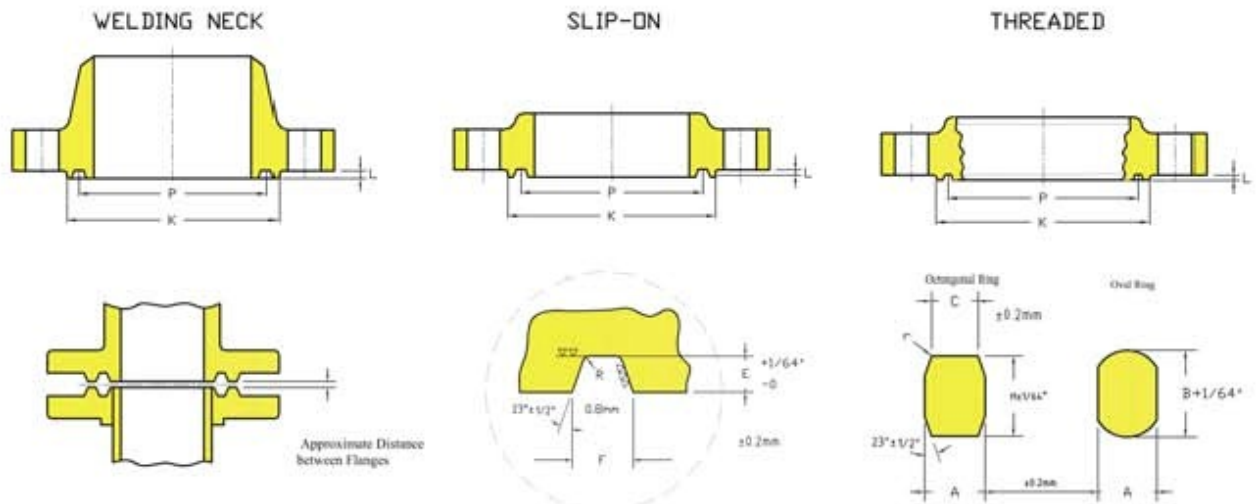
(4) Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub

(5) The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree. To accomplish parallelism, spot facing is carried out according to MSS SP-9, without reducing thickness (t)

(6) Class 2500 Slip-on Flanges are not covered by ANSI B16.5, slip-on flanges are at the manufacturer's option.

CLASS 150 FLANGES

RING JOINT FLANGES FACING DIMENSIONS



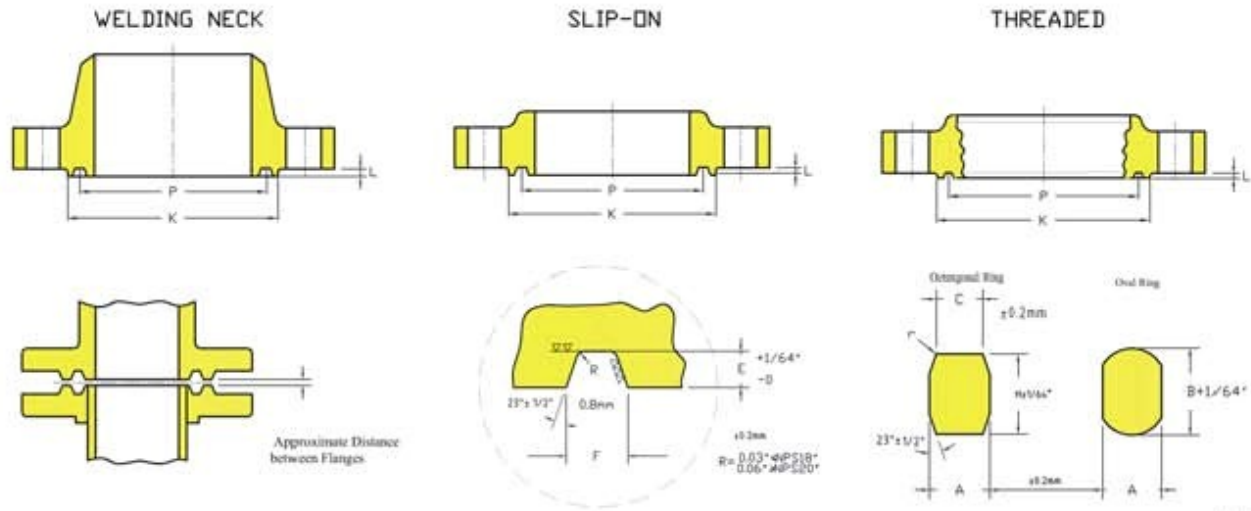
Unit mm

Nominal Pipe Size	Pitch Diam. of Ring and Groove	Width of Ring	HEIGHT OF RING		Width of Flat on Octagonal Rings	Width of Groove	Depth of Groove	Diameter of Raised Face for Ring Joint Or Lapped	Ring Number	Approximate Distance Between Flanges of Ring joints When Ring is Compressed
			Oval	Octagonal						
	P	A	B	H	C	F	E(L)	K(MIN)		
1	47.6	8.0	14.3	12.7	5.2	8.7	6.4	63.5	R15	4.1
1 1/4	57.2	8.0	14.3	12.7	5.2	8.7	6.4	73.2	R17	4.1
2 1/2	65.1	8.0	14.3	12.7	5.2	8.7	6.4	82.6	R19	4.1
2	82.6	8.0	14.3	12.7	5.2	8.7	6.4	101.6	R22	4.1
2 1/2	101.6	8.0	14.3	12.7	5.2	8.7	6.4	120.7	R25	4.1
3	114.3	8.0	14.3	12.7	5.2	8.7	6.4	133.4	R29	4.1
3 1/2	131.8	8.0	14.3	12.7	5.2	8.7	6.4	153.9	R33	4.1
4	149.2	8.0	14.3	12.7	5.2	8.7	6.4	171.5	R36	4.1
5	171.5	8.0	14.3	12.7	5.2	8.7	6.4	193.5	R40	4.1
6	193.7	8.0	14.3	12.7	5.2	8.7	6.4	218.9	R43	4.1
8	247.7	8.0	14.3	12.7	5.2	8.7	6.4	273.1	R48	4.1
10	304.8	8.0	14.3	12.7	5.2	8.7	6.4	330.2	R52	4.1
12	381.0	8.0	14.3	12.7	5.2	8.7	6.4	406.4	R56	4.1
14	396.9	8.0	14.3	12.7	5.2	8.7	6.4	425.5	R59	3.0
16	454.0	8.0	14.3	12.7	5.2	8.7	6.4	482.6	R64	3.0
18	517.5	8.0	14.3	12.7	5.2	8.7	6.4	546.1	R68	3.0
20	558.8	8.0	14.3	12.7	5.2	8.7	6.4	596.9	R72	3.0
24	673.1	8.0	14.3	12.7	5.2	8.7	6.4	711.2	R76	3.0

Note:
 Unless otherwise specified by the customer, Ring Type Joint Flanges will be finished in accordance with these details. The depth of groove is added to the minimum flange thickness.
 * Raised face "L" is equal to groove dimension "E" but is not subject to tolerance for "E".
 * A plus tolerance of 3/64 in. For heights B and H is permitted providing the variation in the height of any given ring does not exceed 1/64 in. Throughout its entire circumference.
 Dimension "R" is max.
 Radius "r" is 1/16 for ring widths 7/8" and less and 3/32" for ring widths 1" (25.4 mm) and over.

CLASS 300-400-600 FLANGES

RING JOINT FLANGES FACING DIMENSIONS



Unit mm

Nominal Pipe Size	Pitch Diam. of Ring and Groove	Width of Ring	HEIGHT OF RING		Width of Flat on Octagonal Rings	Width of Groove	Depth of Groove	Diameter of Raised Face for Ring Joint Or Lapped	Ring Number	Approximate Distance Between Flanges of Ring Joints When Ring is Compressed		
			Oval	Octagonal						Class300	Class400	Class600
			B	H								
1/2	34.1	6.4	11.1	9.5	4.3	7.1	5.6	50.8	R11	3.0	-	3.0
3/4	42.9	8.0	14.3	12.7	5.2	8.7	6.4	63.5	R13	4.1	-	4.1
1	50.8	8.0	14.3	12.7	5.2	8.7	6.4	69.9	R16	4.1	-	4.1
1 1/4	60.3	8.0	14.3	12.7	5.2	8.7	6.4	79.5	R18	4.1	-	4.1
1 1/2	68.3	8.0	14.3	12.7	5.2	8.7	6.4	90.4	R20	4.1	-	4.1
2	82.6	11.1	17.5	15.9	7.7	11.9	7.9	108.0	R23	5.6	-	4.8
2 1/2	101.6	11.1	17.5	15.9	7.7	11.9	7.9	127.0	R26	5.6	-	4.8
3	123.8	11.1	17.5	15.9	7.7	11.9	7.9	146.1	R31	5.6	-	4.8
3 1/2	131.8	11.1	17.5	15.9	7.7	11.9	7.9	158.8	R34	5.6	-	4.8
4	149.2	11.1	17.5	15.9	7.7	11.9	7.9	174.8	R37	5.6	5.6	4.8
5	181.0	11.1	17.5	15.9	7.7	11.9	7.9	209.6	R41	5.6	5.6	4.8
6	211.2	11.1	17.5	15.9	7.7	11.9	7.9	241.3	R45	5.6	5.6	4.8
8	269.9	11.1	17.5	15.9	7.7	11.9	7.9	301.8	R49	5.6	5.6	4.8
10	323.9	11.1	17.5	15.9	7.7	11.9	7.9	355.6	R53	5.6	5.6	4.8
12	381.0	11.1	17.5	15.9	7.7	11.9	7.9	412.8	R57	5.6	5.6	4.8
14	419.1	11.1	17.5	15.9	7.7	11.9	7.9	457.2	R61	5.6	5.6	4.8
16	469.9	11.1	17.5	15.9	7.7	11.9	7.9	508.0	R65	5.6	5.6	4.8
18	533.4	11.1	17.5	15.9	7.7	11.9	7.9	574.8	R69	5.6	5.6	4.8
20	584.2	12.7	19.1	17.5	8.7	13.5	9.5	635.0	R73	5.6	5.6	4.8
24	692.2	15.9	22.2	20.7	10.5	16.7	11.1	749.3	R77	6.4	6.4	5.6

Note:

Unless otherwise specified by the customer, Ring Type Joint Flanges will be finished in accordance with these details. The depth of groove is added to the minimum flange thickness.

* Raised face "L" is equal to groove dimension "E" but is not subject to tolerance for "E".

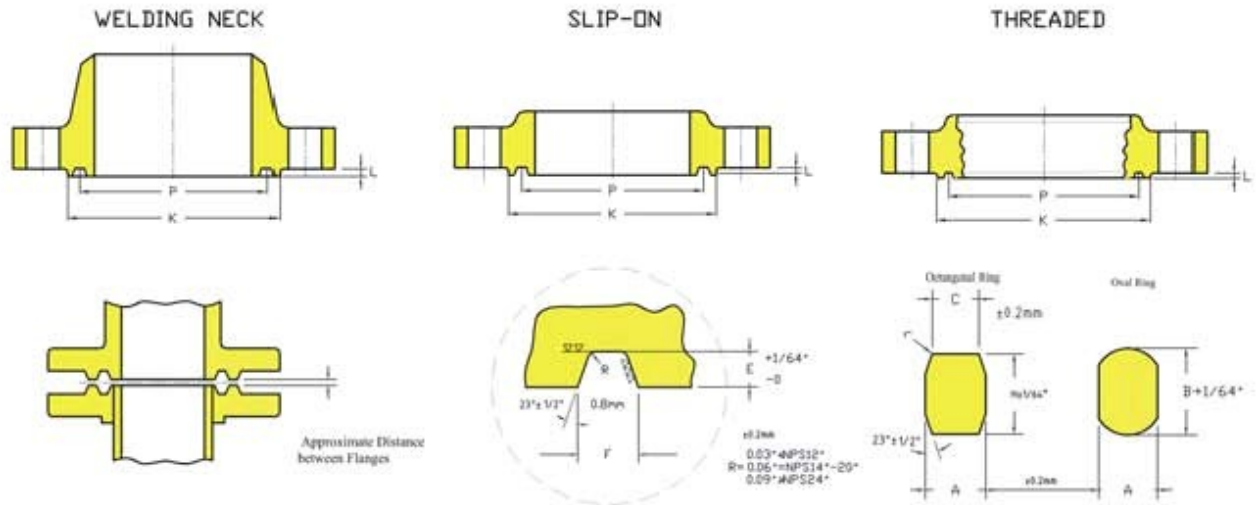
* A plus tolerance of 3/64 in. For heights B and H is permitted providing the variation in the height of any given ring does not exceed 1/64 in. Throughout its entire circumference.

Dimension "R" is max.

Radius "r" is 1/16 for ring widths 7/8" and less and 3/32" for ring widths 1" (25.4 mm) and over.

CLASS 900 FLANGES

RING JOINT FLANGES FACING DIMENSIONS



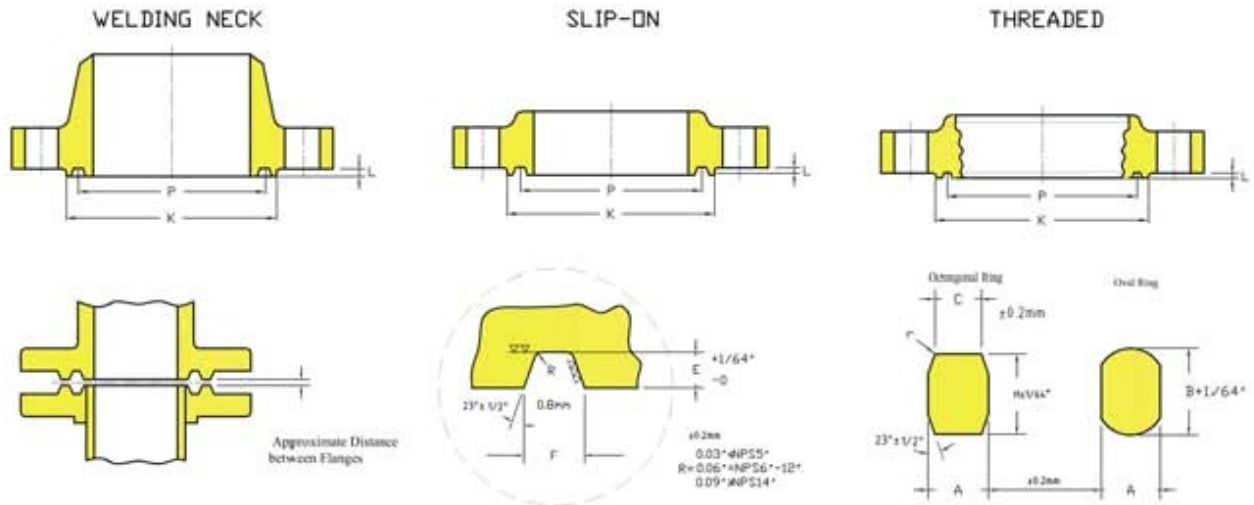
Unit mm

Nominal Pipe Size	Pitch Diam. of Ring and Groove P	Width of Ring A	HEIGHT OF RING		Width of Flat on Octagonal Rings C	Width of Groove F	Depth of Groove E(L)	Diameter of Raised Face for Ring Joint Or Lapped K(MIN)	Ring Number	Approximate Distance Between Flanges of Ring joints When Ring is Compressed
			Oval B	Octagonal H						
For size 2 1/2 and smaller, use Class 1500 Ring Joint Flanges										
3	123.8	11.1	17.5	15.9	7.7	11.9	7.9	155.4	R31	4.1
4	149.2	11.1	17.5	15.9	7.7	11.9	7.9	180.8	R37	4.1
5	181.0	11.1	17.5	15.9	7.7	11.9	7.9	215.9	R41	4.1
6	211.2	11.1	17.5	15.9	7.7	11.9	7.9	241.3	R45	4.1
8	269.9	11.1	17.5	15.9	7.7	11.9	7.9	307.8	R49	4.1
10	323.9	11.1	17.5	15.9	7.7	11.9	7.9	362.0	R53	4.1
12	381.0	11.1	17.5	15.9	7.7	11.9	7.9	419.1	R57	4.1
14	419.1	15.9	22.2	20.7	10.5	16.7	11.1	466.9	R62	4.1
16	469.9	15.9	22.2	20.7	10.5	16.7	11.1	523.7	R66	4.1
18	533.4	19.1	25.4	23.8	11.1	19.8	12.7	593.9	R70	4.8
20	584.2	19.1	25.4	23.8	12.3	19.8	12.7	647.7	R74	4.8
24	692.2	25.4	33.4	31.8	17.3	27.0	15.9	771.7	R78	5.6

Note:
 Unless otherwise specified by the customer, Ring Type Joint Flanges will be finished in accordance with these details. The depth of groove is added to the minimum flange thickness.
 * Raised face "L" is equal to groove dimension "E" but is not subject to tolerance for "E".
 * A plus tolerance of 3/64 in. For heights B and H is permitted providing the variation in the height of any given ring does not exceed 1/64 in. Throughout its entire circumference.
 Dimension "R" is max.
 Radius "r" is 1/16 for ring widths 7/8" and less and 3/32" for ring widths 1" (25.4 mm) and over.

CLASS 1500 FLANGES

RING JOINT FLANGES FACING DIMENSIONS



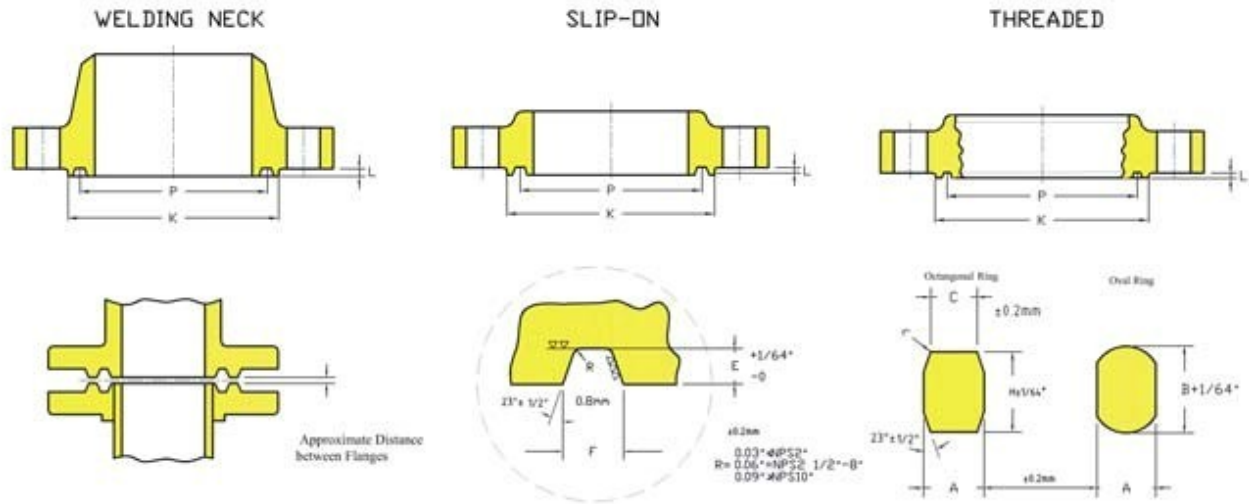
Unit: mm

Nominal Pipe Size	Pitch Diam. of Ring and Groove P	Width of Ring A	HEIGHT OF RING		Width of Flat on Octagonal Rings C	Width of Groove F	Depth of Groove E(L)	Diameter of Raised Face for Ring Joint Or Lapped K(MIN)	Ring Number	Approximate Distance Between Flanges of Ring joints When Ring is Compressed
			Oval B	Octagonal H						
1/2	39.7	8.0	14.3	12.7	5.2	8.7	6.4	60.5	R12	4.1
3/4	44.5	8.0	14.3	12.7	5.2	8.7	6.4	66.8	R14	4.1
1	50.8	8.0	14.3	12.7	5.2	8.7	6.4	71.4	R16	4.1
1 1/4	60.3	8.0	14.3	12.7	5.2	8.7	6.4	81.0	R18	4.1
1 1/2	68.3	8.0	14.3	12.7	5.2	8.7	6.4	92.2	R20	4.1
2	95.3	11.1	17.5	15.9	7.7	11.9	7.9	124.0	R24	3.0
2 1/2	108.0	11.1	17.5	15.9	7.7	11.9	7.9	136.7	R27	3.0
3	136.5	11.1	17.5	15.9	7.7	11.9	7.9	168.4	R35	3.0
3 1/2	161.9	11.1	17.5	15.9	7.7	11.9	7.9	193.8	R39	3.0
5	193.7	11.1	17.5	15.9	7.7	11.9	7.9	228.6	R44	3.0
6	211.2	12.7	19.1	17.5	8.7	13.5	9.5	247.7	R46	3.0
8	269.9	15.9	22.2	20.7	10.5	16.7	11.1	317.5	R50	4.1
10	323.9	15.9	22.2	20.7	10.5	16.7	11.1	371.6	R54	4.1
12	381.0	22.2	28.6	27.0	14.8	23.0	14.3	438.2	R58	4.8
14	419.1	25.4	33.4	31.8	17.3	27.0	15.9	489.0	R63	5.6
16	469.9	28.6	36.5	34.9	19.8	30.2	17.5	546.1	R67	7.9
18	533.4	28.6	36.5	34.9	19.8	30.2	17.5	612.9	R71	7.9
20	584.2	31.8	39.7	38.1	22.3	33.4	17.5	673.1	R75	9.7
24	692.2	34.9	44.5	41.3	24.8	36.5	20.6	793.8	R79	11.2

Note:
 Unless otherwise specified by the customer, Ring Type Joint Flanges will be finished in accordance with these details. The depth of groove is added to the minimum flange thickness.
 * Raised face "L" is equal to groove dimension "E" but is not subject to tolerance for "E".
 * A plus tolerance of 3/64 in. For heights B and H is permitted providing the variation in the height of any given ring does not exceed 1/64 in. Throughout its entire circumference.
 Dimension "R" is max.
 Radius "r" is 1/16 for ring widths 7/8" and less and 3/32" for ring widths 1" (25.4 mm) and over.

CLASS 2500 FLANGES

RING JOINT FLANGES FACING DIMENSIONS



Unit mm

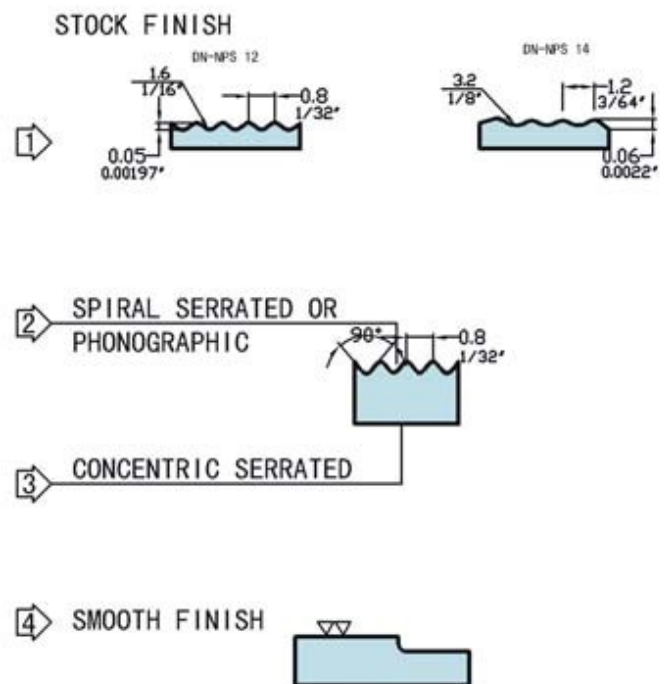
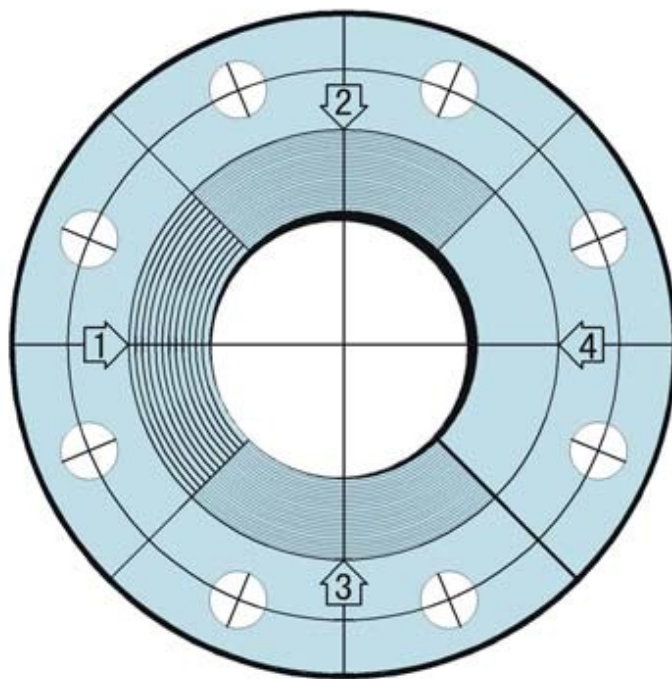
Nominal Pipe Size	Pitch Diam. of Ring and Groove	Width of Ring	HEIGHT OF RING		Width of Flat on Octagonal Rings	Width of Groove	Depth of Groove	Diameter of Raised Face for Ring Joint Or Lapped	Ring Number	Approximate Distance Between Flanges of Ring joints When Ring is Compressed
			Oval	Octagonal						
			P	A						
1/2	42.9	8.0	14.3	12.7	5.2	8.7	6.4	65.0	R13	4.1
3/4	50.8	8.0	14.3	12.7	5.2	8.7	6.4	73.2	R16	4.1
1	60.3	8.0	14.3	12.7	5.2	8.7	6.4	82.6	R18	4.1
1 1/4	72.2	11.1	17.5	15.9	7.7	11.9	7.9	101.6	R21	3.0
1 1/2	82.6	11.1	17.5	15.9	7.7	11.9	7.9	114.3	R23	3.0
2	101.6	11.1	17.5	15.9	7.7	11.9	7.9	133.4	R26	3.0
2 1/2	111.1	12.7	19.1	17.5	8.7	13.5	9.5	149.4	R28	3.0
3	127.0	12.7	19.1	17.5	8.7	13.5	9.5	168.4	R32	3.0
4	157.2	15.9	22.2	20.7	10.5	16.7	11.1	203.2	R38	4.1
5	190.5	19.1	25.4	23.8	12.3	19.8	12.7	241.3	R42	4.1
6	228.6	19.1	25.4	23.8	12.3	19.8	12.7	279.4	R47	4.1
8	279.4	22.2	28.6	27.0	14.8	23.0	14.3	339.9	R51	4.8
10	342.9	28.6	36.5	34.9	19.8	30.2	17.5	425.5	R55	6.4
12	406.4	31.8	39.7	38.1	22.3	33.4	17.5	495.3	R60	7.9

Note:
 Unless otherwise specified by the customer, Ring Type Joint Flanges will be finished in accordance with these details. The depth of groove is added to the minimum flange thickness.
 * Raised face "L" is equal to groove dimension "E" but is not subject to tolerance for "E".
 * A plus tolerance of 3/64 in. For heights B and H is permitted providing the variation in the height of any given ring does not exceed 1/64 in. Throughout its entire circumference. Dimension "R" is max.
 Radius "r" is 1/16 for ring widths 7/8" and less and 3/32" for ring widths 1" (25.4 mm) and over.

STANDARD FINISH

STANDARD FINISH

STANDARD FINISHES FOR FACE OF FLANGE (ANSI B16.5)



STOCK FINISH: The most widely used of any gasket finish, because practically is suitable for all ordinary service conditions. This is a continuous spiral groove. Flange sizes 12" (304.8mm) and smaller, are produced with a 1/16" round-nosed tool at a feed of 1/32" per revolution. For sizes 14" (355.6mm) and larger, the finish is made with 1/8" round-nosed tool at a feed of 3/64" per revolution.

SPIRAL SERRATED OR PHONOGRAPHIC: This finish is produced by using a 90° round-nosed tool.

CONCENTRIC SERRATED: This finish is produced by using a 90° round-nosed tool.

SMOOTH FINISH: The cutting tool employed shall have an approximate 0.06" radius. The resultant surface finish shall have a 125 μ inch to 250 μ inch (ANSI B16.5 para 6.4;4.1)

1. RAISED FACE, AND LARGE MALE AND FEMALE

Either a serrated-concentric or serrated-spiral finish having from 34 to 64 grooves per inch is used. The cutting tool employed has an approximate 0.06 in radius. The resultant surface finish shall have a 125 μ inch (3.2 μ m) to 500 μ inch (12.5 μ m) approximate roughness.

2. TONGUE AND GROOVE, AND SMALL MALE AND FEMALE

The gasket contact surface does not exceed 125 μ in. (3.2 μ m) roughness

3. RING JOINT

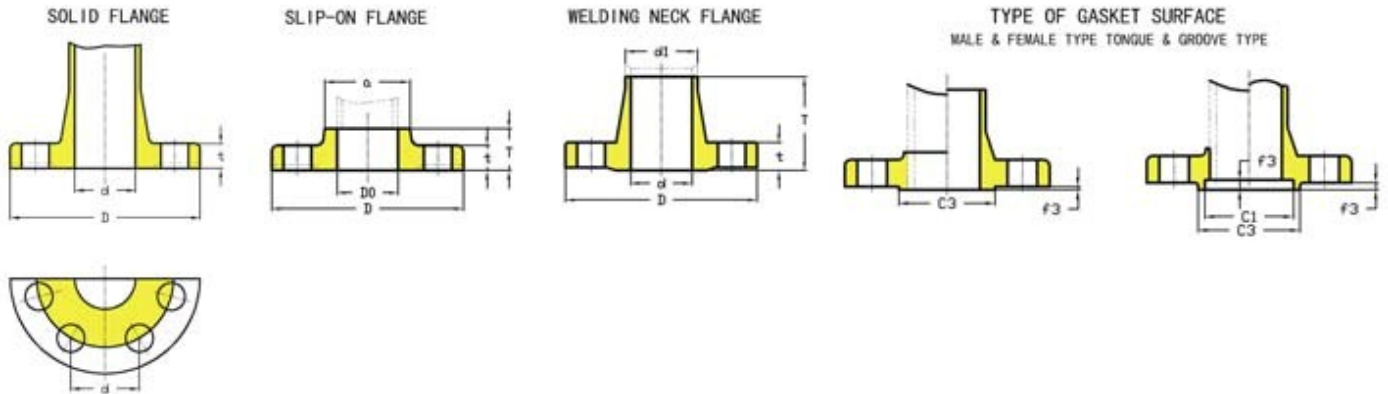
The inside wall surface of gasket groove does not exceed 63 μ in (1.6 μ m) roughness

4. BLIND

Blind flanges need not be faced in the center if, when this center part is raised, its diameter is at least 1 in. Smaller than the inside diameter of fittings of the corresponding pressure class. When the center part is depressed, its diameter is not greater than the inside diameter of the corresponding pressure class fittings. Machining of the depressed center is not required.

TOLERANCE

ANSI B16.5 FORGED FLANGES



THREAD, SOCKET-WELDING, SLIP-ON, LAP JOINT AND BLIND

Outside Diameter	When O.D. is 24" or less	$\pm 1/16"$ (1.6mm)
	When O.D. is over 24"	$\pm 1/8"$ (3.2mm)
Inside Diameter	Threaded	Within Limits on boring gauge
	Socket-Welding, Slip-on and Lap joint	10" & Smaller $+ 1/32"$ (0.8mm), $-0"$ 12" & larger $+ 1/16"$ (1.6mm), $-0"$
Outside Diameter of Hub	5" and Smaller	$+ 3/32"$ (2.4mm) $- 1/32"$ (0.8mm)
	6" and Larger	$+ 5/32"$ (4.0mm) $- 1/32"$ (0.8mm)
Diameter of Contact Face	1/16" Raised Face	$\pm 1/32"$ (0.8mm)
	1/4" Raised Face Tongue & Groove Male, Female	$\pm 1/64"$ (0.4mm)
Diameter of Counterbore	Same as for Inside diameter	
Drilling	Bolt Circle	$\pm 1/16"$ (1.6mm)
	Bolt Hole Spacing	$\pm 1/32"$ (0.8mm)
	Eccentricity of Bolt Circle with Respect to Facing	2 1/2" Smaller $1/32"$ (0.8mm) Max. 3" & Larger $1/16"$ (1.6mm) Max.
	Eccentricity of Bolt Circle with Respect to Bore	$1/32"$ (0.8mm) Max.
	Eccentricity of Facing with Respect to bore	$1/32"$ (0.8mm) Max.
Thickness	18" and Smaller	$+ 1/8"$ (3.2mm), $-0"$
	20" and Larger	$+ 3/16"$ (4.8mm), $-0"$
Length Thru Hub	10" and Smaller	$\pm 1/16"$ (1.6mm)
	12" and Larger	$\pm 1/8"$ (3.2mm)

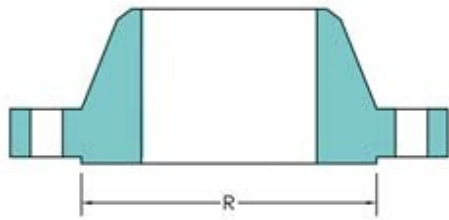
Note This tolerance is covered in ANSI B16.5, but maker's option.

WELDING NECK

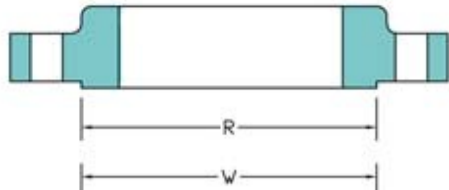
Outside Diameter	When O.D. is 24" or less	$\pm 1/16"$ (1.6mm)
	When O.D. is over 24"	$\pm 1/8"$ (3.2mm)
Inside Diameter	10" and Smaller	$\pm 1/32"$ (0.8mm)
	12" thru 18" 20" and Larger	$\pm 1/16"$ (1.6mm) $+ 1/8"$ (3.2mm) $- 1/16"$ (1.6mm)
Diameter of Contact Face	1/16" Raised Face	$\pm 1/32"$ (0.8mm)
	1/4" Raised Face Tongue & Groove Male, Female	$\pm 1/64"$ (0.4mm)
Diameter of Hub at Base	When Hub Base is 24" or Smaller	$\pm 1/16"$ (1.6mm)
	When Hub Base is over 24"	$\pm 1/8"$ (3.2mm)
Diameter of Hub at point of welding	5" and Smaller	$+ 3/32"$ (2.4mm) $- 1/32"$ (0.8mm)
	6" and Larger	$+ 5/32"$ (4.0mm) $- 1/32"$ (0.8mm)
Drilling	Bolt Circle	$\pm 1/16"$ (1.6mm)
	Bolt Hole Spacing	$\pm 1/32"$ (0.8mm)
	Eccentricity of Bolt Circle with Respect to Facing	2 1/2" Smaller $1/32"$ (0.8mm) Max. 3" & Larger $1/16"$ (1.6mm) Max.
	Eccentricity of Bolt Circle with Respect to Bore	$1/32"$ (0.8mm) Max.
	Eccentricity of Facing with Respect to bore	$1/32"$ (0.8mm) Max.
Thickness	18" and Smaller	$+ 1/8"$ (3.2mm), $-0"$
	20" and Larger	$+ 3/16"$ (4.8mm), $-0"$
Length Thru Hub	10" and Smaller	$\pm 1/16"$ (1.6mm)
	12" and Larger	$\pm 1/8"$ (3.2mm)

FLANGES FACING

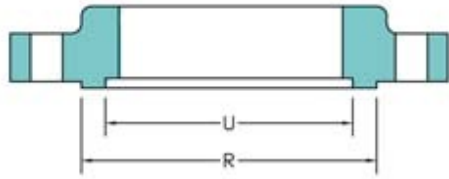
Diameter of Counterbore



RAISED FACE



LARGE MALE-FEMALE



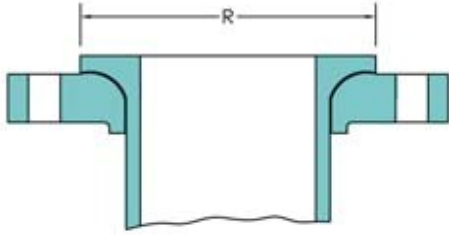
LARGE TONGUE AND GROOVE



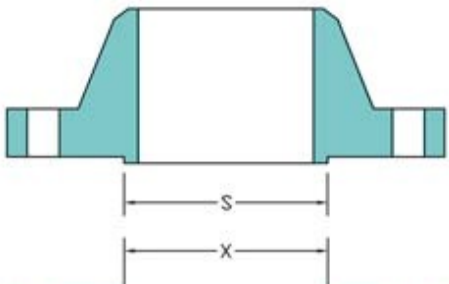
SMALL TONGUE AND GROOVE



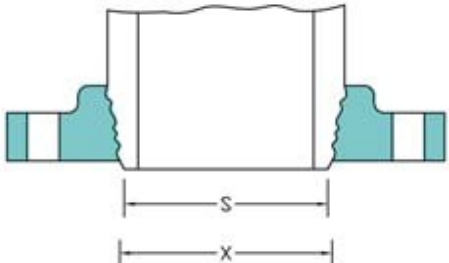
FLAT FACE



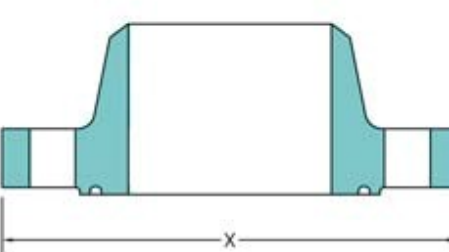
LAPPED JOINT



SMALL MALE AND FEMALE



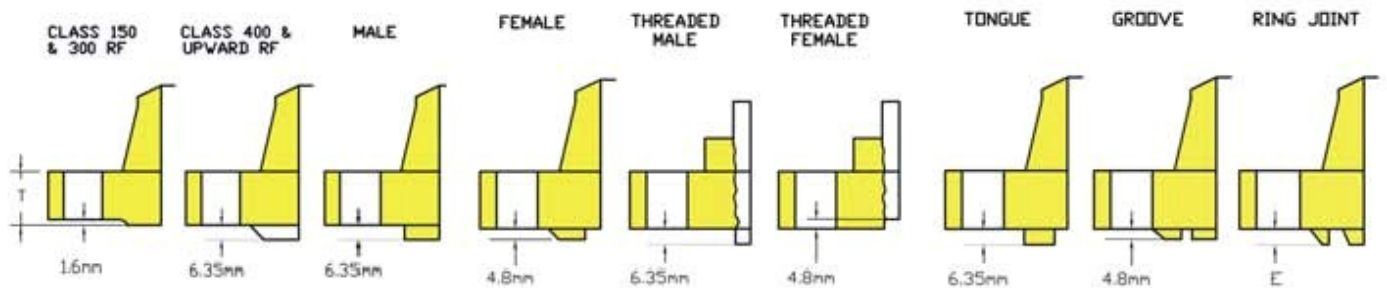
SMALL MALE AND FEMALE



RING JOINT

ANSI B16.5

ANSIB16.5 FORGED FLANGES

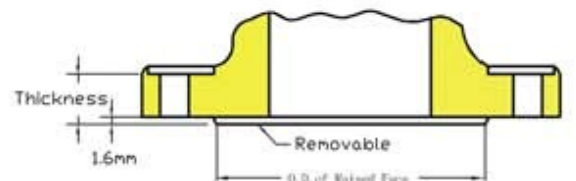


Unit: mm

Nominal Pipe Size	OUTSIDE DIAMETER			ID of Large and Small Tongue	OUTSIDE DIAMETER				ID of Large and Small Tongue	HEIGHT		Depth of Groove or Female
	Raised Face Lapped Large Male and Large Tongue	Small Male	Small Tongue		Large Female and Large Groove		Small Female	Small Groove		Raised Face and 300 STDS	Raised Face Large and Small Male and Tongue Classes 400 2500 STDS	
					R	S						
1/2	35.1	18.3	35.1	25.4	36.6	46.0	19.8	36.6	23.9	1.5	6.4	4.8
3/4	42.9	23.9	42.9	33.3	44.5	53.8	25.4	44.5	31.8	1.5	6.4	4.8
1	50.8	30.2	47.8	38.1	52.3	62.0	31.8	49.3	36.6	1.5	6.4	4.8
1 1/4	63.5	38.1	57.2	47.8	65.0	74.7	39.6	58.7	46.0	1.5	6.4	4.8
1 1/2	73.2	44.5	63.5	53.8	74.7	84.1	46.0	65.0	52.3	1.5	6.4	4.8
2	91.9	57.2	82.6	73.2	93.7	103.1	58.7	84.1	71.4	1.5	6.4	4.8
2 1/2	104.6	68.3	95.3	85.9	106.4	115.8	69.9	96.8	84.1	1.5	6.4	4.8
3	127.0	84.1	117.3	108.0	128.5	138.2	85.9	119.1	106.4	1.5	6.4	4.8
3 1/2	139.7	96.8	130.0	120.7	141.2	150.9	98.6	131.8	119.1	1.5	6.4	4.8
4	157.2	109.5	144.5	131.8	158.8	168.1	111.3	146.1	130.0	1.5	6.4	4.8
5	185.7	136.7	173.0	160.3	187.5	196.9	138.2	174.8	158.8	1.5	6.4	4.8
6	215.9	162.1	203.2	190.5	217.4	227.1	163.6	204.7	189.0	1.5	6.4	4.8
8	269.7	212.9	254.0	238.3	271.5	280.9	214.4	255.5	236.5	1.5	6.4	4.8
10	323.9	266.7	304.8	285.8	325.4	335.0	268.2	306.3	284.2	1.5	6.4	4.8
12	381.0	317.5	362.0	342.9	382.5	392.2	319.0	363.5	341.4	1.5	6.4	4.8
14	412.8	349.3	393.7	374.7	414.3	423.9	350.8	395.2	373.1	1.5	6.4	4.8
16	469.9	400.1	447.5	425.5	471.4	481.1	401.6	449.3	423.9	1.5	6.4	4.8
18	533.4	450.9	511.0	489.0	534.9	544.1	452.4	512.8	487.4	1.5	6.4	4.8
20	584.2	501.7	558.8	533.4	585.7	595.4	503.2	560.3	531.9	1.5	6.4	4.8
24	692.2	603.3	666.8	641.4	693.7	703.3	604.8	668.3	639.8	1.5	6.4	4.8

Note:

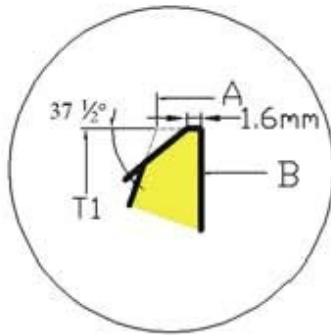
- (1) Small male and female faces are not applicable to Slip-on Flange.
- (2) Large male and female faces are not applicable to Class 150 Flanges.
- (3) For flanges of Class 150 and 300 where they are to be bolted to ANSI Class 125 and 250 Cast-Iron Flanges or required with flat face, flat face can be made by removing raised face.



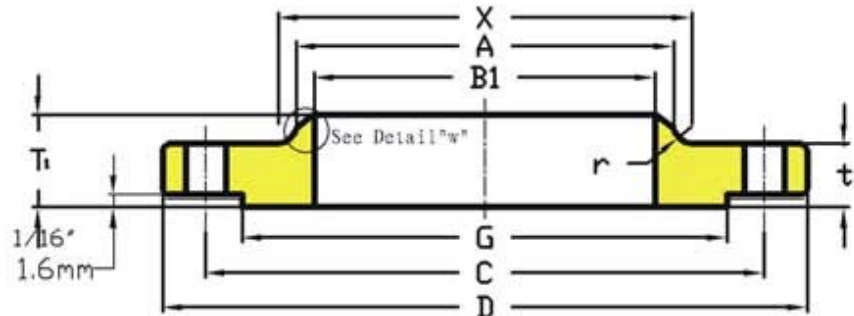
Tolerance are $\pm 0.03^$ (+0.8mm) for 0.06^* (1.6mm) RF and $\pm 0.02^*$ (+0.5mm) for 0.25^* (6.35mm) RF large Male and Large Tongue

API 605

ANSI/ASME B16.47 SERIESE B FLANGES (API 605)



Detail "w"
Typical Welding
end Preparation



CLASS 75 FLANGES

Unit: mm

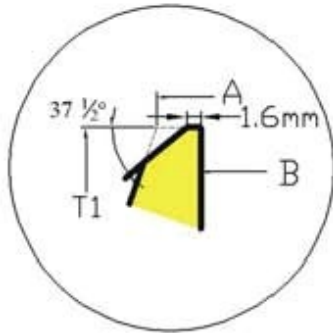
Nominal Pipe Size	Outside Diam.	O.D.of Raised Face	Diam. at Base of Hub	Thick-ness	BORE			Length Thru Hub	Diam .of Hub at Bevel	Radius at Base of Hub	DRILLING			Approximates Weight (kg)
					Wall Thickness						Bolt Circle Diam.	Number of Holes	Diam. of Holes	
					6.35mm	9.5mm	12.7mm							WN
26	762	704.9	676.1	33.3	647.7	641.4	635.0	58.7	661.9	7.9	723.9	36	19.1	29.01
28	813	755.7	726.9	33.3	698.5	692.2	685.8	62.0	712.7	7.9	774.7	40	19.1	31.01
30	864	806.5	777.7	33.3	749.3	743.0	736.6	65.0	763.5	7.9	825.5	44	19.1	35.05
32	914	857.3	828.5	35.1	800.1	793.8	787.4	69.9	814.3	7.9	876.3	48	19.1	48.03
34	965	908.1	879.3	35.1	850.9	844.6	838.2	73.2	865.1	7.9	927.1	52	19.1	50.03
36	1034	965.2	935.0	36.6	850.9	895.4	889.0	85.9	915.9	9.7	992.1	40	22.4	62.06
38	1084	1016.0	985.8	38.1	952.5	946.2	939.8	88.9	966.7	9.7	1042.9	40	22.4	70.05
40	1135	1066.8	1036.6	38.1	1003.3	997.0	990.6	91.9	1017.5	9.7	1093.7	44	22.4	74.05
42	1186	1117.6	1087.4	39.6	1054.1	1047.8	1041.4	95.3	1068.3	9.7	1144.5	48	22.4	77.09
44	1251	1174.8	1140.0	42.9	1104.9	1049.4	1143.0	104.6	1119.1	9.7	1203.5	36	25.4	82.08
46	1302	1225.6	1190.8	44.5	1155.7	1149.4	1143.0	108.0	1169.9	9.7	1254.3	40	25.4	105.01
48	1353	1276.4	1241.6	46.0	1206.5	1200.2	1193.8	111.3	1220.7	9.7	1305.1	44	25.4	120.03
50	1403	1327.2	1293.9	47.8	1257.3	1251.0	1244.6	115.8	1271.5	9.7	1355.9	44	25.4	134.28
52	1457	1378.0	1344.7	47.8	1308.1	1301.8	1295.4	120.7	1322.3	9.7	1409.7	48	25.4	142.18
54	1508	1428.8	1397.0	49.3	1358.9	1352.6	1346.2	125.5	1373.1	9.7	1460.5	48	25.4	180.15
56	1575	1485.9	1450.8	50.8	1409.7	1403.4	1397.0	134.9	1423.9	11.2	1521.0	40	28.4	184.58
58	1626	1536.7	1501.6	52.3	1460.5	1454.2	1447.8	138.2	1474.7	11.2	1571.8	44	28.4	195.56
60	1676	1587.5	1552.4	55.6	1511.3	1505.0	1498.6	144.5	1525.5	11.2	1622.6	44	28.4	210.20

Notes:

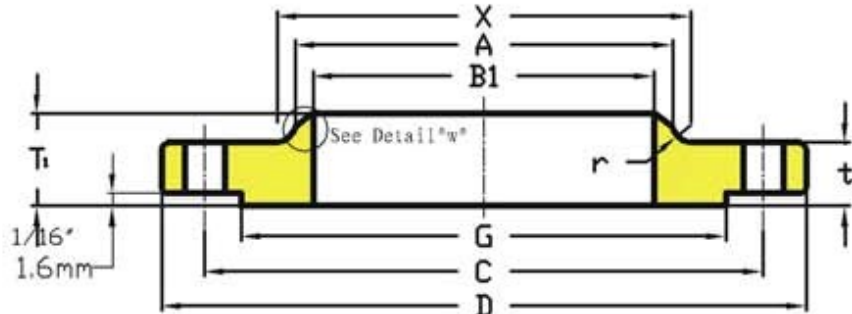
- (1) 'Bore' (B1) of flanges shall be specified by the purchaser
- (2) Class 75 flanges will be furnished with 0.06" (1.6mm) raised face, which is included in 'Thickness' (t) and 'Length through Hub' (T1)

API 605

ANSI/ASME B16.47 SERIESE B FLANGES (API 605)



Detail "w"
Typical Welding
end Preparation



CLASS 150 FLANGES

Unit: mm

Nominal Pipe Size	Outside Diam.	O.D.of Raised Face	Diam. at Base of Hub	Thickness			BORE			Length Thru Hub	Diam. of Hub at Bevel	Radius at Base of Hub	DRILLING			Approximates Weight (kg) 9.5mm					
							Wall Thickness						Bolt Circle Diam.	Number of Holes	Diam. of Holes						
				6.35mm	9.5mm	12.7mm	D	G	X							t	(BL)	B1	T1	A	r
26	786	711.2	684.3	44.1	44.5	647.7	641.4	635.0	88.9	661.9	9.7	744.5	36	22.4	59	165					
28	837	762.0	735.1	44.5	47.8	698.5	692.2	685.8	95.3	712.7	9.7	795.3	40	22.4	68	201					
30	887	812.8	787.4	44.5	50.8	749.3	743.0	736.6	100.1	763.5	9.7	846.1	44	22.4	74	241					
32	941	863.6	839.7	46.0	53.8	800.1	793.8	787.4	108.0	814.3	9.7	900.1	48	22.4	85	288					
34	1005	920.8	892.0	49.3	57.2	850.9	844.6	838.2	110.2	865.1	9.7	957.3	40	25.4	103	349					
36	1057	971.6	944.6	52.3	58.7	901.7	895.4	889.0	117.3	915.9	9.7	1009.7	44	25.4	117	397					
38	1124	1022.4	997.0	53.8	63.5	952.5	946.2	939.8	124.0	968.2	9.7	1069.8	40	28.4	140	485					
40	1175	1079.5	1049.3	55.6	66.5	1003.3	997.0	990.6	128.5	1019.0	9.7	1120.6	44	28.4	153	556					
42	1226	1130.3	1101.9	58.7	68.3	1054.1	1047.8	1041.4	133.4	1069.8	11.2	1171.4	48	28.4	168	621					
44	1276	1181.1	1152.7	60.5	71.4	1104.9	1098.6	1092.2	136.7	1120.6	11.2	1222.2	52	31.8	200	704					
46	1341	1234.9	1205.0	62.0	74.7	1155.7	1149.4	1143.0	144.5	1171.4	11.2	1284.2	40	31.8	210	816					
48	1392	1289.1	1257.3	65.0	77.7	1206.5	1200.2	1193.8	149.4	1222.2	11.2	1335.0	44	31.8	240	915					
50	1443	1339.9	1308.1	68.3	80.8	1257.3	1251.0	1244.6	153.9	1273.0	11.2	1385.8	48	31.8	250	1021					
52	1494	1390.7	1360.4	69.9	84.1	1308.1	1301.8	1295.4	157.2	1323.8	11.2	1436.6	52	31.8	266	1139					
54	1549	1441.5	1412.7	71.4	87.4	1358.9	1352.6	1346.2	162.1	1374.6	11.2	1492.3	56	31.8	310	1274					
56	1600	1492.3	1465.3	73.2	90.4	1409.7	1403.4	1397.0	166.6	1425.4	14.2	1543.1	60	31.8	306	1406					
58	1675	1543.1	1516.1	74.7	93.5	1460.5	1454.2	1447.8	174.8	1476.2	14.2	1611.4	48	35.1	367	1596					
60	1726	1600.2	1570.0	76.2	96.8	1511.3	1505.0	1498.6	179.3	1527.0	14.2	1662.2	52	35.1	410	1754					

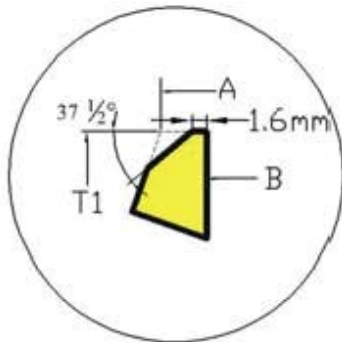
Notes:

(1) 'Bore' (B1) of flanges shall be specified by the purchaser

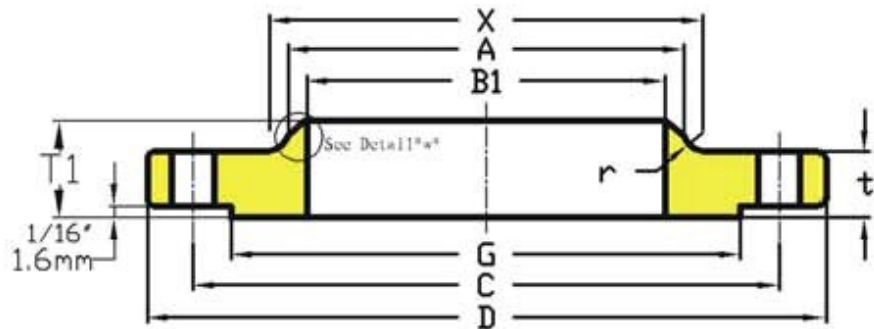
(2) Class 150 flanges will be furnished with 0.06" (1.6mm) raised face, which is included in 'Thickness' (t) and 'Length through Hub' (T1)

API 605

ANSI/ASME B16.47 SERIESE B FLANGES (API 605)



Detail "w"
Typical Welding
end Preparation



CLASS 300 FLANGES

Unit: mm

Nominal Pipe Size	Outside Diam.	O.D.of Raised Face	Diam. at Base of Hub	Diam. of Hub at Bevel	BORE			Length Thru Hub	Thickness		Radius at Base of Hub	DRILLING			Approximates Weight (kg)			
					Wall Thickness				T1	t		(BL)	r	C	Number of Holes	Diam. of Holes	WN	BL
					6.35mm	9.5mm	12.7mm											
26	867	736.6	701.5	665.2	647.7	641.4	635.0	144.5	88.9	88.9	14.2	803.1	32	35.1	200	393		
28	921	787.4	755.7	716.0	698.5	692.2	685.8	149.4	88.9	88.9	14.2	857.3	36	35.1	210	443		
30	991	844.6	812.8	768.4	749.3	743.0	736.6	158.0	93.7	93.7	14.2	920.8	36	38.1	270	540		
32	1054	901.7	863.6	819.2	800.1	793.8	787.4	168.1	103.1	103.1	15.7	977.9	32	41.1	330	677		
34	1108	952.5	917.4	870.0	850.9	844.6	838.2	173.0	103.1	103.1	15.7	1031.7	36	41.1	360	747		
36	1171	1009.7	965.2	920.8	901.7	895.4	889.0	180.8	103.1	103.1	15.7	1089.2	32	44.5	410	838		
38	1222	1060.5	1016.0	971.6	952.5	946.2	939.8	192.0	111.3	111.3	15.7	1140.0	36	44.5	571	983		
40	1273	1114.6	1066.8	1022.4	1003.3	997.0	990.6	198.4	115.8	115.8	15.7	1190.8	40	44.5	661	1110		
42	1334	1168.4	1117.6	1074.7	1054.1	1047.8	1041.4	204.7	119.1	119.1	15.7	1244.6	36	47.8	721	1256		
44	1384	1219.2	1173.2	1125.5	1104.9	1098.6	1092.2	214.4	127.0	127.0	15.7	1295.4	40	47.8	801	1441		
46	1461	1270.0	1228.85	1176.3	1155.7	1149.4	1143.0	222.3	128.5	130.0	15.7	1365.3	36	50.8	971	1649		
48	1511	1327.2	1277.9	1227.1	1206.5	1200.2	1193.8	223.8	128.5	134.9	15.7	1416.1	40	50.8	991	1829		
50	1562	1378.0	1330.5	1277.9	1257.3	1251.0	1244.6	235.0	138.2	139.7	15.7	1466.9	44	50.8	1048	2021		
52	1613	1428.8	1382.8	1328.7	1308.1	1301.8	1295.4	242.8	142.7	144.3	15.7	1517.7	48	50.8	1114	2223		
54	1673	1479.6	1435.1	1379.5	1358.9	1352.6	1346.2	239.8	136.7	149.4	15.7	1577.8	48	50.8	1161	2486		
56	1765	1536.7	1493.8	1422.4	1409.7	1403.4	1397.0	268.2	153.9	157.0	17.5	1651.0	36	60.5	1336	2913		
58	1827	1593.9	1547.9	1481.1	1460.5	1454.2	1447.8	274.6	153.9	162.1	17.5	1712.0	40	60.5	1428	3218		
60	1878	1651.0	1598.7	1531.9	1511.3	1505.0	1498.6	271.5	150.9	166.6	17.5	1763.8	40	60.5	1451	3504		

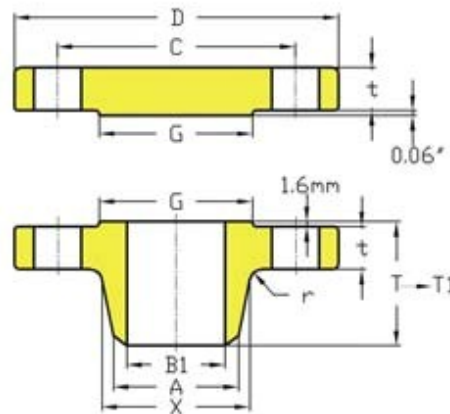
Notes:

(1) 'Bore' (B1) of flanges shall be specified by the purchaser

(2) Class 300 flanges will be furnished with 0.06" (1.6mm) raised face, which is included in 'Thickness' (t) and 'Length through Hub' (T1)

MSS SP44

CLASS 150 FLANGES



Unit: mm

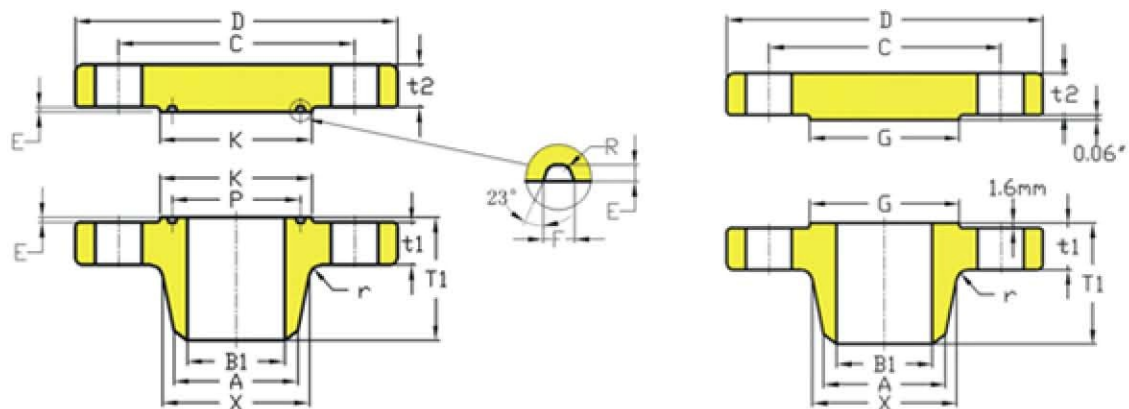
Nominal Pipe Size	Outside Diam.	O.D.of Raised Face	Diam. at Base of Hub	Thickness	BORE		Length Thru Hub	Diam. of Hub at Bevel	Radius at Base of Hub	DRILLING			Approximates Weight (kg)	
					Wall Thickness					Bolt Circle Diam.	Number of Holes	Diam. of Holes	9.5mm	
					9.5mm	12.7mm							WN	BL
					B1								T1	A
12	483	381.0	365.3	31.8	304.8	298.5	114.3	323.9	9.7	431.8	12	25.4	-	-
14	533	412.8	400.1	35.1	336.6	330.2	127.0	355.6	9.7	476.3	12	28.4	-	-
16	597	469.9	457.2	36.6	387.4	381.0	127.0	406.4	9.7	539.8	16	28.4	-	-
18	635	533.4	505.0	39.6	438.2	431.8	139.7	457.2	9.7	577.9	16	31.8	-	-
20	699	584.2	558.8	42.9	489.0	482.6	144.5	508.0	9.7	635.0	20	31.8	-	-
22	749	641.4	609.6	46.0	539.8	533.4	149.4	558.8	9.7	692.2	20	35.1	-	-
24	813	692.2	663.4	47.8	590.6	584.2	152.4	609.6	9.7	749.3	20	35.1	-	-
26	870	749.3	676.1	68.3	641.4	635.0	120.70	To be specified by purchaser	9.7	806.5	24	35.1	147	306
28	927	800.1	726.9	71.4	692.2	685.8	125.50		11.2	863.6	28	35.1	165	363
30	984	857.3	781.1	74.7	743.0	736.6	136.70		11.2	914.4	28	35.1	193	430
32	1060	914.4	831.9	80.8	793.8	787.4	144.50		11.2	977.9	28	41.1	243	537
34	1111	965.2	882.7	82.6	844.6	838.2	149.40		12.7	1028.7	32	41.1	258	600
36	1168	1022.4	933.5	90.4	895.4	889.0	157.00		12.7	1085.9	32	41.1	306	730
38	1238	1073.2	990.6	87.4	946.2	939.8	157.20		12.7	1149.4	32	41.1	342	794
40	1289	1124.0	1041.4	90.4	997.0	990.6	163.60		12.7	1200.2	36	41.1	368	893
42	1346	1193.8	1092.2	96.8	1047.8	1041.4	171.50		12.7	1257.3	36	41.1	422	1044
44	1403	1244.6	1143.0	101.6	1098.6	1092.2	177.80		12.7	1314.5	40	41.1	470	1190
46	1454	1295.4	1196.8	103.1	1149.4	1143.0	185.70		12.7	1365.3	40	41.1	503	1299
48	1511	1358.9	1247.6	108.0	1200.2	1193.8	192.00		12.7	1422.4	44	41.1	556	1470
50	1568	1409.7	1301.8	111.3	1251.0	1244.6	203.20		12.7	1479.6	44	47.8	598	1616
52	1626	1460.5	1352.6	115.8	1301.8	1295.4	209.60		12.7	1536.7	44	47.8	661	1817
54	1683	1511.3	1403.4	120.7	1352.6	1346.2	215.90		12.7	1593.9	44	47.8	730	2031
56	1746	1574.8	1457.5	124.0	1403.4	1397.0	228.60		12.7	1651.0	48	47.8	813	2244
58	1803	1625.6	1508.3	128.5	1454.2	1447.8	235.00		12.7	1708.2	48	47.8	890	2491
60	1854	1676.4	1559.1	131.8	1505.0	1498.6	239.80		12.7	1759.0	52	47.8	936	2697

Notes:

- (1) Class 150 flanges will be furnished with 0.06"(1.6mm) raised face, which is included in 'Thickness (t) and 'Length through Hub' (T1)
- (2) Dimensional tolerance are in accordance with ANSI B16.5

MSS SP44

CLASS 300 FLANGES



Unit: mm

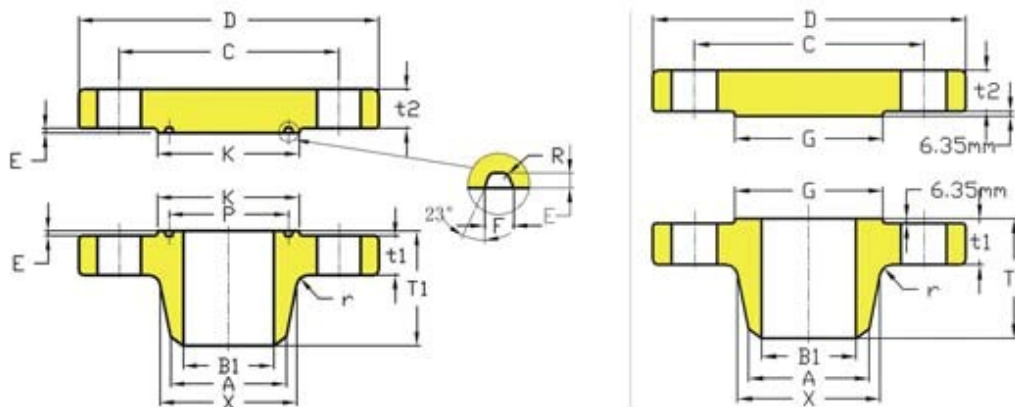
Nominal Pipe Size	Outside Diam.	O.D. of Raised Face	Diam. at Base of Hub	Thickness		BORE		Length Thru Hub	Diam. of Hub at Bevel	Radius of Fillet	DRILLING			Approximate Weight (kg)	
				Welding Neck	Blind	Wall Thickness					Bolt Circle Diam.	Number of Holes	Diam. of Holes	9.5mm	
						9.5mm	12.7mm							WN	BL
				D	G	X	t1				t2	B1	T1	A	r
12	521	381.0	374.7	50.8	50.8	304.8	298.5	130.0	323.9	9.7	450.9	16	31.8	-	-
14	584	412.8	425.5	53.8	53.8	336.6	330.2	142.7	355.6	9.7	514.4	20	31.8	-	-
16	648	469.9	482.6	57.2	57.2	387.4	381.0	146.1	406.4	9.7	571.5	20	35.1	-	-
18	711	533.4	533.4	60.5	60.5	468.2	431.8	158.8	457.2	9.7	628.7	24	35.1	-	-
20	775	584.2	587.2	63.5	63.5	489.0	482.6	162.1	508.0	9.7	685.8	24	35.1	-	-
22	838	641.4	641.4	66.5	66.5	539.8	533.4	165.1	558.8	9.7	743.0	24	41.1	-	-
24	914	692.2	701.5	69.9	69.9	590.6	584.2	168.1	609.6	9.7	812.8	24	41.1	-	-
26	972	749.3	720.9	79.2	84.1	641.4	635.0	184.2	660.4	9.7	876.3	28	44.5	275	460
28	1035	800.1	774.7	85.9	90.4	692.2	685.8	196.9	711.2	11.2	939.8	28	44.5	340	566
30	1092	857.3	827.0	91.9	95.3	743.0	736.6	209.6	762.0	11.2	997.0	28	47.8	389	663
32	1149	914.4	881.1	98.6	100.1	793.8	787.4	222.3	812.8	11.2	1054.1	28	50.8	445	770
34	1207	965.2	936.8	101.6	104.6	844.6	838.2	231.6	863.6	12.7	1104.9	28	50.8	498	894
36	1270	1022.4	990.6	104.6	111.3	895.4	889.0	241.3	914.4	12.7	1168.4	32	53.8	563	1040
38	1168	1028.7	993.6	108.0	108.0	946.2	939.8	180.8		12.7	1092.2	32	41.1	307	872
40	1238	1085.9	1047.8	114.3	114.3	997.0	990.6	193.5		12.7	1155.7	32	44.5	392	1035
42	1289	1136.7	1098.6	119.1	119.1	1047.8	1041.4	200.2	To be specified by purchaser	12.7	1206.5	32	44.5	409	1173
44	1353	1193.8	1149.4	124.0	124.0	1198.6	1092.2	206.2		12.7	1263.7	32	47.8	464	1340
46	1416	1244.6	1203.5	128.5	128.5	1149.4	1143.0	215.9		12.7	1320.8	28	50.8	544	1600
48	1467	1301.8	1254.3	133.4	133.4	1200.2	1193.8	223.8		12.7	1371.6	32	50.8	569	1700
50	1530	1358.9	1305.1	139.7	139.7	1251.0	1244.6	231.6		12.7	1428.8	32	53.8	645	1936
52	1581	1409.7	1355.9	144.5	144.5	1301.8	1295.4	238.3		12.7	1479.6	32	53.8	694	2143
54	1657	1466.9	1409.7	152.4	152.4	1352.6	1346.2	252.5		12.7	1549.4	28	60.5	834	2486
56	1708	1517.7	1463.5	153.9	153.9	1403.4	1397.0	260.4		12.7	1600.2	28	60.5	882	2674
58	1759	1574.8	1514.3	158.8	158.8	1454.2	1447.8	266.7		12.7	1651.0	32	60.5	928	2913
60	1810	625.6	1565.1	163.6	163.6	1505.0	1498.6	273.1		12.7	1701.8	32	60.5	989	3184

Notes:

- (1) Class 300 flanges will be furnished with 0.06*(1.6mm) raised face, which is included in 'Thickness (t) and 'Length through Hub' (T1)
- (2) Dimensional tolerance are in accordance with ANSI B16.5

MSS SP44

CLASS 600 FLANGES



Unit mm

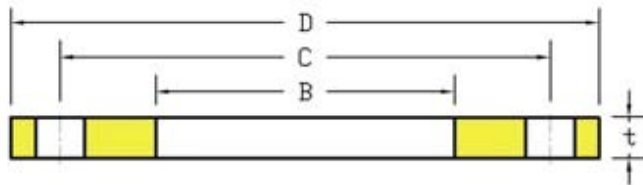
Nominal Pipe Size	Outside Diam.	O.D.of Raised Face	Diam. at Base of Hub	Thickness		BORE		Length Thru Hub	Diam. of Hub at Bevel	Radius of Fillet	DRILLING			Approximates Weight (kg)	
				Welding Neck	Blind	Wall Thickness					Bolt Circle Diam.	Number of Holes	Diam. of Holes	9.5mm	
						9.5mm	12.7mm							WN	BL
				D	G	X	t1				t2	B1	T1	A	r
12	558.8	381.0	400.1	66.5	66.5	304.8	298.5	155.4	323.9	11.2	489.0	20	35.1	-	-
14	602.0	412.8	431.8	69.9	69.9	336.6	330.2	165.1	355.6	11.2	527.1	20	38.1	-	-
16	685.8	469.9	495.3	76.2	76.2	387.4	381.0	177.8	406.4	11.2	603.3	20	41.1	-	-
18	743.0	533.4	546.1	82.6	82.6	438.2	431.8	184.2	457.2	11.2	654.1	20	44.5	-	-
20	812.8	584.2	609.6	88.9	88.9	488.9	482.6	190.5	508.0	11.2	723.9	24	44.5	-	-
22	870.0	641.4	666.8	95.3	95.3	539.8	533.4	196.9	558.8	11.2	777.7	24	47.8	-	-
24	939.8	692.2	717.6	101.6	101.6	590.6	584.2	203.2	609.6	11.2	838.2	24	50.8	-	-
26	1016.0	749.3	747.8	108.0	125.5	641.4	635.0	222.25	660.4	12.7	914.4	28	50.8	431	765
28	1073.2	800.1	803.2	111.3	131.8	692.2	685.8	234.95	711.2	12.7	965.2	28	53.8	484	896
30	1130.3	857.3	826.1	114.3	139.7	743.0	736.6	247.65	762.0	12.7	1022.4	28	53.8	550	1060
32	1193.8	914.4	917.5	117.4	147.6	793.8	787.4	260.35	812.8	12.7	1079.5	28	60.5	614	1237
34	1244.6	965.2	973.1	120.7	153.9	844.6	838.2	269.75	863.6	14.2	1130.3	28	60.5	675	1410
36	1314.5	1022.4	1031.8	124.0	162.1	895.4	889.0	282.45	914.4	14.2	1193.8	28	66.5	764	1645
38	1270.0	1054.1	1022.4	152.4	155.5	946.2	939.8	254.00		14.2	1162.1	28	60.5	645	1492
40	1320.8	1111.3	1073.2	158.8	162.1	997.0	990.6	263.65		14.2	1212.9	32	60.5	693	1676
42	1403.4	1168.4	1127.3	168.2	171.5	1047.8	1041.4	279.40	To be specified by purchaser	14.2	1282.7	28	66.5	858	2006
44	1454.2	1225.6	1181.1	173.0	177.8	1098.6	1092.2	289.05		14.2	1333.5	32	66.5	911	2223
46	1511.3	1276.4	1235.0	179.3	185.7	1149.4	1143.0	299.97		14.2	1390.7	32	66.5	1019	2518
48	1593.9	1333.5	1289.1	189.0	195.3	1200.2	1193.8	315.98		14.2	1460.5	32	73.2	1200	2925
50	1670.1	1384.3	1343.2	196.9	203.2	1251.1	1244.6	328.68		14.2	1524.1	28	79.2	1403	3351
52	1720.9	1435.1	1394.0	203.2	209.6	1301.8	1295.4	336.55		14.2	1574.8	32	79.2	1473	3650
54	1778.0	1492.3	1447.8	209.6	217.4	1352.6	1346.2	349.25		14.2	1632.0	32	79.2	1616	4059
56	1854.2	1543.1	1501.7	217.4	225.6	1403.4	1397.0	361.95		15.8	1695.5	32	85.9	1820	4550
58	1905.0	1600.2	1552.5	222.3	231.7	1454.2	1447.8	369.82		15.8	1746.3	32	85.9	1929	4950
60	1993.9	1657.4	1609.9	233.4	242.8	1505.0	1498.6	388.87		17.5	1822.5	28	91.9	2325	5709

Notes:

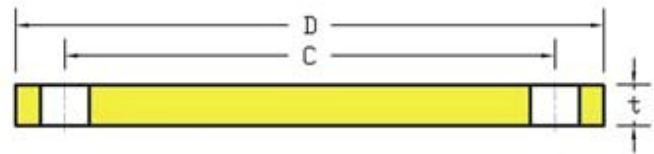
- (1) Class 600 flanges will be furnished with 0.25*(6.35mm) raised face, which is included in 'Thickness (t)' and 'Length through Hub' (T1)
- (2) Dimensional tolerance are in accordance with ANSI B16.5

CLASS B & D FLANGES TABLE 1

AWWA Standard Steel Rings Flanges, Class B (86 psi) and Class D (175-150psi)



SLIP-ON



BLIND

Dimensions in inches

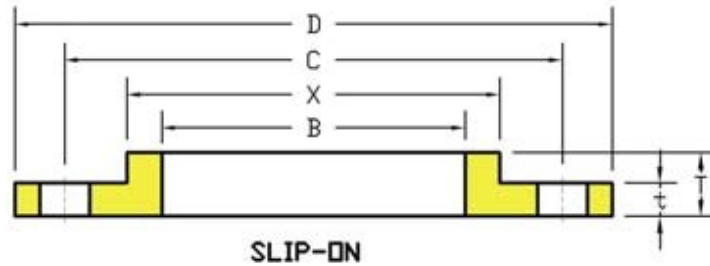
Nominal Pipe Size	Outside Diam.	Bore	Thickness		DRILLING			
					Bolt Circle Diam.	Number of Holes	Diam. Of Bolt Holes	
							ClassB	ClassD
D	B	ClassB(t)	ClassD(t)	C		ClassB	ClassD	
4	9	4.57	5/8	5/8	7 1/2	8	3/4	3/4
5	10	5.66	5/8	5/8	8 1/2	8	3/4	7/8
6	11	6.72	11/16	11/16	9 1/2	8	3/4	7/8
8	13 1/2	8.72	11/16	11/16	11 3/4	8	3/4	7/8
10	16	10.88	11/16	11/16	14 1/4	12	3/4	1
12	19	12.88	11/16	13/16	17	12	3/4	1
14	21	14.19	11/16	15/16	18 3/4	12	7/8	1 1/8
16	23 1/2	16.19	11/16	1	21 1/4	16	7/8	1 1/8
18	25	18.19	11/16	1 1/16	22 3/4	16	7/8	1 1/4
20	27 1/2	20.19	11/16	1 1/8	25	20	7/8	1 1/4
22	29 1/2	22.19	3/4	1 13/16	27 1/4	20	7/8	1 3/8
24	32	24.19	3/4	1 1/4	29 1/2	20	7/8	1 3/8
26	34 1/4	26.19	13/16	1 5/16	31 3/4	24	7/8	1 3/8
28	36 1/2	28.19	7/8	1 5/16	34	28	7/8	1 3/8
30	38 3/4	30.19	7/8	1 3/8	36	28	1	1 3/8
32	41 3/4	32.19	15/16	1 1/2	38 1/2	28	1	1 5/8
34	43 3/4	34.19	15/16	1 1/2	40 1/2	32	1	1 5/8
36	46	36.19	1	1 5/8	42 3/4	32	1	1 5/8
38	48 3/4	38.19	1	1 5/8	45 1/4	32	1	1 5/8
40	50 3/4	40.19	1	1 5/8	47 1/4	36	1	1 5/8
42	53	42.19	1 1/8	1 3/4	49 1/2	36	1 1/8	1 5/8
44	55 1/4	44.19	1 1/8	1 3/4	51 3/4	40	1 1/8	1 5/8
46	57 1/4	46.19	1 1/8	1 3/4	53 3/4	40	1 1/8	1 5/8
48	59 1/2	48.19	1 1/4	1 3/4	56	44	1 1/8	1 5/8
50	61 3/4	50.19	1 1/4	2	58 1/4	44	1 1/4	1 7/8
52	64	52.19	1 1/4	2	60 1/2	44	1 1/4	1 7/8
54	66 1/4	54.19	1 3/8	2 1/8	62 3/4	44	1 3/8	1 7/8
60	73	60.19	1 1/2	2 1/4	69 1/4	52	1 3/8	1 7/8
66	80	66.19	1 5/8	2 1/2	76	52	1 3/8	1 7/8
72	86 1/2	72.19	1 3/4	2 5/8	82 1/2	60	1 3/8	1 7/8
78	93	78.19	2	2 3/4	89	64	1 5/8	2 1/8
84	99 3/4	84.19	2	2 3/4	95 1/2	64	1 5/8	2 1/8
90	106 1/2	90.19	2 1/4	3	102	68	1 7/8	2 3/8
96	113 1/4	96.19	2 1/4	3	108 1/2	68	1 7/8	2 3/8
102	120	102.19	2 1/2	3 1/4	114 1/2	72	2 1/8	2 5/8
108	126 3/4	108.19	2 1/2	3 1/4	120 3/4	72	2 1/8	2 5/8
114	133 1/2	114.19	2 3/4	3 1/2	126 3/4	76	2 3/8	2 7/8
120	140 1/4	120.19	2 3/4	3 1/2	132 3/4	76	2 3/8	2 7/8

Note:

(1) The 'Bore' (B) shall be 3/16 in. large than the nominal outside diameter of the pipe, unless otherwise specified.

CLASS B & D FLANGES TABLE 2

AWWA Standard Steel Hub Flanges, Class B(86 psi)
and Class D(175-150 psi)



Dimensions in inches

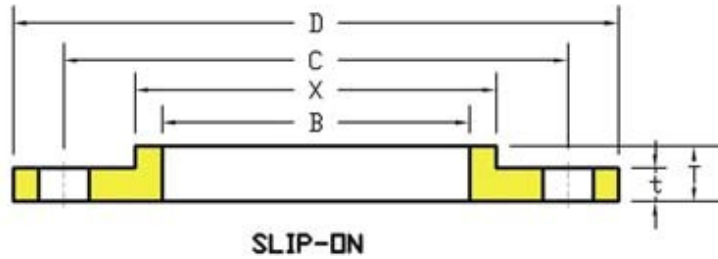
Nominal Pipe Size	Outside Diam.	Bore	Thickness	Length Thru Hub	Diam. of Hub at Base	DRILLING			
						Bolt Circle Diam.	Number of Holes	Diam. of Bolt Holes	
								Class B	Class D
D	B	t	T	X	C				
4	9	4.57	1/2	7/8	5 5/16	7 1/2	8	3/4	3/4
5	10	5.66	9/16	1 1/4	6 5/16	8 1/2	8	3/4	7/8
6	11	6.72	9/16	1 1/4	7 9/16	9 1/2	8	3/4	7/8
8	13 1/2	8.72	9/16	1 1/4	9 11/16	11 3/4	8	3/4	7/8
10	16	10.88	11/16	1 1/4	12	14 1/4	12	3/4	1
12	19	12.88	11/16	1 1/4	14 3/8	17	12	3/4	1
14	21	14.19	3/4	1 1/4	15 3/4	18 3/4	12	7/8	1 1/8
16	23 1/2	16.19	3/4	1 1/4	18	21 1/4	16	7/8	1 1/8
18	25	18.19	3/4	1 1/4	19 7/8	22 3/4	16	7/8	1 1/4
20	27 1/2	20.19	3/4	1 1/4	22	25	20	7/8	1 1/4
22	29 1/2	22.19	1	1 3/4	24 1/4	27 1/4	20	7/8	1 3/8
24	32	24.19	1	1 3/4	26 1/8	29 1/2	20	7/8	1 3/8
26	34 1/4	26.19	1	1 3/4	28 1/2	31 3/4	24	7/8	1 3/8
28	36 1/2	28.19	1	1 3/4	30 1/2	34	28	7/8	1 3/8
30	38 3/4	30.19	1	1 3/4	32 1/2	36	28	1	1 3/8
32	41 3/4	32.19	1 1/8	1 3/4	34 3/4	38 1/2	28	1	1 5/8
34	43 3/4	34.19	1 1/8	1 3/4	36 3/4	40 1/2	32	1	1 5/8
36	46	36.19	1 1/8	1 3/4	38 3/4	42 3/4	32	1	1 5/8
38	48 3/4	38.19	1 1/8	1 3/4	40 3/4	45 1/4	32	1	1 5/8
40	50 3/4	40.19	1 1/8	1 3/4	43	47 1/4	36	1	1 5/8
42	53	42.19	1 1/4	1 3/4	45	49 1/2	36	1 1/8	1 5/8
44	55 1/4	44.19	1 1/4	2 1/4	47	51 3/4	40	1 1/8	1 5/8
46	57 1/4	46.19	1 1/4	2 1/4	49	53 3/4	40	1 1/8	1 5/8
48	59 1/2	48.19	1 3/8	2 1/2	51	56	44	1 1/8	1 5/8
50	61 3/4	50.19	1 3/8	2 1/2	53	58 1/4	44	1 1/4	1 7/8
52	64	52.19	1 3/8	2 1/2	55	60 1/2	44	1 1/4	1 7/8
54	66 1/4	54.19	1 3/8	2 1/2	57	62 3/4	44	1 3/8	1 7/8
60	73	60.19	1 1/2	2 3/4	63	69 1/4	52	1 3/8	1 7/8
66	80	66.19	1 1/2	2 3/4	69	76	52	1 3/8	1 7/8
72	83 1/2	72.19	1 1/2	2 3/4	75	82 1/2	60	1 3/8	1 7/8
78	93	78.19	1 3/4	3	81 1/4	89	64	1 5/8	2 1/8
84	99 3/4	84.19	1 3/4	3	87 1/2	95 1/2	64	1 5/8	2 1/8
90	106 1/2	90.19	2	3 1/4	93 3/4	102	68	1 7/8	2 3/8
96	113 1/4	96.19	2	3 1/4	100	108 1/2	68	1 7/8	2 3/8
102	120	102.19	2 1/4	3 1/2	105 3/4	114 1/2	72	2 1/8	2 5/8
108	126 3/4	108.19	2 1/4	3 1/2	111 1/2	120 3/4	72	2 1/8	2 5/8
114	133 1/2	114.19	2 1/2	3 3/4	117 3/4	126 3/4	76	2 3/8	2 7/8
120	140 1/4	120.19	2 1/2	3 3/4	124	132 3/4	76	2 3/8	2 7/8

Note:

- (1) For Slip-on Flanges, (Hub Type Flanges), the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees.
- (2) The 'Bore' (B) shall be 3/16 in. large than the nominal outside diameter of the pipe, unless otherwise specified.

CLASS E FLANGES TABLE 3

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



Dimensions in inches

Nominal Pipe Size	Outside Diam.	Bore	Thickness	Length Thru Hub	Diam. of Hub at Base	DRILLING		
						Bolt Circle Diam.	Number of Holes	Diam. of Bolt Holes
	D	B	t	T	X	C		
4	9	4.57	1 5/16	1 5/16	5 5/16	7 1/2	8	3/4
5	10	5.66	1 5/16	1 7/16	6 7/16	8 1/2	8	7/8
6	11	6.72	1	1 9/16	7 9/16	9 1/2	8	7/8
8	13 1/2	8.72	1 1/8	1 3/4	9 11/16	11 3/4	8	7/8
10	16	10.88	1 13/16	1 15/16	12	14 1/4	12	1
12	19	12.88	1 1/4	2 3/16	14 3/8	17	12	1
14	21	14.19	1 3/8	2 1/4	15 3/4	18 3/4	12	1 1/8
16	23 1/2	16.19	1 7/16	2 1/2	18	21 1/4	16	1 1/8
18	25	18.19	1 9/16	2 11/16	19 7/8	22 3/4	16	1 1/4
20	27 1/2	20.19	1 11/16	2 7/8	22	25	20	1 1/4
22	29 1/2	22.19	1 13/16	3 1/8	24	27 1/4	20	1 3/8
24	32	24.19	1 7/8	3 1/4	26 1/8	29 1/2	20	1 3/8
26	34 1/4	26.19	2	3 3/8	28 1/2	31 3/4	24	1 3/8
28	36 1/2	28.19	2 1/16	3 7/16	30 3/4	34	28	1 3/8
30	38 3/4	30.19	2 1/8	3 1/2	32 3/4	36	28	1 3/8
32	41 3/4	32.19	2 1/4	3 5/8	35	38 1/2	28	1 5/8
34	43 3/4	34.19	2 15/16	3 11/16	37	40 1/2	32	1 5/8
36	46	36.19	2 3/8	3 3/4	39 1/4	42 3/4	32	1 5/8
38	48 3/4	38.19	2 3/8	3 3/4	41 3/4	45 1/4	32	1 5/8
40	50 3/4	40.19	2 1/2	3 7/8	43 3/4	47 1/4	36	1 5/8
42	53	42.19	2 5/8	4	46	49 1/2	36	1 5/8
44	55 1/4	44.19	2 5/8	4	48	51 3/4	40	1 5/8
46	57 1/4	46.19	2 11/16	4 1/16	50	53 3/4	40	1 5/8
48	59 1/2	48.19	2 3/4	4 1/8	52 1/4	56	44	1 5/8
50	61 3/4	50.19	2 3/4	4 1/8	54 1/4	58 1/4	44	1 7/8
52	64	52.19	2 7/8	4 1/4	56 1/2	60 1/2	44	1 7/8
54	66 1/4	54.19	3	4 3/8	58 3/4	62 3/4	44	1 7/8
60	73	60.19	3 1/8	4 1/2	65 1/4	69 1/4	52	1 7/8
66	80	66.19	3 3/8	4 7/8	71 1/2	76	52	1 7/8
72	86 1/2	72.19	3 1/2	5	78 1/2	82 1/2	60	1 7/8
78	93	78.19	3 7/8	5 3/8	84 1/2	89	64	2 1/8
84	99 3/4	84.19	3 7/8	5 3/8	90 1/2	95 1/2	64	2 1/8
90	106 1/2	90.19	4 1/4	5 3/4	96 3/4	102	68	2 3/8
96	113 1/4	96.19	4 1/4	5 3/4	102 3/4	108 1/2	68	2 3/8
102	120	102.19	4 5/8	6 1/8	108 3/4	114 1/2	72	2 5/8
108	126 3/4	108.19	4 5/8	6 1/8	114 1/2	120 3/4	72	2 5/8
114	133 1/2	114.19	5	6 1/2	121 1/4	126 3/4	76	2 7/8
120	140 1/4	120.19	5	6 1/2	128	132 3/4	76	2 7/8

Note:

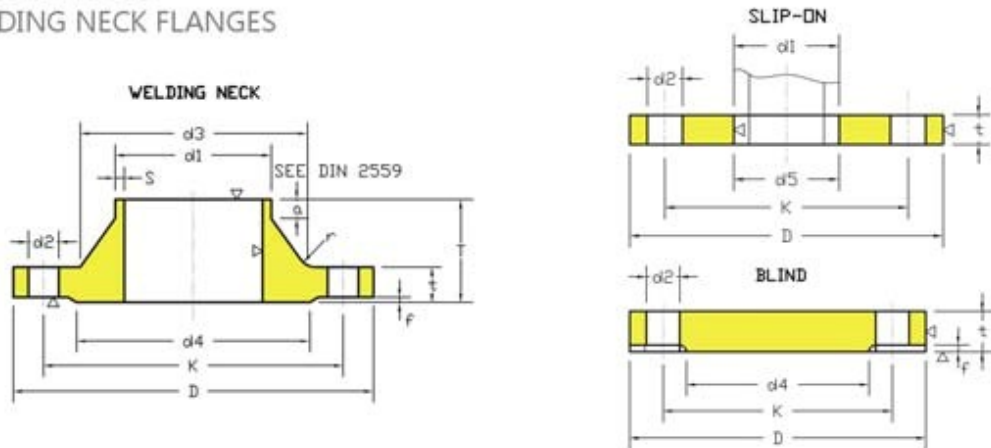
- (1) For Slip-on Flanges, (Hub Type Flanges), the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees.
- (2) The 'Bore' (B) shall be 3/16 in. large than the nominal outside diameter of the pipe, unless otherwise specified.

DIN-6BAR

DIN2573 SLIP-ON FLANGES

DIN2527 BLIND FLANGES

DIN2631 WELDING NECK FLANGES



Unit: mm

Bore		Common Dimension						Hub				Raised Face		Drilling			approx. Weight(kg)		
Nominal Bore	d1	D	d5	t			K	T	d3	S	r	a≈	d4	f	Number of Bolt	Dia. of Bolt	d2	Din 2573	Din 2631
				Weding Neck	Slip On	Blind													
10	14 17.2 *)	75	14.50 17.70	12.0	12.0	12.0	50.0	28.0	22 26	1.8	4	6	35	2	4	M10	11.5	0.363	0.37
15	20 21.3 *)	80	21.00 22.00	12.0	12.0	12.0	55.0	30.0	28 30	2	4	6	40	2	4	M10	11.5	0.41	0.41
20	25 26.9 *)	90	26.00 27.60	14.0	14.0	14.0	65.0	32.0	35 38	2.3	4	6	50	2	4	M10	11.5	0.600	0.615
25	30 33.7 *)	100	31.00 34.40	14.0	14.0	14.0	75.0	35.0	40 42	2.6	4	6	60	2	4	M10	11.5	0.74	0.747
32	38 42.4 *)	120	39.00 43.10	14.0	16.0	14.0	90.0	35.0	50 55	2.6	6	6	70	2	4	M12 (1/2 ")	14	1.19	1.05
40	44.5 48.3 *)	130	45.50 49.00	14.0	16.0	14.0	100.0	38.0	58 62	2.6	6	7	80	3	4	M12 (1/2 ")	14	1.39	1.18
50	57 60.3 *)	140	58.10 61.10	14.0	16.0	14.0	110.0	38.0	70 74	2.9	6	8	90	3	4	M12 (1/2 ")	14	1.53	1.34
65	76.1 *)	160	77.10	14.0	16.0	14.0	130.0	38.0	88	2.9	6	9	110	3	4	M12 (1/2 ")	14	1.89	1.67
80	88.9 *)	190	90.30	16.0	18.0	16.0	150.0	42.0	102	3.2	8	10	128	3	4	M16 (1/2 ")	18	2.98	2.71
100	108 114.3 *)	210	109.60 115.90	16.0	18.0	16.0	170.0	45.0	122 130	3.6	8	10	148	3	4	M16 (5/8 ")	18	3.46	3.24
125	133 139.7 *)	240	134.80 141.60	18.0	20.0	18.0	200.0	48.0	148 155	4	8	10	178	3	8	M16 (5/8 ")	18	4.6	4.49
150	159 168.3 *)	265	161.10 170.50	18.0	20.0	18.0	225.0	48.0	172 184	4.5	10	12	202	3	8	M16 (5/8 ")	18	5.22	5.15
200	216 219.1 *)	320	221.80	20.0	22.0	20.0	280.0	55.0	230 236	5.9	10	15	258	3	8	M16 (5/8 ")	18	7.15	7.78
250	267 273 *)	375	270.20 276.20	22.0	24.0	22.0	335.0	60.0	282 290	6.2	12	15	312	3	12	M16 (5/8 ")	18	9.61	10.8
300	318 323.9 *)	440	327.60	22.0	24.0	22.0	395.0	62.0	335 342	7.1	12	15	365	4	12	M20 (3/4 ")	23	12.6	14
350	355.6 *)	490	350.70 372.20	22.0	26.0	22.0	445.0	62.0	385	7.1	12	15	415	4	12	M20 (3/4 ")	23	15.6	16.1
400	406.4 *)	540	411.00 423.70	22.0	28.0	22.0	495.0	65.0	438	7.1	12	15	455	4	16	M20 (3/4 ")	23	18.4	18.3
500	419 508 *) 521	645	513.60	24.0	30.0	24.0	600.0	68.0	538	7.1	12	15	570	4	20	M20 (3/4 ")	23	24.5	24.6
600	609.6 *)	755		24.0			705.0	70.0	640	7.1	12	16	670	5	20	M24 (7/8 ")	27		
700	711.2 *)	860		24.0			810.0	70.0	740	7.1	12	16	775	5	24	M24 (7/8 ")	27		
800	720 812.8 *) 820	975		24.0			920.0	70.0	842	7.1	12	16	880	5	24	M27 (1 ")	30		
900	914.4 *)	1075		26.0			1020.0	70.0	942	7.1	12	16	980	5	24	M27 (1 ")	30		
1000	920 1016 *) 1020	1175		26.0			1120.0	70.0	1045	7.1	16	16	1080	5	28	M27 (1 ")	30		

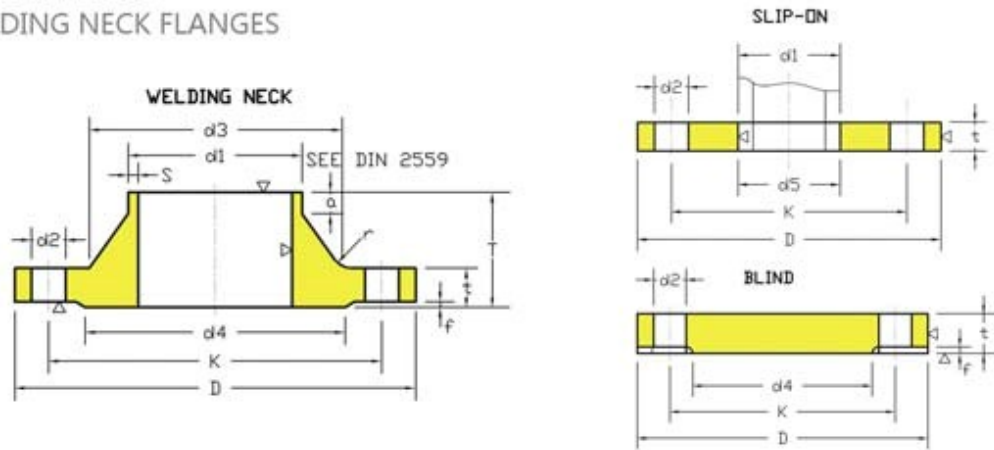
Note: * outside diameter of pipe complies with ISO recommendation R64

DIN 10BAR

DIN2576 SLIP-ON FLANGES

DIN2527 BLIND FLANGES

DIN2632 WELDING NECK FLANGES



Unit: mm

Bore		Common Dimension							Hub				Rasied Face		Drilling			approx. Weight(kg)		
Nominal Bore	d1	D	d5	t			K	T	d3	S	r	a ≈	d4	f	Number of Bolt	Dia. of Bolt		d2	Din 2576	Din 2632
				Weding Neck	Slip On	Blind														
10	14 17.2 *)	90	14.50 17.70	14.0	14.0	14.0	60.0	35.0	25 28	1.8	4	6	40	2	4.0	M12	(1/2 ")	14	0.163	0.58
15	20 21.3 *)	95	21.00 22.00	14.0	14.0	14.0	65.0	35.0	30 32	2	4	6	45	2	4.0	M12	(1/2 ")	14	0.675	0.648
20	25 26.9 *)	105	26.00 27.60	16.0	16.0	16.0	75.0	38.0	38 40	2.3	4	6	58	2	4.0	M12	(1/2 ")	14	0.947	0.952
25	30 33.7 *)	115	31.00 34.40	16.0	16.0	16.0	85.0	38.0	42 45	2.6	4	6	68	2	4.0	M12	(1/2 ")	14	1.14	1.14
32	38 42.4 *)	140	39.00 43.10	16.0	16.0	16.0	100.0	40.0	52 56	2.6	6	6	78	2	4.0	M16	(5/8 ")	18	1.66	1.69
40	44.5 48.3 *)	150	45.50 49.00	16.0	16.0	16.0	110.0	42.0	60 64	2.6	6	7	88	3	4.0	M16	(5/8 ")	18	1.89	1.86
50	57 60.3 *)	165	58.10 61.10	18.0	18.0	18.0	125.0	45.0	72 75	2.9	6	8	102	3	4.0	M16	(5/8 ")	18	2.51	2.53
65	76.1 *)	185	77.10	18.0	18.0	18.0	145.0	45.0	90	2.9	6	10	122	3	4.0	M16	(5/8 ")	18	3	3.06
80	88.9 *)	200	90.30	20.0	20.0	20.0	160.0	50.0	105	3.2	8	10	138	3	4.0	M16	(5/8 ")	18	3.79	3.7
100	108 114.3 *)	220	109.60 115.90	20.0	20.0	20.0	180.0	52.0	125 131	3.6	8	12	158	3	8.0	M16	(5/8 ")	18	4.2	4.62
125	133 139.7 *)	250	134.80 141.60	22.0	22.0	22.0	210.0	55.0	150 156	4	8	12	188	3	8.0	M16	(5/8 ")	18	5.71	6.3
150	159 168.3 *)	285	161.10 170.50	22.0	22.0	22.0	240.0	55.0	175 184	4.5	10	12	212	3	8.0	M20	(3/4 ")	23	6.72	7.75
200	216 219.1 *)	340	221.80	24.0	24.0	24.0	295.0	62.0	232 235	5.9	10	16	268	3	8.0	M20	(3/4 ")	23	9.5	11.3
250	267 273 *)	395	270.20 276.20	26.0	26.0	26.0	350.0	68.0	285 292	6.3	12	16	320	3	12.0	M20	(3/4 ")	23	12.5	14.7
300	318 323.9 *)	445	327.60	26.0	26.0	28.0	400.0	68.0	335 344	7.1	12	16	370	4	12.0	M20	(3/4 ")	23	14.4	17.6
350	355.6 *)	505	350.70 372.20	26.0	28.0	30.0	460.0	68.0	385	7.1	12	16	430	4	16.0	M20	(3/4 ")	23	20.6	21.4
400	406.4 *)	565	411.00 423.70	26.0	32.0	32.0	515.0	72.0	440	7.1	12	16	482	4	16.0	M24	(7/8 ")	27	27.9	28.6
500	508 *) 521	670	513.60	28.0	38.0	34.0	620.0	75.0	542	7.1	12	16	585	4	20.0	M24	(7/8 ")	27	41.1	38.1
600	609.6 *) 622	780		28.0			725.0	80.0	642	7.1	12	18	685	5	20.0	M27	(1 ")	30		
700	711.2 *) 720	895		30.0			840.0	80.0	745	8	12	18	800	5	24.0	M27	(1 ")	30		
800	812.8 *) 820	1015		32.0			950.0	90.0	850	8	12	18	905	5	24.0	M30	(1 1/8 ")	33		
900	914.4 *) 920	1115		34.0			1050.0	95.0	950	10	12	20	1005	5	28.0	M30	(1 1/8 ")	33		
1000	1016 *) 1020	1230		34.0			1160.0	95.0	1052	10	16	20	1110	5	28.0	M30	(1 1/4 ")	36		

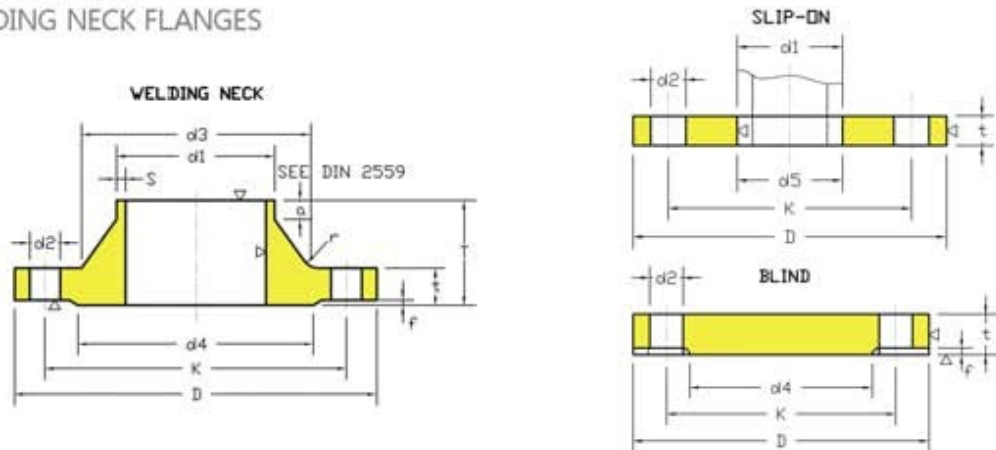
Note: * outside diameter of pipe complies with ISO recommendation R64

DIN-16BAR

DIN2543 SLIP-ON FLANGES

DIN2527 BLIND FLANGES

DIN2633 WELDING NECK FLANGES



Unit: mm

Bore		Common Dimension						Hub				Rasied Face		Drilling			approx. Weight(kg)			
Nominal Bore	d1	D	d5	t			K	T	d3	S	r	a≈	d4	f	Number of Bolt	Dia. of Bolt		d2	Din 2543	Din 2633
				Weding Neck	Slip On (No Hub)	Blind														
10	14 17.2 *)	90	14.50 17.70	14.0	14.0	14.0	60.0	35.0	25 28	1.8	4	6	40	2	4	M12	(1/2 °)	14	0.63	0.58
15	20 21.3 *)	95	21.00 22.00	14.0	16.0	14.0	65.0	35.0	30 32	2	4	6	45	2	4	M12	(1/2 °)	14	0.72	0.648
20	25 26.9 *)	105	26.00 27.60	16.0		16.0	75.0	38.0	38 40	2.3	4	6	58	2	4	M12	(1/2 °)	14	1.01	0.952
25	30 33.7 *)	115	31.00 34.40	16.0	16.0	16.0	85.0	38.0	42 45	2.6	4	6	68	2	4	M12	(1/2 °)	14	1.23	1.14
32	38 42.4 *)	140	39.00 43.10	16.0	16.0	16.0	100.0	40.0	52 56	2.6	6	6	78	2	4	M16	(5/8 °)	18	1.8	1.69
40	44.5 48.3 *)	150	45.50 49.00	16.0	16.0	16.0	110.0	42.0	60 64	2.6	6	7	88	3	4	M16	(5/8 °)	18	2.09	1.86
50	57 60.3 *)	165	58.10 61.10	18.0	18.0	18.0	125.0	45.0	72 75	2.9	6	8	102	3	4	M16	(5/8 °)	18	2.88	2.53
65	76.1 *)	185	77.10	18.0	18.0	18.0	145.0	45.0	90	2.9	6	10	122	3	4	M16	(5/8 °)	18	3.66	3.06
80	88.9 *)	200	90.30	20.0	20.0	20.0	160.0	50.0	105	2.2	8	10	138	3	8	M16	(5/8 °)	18	4.77	3.7
100	108 114.3 *)	220	109.60 115.90	20.0	20.0	20.0	180.0	52.0	125 131	3.6	8	12	158	3	8	M16	(5/8 °)	18	5.65	4.62
125	133 139.7 *)	250	134.80 141.60	22.0	22.0	22.0	210.0	55.0	150 156	4	8	12	188	3	8	M16	(5/8 °)	18	8.42	6.3
150	159 168.3 *)	285	161.10 170.50	22.0	22.0	22.0	240.0	55.0	175 184	4.5	10	12	212	3	8	M20	(3/4 °)	23	10.4	7.75
200	216 219.1 *)	340	221.80	24.0	24.0	24.0	295.0	62.0	232 235	5.9	10	16	268	3	12	M20	(3/4 °)	23	16.1	11
250	267 273 *)	405	270.20 276.20	26.0	26.0	26.0	355.0	70.0	285 292	6.3	12	16	320	3	12	M24	(7/8 °)	27	24.9	15.6
300	318 323.9 *)	460	327.60	28.0	28.0	28.0	410.0	78.0	338 344	7.1	12	16	378	4	12	M24	(7/8 °)	27	35.1	22
350	355.6 *)	520	350.70 372.20	30.0	30.0	30.0	470.0	82.0	390	8	12	16	438	4	16	M24	(7/8 °)	27	47.8	28.7
400	406.4 *)	580	411.00 423.70	32.0	32.0	32.0	525.0	85.0	445	8	12	16	490	4	16	M27	(1 °)	30	63.5	36.3
500	419 506 *)	715	513.60	34.0	36.0	34.0	650.0	90.0	548	8	12	16	610	4	20	M30	(1 1/8 °)	33	102	59.3
600	609.6 *)	840		36.0	40.0		770.0	95.0	652	8.8	12	18	725	5	20	M33	(1 1/4 °)	36		
700	711.2 *)	910		36.0			840.0	100.0	755	8.8	12	18	795	5	24	M33	(1 1/4 °)	36		
800	720 812.8 *)	1025		38.0			950.0	105.0	855	10	12	20	900	5	24	M36	(1 3/8 °)	39		
900	914.4 *)	1125		40.0			1050.0	110.0	955	10	12	20	1000	5	28	M36	(1 3/8 °)	39		
1000	920 1016 *)	1255		42.0			1170.0	120.0	1058	10	16	20	1115	5	28	M39	(1 1/2 °)	42		

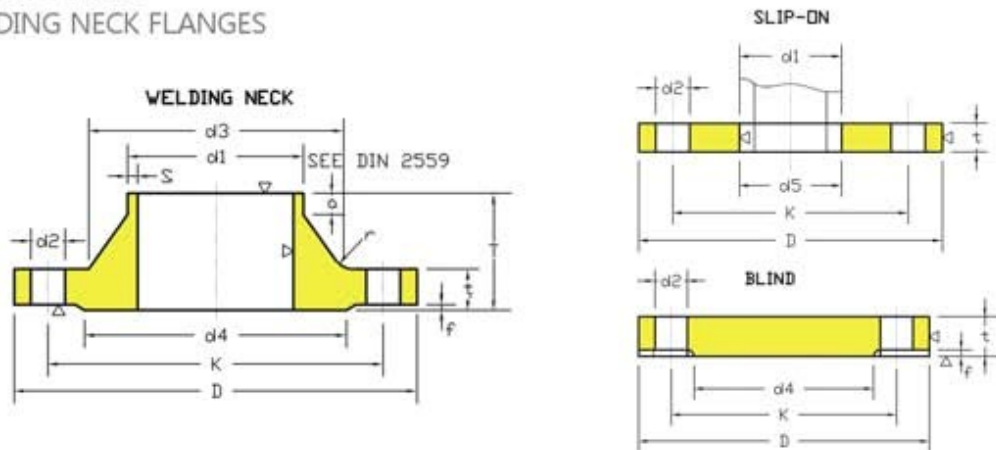
Note: * outside diameter of pipe complies with ISO recommendation R64

DIN-25BAR

DIN2544 SLIP-ON FLANGES

DIN2527 BLIND FLANGES

DIN2634 WELDING NECK FLANGES



Unit: mm

Bore		Common Dimension						Hub				Raised Face		Drilling			approx. Weight(kg)		
Nominal Bore	d1	D	d5	t			K	T	d3	S	r	a [*]	d4	f	Number of Bolt	Dia. of Bolt	d2	Din 2544	Din 2634
				Weding Neck	Slip On	Blind													
10	14 17.2 +)	90	14.50 17.70	16.0		16.0	60.0	35.0	25 28	1.8	4	6	40	2	4	M12 (1/2 ")	14	0.72	0.661
15	20 21.3 +)	95	21.00 22.00	16.0	16.0	16.0	65.0	38.0	30 32	20	4	6	45	2	4	M12 (1/2 ")	14	0.81	0.746
20	25 26.9 +)	105	26.00 27.60	18.0	18.0	18.0	75.0	40.0	38 40	2.3	4	6	58	2	4	M12 (1/2 ")	14	1.24	1.06
25	30 33.7 +)	115	31.00 34.40	18.0	18.0	18.0	85.0	40.0	42 46	2.6	4	6	68	2	4	M12 (1/2 ")	14	1.38	1.29
32	38 42.4 +)	140	39.00 43.10	18.0	18.0	18.0	100.0	42.0	52 56	2.6	6	6	78	2	4	M16 (5/8 ")	18	2.03	1.88
40	44.5 48.3 +)	150	45.50 49.00	18.0	18.0	18.0	110.0	45.0	60 64	2.6	6	7	88	3	4	M16 (5/8 ")	18	2.35	2.34
50	57 60.3 +)	165	58.10 61.10 77.10	20.0	20.0	20.0	125.0	48.0	72 75	2.9	6	8	102	3	4	M16 (5/8 ")	18	3.2	2.82
65	76.1 +)	185	77.10	22.0	22.0	22.0	145.0	52.0	90	2.9	6	10	122	3	8	M16 (5/8 ")	18	4.29	3.74
80	88.9 +)	200	90.30	24.0	24.0	24.0	160.0	58.0	105	3.2	8	12	138	3	8	M16 (5/8 ")	18	5.88	4.75
100	108 114.3 +)	235	109.60 115.90	24.0	24.0	24.0	190.0	65.0	128 134	3.6	8	12	162	3	8	M20 (3/4 ")	23	7.54	6.52
125	133 139.7 +)	270	134.80 141.60	26.0	26.0	26.0	220.0	68.0	155 162	4	8	12	188	3	8	M24 (7/8 ")	27	10.8	9.07
150	159 168.3 +)	300	161.10 170.50	28.0	28.0	28.0	250.0	75.0	182 192	4.5	10	12	218	3	8	M24 (7/8 ")	27	14.5	11.8
200	216 219.1 +)	360	221.80	30.0	30.0	30.0	310.0	80.0	240 244	6.3	10	16	278	3	12	M24 (7/8 ")	27	22.3	17
250	267 273 +)	425	270.20 276.20	32.0	32.0	32.0	370.0	88.0	292 298	7.1	12	18	335	3	12	M27 (1 ")	30	33.5	24.4
300	318 323.9 +)	485	327.60	34.0	34.0	34.0	430.0	92.0	345 352	8	12	18	395	4	16	M27 (1 ")	30	46.3	31.2
350	355.6 +)	555	350.70 372.20	38.0	38.0	38.0	490.0	100.0	398	8	12	20	450	4	16	M30 (1 1/8 ")	33	68	17.2
400	406.4 +)	620	411.00 423.70	40.0	40.0	40.0	550.0	110.0	452	8.8	12	20	505	4	16	M33 (1 1/4 ")	36	89.7	61.7
500	508 +)	730	513.60	44.0	44.0	44.0	660.0	125.0	558	10	12	20	615	4	20	M33 (1 1/4 ")	36	138	89.6
600	609.6 +)	845		46.0			770.0	125.0	660	11	12	20	720	5	20	M36 (1 3/8 ")	39		104
700	711.2 +)	960		46.0			875.0	125.0	760	12.5	12	20	820	5	24	M39 (1 1/2 ")	42		136
800	812.8 +)	1085		50.0			990.0	135.0	865	14.2	12	22	930	5	24	M45 (1 3/4 ")	48		186
900	914.4 +)	1185		54.0			1090.0	145.0	968	16	12	24	1030	5	28	M45 (1 3/4 ")	48		236
1000	1016 +)	1320		58.0			1210.0	155.0	1070	17.5	16	24	1140	5	28	M52 (2 ")	56		307

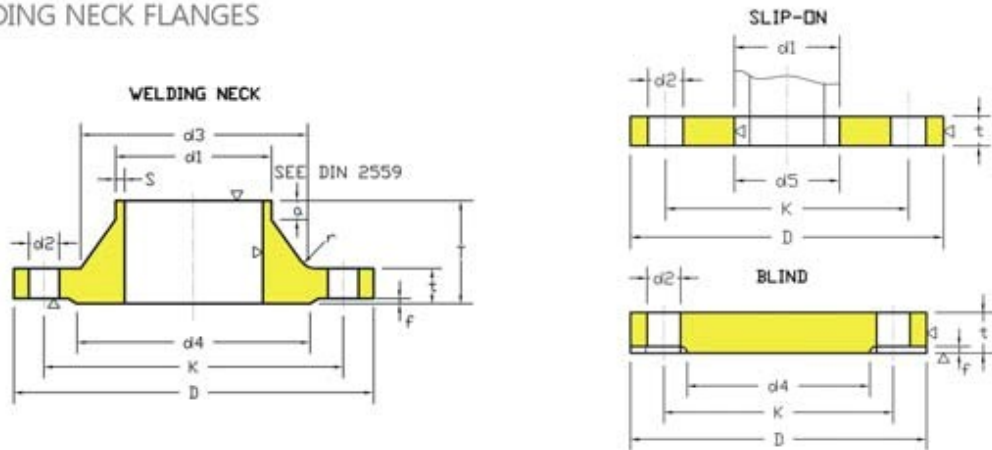
Note: * outside diameter of pipe complies with ISO recommendation R64

DIN-40BAR

DIN2545 SLIP-ON FLANGES

DIN2527 BLIND FLANGES

DIN2635 WELDING NECK FLANGES



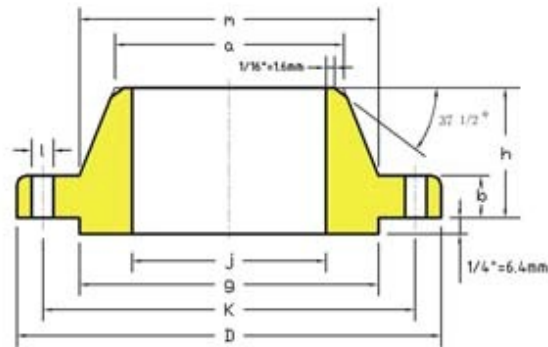
Unit: mm

Bore		Common Dimension							Hub				Rasied Face		Drilling			approx. Weight(kg)		
Nominal Bore	d1	D	d5	t			K	T	d3	S	r	a=	d4	f	Number of Bolt	Dia. of Bolt	d2	Din 2545	Din 2635	
				Weding Neck	Slip On	Blind														
10	14 17.2*)	90	14.50 17.70 20	16.0		16.0	60.0	35.0	25 28 30	1.8	4	6	40	2	4.0	M12	(1/2")	14	0.72	0.661
15	21.3*)	95	22.00 25	16.0	16.0	16.0	65.0	38.0	32 38	2	4	6	45	2	4.0	M12	(1/2")	14	0.81	0.746
20	26.9*)	105	27.60	18.0	18.0	18.0	75.0	40.0	40	2.3	4	6	58	2	4.0	M12	(1/2")	14	1.24	1.06
25	30 33.7*)	115	31.00 34.40 38	18.0	18.0	18.0	85.0	40.0	42 46 52	2.6	4	6	68	2	4.0	M12	(1/2")	14	1.38	1.29
32	42.4*)	140	43.10 44.5	18.0	18.0	18.0	100.0	42.0	56 60	2.6	6	6	78	2	4.0	M16	(5/8")	18	2.03	1.88
40	48.3*)	150	49.00	18.0	18.0	18.0	110.0	45.0	64	2.6	6	7	88	3	4.0	M16	(5/8")	18	2.35	2.33
50	57 60.3*)	165	58.10 61.10 77.10	20.0	20.0	20.0	125.0	48.0	72 75 90	2.9	6	8	102	3	4.0	M16	(5/8")	18	3.2	2.82
65	76.1*)	185	90.30	22.0	22.0	22.0	145.0	52.0		2.9	6	10	122	3	8.0	M16	(5/8")	18	4.29	3.74
80	88.9*)	200		24.0	24.0	24.0	160.0	58.0	105	3.2	8	12	138	3	8.0	M16	(5/8")	18	5.88	4.75
100	108 114.3*)	235	109.60 115.90	24.0	24.0	24.0	190.0	65.0	128 134	3.6	8	12	162	3	8.0	M20	(3/4")	23	7.54	6.52
125	133 139.7*)	270	134.80 141.60	26.0	26.0	26.0	220.0	68.0	155 162	4	8	12	188	3	8.0	M24	(7/8")	27	10.8	9.07
150	159 168.3*)	300	161.10 170.50	28.0	28.0	28.0	250.0	75.0	182 182	4.5	10	12	218	3	8.0	M24	(7/8")	27	14.5	11.8
175	191 193.7*)	350		32.0	32.0	32.0	295.0	82.0	215 218	5.6	10	15	260	3	12.0	M27	(1")	30	22.1	18.2
200	216 219.1*)	375	221.80	34.0	34.0	34.0	320.0	88.0	240 244	6.3	10	16	285	3	12.0	M27	(1")	30	27.2	21.5
250	267 273*)	450	270.20 276.20	38.0	38.0	38.0	385.0	105.0	298 306	7.1	12	18	345	3	12.0	M30	(1 1/8")	33	43.8	34.9
300	318 323.9*)	515	327.60	42.0	42.0	42.0	450.0	115.0	352 362	8	12	18	410	4	16.0	M30	(1 1/8")	33	63.3	49.7
350	355.6*)	580	350.70 372.20	46.0	46.0	46.0	510.0	125.0	408	8.8	12	20	465	4	16.0	M33	(1 1/8")	36	89.5	68.1
400	368 406.4*) 419	660	411.00 423.70	50.0	50.0	50.0	585.0	135.0	462	11	12	20	535	4	16.0	M36	(1 1/8")	39	127	96.5
500	508*) 521	755	513.60	52.0	52.0	52.0	670.0	140.0	562	14.2	12	20	615	4	20.0	M39	(1 1/2")	42	172	117

Note: * outside diameter of pipe complies with ISO recommendation R64

150 lb/sq.in. Welding Neck Flanges

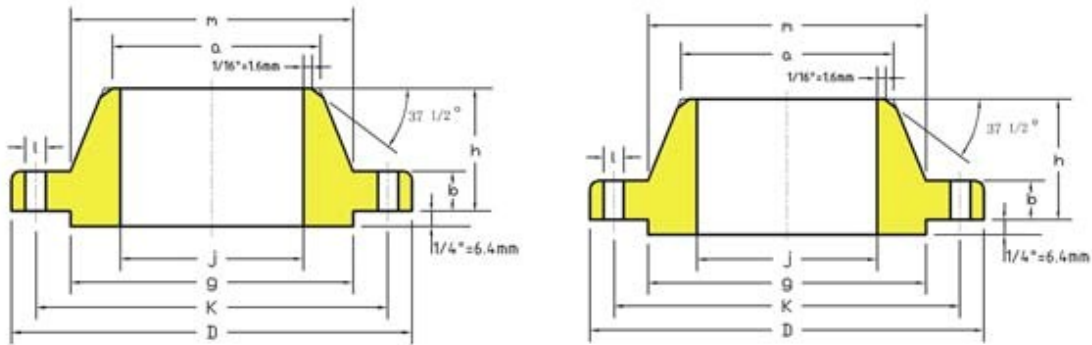
B.S.3293



Pipe		Flange				Hub		Raised Face	Drilling Template			Approx Weight
Nom. Size DN	Od In. mm	D in. mm	J in. mm	b in. mm	h in. mm	a in. mm	m in. mm	g in. mm	Number Anzahl	I In. mm	k in. mm	≈ Pound Kilo
26 #	26,0 660,4	34 1/4 870	To be specified by purchaser Vom Besteller anzugeben	2 50,8	5 127,0	26 660,4	28 1/2 723,9	29 1/4 743	24	1 3/8 34,9	31 3/4 806,5	260 118
28 #	28,0 711,2	36 1/2 927,1		2 1/16 52,4	5 1/16 128,6	28 711,2	30 3/4 781,1	31 1/4 793,8	28	1 3/8 34,9	34 863,6	295 134
30 #	30,0 762	38 3/4 984,3		2 1/8 54,0	5 1/8 130,2	30 762,0	32 3/4 831,9	33 3/4 857,3	28	1 3/8 34,9	36 914,4	338 153
32 #	32,0 812,8	41 3/4 1060,5		2 1/4 57,2	5 1/4 133,4	32 812,8	35 889,0	35 3/4 908,1	28	1 5/8 41,3	38 1/2 977,9	420 190
34 #	34,0 863,6	43 3/4 1111,3		2 5/16 58,8	5 5/16 135	34 863,6	37 939,8	37 3/4 958,8	32	1 5/8 41,3	40 1/2 1028,7	468 212
36 #	36,0 914,4	46 1168,4		2 3/8 60,3	5 3/8 136,5	36 914,4	39 1/4 977	40 1/4 1022,4	32	1 5/8 41,3	42 3/4 1085,9	534 242
38 #	38,0 965,2	48 3/4 1238,3		2 3/8 60,3	5 3/8 136,5	38 965,2	41 3/4 1060,5	42 1/4 1073,2	32	1 5/8 41,3	45 1/4 1149,4	625 284
40 #	40,0 1016,0	50 3/4 1289,1		2 1/2 63,5	5 1/2 139,7	40 1016,0	43 3/4 1111,3	44 1/4 1124	36	1 5/8 41,3	47 1/4 1200,2	685 311
42 #	42,0 1066,8	53 1346,2		2 5/8 66,7	5 5/8 142,9	42 1066,8	46 1168,4	47 1193,8	36	1 5/8 41,3	49 1/2 1257,3	788 358
44 #	44,0 1117,6	55 1/4 1403,4		2 5/8 66,7	5 5/8 142,9	44 1117,6	48 1219,2	49 1244,6	40	1 5/8 41,3	51 3/4 1314,5	830 376
46 #	46,0 1168,4	57 1/4 1454,2		2 11/16 68,3	5 11/16 144,5	46 1168,4	50 1270,0	51 1295,4	40	1 5/8 41,3	53 3/4 1365,3	880 399
48 #	48,0 1219,2	59 1/2 1511,3		2 3/4 69,9	5 3/4 146,1	48 1219,2	52 1/4 1327,2	53 1/2 1358,9	44	1 5/8 41,3	56 1422,4	970 440

300 lb/sq.in. Welding Neck Flanges

B.S.3293

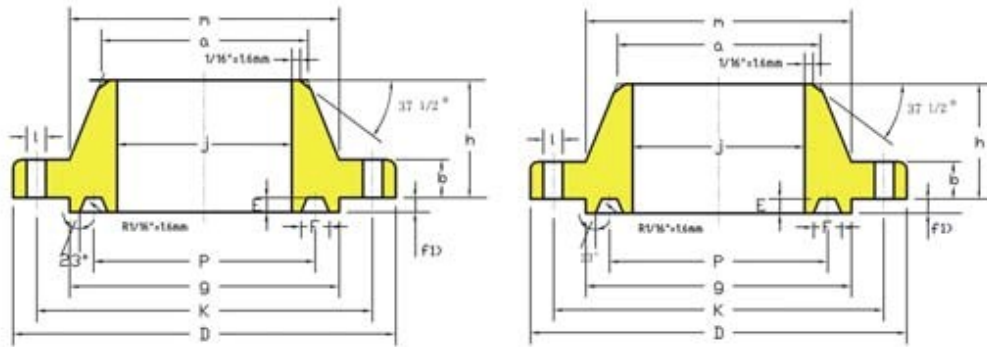


300 lb/sq.in. Welding Neck Flanges

Pipe		Flange				Hub		Raised Face	Drilling Template			Approx Weight
Nom. Size DN	OD in. mm	D in. mm	J in. mm	b in. mm	h in. mm	a in. mm	m in. mm	g in. mm	Number Anzahl	l in. mm	k in. mm	≈ Pound Kilo
26"	26,0 660,4	38 1/4 971,6	To be specified by purchaser Vom Besteller anzu geben	3 1/8 79,4	7 1/4 184,2	26 1/4 666,8	28 3/8 720,7	29 1/2 749,3	28	1 3/4 44,5	34 1/2 876,3	615 279
28"	28,0 711,2	40 3/4 1035,1		3 3/8 85,7	7 3/4 196,9	28 1/4 717,6	30 1/2 774,7	31 1/2 800,1	28	1 3/4 44,5	37 939,8	750 340
30"	30,0 762	43 1092,2		3 5/8 92,1	8 1/4 209,6	30 1/4 768,4	32 9/16 827,1	33 3/4 857,3	28	1 7/8 47,6	39 1/4 997,0	858 390
32"	32,0 812,8	45 1/4 1149,4		3 7/8 98,4	8 3/4 222,3	32 1/4 819,2	34 11/16 881,1	36 914,4	28	2 50,8	41 1/2 1054,1	960 435
34"	34,0 863,6	47 1/2 1206,5		4 101,6	9 1/8 231,8	34 5/16 871,5	36 7/8 936,6	38 965,2	28	2 50,8	43 1/2 1104,9	1110 504
36"	36,0 914,4	50 1270,0		4 1/8 104,8	9 1/2 241,3	36 5/16 922,3	39 990,6	40 1/4 1022,4	32	2 1/8 54,0	46 1168,4	1233 560

600 lb/sq.in. Welding Neck Flanges

Pipe		Flange				Hub		Raised Face	Drilling Template			Approx Weight
Nom. Size DN	OD in. mm	D in. mm	J in. mm	b in. mm	h in. mm	a in. mm	m in. mm	g in. mm	Number Anzahl	l in. mm	k in. mm	≈ pound Kilo
26"	26,0 660,4	40 1016,0	To be specified by purchaser Vom Besteller anzu geben	4 1/4 108	8 3/4 222,3	26 7/16 671,5	29 7/16 747,7	29 1/2 749,3	28	2 50,8	36 914,4	963 437
28"	28,0 711,2	42 1/4 1073,2		4 3/8 111,1	9 1/4 235	28 1/2 723,9	31 5/8 803,3	31 1/2 800,1	28	2 1/8 54,0	38 965,2	1120 508
30"	30,0 762	44 1/2 1130,0		4 1/2 101,6	9 3/4 247,7	30 1/2 774,7	33 15/16 862,0	33 3/4 857,3	28	2 1/8 54,0	40 1/4 1022,4	1232 559
32"	32,0 812,8	47 1193,8		4 5/8 108,0	10 1/4 260,4	32 1/2 825,5	36 1/8 917,6	36 914,4	28	2 3/8 60,3	44 1/2 1079,5	1500 680
34"	34,0 863,6	49 1244,6		4 3/4 111,1	10 5/8 269,9	34 9/16 877,9	38 5/16 973,1	38 965,2	28	2 3/8 60,3	44 1/2 1130,3	1580 717
36"	36,0 914,4	51 3/4 1314,5		4 7/8 114,3	11 1/8 282,6	36 7/16 928,7	40 5/8 1031,9	40 1/4 1022,4	28	2 5/8 66,7	47 1193,8	1719 780



300 lb/sq.in. Welding Neck Flanges, Ring Joint Type

Pipe		Flange					Hub		Raised Face	Drilling Template			Ring Joint			Approx Weight
Nom. Size DN	OD in. mm	D in. mm	J in. mm	b in. mm	h in. mm	a in. mm	m in. mm	g in. mm	Number Anzahl	I in. mm	k in. mm	P in. mm	E in. mm	F in. mm	≈ Pound Kilo	
26"	26,0 660,4	38 1/4 917,6	To be specified by purchaser Vom Besteller anzu geben	3 1/8 79,4	7 1/4 184,2	26 1/4 666,8	28 3/8 720,7	31 7/8 809,6	28	1 3/4 44,5	34 1/2 876,3	29 1/2 749,3	1/2 12,7	25/32 19,8	657 298	
28"	28,0 711,2	40 3/4 1035,1		3 3/8 85,7	7 3/4 196,9	28 1/4 717,6	30 1/2 774,7	33 7/8 860,4	28	1 3/4 44,5	37 939,8	31 1/2 800,1	1/2 12,7	25/32 19,8	794 360	
30"	30,0 762	43 1092,2		3 5/8 92,1	8 1/4 209,6	30 1/4 768,4	32 9/16 827,1	36 1/8 917,6	28	1 7/8 47,6	39 1/4 997,0	33 3/4 857,3	1/2 12,7	25/32 19,8	908 412	
32"	32,0 812,8	45 1/4 1149,4		3 7/8 98,4	8 3/4 222,3	32 1/4 819,2	34 11/16 881,1	38 3/4 984,3	28	2 50,8	41 1/2 1054,1	36 914,4	9/16 14,3	29/32 23,0	1025 465	
34"	34,0 863,6	47 1/2 1206,5		4 101,6	9 1/8 231,8	34 5/16 871,5	36 7/8 936,6	40 3/4 1035,1	28	2 50,8	43 1/2 1104,9	38 965,2	9/16 14,3	29/32 23,0	1182 536	
36"	36,0 914,4	50 1270,0		4 1/8 104,8	9 1/2 241,3	36 7/16 922,4	39 990,6	43 1092,2	32	2 1/8 54,0	46 1168,4	40 1/4 1022,4	9/16 14,3	29/32 23,0	1312 595	

600 lb/sq.in. Welding Neck Flanges, Ring Joint Type

Pipe		Flange					Hub		Raised Face	Drilling Template			Ring Joint			Approx Weight
Nom. Size DN	OD in. mm	D in. mm	J in. mm	b in. mm	h in. mm	a in. mm	m in. mm	g in. mm	Number Anzahl	I in. mm	k in. mm	P in. mm	E in. mm	F in. mm	≈ Pound Kilo	
26"	26,0 660,4	40 1016,0	To be specified by purchaser Vom Besteller anzu geben	4 1/4 108	8 3/4 222,3	26 7/16 671,5	29 7/16 747,7	31 7/8 809,6	28	2 50,8	36 1/2 914,4	29 1/2 749,3	1/2 12,7	25/32 19,8	983 446	
28"	28,0 711,2	42 1/4 1073,2		4 3/8 111,1	9 1/4 235	28 1/2 723,9	31 5/8 803,3	33 7/8 860,4	28	2 1/8 54,0	38 965,2	32 1/2 800,1	1/2 12,7	25/32 19,8	1142 518	
30"	30,0 762	44 1/2 1130,3		4 1/2 114,3	9 3/4 247,7	30 1/2 774,7	33 15/16 862,0	36 1/8 917,6	28	2 1/8 54,0	40 1/4 1022,4	33 3/4 857,3	1/2 12,7	25/32 19,8	1257 570	
32"	32,0 812,8	47 1193,8		4 5/8 117,5	10 1/4 260,4	32 1/2 825,5	36 1/8 917,6	38 3/4 984,2	28	2 3/8 60,3	41 1/2 1079,5	36 914,4	9/16 14,3	29/32 23,0	1537 697	
34"	34,0 863,6	49 1244,6		4 3/4 120,7	10 5/8 269,9	34 9/16 877,9	38 5/16 973,2	40 3/4 1035,1	28	2 3/8 60,3	44 1/2 1130,3	38 965,2	9/16 14,3	29/32 23,0	1620 735	
36"	36,0 914,4	51 3/4 1314,5		4 7/8 123,8	11 1/8 282,6	36 9/16 928,7	40 5/8 1031,9	43 1092,2	28	2 5/8 66,7	47 1193,8	40 1/4 1022,4	9/16 14,3	29/32 23,0	1764 800	

MATERIAL FOR FLANGES

ANSIB16.5 FORGED FLANGES

Designation	Tensile strength		Yield strength		Elongation in 2" or D ₀ min. %	Reduction of Area min. %	Chemical Composition, Weight %													
	KSI	Mpa	KSI	Mpa			C	Mn	P	S	Si	Cr	Mo	Ni	Cu	V	Cb	N	Other elements	
A 105	≥70	≥485	≥36	≥250	22	30	min.		0.60			0.10								
							max.	0.35	1.05	0.035	0.040	0.35	0.30	0.12	0.40	0.400	0.080	0.020		
A 181 Class 60	≥60	≥415	≥30	≥205	22	35	min.					0.10								
							max.	0.35	1.10	0.050	0.050	0.35								
A 182 Class 70	≥70	≥485	≥36	≥250	18	24	min.					0.10								
							max.	0.35	1.10	0.050	0.050	0.35								
A 182 F1	≥70	≥485	≥40	≥275	20	30	min.		0.60			0.15		0.44						
							max.	0.28	0.90	0.045	0.045	0.35		0.65						
A 182 F2	≥70	≥485	≥40	≥275	20	30	min.	0.05	0.30			0.10	0.50	0.44						
							max.	0.21	0.80	0.040	0.040	0.60	0.81	0.65						
A 182 F5	≥70	≥485	≥40	≥275	20	35	min.		0.30				4.00	0.44						
							max.	0.15	0.60	0.030	0.030	0.50	6.00	0.65	0.50					
A 182 F5a	≥90	≥620	≥65	≥450	22	50	min.						4.00	0.44						
							max.	0.25	0.60	0.040	0.030	0.50	6.00	0.65	0.50					
A 182 F9	≥85	≥585	≥55	≥380	20	40	min.		0.30			0.50	8.00	0.90						
							max.	0.15	0.60	0.030	0.030	1.00	10.00	1.10						
A 182 F91	≥85	≥585	≥60	≥415	20	40	min.	0.08	0.30			0.20	8.00	0.85			0.18	0.06	0.030	Al 0.04 max
							max.	0.12	0.60	0.020	0.010	0.50	9.50	1.05	0.40		0.25	0.10	0.070	
A 182 F11, Cl. 1	≥60	≥415	≥30	≥205	20	45	min.	0.05	0.30			0.50	1.00	0.44						
							max.	0.15	0.60	0.030	0.030	1.00	1.15	0.65						
A 182 F11, Cl. 2	≥70	≥485	≥40	≥275	20	30	min.	0.10	0.30			0.50	1.00	0.44						
							max.	0.20	0.80	0.040	0.040	1.00	1.50	0.65						
A 182 F11, Cl. 3	≥75	≥515	≥45	≥310	20	30	min.	0.10	0.30			0.50	1.00	0.44						
							max.	0.20	0.80	0.040	0.040	1.00	1.50	0.65						
A 182 F12, Cl. 1	≥60	≥415	≥32	≥220	20	45	min.	0.05	0.30				0.80	0.44						
							max.	0.15	0.60	0.045	0.045	0.50	1.25	0.65						
A 182 F12, Cl. 2	≥70	≥485	≥40	≥275	20	30	min.	0.10	0.30			0.10	0.80	0.44						
							max.	0.20	0.80	0.040	0.040	0.60	1.25	0.65						
A 182 F22, Cl. 1	≥60	≥415	≥30	≥205	20	35	min.	0.05	0.30				2.00	0.87						
							max.	0.15	0.60	0.040	0.040	0.50	2.50	1.13						
A 182 F22, Cl. 3	≥75	≥515	≥45	≥310	20	30	min.	0.05	0.30				2.00	0.87						
							max.	0.15	0.60	0.040	0.040	0.50	2.50	1.13						
A 182 F22V	85-110	585-780	≥60	≥415	18	45	min.	0.11	0.30				2.00	0.90			0.25			80.002MAX Ca 0.015max Ti 0.03max
							max.	0.15	0.60	0.015	0.010	0.10	2.50	1.10	0.25	0.20	0.35	0.07		
A 182 F304	≥75	≥515	≥30	≥205	30	50	min.						18.00		8.00					
							max.	0.08	2.00	0.045	0.030	1.00	20.00		11.00					
A 182 F304H	≥75	≥515	≥30	≥205	30	50	min.	0.04					18.00		8.00					
							Max.	0.10	2.00	0.045	0.030	1.00	20.00		11.00					