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C&N INDUSTRIAL GROUP LIMITED

BETTER PIPELINE
BETTER CONNECTION

• Steel pipe • Pipe fitting • Flange • Valve • Fabricate parts • Deep Processing

2012-2013

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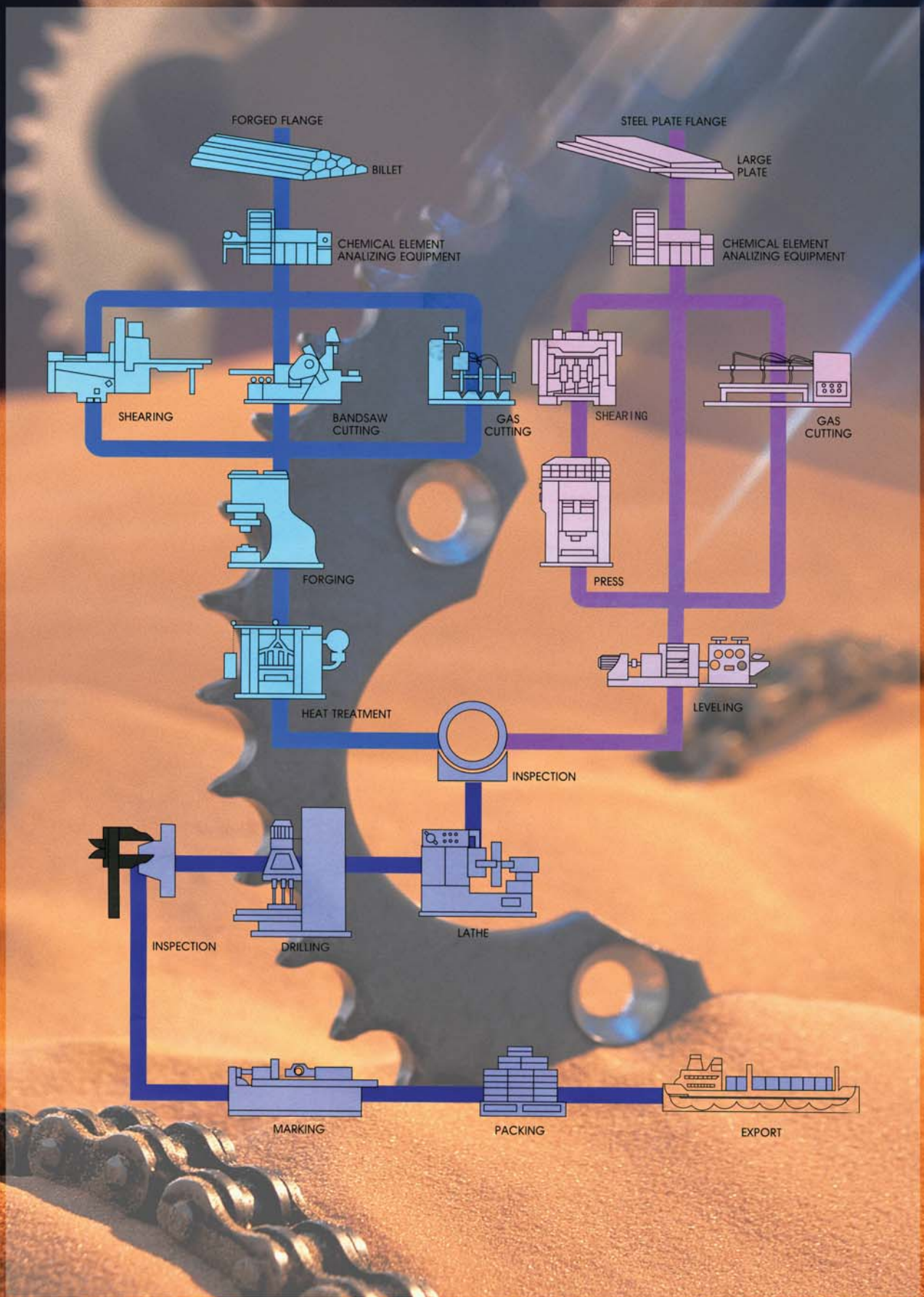
FLANGE

C&N Pipeline Limited

PRIDUCTS

工艺流程图
PRODUCTION PROCESS



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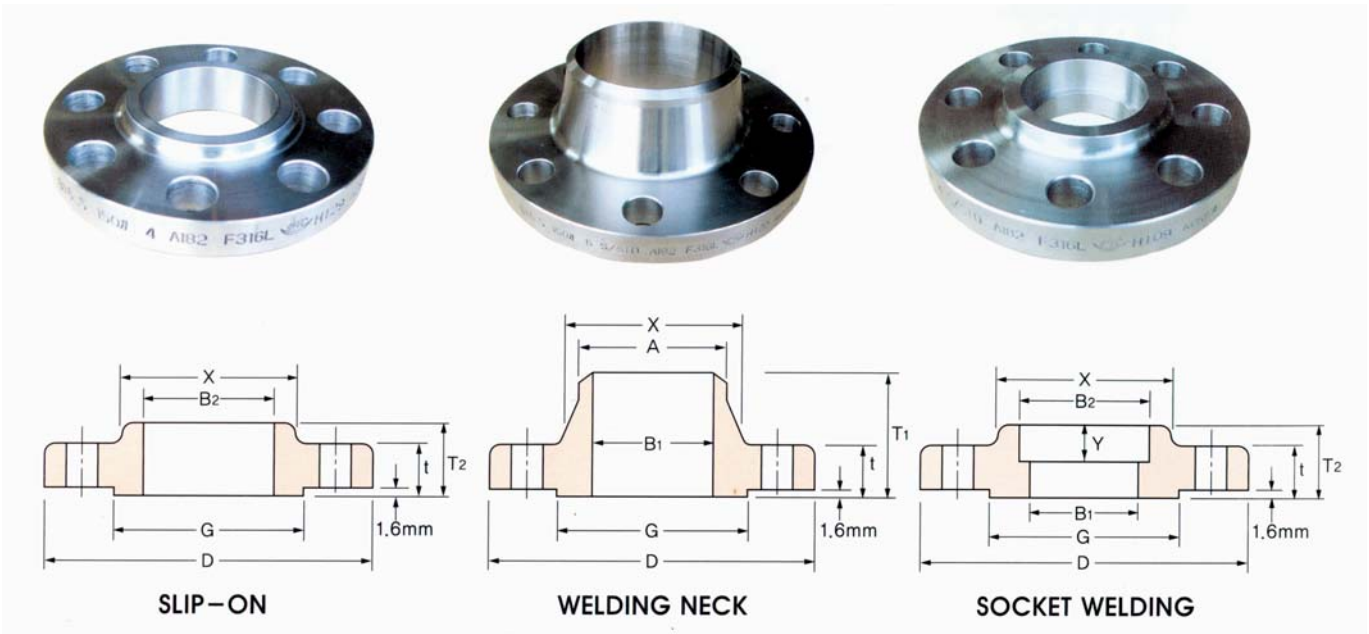
CLASS 150 FLANGES

ASME B16.5



ASME B16.5 FORGED FLANGES

Unit:mm

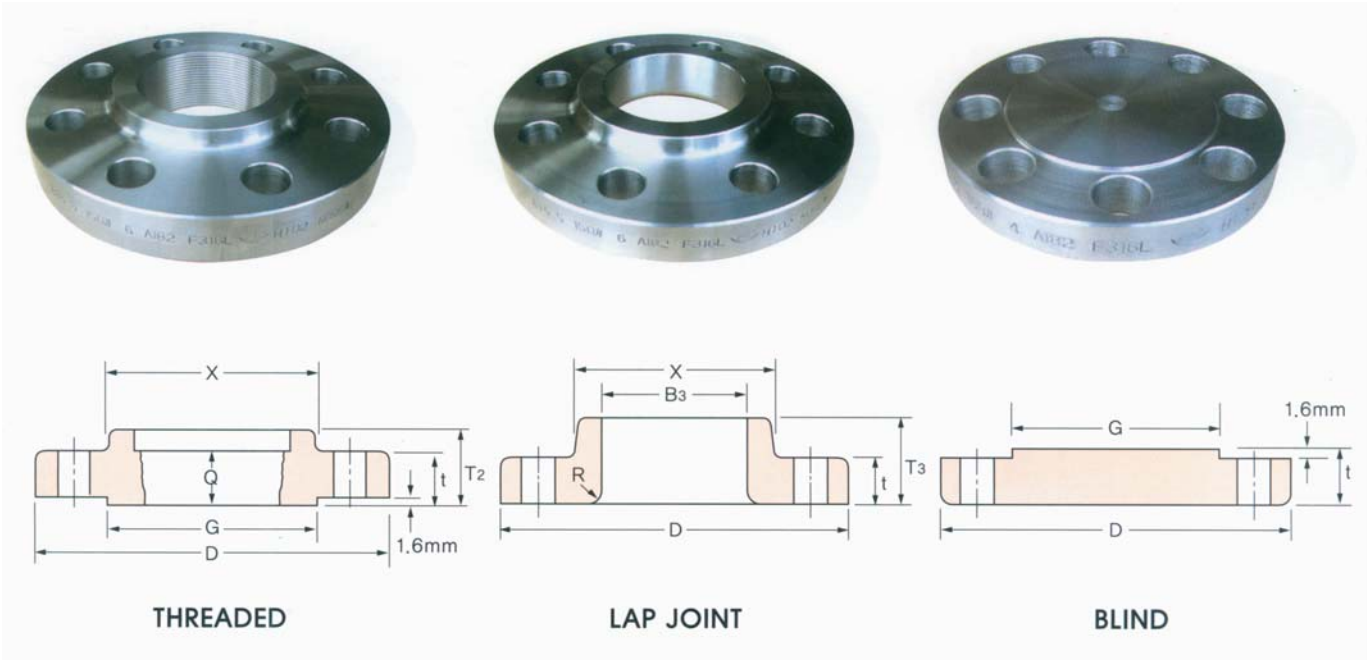
Nominal Pipe Size	Outside Diam	O.D.of Raised Face	Diam. at Base of Hub	Thickness	BORE			LENGTH THRU HUB			Diam.of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket Welding	Slip–on Socket Welding	Lap Joint	Welding Neck	Slip–on Threaded Socket Welding	Lap Joint			
	D	G	X	t	B1	B2	B3	T1	T2	T3	A	R	Q
1/2	88.9	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	98.6	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	108.0	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	117.3	63.5	58.7	15.7	35.1	43.2	43.7	57.2	20.6	20.6	42.2	5.0	20.6
1 1/2	127.0	73.2	65.0	17.5	40.9	49.5	50.0	62.0	22.4	22.4	48.3	6.0	22.4
2	152.4	91.9	77.7	19.1	52.6	62.0	62.5	63.5	25.4	25.4	60.5	8.0	25.4
2 1/2	177.8	104.6	90.4	22.4	62.7	74.7	75.4	69.9	28.4	28.4	73.2	8.0	28.4
3	190.5	127.0	108.0	23.9	78.0	90.7	91.4	69.9	30.2	30.2	88.9	10.0	30.2
3 1/2	215.9	139.7	122.2	23.9	90.2	103.4	104.1	71.4	31.8	31.8	101.6	10.0	31.8
4	228.6	157.2	134.9	23.9	102.4	116.1	116.8	76.2	33.3	33.3	114.3	11.0	33.3
5	254.0	185.7	163.6	23.9	128.3	143.8	144.5	88.9	36.6	36.6	141.2	11.0	36.6
6	279.4	215.9	192.0	25.4	154.2	170.7	171.5	88.9	39.6	39.6	168.4	13.0	39.6
8	342.9	269.7	246.1	28.4	202.7	221.5	222.3	101.6	44.5	44.5	219.2	13.0	44.5
10	406.4	323.9	304.8	30.2	254.5	276.4	277.4	101.6	49.3	49.3	273.1	13.0	49.3
12	482.6	381.0	365.3	31.8	304.8	327.2	328.2	114.3	55.6	55.6	323.9	13.0	55.6
14	533.4	412.8	400.1	35.1	336.6	359.2	360.2	127.0	57.2	79.2	355.6	13.0	57.2
16	596.9	469.9	457.2	36.6	387.4	410.5	411.2	127.0	63.5	87.4	406.4	13.0	63.5
18	635.0	533.4	505.0	39.6	438.2	461.8	462.3	139.7	68.3	97	457.2	13.0	68.3
20	698.5	584.2	558.8	42.9	489.0	513.1	514.4	144.5	73.2	103.1	508.0	13.0	73.2
24	812.8	692.2	663.4	47.8	590.6	616.0	616.0	152.4	82.6	111.3	609.6	13.0	82.6

Notes

(1)For the 'Bore'(B1) other than Standard Wall Thickness, refer to page 50,51.

(2)Class 150 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).

(3)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.

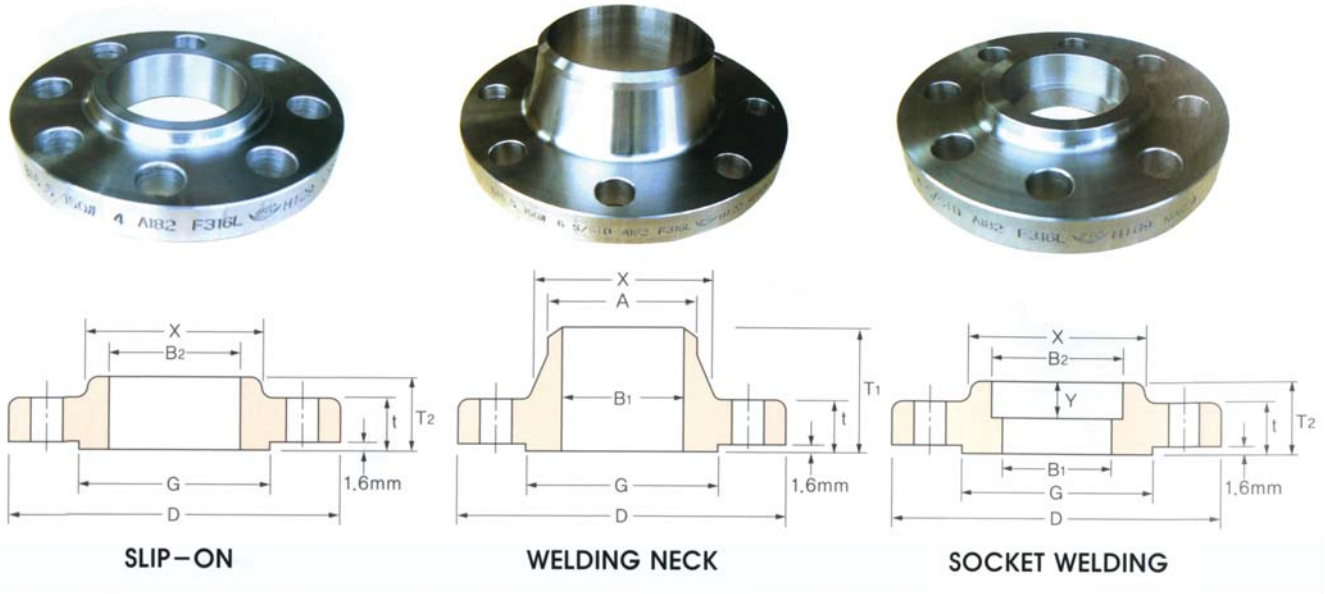


Unit:mm

Nominal Pipe Size	Depth of Socket	DRILLING			BOLTING				APPROXIMATE WELGHT				
		Bolt Circle Diam.	Number of Holes	Diam of Holes	Diam of Bolt (inch)	Machine Bolt Length	Stud Bolt Length		Welding Neck	Slip-on and Threaded	LapJoint	Blind	Socket Welding
	Y					Raised Face	Raised Face	Ring Joint	kg	kg	kg	kg	kg
1/2	9.7	60.5	4	15.8	1/2	50.0	55.0	–	0.51	0.47	0.51	0.47	0.47
3/4	11.2	69.9	4	15.8	1/2	50.0	65.0	–	0.73	0.58	0.64	0.63	0.59
1	12.7	79.2	4	15.8	1/2	55.0	65.0	75.0	1.07	0.86	0.93	0.94	0.87
1 1/4	14.2	88.9	4	15.8	1/2	55.0	70.0	85.0	1.40	1.08	1.16	1.23	1.11
1 1/2	15.7	98.6	4	15.8	1/2	65.0	70.0	85.0	1.81	1.41	1.51	1.62	1.45
2	17.5	120.7	4	19.1	5/8	70.0	85.0	95.0	2.59	2.26	2.38	2.64	2.33
2 1/2	19.1	139.7	4	19.1	5/8	75.0	90.0	100.0	4.28	3.43	3.60	4.06	3.55
3	20.6	152.4	4	19.1	5/8	75.0	90.0	100.0	5.18	3.87	4.04	4.90	4.02
3 1/2	22.4	177.8	8	19.1	5/8	75.0	90.0	100.0	5.45	4.99	4.99	5.90	4.99
4	23.9	190.5	8	19.1	5/8	75.0	90.0	100.0	7.32	5.75	5.96	7.41	5.99
5	23.9	215.9	8	22.2	3/4	85.0	95.0	110.0	8.91	6.22	6.44	8.76	6.68
6	26.9	241.3	8	22.2	3/4	85.0	100.0	115.0	11.26	7.38	7.59	11.31	7.99
8	31.8	298.5	8	22.2	3/4	90.0	110.0	120.0	17.68	12.36	12.66	19.92	13.29
10	33.3	362.0	12	25.4	7/8	100.0	115.0	125.0	24.79	17.10	16.78	29.39	19.50
12	39.6	431.8	12	25.4	7/8	100.0	120.0	135.0	38.98	27.68	28.30	43.70	29.03
14	41.4	476.3	12	28.5	1	115.0	135.0	145.0	51.71	35.20	41.50	59.42	38.56
16	44.5	539.8	16	28.5	1	115.0	135.0	145.0	64.41	42.18	52.98	77.11	44.49
18	49.3	577.9	16	31.8	1 1/8	125.0	145.0	160.0	74.84	49.71	59.00	94.80	54.43
20	54.1	635.0	20	31.8	1 1/8	140.0	160.0	170.0	89.36	65.50	72.12	123.38	70.31
24	63.5	749.3	20	35.1	1 1/4	150.0	170.0	185.0	119.66	90.50	99.02	188.24	95.25

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

CLASS 300 FLANGES ASME B16.5



ASME B16.5 FORGED FLANGES

Unit:mm

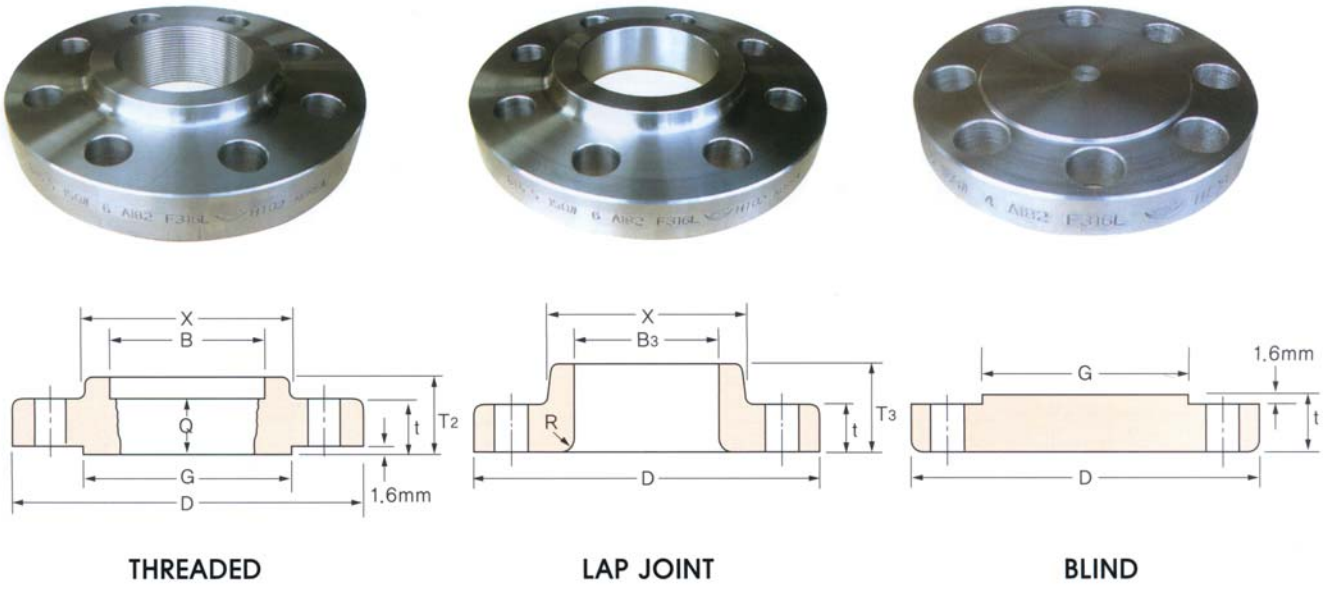
Nominal Pipe Size	Outside Diam	Diam. at Base of Hub	O.D.of Raised Face	Thickness	BORE				LENGTH THRU HUB			Diam.of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket welding	Slip–on Socket Welding	Lap Joint	Counter Bore Min.Threaded Min.	Welding Neck	Slip–on Threaded Socket welding	Lap Joint			
	D	X	G	t	B_1	B_2	B_3	B	T_1	T_2	T_3	A	R	Q
1/2	95.3	38.1	35.1	14.2	15.7	22.4	22.9	23.6	52.3	22.4	22.4	21.3	3.0	16.0
3/4	117.3	48.0	42.9	15.9	20.8	27.7	28.2	29.0	57.2	25.4	25.4	26.7	3.0	16.0
1	124.0	54.0	50.8	17.5	26.7	34.5	35.1	35.8	62.0	26.9	26.9	33.5	3.0	18.0
1 1/4	133.4	64.0	63.5	19.1	35.1	43.2	43.7	44.5	65.0	26.9	26.9	42.2	5.0	21.0
1 1/2	155.4	70.0	73.2	20.6	40.9	49.5	50.0	50.5	68.3	30.2	30.2	48.3	6.0	23.0
2	165.1	84.1	91.9	22.4	52.6	62.0	62.5	63.5	69.9	33.3	33.3	60.5	8.0	29.0
2 1/2	190.5	100.1	104.6	25.4	62.7	74.7	75.4	76.2	76.2	38.1	38.1	73.2	8.0	32.0
3	209.6	117.3	127.0	28.6	78.0	90.7	91.4	92.2	79.2	42.9	42.9	88.9	10.0	32.0
3 1/2	228.6	133.4	139.7	30.2	90.2	103.4	104.1	104.9	81.0	44.5	44.5	101.6	10.0	37.0
4	254.0	146.1	157.2	31.8	102.4	116.1	116.8	117.6	85.9	47.8	47.8	114.3	11.0	37.0
5	279.4	177.8	185.7	35.1	128.3	143.8	144.5	144.5	98.6	50.8	50.8	141.2	11.0	43.0
6	317.5	206.2	215.9	36.6	154.2	170.7	171.5	171.5	98.6	52.3	52.3	168.4	13.0	47.0
8	381.0	260.4	269.7	41.1	202.7	221.5	222.3	222.3	111.3	62.0	62.0	219.2	13.0	51.0
10	444.5	321.0	323.9	47.8	254.5	276.4	277.4	276.4	117.3	66.5	95.3	273.1	13.0	56.0
12	520.7	374.7	381.0	50.8	304.8	327.2	328.2	328.7	130.0	73.2	101.6	323.9	13.0	61.0
14	584.2	425.5	412.8	53.8	336.6	359.2	360.2	360.4	142.7	76.2	111.3	355.6	13.0	64.0
16	647.7	483.0	469.9	57.2	387.4	410.5	411.2	411.2	146.1	82.6	120.7	406.4	13.0	69.0
18	711.2	533.4	533.4	60.5	438.2	461.8	462.3	462.0	158.8	88.9	130.0	457.2	13.0	70.0
20	774.7	587.2	584.2	63.5	489.0	513.1	514.4	512.8	162.1	95.3	139.7	508.0	13.0	74.0
24	914.4	702.0	692.2	69.9	590.6	616.0	616.0	614.4	168.1	106.4	152.4	609.6	13.0	83.0

Notes

(1)For the 'Bore'(B1) other than Standard Wall Thickness, refer to page 50,51.

(2)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).

(3)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.



THREADED LAP JOINT BLIND

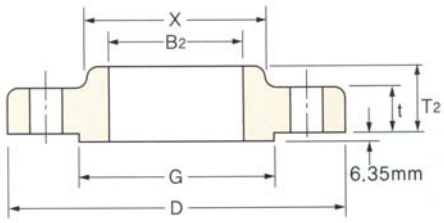
Unit:mm

Nominal Pipe Size	Depth of Socket	DRILLING			BOLTING				APPROXIMATE WEIGHT									
		Bolt Circle Diam.	Num-ber of Holes	Diam of Holes	Diam of Bolt (inch)	Machine Bolt Length	Stud Bolt Length		Welding Neck		Slip-on and Threaded		LapJoint		Blind		Socket Welding	
	Y					Raised Face	Raised Face	Ring Joint	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
1/2	9.7	66.7	4	15.8	1/2	55	65	75	0.78	1.70	0.62	1.40	0.61	1.30	0.62	1.40	0.62	1.40
3/4	11.2	82.6	4	19.1	5/8	65	75	90	1.34	3.00	1.15	2.50	1.15	2.50	1.16	2.50	1.19	2.60
1	12.7	88.9	4	19.1	5/8	65	75	90	1.64	3.60	1.39	3.10	1.38	3.00	1.42	3.00	1.44	3.20
1 1/4	14.2	98.6	4	19.1	5/8	70	85	95	2.06	4.50	1.67	3.70	1.66	3.70	1.79	3.90	1.73	3.80
1 1/2	15.7	114.3	4	22.2	3/4	75	90	100	3.06	6.70	2.53	5.60	2.52	5.60	2.68	5.90	2.62	5.80
2	17.5	127.0	8	19.1	5/8	75	90	100	3.40	7.50	2.80	6.20	2.79	6.20	3.09	6.80	2.94	6.50
2 1/2	19.1	149.4	8	22.2	3/4	85	100	115	5.31	11.70	4.25	9.40	4.22	9.30	4.75	10.50	4.49	9.90
3	20.6	168.3	8	22.2	3/4	90	110	120	7.32	16.10	5.81	12.80	5.78	12.70	6.79	14.90	6.20	13.70
3 1/2	22.4	184.2	8	22.2	3/4	95	110	125	8.17	18.00	7.72	17.00	7.72	17.00	9.53	21.00		
4	23.9	200.2	8	22.2	3/4	95	115	125	11.30	24.90	10.13	22.30	10.07	22.20	12.00	26.50		
5	23.9	235.0	8	22.2	3/4	110	120	135	15.12	33.30	12.58	27.70	12.52	27.60	15.96	35.20		
6	26.9	269.7	12	22.2	3/4	110	120	140	19.68	43.40	16.04	35.40	15.95	35.20	21.20	46.70		
8	31.8	330.2	12	25.4	7/8	120	140	150	30.48	67.20	24.50	54.00	24.37	53.70	34.60	76.30		
10	33.3	387.4	16	28.4	1	140	160	170	43.74	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	145	170	185	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	160	180	190	88.30	194.70	72.12	159.00	83.46	184.00	107.05	236.00		
16	44.5	571.5	20	34.9	1 1/4	165	190	205	112.94	249.00	90.40	199.30	106.14	234.00	139.25	307.00		
18	49.3	628.7	24	34.9	1 1/4	170	195	210	138.34	305.00	109.00	240.30	133.95	295.30	176.90	396.00		
20	54.1	685.8	24	34.9	1 1/4	185	205	220	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	205	230	255	235.41	519.00	204.00	449.70	240.40	530.00	342.00	754.00		

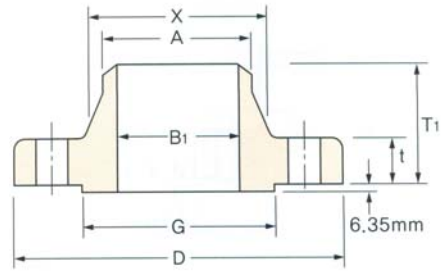
(4)Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub.
(5)The gasket surface and backside(bearing surface for bolting)are made parallel within 1 degree.To accomplish parallelism,spot facing is carried out according to MSS SP-9,without reducing thickness(t).
(6)Depth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

CLASS 400 FLANGES

ASME B16.5



SLIP–ON



WELDING NECK

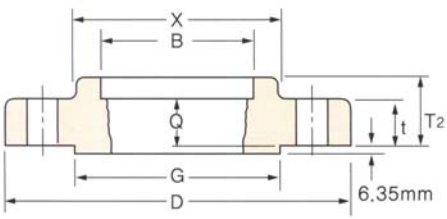
ASME B16.5 FORGED FLANGES

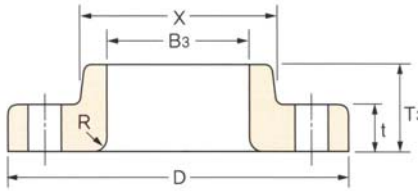
Unit:mm

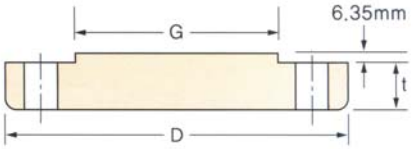
Nominal Pipe Size	Outside Diam.	Diam. at Base of Hub	O.D.of Raised Face	Thickness	BORE				LENGTH THRU HUB			Diam.of Hub at Bevel
					Welding Neck	Slip–on	Lap Joint	Counter Bore Min. Threaded Min.	Welding Neck	Slip–on Threaded	Lap Joint	
	D	X	G	t	B_1	B_2	B_3	B	T_1	T_2	T_3	A
1/2	95.3	38.1	35.1	14.2	See Note(1) To be specified by purchaser.	22.4	22.9	23.6	52.3	22.4	22.4	21.3
3/4	117.3	48.0	42.9	15.9		27.7	28.2	29.0	57.2	25.4	25.4	26.7
1	124.0	54.0	50.8	17.5		34.5	35.1	35.8	62.0	26.9	26.9	33.5
1 1/4	133.4	64.0	63.5	20.6		43.2	43.7	44.5	67.0	29.0	29.0	42.2
1 1/2	155.4	70.0	73.2	22.4		49.5	50.0	50.5	69.9	32.0	32.0	48.3
2	165.1	84.1	91.9	25.4		62.0	62.5	63.5	73.2	37.0	37.0	60.5
2 1/2	190.5	100.1	104.6	28.6		74.7	75.4	76.2	79.2	41.1	41.1	73.2
3	209.6	117.3	127.0	31.8		90.7	91.4	92.2	83.0	46.0	46.0	88.9
3 1/2	228.6	133.4	139.7	35.1		103.4	104.1	104.9	85.9	49.3	49.3	101.6
4	254.0	146.1	157.2	35.1		116.1	116.8	117.6	88.9	51.0	51.0	114.3
5	279.4	178.0	185.7	38.1		143.8	144.5	144.5	102.0	53.8	53.8	141.2
6	317.5	206.2	215.9	41.1		170.7	171.5	171.5	103.1	57.2	57.2	168.4
8	381.0	260.4	269.7	47.8		221.5	222.3	222.3	117.3	68.3	68.3	219.2
10	444.5	321.0	323.9	54.0		276.4	277.4	276.4	124.0	73.2	102.0	273.1
12	520.7	375.0	381.0	57.2		327.2	328.2	328.7	137.0	79.2	108.0	323.9
14	584.2	425.5	412.8	60.5		359.2	360.2	360.4	149.4	84.1	117.3	355.6
16	647.7	483.0	469.9	63.5		410.5	411.2	411.2	152.4	94.0	127.0	406.4
18	711.2	533.4	533.4	66.7		461.8	462.3	462.0	165.1	98.6	137.0	457.2
20	774.7	587.2	584.2	69.9		513.1	514.4	512.8	168.1	102.0	146.1	508.0
24	914.4	702.0	692.2	76.2		616.0	616.0	614.4	175.0	114.3	159.0	609.6

Notes

(1)For the inside diameter of pipes(corresponding to ´Bore´(B1)of Welding Neck Flanges),refer to page 50,51.
(2)Class 400 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, 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.







THREADED LAP JOINT BLIND

Unit:mm

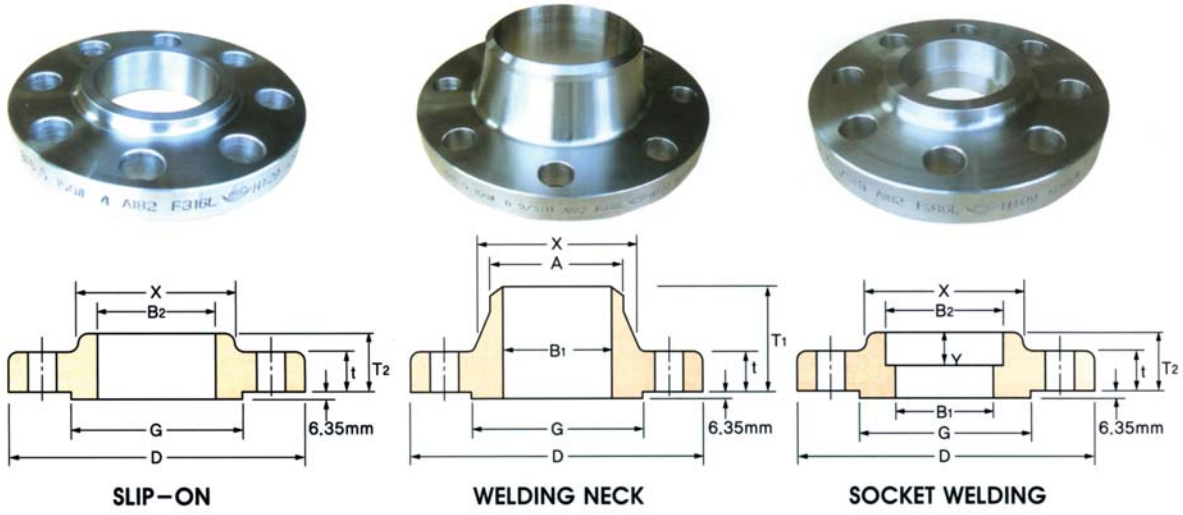
Nominal Pipe Size	Radius of Fillet	Thread Length	DRILLING			BOLTING				APPROXIMATE WEIGHT							
							Stud Bolt Length			Welding Neck		Slip–on and Threaded		Lap Joint		Blind	
			Bolt Circle Diam	NUmber of Holes	Diam of Holes	Diam of Bolts (inch)	0.25" Raised-Face	Male–Female-Tongue–Groove	Ring Joint								
	R	Q								Kg	lb	Kg	lb	Kg	lb	Kg	lb
1/2	3.0	16	66.7	4	15.8	1/2	75	70	75	1.36	3.00	0.91	2.00	0.80	1.80	0.91	2.00
3/4	3.0	16	82.6	4	19.1	5/8	90	85	90	1.59	3.50	1.36	3.00	1.36	3.00	1.40	3.00
1	3.0	18	88.9	4	19.1	5/8	90	85	90	1.81	4.00	1.59	3.50	1.59	3.50	1.70	3.80
1 1/4	5	21	98.6	4	19.1	5/8	95	90	95	2.50	5.50	2.10	4.60	2.04	4.50	2.27	5.00
1 1/2	6	23	114.3	4	22.2	3/4	110	100	110	3.63	8.00	3.10	6.80	2.95	6.50	3.40	7.50
2	8	29	127.0	8	19.1	5/8	110	100	110	4.54	10.00	3.63	8.00	3.63	8.00	4.40	9.70
2 1/2	8	32	149.4	8	22.2	3/4	120	115	120	6.35	14.00	5.44	12.00	4.99	11.00	6.80	15.00
3	10	35	168.1	8	22.2	3/4	125	120	125	8.17	18.00	7.26	16.00	6.35	14.00	8.90	19.60
3 1/2	10	40	184.2	8	25.4	7/8	140	135	140	11.80	26.00	9.53	21.00	9.08	20.00	13.17	29.00
4	11	37	200.2	8	25.4	7/8	140	135	140	13.61	30.00	10.89	24.00	9.98	22.00	14.40	31.70
5	11	43	235.0	8	25.4	7/8	145	135	145	17.69	39.00	14.07	31.00	13.15	29.00	19.50	43.00
6	13	46	269.7	12	25.4	7/8	150	145	150	22.23	49.00	19.98	44.00	16.78	37.00	27.67	61.00
8	13	51	330.2	12	28.4	1	170	165	170	35.38	78.00	30.40	67.00	26.16	59.00	45.36	100.00
10	13	56	387.4	16	31.8	1 1/8	190	185	190	49.89	110.00	41.28	91.00	43.09	95.00	68.00	150.00
12	13	61	450.9	16	35.1	1 1/4	205	195	205	72.57	160.00	59.02	130.00	68.95	152.00	98.00	216.00
14	13	64	514.4	20	35.1	1 1/4	210	205	210	105.69	233.00	81.72	180.00	95.25	210.00	131.66	290.00
16	13	69	571.5	20	38.1	1 3/8	220	215	220	133.30	294.00	106.69	235.00	127.00	280.00	167.00	368.00
18	13	70	628.7	24	38.1	1 3/8	230	220	230	158.90	350.30	129.39	285.30	156.49	345.00	206.57	455.40
20	13	74	685.8	24	41.1	1 1/2	240	235	250	193.00	425.50	152.00	335.00	190.51	420.00	261.00	575.40
24	13	83	812.8	24	47.8	1 3/4	265	260	280	281.48	620.50	231.54	510.50	278.96	615.00	395.00	870.80

(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 sizes 1/2 through 3–1/2"are the same as for Class 600 Flanges.

C&N Pipeline Limited

CLASS 600 FLANGES

ASME B16.5



ASME B16.5 FORGED FLANGES

Unit:mm

Nominal Pipe Size	Outside Diam	Diam. at Base of Hub	O.D.of Raised Face	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			
	D	X	G	t	B1	B2	B3	B	T1	T2	T3	A	R	Q
1/2	95.3	38.1	35.1	14.2	To be specified by purchaser See Note(1)	22.4	22.9	23.6	52.3	22.4	22.4	21.3	3.0	16.0
3/4	117.3	48.0	42.9	15.7		27.7	28.2	29.0	57.2	25.4	25.4	26.7	3.0	16.0
1	124.0	54.0	50.8	17.5		34.5	35.1	35.8	62.0	26.9	26.9	33.5	3.0	18.0
1 1/4	133.4	64.0	63.5	20.6		43.2	43.7	44.4	67.0	29.0	29.0	42.2	5.0	21.0
1 1/2	155.4	70.0	73.2	22.4		49.5	50.0	50.5	69.9	32.0	32.0	48.3	6.0	23.0
2	165.1	84.1	91.9	25.4		62.0	62.5	63.5	73.2	37.0	37.0	60.5	8.0	29.0
2 1/2	190.5	100.1	104.6	28.6		74.7	75.4	76.2	79.2	41.1	41.1	73.2	8.0	32.0
3	209.6	117.3	127.0	31.8		90.7	91.4	92.2	83.0	46.0	46.0	88.9	10.0	35.0
3 1/2	228.6	133.4	139.7	35.1		103.4	104.1	104.9	86.0	49.3	49.3	101.6	10.0	40.0
4	273.1	152.4	157.2	38.1		116.1	116.8	117.6	102.0	54.0	54.0	114.3	11.0	42.0
5	330.2	189.0	185.7	44.5		143.8	144.5	144.4	114.3	60.5	60.5	141.2	11.0	48.0
6	355.6	222.3	215.9	47.8		170.7	171.5	171.4	117.3	67.0	67.0	168.4	13.0	51.0
8	419.1	273.1	269.7	55.6		221.5	222.3	222.3	133.4	76.2	76.2	219.2	13.0	58.0
10	508.0	342.9	323.9	63.5		276.4	277.4	276.4	152.4	86.0	111.3	273.1	13.0	66.0
12	558.8	400.1	381.0	66.7		327.2	328.2	328.7	156.0	92.0	117.3	323.9	13.0	70.0
14	603.3	432.0	412.8	69.9		359.2	360.2	360.4	165.1	94.0	127.0	355.6	13.0	74.0
16	685.8	495.3	469.9	76.2		410.5	411.2	411.2	178.0	106.4	140.0	406.4	13.0	78.0
18	743.0	546.1	533.4	82.6		461.8	462.3	462.0	184.2	117.3	152.4	457.2	13.0	80.0
20	812.8	610.0	584.2	88.9		513.1	514.4	512.8	190.5	127.0	165.1	508.0	13.0	83.0
24	939.8	718.0	692.2	101.6		616.0	616.0	614.4	203.2	140.0	184.2	609.6	13.0	93.0

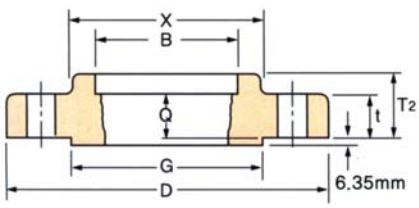
Notes

(1)For the inside diameter of pipes(corresponding to ´Bore´(B_1)of Welding Neck Flanges),refer to page 50,51.

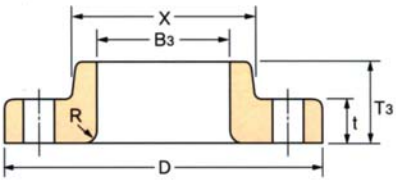
(2)Class 600 flanges except Lap Joint will be furnished with 0.25"(6.35mm) raised face,which is not included in ´Thickness´(t)and ´Length through Hub´(T_1),(T_2).

(3)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.

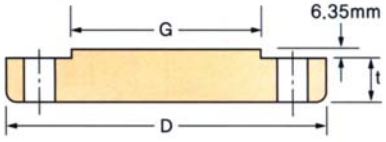




THREADED



LAP JOINT



BLIND

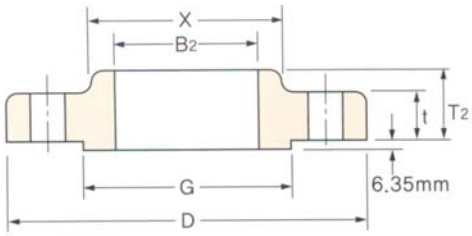
Unit:mm

Nominal Pipe Size	Depth of Socket	DRILLING			BOLTING				APPROXIMATE WEIGHT									
		Bolt Circle Diam.	Num-ber of Holes	Diam of Holes	Diam of Bolt (inch)	Stud Bolt Length			Welding Neck		Slip–on and Threaded		Lap Joint		Blind		Socket Welding	
						0.25" Raised Face	Male FemaleTongue-Groove	Ring Joint										
	Y								kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
1/2	9.7	66.7	4	15.8	1/2	75	70	75	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	90	85	90	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	90	85	90	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	90	95	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	22.2	3/4	110	100	110	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	110	100	110	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	22.2	3/4	120	115	120	6.35	14.00	5.44	12.00	4.99	11.00	6.80	15.00	5.90	13.00
3	20.6	168.1	8	22.2	3/4	125	120	125	8.16	18.00	7.26	16.00	6.35	14.00	8.90	19.60	7.40	16.30
3 1/2	22.4	184.2	8	25.4	7/8	140	135	140	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	145	140	145	16.78	37.00	14.97	33.00	14.06	31.00	18.60	41.00		
5	23.9	266.7	8	28.4	1	165	160	165	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	170	165	170	36.77	80.00	36.32	80.00	35.38	78.00	38.00	83.80		
8	31.8	349.3	12	31.8	1 1/8	190	185	195	50.80	112.00	44.00	97.00	50.80	112.00	62.20	137.00		
10	33.3	431.8	16	35.1	1 1/4	215	210	215	86.26	190.00	76.20	168.00	74.00	163.00	102.00	224.90		
12	39.6	489.0	20	35.1	1 1/4	220	215	220	102.51	226.00	97.52	215.00	108.86	240.00	132.00	291.00		
14	41.4	527.1	20	38.1	1 3/8	235	230	235	121.56	268.00	102.00	224.8/0	111.00	244.70	158.00	348.30		
16	44.5	603.3	20	41.1	1 1/2	255	250	255	177.06	290.00	149.82	330.20	165.71	365.30	224.73	495.40		
18	49.3	654.1	20	44.5	1 5/8	275	265	275	215.65	475.40	180.10	412.30	194.00	427.70	285.00	628.30		
20	54.1	723.9	24	44.5	1 5/8	285	280	290	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	325	335	372.00	820.00	330.00	725.50	362.00	798.00	533.45	1176.0		

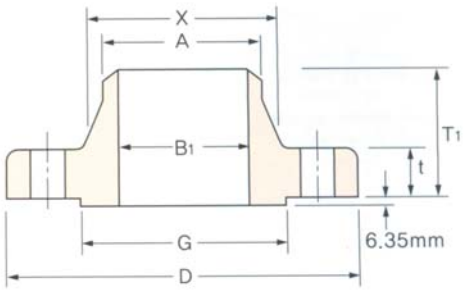
(4)Blind Flanges may be made with the same hub as that used for Slip–on Flanges or without hub.
(5)The gasket surface and backside(bearing surface for bolting)are made parallel within 1 degree.To accomplish parallelism,spot facing is carried out according to MSS SP–9,without reducing thickness(t).
(6)Dimensions of sizes 1/2"through 3 1/2" are the same as for Class 400 Flanges.
(7)Depth of Socket(Y)is covered ANSI B16.5 only in sizes through 3 inch,over 3 inch is at the manufacturer´s option.

CLASS 900 FLANGES

ASME B16.5



SLIP–ON



WELDING NECK

ASME B16.5 FORGED FLANGES

Unit:mm

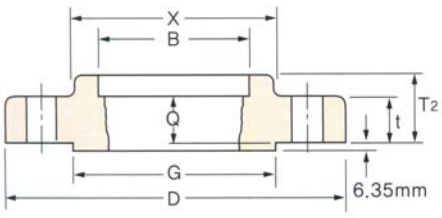
Nominal Pipe Size	Outside Diam.	Diam. at Base of Hub	O.D.of Raised Face	Thickness	BORE				LENGTH THRU HUB			Diam.of Hub at Bevel
					Welding Neck	Slip–on	Lap Joint	Counter Bore Min. Threaded Min.	Welding Neck	Slip–on Threaded	Lap Joint	
	D	X	G	t	B_1	B_2	B_3	B	T_1	T_2	T_3	A
1/2	120.7	38.1	35.1	22.4	To be specified by purchaser. See Noteo(1)	22.4	22.9	23.6	60.5	31.8	31.8	21.3
3/4	130.0	44.5	42.9	25.4		27.7	28.2	29.0	69.9	35.1	35.1	26.7
1	149.4	52.3	50.8	28.6		34.5	35.1	35.8	73.2	41.1	41.4	33.5
1 1/4	158.8	64.0	63.5	28.6		43.2	43.7	44.5	73.2	41.1	41.1	42.2
1 1/2	177.8	70.0	73.2	31.8		49.5	50.0	50.3	82.6	44.5	44.5	48.3
2	215.9	105.0	91.9	38.1		62.0	62.5	63.5	102.0	57.2	57.2	60.5
2 1/2	244.3	124.0	104.6	41.3		74.7	75.4	76.2	105.0	64.0	64.0	73.2
3	241.3	127.0	127.0	38.1		90.7	91.4	92.2	102.0	54.0	54.0	88.9
4	292.1	158.8	157.2	44.5		116.1	116.8	117.6	114.3	70.0	70.0	114.3
5	349.3	190.5	185.7	50.8		143.8	144.5	144.5	127.0	79.2	79.2	141.2
6	381.0	235.0	215.9	55.6		170.7	171.5	171.5	140.0	86.0	86.0	168.4
8	469.9	298.5	269.7	63.5		221.5	222.3	222.3	162.1	102.0	114.3	219.2
10	546.1	368.3	323.9	69.9		276.4	277.4	276.4	184.2	108.0	127.0	273.1
12	609.6	419.1	381.0	79.4		327.2	328.2	328.7	200.2	117.3	143.0	323.9
14	641.4	450.9	412.8	85.9		359.2	360.2	360.4	213.0	130.3	156.0	355.6
16	704.9	508.0	469.9	88.9		410.5	411.2	411.2	215.9	133.4	165.1	406.4
18	787.4	565.2	533.4	101.6		461.8	462.3	462.0	228.6	152.4	190.5	457.2
20	857.3	622.3	584.2	108.0		513.1	514.4	512.8	248.0	159.0	210.0	508.0
24	1041.4	749.3	692.2	139.7		616.0	616.0	614.4	292.1	203.2	267.0	609.6

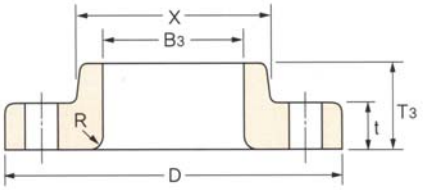
Notes

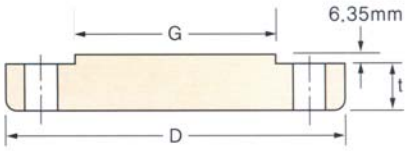
(1)For the inside diameter of pipes(corresponding to ´Bore´(B1)of Welding Neck Flanges),refer to page 50,51.

(2)Class 900 flanges except Lap Joint will be furnished with0.25"(6.35mm)raised face, which is not included in ´Thickness´(t)and ´Length through Hub´(T_1),(T_2).

(3)For Slip–on,Threaded,Socket Welding and Lap Joint Flanges,the hubs can be can be shaped either vertical from base to top or tapered within the limits of 7 degrees.







THREADED LAP JOINT BLIND

Unit:mm

Nominal Pipe Size	Radius of Fillet	Thread Length	DRILLING			BOLTING				APPROXIMATE WEIGHT							
						Diam of Bolts (inch)	stud Bolt Length			Welding Neck		Slip–on and Threaded		Lap Joint		Blind	
			Bolt Circle Diam	Humber of Holes	Diam of Holes		0.25" Raised-Face	Male–Female Tongue–Groove	Ring Joint								
	R	Q								Kg	lb	Kg	lb	Kg	lb	Kg	lb
1/2	3.0	23	82.6	4	22.2	3/4	110	100	110	2.10	4.60	1.81	4.00	1.81	4.00	1.90	4.20
3/4	3.0	26	88.9	4	22.2	3/4	115	110	115	2.72	6.00	2.40	5.30	2.30	5.00	2.70	6.00
1	3.0	29	101.6	4	25.4	7/8	125	120	125	3.86	8.50	3.41	7.50	3.40	7.50	4.09	9.00
1 1/4	5.0	31	111.3	4	25.4	7/8	125	120	125	4.54	10.00	4.10	9.00	4.09	9.00	4.54	10.00
1 1/2	6.0	32	124.0	4	28.4	1	140	135	140	5.90	13.00	5.45	12.00	5.40	11.90	5.90	13.00
2	8.0	39	165.1	8	25.4	7/8	145	140	145	10.89	24.00	9.98	22.00	9.53	21.00	11.34	25.00
2 1/2	8.0	48	190.5	8	28.4	1	160	150	160	16.33	36.00	15.80	34.80	13.15	29.00	16.00	35.30
3	10.0	42	190.5	8	25.4	7/8	145	140	145	15.00	33.00	11.80	26.00	11.34	25.00	13.17	29.00
4	11.0	48	235.0	8	31.8	1 1/8	170	165	170	23.13	51.00	23.20	51.00	22.60	48.50	24.50	54.00
5	11.0	54	279.4	8	35.1	1 1/4	190	185	190	38.50	84.90	37.65	83.00	36.74	81.00	39.46	87.00
6	13.0	58	317.5	12	31.8	1 1/8	190	185	195	49.89	110.00	48.30	106.50	47.50	104.70	51.50	113.50
8	13.0	64	393.7	12	38.1	1 3/8	220	215	220	79.45	175.00	75.00	166.30	86.00	189.60	89.00	106.20
10	13.0	72	469.9	16	38.1	1 3/8	235	230	235	118.04	260.00	111.13	245.00	125.64	277.00	131.54	290.00
12	13.0	77	533.4	20	38.1	1 3/8	255	250	255	157.00	346.00	146.00	321.80	167.00	368.00	187.00	412.30
14	13.0	83	558.8	20	41.1	1 1/2	275	265	280	181.60	400.40	172.36	380.00	180.07	397.00	224.07	494.00
16	13.0	86	616.0	20	44.5	1 5/8	285	280	290	224.73	495.50	192.95	425.40	211.11	465.40	272.40	600.50
18	13.0	89	685.8	20	50.8	1 7/8	325	320	335	308.72	680.60	272.40	600.50	295.10	650.60	385.90	850.80
20	13.0	93	749.3	20	53.8	2	350	345	360	376.82	830.70	331.42	730.60	367.74	810.70	488.00	1076.00
24	13.0	102	901.7	20	66.5	2 1/2	440	430	455	685.00	1510.00	632.00	1393.30	700.00	1543.00	905.00	1995.00

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

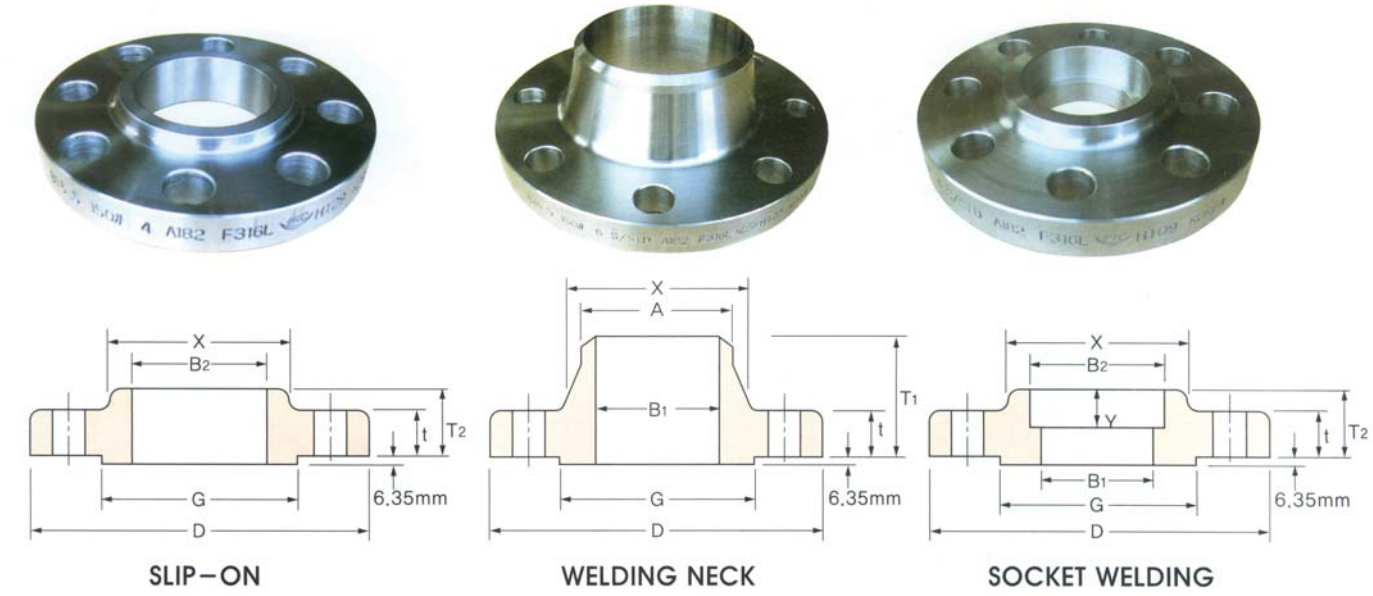
(5)The gasket surface and backside(bearing sruface for bolting)are made parallel within 1 degree.To accomplish parallelism, spot facing is carried out according to MSS SP–9,without reducing thickness(t).

(6)Dimensions of sizes1/2"through2 1/2"are the same as for Class 1500 Flanges.

C&N Pipeline Limited

CLASS 1500 FLANGES

ASME B16.5



ASME B16.5 FORGED FLANGES

Unit:mm

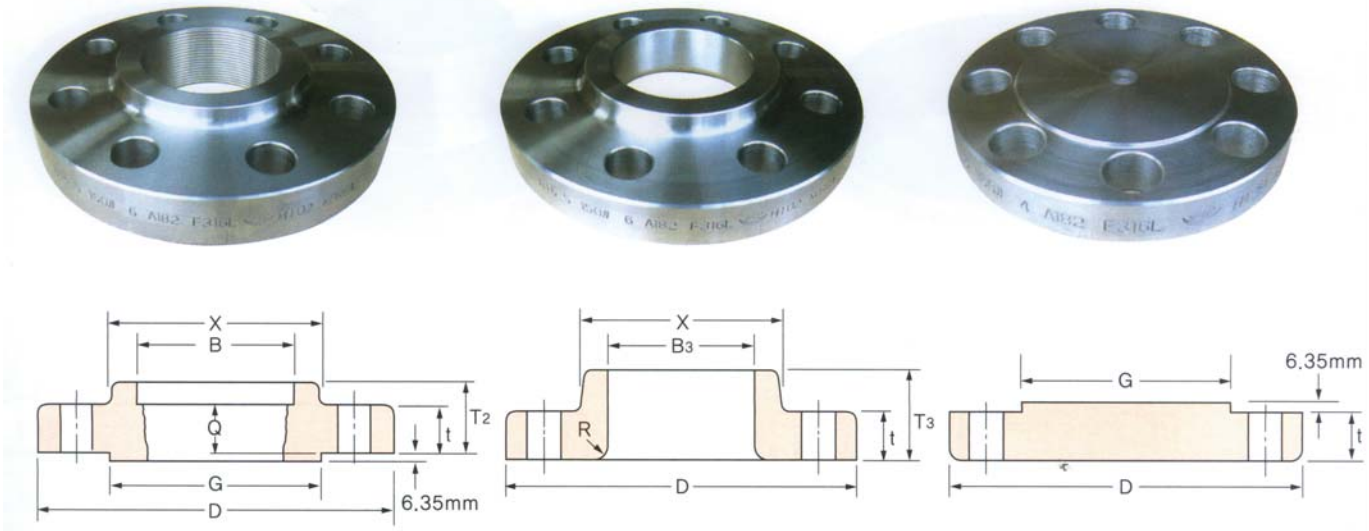
Nominal Pipe Size	OutSide Diam.	Diam. at Base of Hub	O.D,of Raised Face	Thick-ness	BORE				LENGTH THRU HUB			Diam.of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket Welding	Slip–on Socket Welding	Lap Joint	Counter Bore Min.	Welding Neck	Slip–on Thread-ed Socket Welding	Lap Joint			
	D	X	G	t	B_1	B_2	B_3	B	T_1	T_2	T_3	A	R	Q
1/2	120.7	38.1	35.1	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	23.0
3/4	130.0	44.5	42.9	25.4		27.7	28.2	29.0	69.9	35.1	35.1	26.7	3.0	26.0
1	149.4	52.3	50.8	28.6		34.5	35.1	35.8	73.2	41.1	41.1	33.5	3.0	29.0
1 1/4	158.8	64.0	63.5	28.6		43.2	43.7	44.5	73.2	41.1	41.1	42.2	5.0	31.0
1 1/2	177.8	70.0	73.2	31.8		49.5	50.0	50.5	82.6	44.5	44.5	48.3	6.0	32.0
2	215.9	105.0	91.9	38.1		62.0	62.5	63.5	102.0	57.2	57.2	60.5	8.0	39.0
2 1/2	244.3	124.0	104.6	41.3		74.7	75.4	76.2	105.0	64.0	64.0	73.2	8.0	48.0
3	266.7	133.4	127.0	47.8		90.7	91.4	92.2	117.3	–	73.2	88.9	10.0	–
4	311.2	162.1	157.2	54.0		116.1	116.8	117.6	124.0	–	90.4	114.3	11.0	–
5	374.7	197.0	185.7	73.2		143.8	144.5	144.5	156.0	–	104.6	141.2	11.0	–
6	393.7	229.0	215.9	82.6		170.7	171.5	171 .5	171.5	–	119.1	168.4	13.0	–
8	482.6	292.1	269.7	92.0		221.5	222.3	222.3	213.0	–	143.0	219.2	13.0	–
10	584.2	368.3	323.9	108.0		276.4	277.4	276.4	254.0	–	178.0	273.1	13.0	–
12	673.1	451.0	381.0	124.0		327.2	328.2	328.7	283.0	–	219.0	323.9	13.0	–
14	749.3	495.3	412.8	133.4		359.2	360.2	360.4	298.5	–	241.3	355.6	13.0	–
16	825.5	552.5	469.9	146.1		410.5	411.2	411.2	311.2	–	260.4	406.4	13.0	–
18	914.4	597.0	533.4	162.1		461.8	462.3	462.0	327.2	–	276.4	457.2	13.0	–
20	984.3	641.4	584.2	177.8		513.1	514.4	51 2. 8	356. 0	–	292.1	508.0	13.0	–
24	1168.4	762.0	692.2	203.2		616.0	616.0	614.4	406.4	–	330.2	609.6	13.0	–

Notes

(1)For the inside diameter of pipes(corresponding to´Bore´(B_1)of Welding Neck Flanges),refer to page 50,51.

(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´(T_1),(T_2).

(3)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.



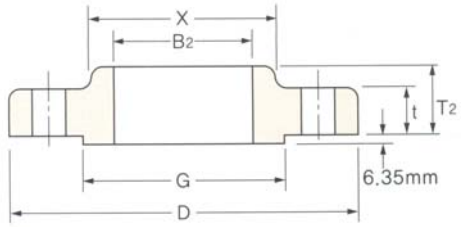
THREADED LAP JOINT BLIND

Unit:mm

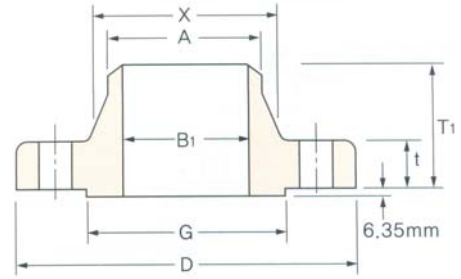
Nominal Pipe Size	Depth of Socket	DRILLING			BOLTING				APPROXIMATE WEIGHT									
					Diam. of Bolt (inch)	Stud Bolt Length			Welding Neck		Slip–on and Threaded		Lap Joint		Blind		Socket Welding	
		Bolt Circle Diam.	Number of Holes	Diam. of Holes		0.25" Raised Face	Male–Female Tongue–Groove	Ring Joint										
	Y								kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
1/2	9.7	82.6	4	22.2	3/4	110	100	110	2.10	4.60	1.80	4.00	1.80	4.00	1.90	4.00	1.81	4.00
3/4	11.2	88.9	4	22.2	3/4	115	110	115	2.72	6.00	2.27	5.00	2.27	5.00	2.72	6.00	2.81	6.20
1	12.7	101.6	4	25.4	7/8	125	120	125	3.86	8.50	3.40	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	125	120	125	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	28.5	1	140	135	140	5.90	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	1 7/8	145	140	145	10.89	24.00	10.50	23.00	9.53	21.00	11.30	25.00	10.89	24.00
2 1/2	19.1	190.5	8	28.4	1	160	150	160	16.34	36.00	15.80	34.80	13.15	29.00	16.00	35.30	16.34	36.00
3	20.6	203.2	8	31.8	1 1/8	180	170	180	21.79	48.00	21.77	48.00	17.24	38.00	21.79	48.00		
4	23.9	241.3	8	35.1	1 1/4	195	190	195	31.30	69.00	31.00	68.40	29.00	63.90	33.11	73.00		
5	23.9	292.1	8	41.1	1 1/2	250	240	250	59.02	130.00	58.80	129.60	54.00	119.00	60.00	132.30		
6	26.9	317.5	12	38.1	1 3/8	260	255	265	74.91	165.00	74.00	163.00	62.00	136.70	75.00	165.30		
8	31.8	393.7	12	44.5	1 5/8	290	285	325	123.83	273.00	117.73	258.00	129.73	236.00	136.98	302.00		
10	33.3	482.6	12	50.8	1 7/8	335	330	345	205.93	454.00	197.49	435.40	220.19	485.40	229.97	507.00		
12	39.6	571.5	16	53.8	2	375	370	385	306.00	674.60	264.00	582.00	286.02	630.60	316.00	696.70		
14	41.4	635.0	16	60.5	2 1/4	405	400	425	416.00	917.00	–	–	404.06	890.80	421.00	928.00		
16	44.5	704.9	16	66.5	2 1/2	445	440	470	567.50	1250.00	–	–	522.10	1151.00	559.00	1232.70		
18	49.3	774.7	16	73.2	2 3/4	495	490	525	736.00	1622.60	–	–	669.65	1476.30	761.00	1677.70		
20	54.1	831.9	16	79.2	3	540	535	565	929.00	2048.0 0	–	–	805.85	1776.60	967.00	2131.80		
24	63.5	990.6	16	91.9	3 1/2	615	610	650	1504.00	3315.70	–	–	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 with out 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 size through 2 1/2" inch,over 2 1/2"inch is at the manufacturer´s option.

CLASS 2500 FLANGES ASME B16.5



SLIP–ON



WELDING NECK

ASME B16.5 FORGED FLANGES

Unit:mm

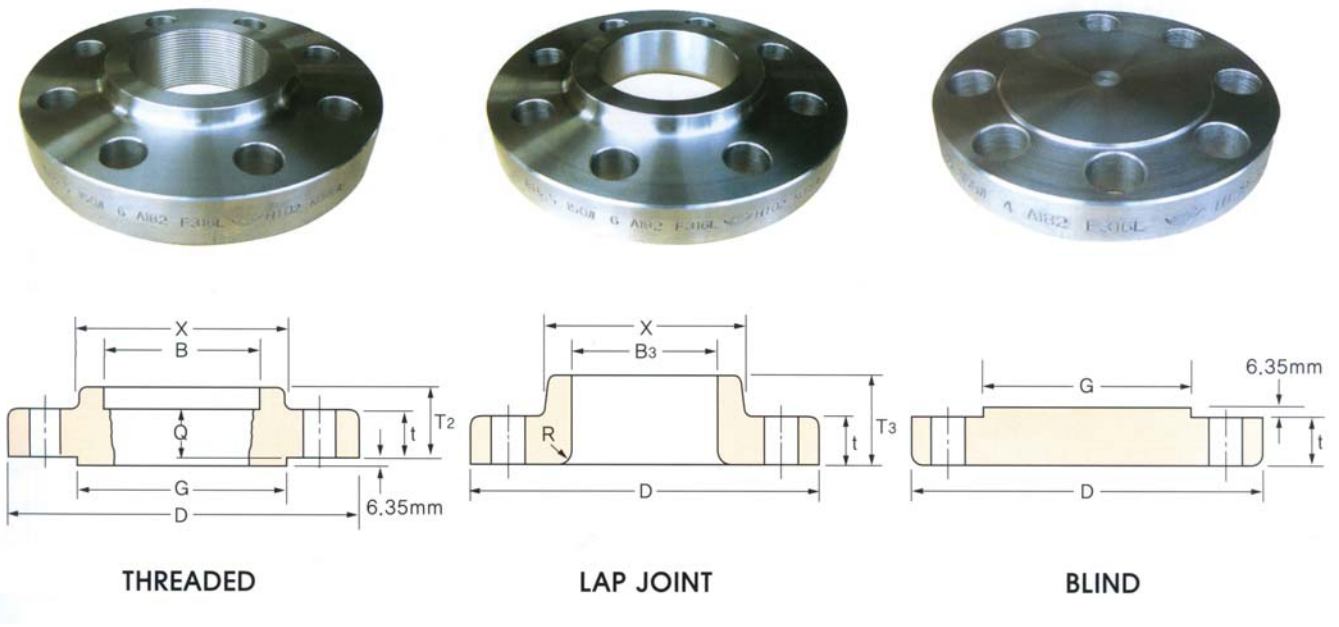
Nominal Pipe Size	OutSide Diam.	Diam. at Base of Hub	O.D,of Raised Face	Thick-ness	BORE				LENGTH THRU HUB			Diam.of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket Welding	Slip–on Socket Welding	Lap Joint	Counter Bore Min.	Welding Neck	Slip–on Thread-ed Socket Welding	Lap Joint			
	D	X	G	t	B_1	B_2	B_3	B	T_1	T_2	T_3	A	R	Q
1/2	133.4	43.0	35.1	30.2	To be specified by purchaser.	22.4	22.9	23.6	73.2	39.6	40.0	21.3	3.0	29.0
3/4	139.7	51.0	42.9	31.8		27.7	28.2	29.0	79.2	42.9	43.0	26.7	3.0	32.0
1	158.8	57.2	50.8	35.1		34.5	35.1	35.8	89.0	47.8	47.8	33.5	3.0	35.0
1 1/4	184.2	73.2	63.5	38.1		43.2	43.7	44.4	95.3	52.3	52.3	42.2	5.0	39.0
1 1/2	203.2	79.2	73.2	44.5		49.5	50.0	50.3	111.3	60.5	60.5	48.3	6.0	45.0
2	235.0	95.3	91.9	50.8		62.0	62.5	63.5	127.0	69.9	70.0	60.5	8.0	51.0
2 1/2	266.7	114.3	104.6	57.2		74.7	75.4	76.2	142.7	79.2	79.0	73.2	8.0	58.0
3	304.8	133.4	127.0	66.7		90.7	91.4	92.2	168.1	91.9	92.0	88.9	10.0	–
4	355.6	165.1	157.2	76.2		116.1	116.8	117.6	190.5	108.0	108.0	114.3	11.0	–
5	419.1	203.2	185.7	92.0		143.8	144.5	144.4	228.6	130.0	130.0	141.2	11.0	–
6	482.6	235.0	215.9	108.0		170.7	171.4	171 .5	273.1	152.4	152.4	168.4	13.0	–
8	552.5	305.0	269.7	127.0		221.5	222.3	222.3	317.5	177.8	178.0	219.2	13.0	–
10	673.1	375.0	323.9	165.1		276.4	277.4	276.4	419.1	228.6	229.0	273.1	13.0	–
12	762.0	441.5	381.0	184.2		327.2	328.2	328.6	463.6	254.0	254.0	323.9	13.0	–

Notes

(1)For the inside diameter of pipes(corresponding to´Bore´(B_1)of Welding Neck Flanges),refer to page 50,51.

(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´(T_1),(T_2).

(3)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.



THREADED LAP JOINT BLIND

Unit:mm

Nominal Pipe Size	DRILLING			BOLTING				APPROXIMATE WEIGHT							
				Stud Bolt Length											
	Bolt Circle Diam.	Number of Holes	Diam. of Holes	Diam. of Bolt (inch)	0.25" Raised Face	Male–Female Tongue – Groove	Ring Joint	Welding Neck		Slip–on and Threaded		Lap Joint		Blind	
								kg	lb	kg	lb	kg	lb	kg	lb
1/2	88.9	4	22.2	3/4	120	115	120	3.18	7.00	3.18	7.00	3.00	6.60	3.18	7.00
3/4	95.3	4	22.2	3/4	125	120	125	4.08	9.00	4.08	9.00	3.63	8.00	4.54	10.00
1	108.0	4	25.4	7/8	140	135	140	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	150	145	150	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	170	165	170	11.35	25.00	11.00	24.30	9.99	22.00	10.44	23.00
2	171.5	8	28.4	1	180	170	180	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	195	190	205	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	220	215	230	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	255	250	260	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	300	290	310	110.68	244.00	95.25	210.00	92.53	204.00	101.15	223.00
6	368.3	8	53.8	2	345	335	355	176.46	378.00	146.51	323.00	143.01	315.30	156.63	345.30
8	438.2	12	53.8	2	380	375	395	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	490	485	510	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	540	535	560	692.35	1526.30	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.

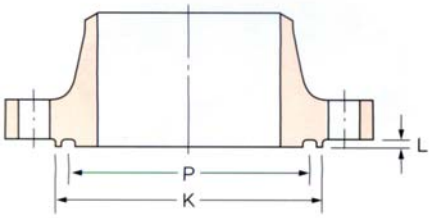
(5)The gasket surface and backside(bearing surface for bolting)are made parallel within 1 degree.To accomplish parallelism,spot facing is carried out according to MSS SP–9,without reducing thickness(t).

(6)Class 2500 Slip–on Flanges are not covered by ANSI B16.5.Slip–on flanges are at the manufacturer´s option.

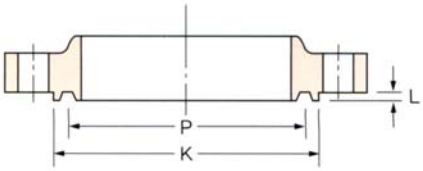
CLASS 150 FLANGES

RING JOIN FLANGES FACING DIMENSIONS

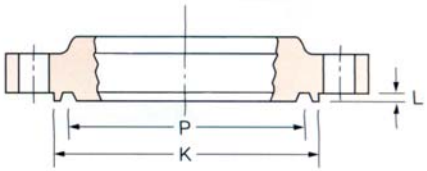
WELDING NECK

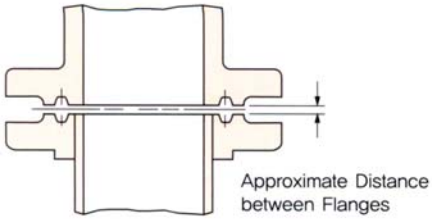


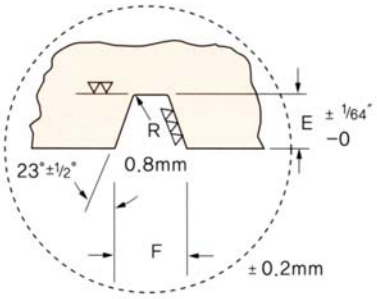
SLIP–ON

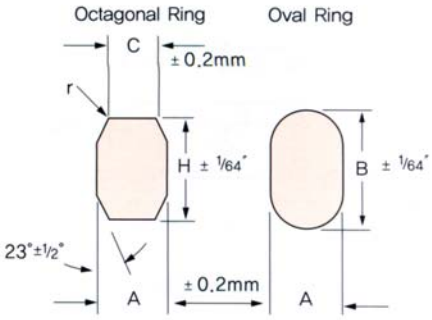


THREADED









ASME B16.5 FORGED FLANGES

Unit:mm

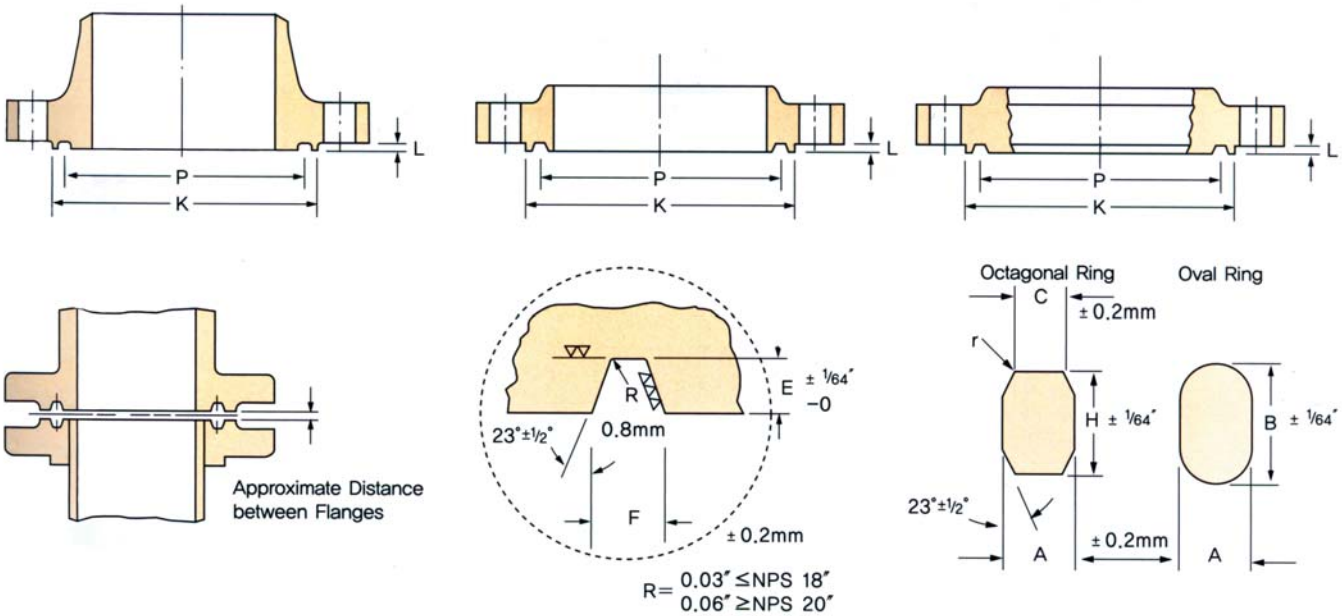
Nominal Pipe Size	Pitch Diam.of Ring and Groove	Width of Ring	HEIGHT OF RING		Width of Flat on Octagonal Ring	Width of Groove	Depth of Groove	Diameter of Raised Face for Ring Joint or Lapped	Ring Number	Approximate Distance Between Flanges of Ring Joints When Ring is Compressed
			Oval	Octagonal						
	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	73.0	R17	4.1
1 1/2	65.1	8.0	14.3	12.7	5.2	8.7	6.4	82.5	R19	4.1
2	82.6	8.0	14.3	12.7	5.2	8.7	6.4	102.0	R22	4.1
2 1/2	101.6	8.0	14.3	12.7	5.2	8.7	6.4	121.0	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	21.7	5.2	8.7	6.4	154.0	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	194.0	R40	4.1
6	193.7	8.0	14.3	12.7	5.2	8.7	6.4	219.0	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	483.0	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	597.0	R72	3.0
24	673.1	8.0	14.3	12.7	5.2	8.7	6.4	711.2	R76	3.0

Notes

Unless otherwise specified by the customer,Ring Type Joint Flanges will be furnished 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 tolerances for"E"
*A plus tolerance of 3/64 in.for height 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"(25.4mm)and over.

CLASS 300–400–600 FLANGES

RING JOINT FLANGES FACING DIMENSIONS



ASME B16.5 FORGED FLANGES

Unit:mm

Nominal Pipe Size	Pitch Diam.of Ring and Groove	Width of Ring	HEIGHT OF RING		Width of Flat on Octagonal Ring	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						Class 300	Class 400	Class 600
	P	A	B	H	C	F	E(L*)	K(Min)				
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	6.0	–	5.0
2 1/2	101.6	11.1	17.5	15.9	7.7	11.9	7.9	127.0	R26	6.0	–	5.0
3	123.8	11.1	17.5	15.9	7.7	11.9	7.9	146.1	R31	6.0	–	5.0
3 1/2	131.8	11.1	17.5	15.9	7.7	11.9	7.9	158.8	R34	6.0	–	5.0
4	149.2	11.1	17.5	15.9	7.7	11.9	7.9	174.8	R37	6.0	6.0	5.0
5	181.0	11.1	17.5	15.9	7.7	11.9	7.9	209.6	R41	6.0	6.0	5.0
6	211.2	11.1	17.5	15.9	7.7	11.9	7.9	241.3	R45	6.0	6.0	5.0
8	269.9	11.1	17.5	15.9	7.7	11.9	7.9	301.8	R49	6.0	6.0	5.0
10	323.9	11.1	17.5	15.9	7.7	11.9	7.9	355.6	R53	6.0	6.0	5.0
12	381.0	11.1	17.5	15.9	7.7	11.9	7.9	412.8	R57	6.0	6.0	5.0
14	419.1	11.1	17.5	15.9	7.7	11.9	7.9	457.2	R61	6.0	6.0	5.0
16	469.9	11.1	17.5	15.9	7.7	11.9	7.9	508.0	R65	6.0	6.0	5.0
18	533.4	11.1	17.5	15.9	7.7	11.9	7.9	574.8	R69	6.0	6.0	5.0
20	584.2	12.7	19.1	17.5	8.7	13.5	9.5	635.0	R73	6.0	6.0	5.0
24	692.2	15.9	22.2	20.7	10.5	16.7	11.1	749.3	R77	6.0	6.0	6.0

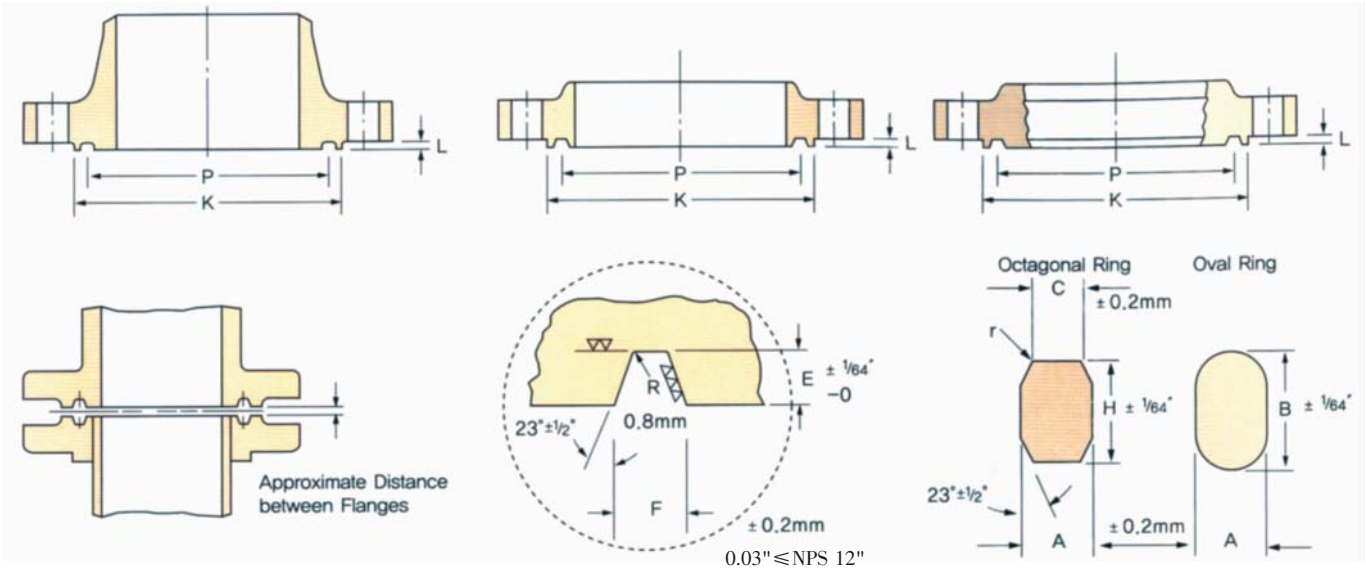
Notes

Unless otherwise specified by the customer,Ring Type Joint Flanges will be furnished 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 tolerances for"E"
*A plus tolerance of 3/64 in.for height 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"(25.4mm)and over.

CLASS 900 FLANGES

RING JOINT FLANGES FACING DIMENSIONS

WELDING NECK SLIP–ON THREADED



0.03"≤NPS 12"
R=0.06" =NPS 14"–20"
0.09" =NPS 24"

Unit:mm

Nominal Pipe Size	Pitch Diam.of Ring and Groove	Width of Ring	HEIGHT OF RING		Width of Flat on Octagonal Ring	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)		
For size 2½ 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

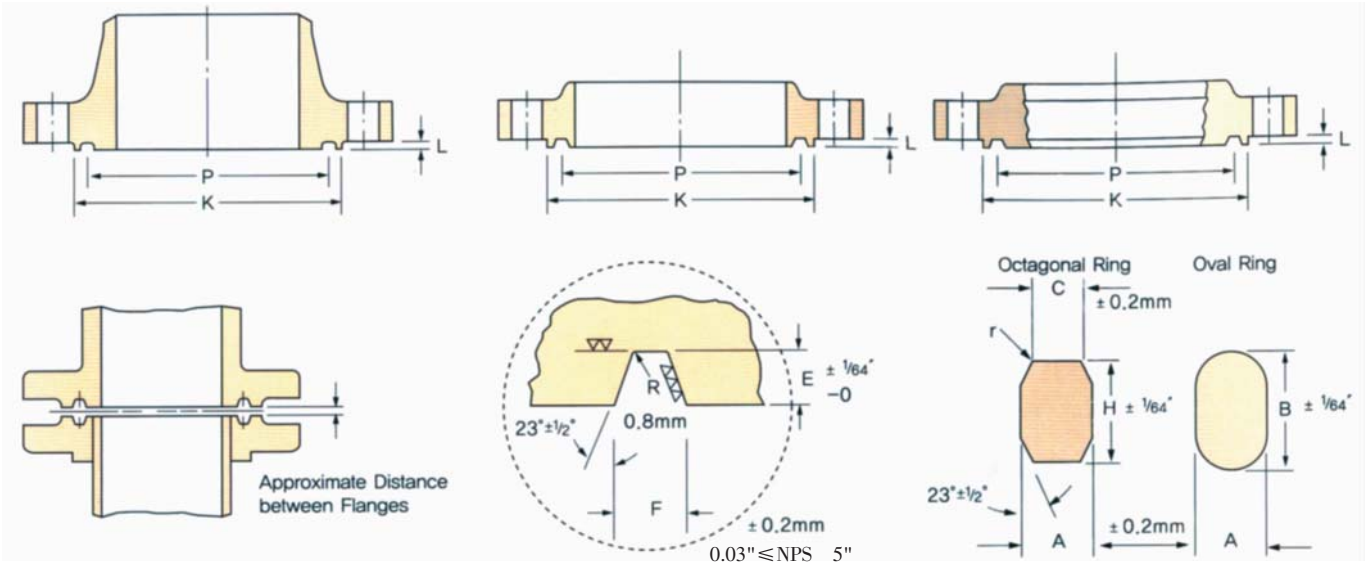
Notes

Unless otherwise specified by the customer,Ring Type Joint Flanges will be furnished 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 tolerances for"E"
*A plus tolerance of 3/64 in.for height 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"(25.4mm)and over.

CLASS 1500 FLANGES

RING JOINT FLANGES FACING DIMENSIONS

WELDING NECK SLIP–ON THREADED



0.03"≤NPS 5"
R=0.06" =NPS 6"–12"
0.09" ≥NPS 14"

ASME B16.5 FORGED FLANGES

Unit:mm

Nominal Pipe Size	Pitch Diam.of Ring and Groove	Width of Ring	HEIGHT OF RING		Width of Flat on Octagonal Ring	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)		
1/2	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	137.0	R27	3.0
3	136.5	11.1	17.5	15.9	7.7	11.9	7.9	168.4	R35	3.0
4	161.9	11.1	17.5	15.9	7.7	11.9	7.9	194.0	R39	3.0
5	193.7	11.1	17.5	15.9	7.7	11.9	7.9	229.0	R44	3.0
6	211.2	12.7	19.1	17.5	8.7	13.5	9.5	248.0	R46	3.0
8	269.9	15.9	22.2	20.7	10.5	16.7	11.1	318.0	R50	4.1
10	323.9	15.9	22.2	20.7	10.5	16.7	11.1	371.0	R54	4.1
12	381.0	22.2	28.6	27.0	14.8	23.0	14.3	438.2	R58	5.0
14	419.1	25.4	33.4	31.8	17.3	27.0	15.9	489.0	R63	6.0
16	469.9	28.6	36.5	34.9	19.8	30.2	17.5	546.1	R67	8.0
18	533.4	28.6	36.5	34.9	19.8	30.2	17.5	613.0	R71	8.0
20	584.2	31.8	39.7	38.1	22.3	33.4	17.5	673.1	R75	10.0
24	692.2	34.9	44.5	41.3	24.8	36.5	20.6	794.0	R79	11.0

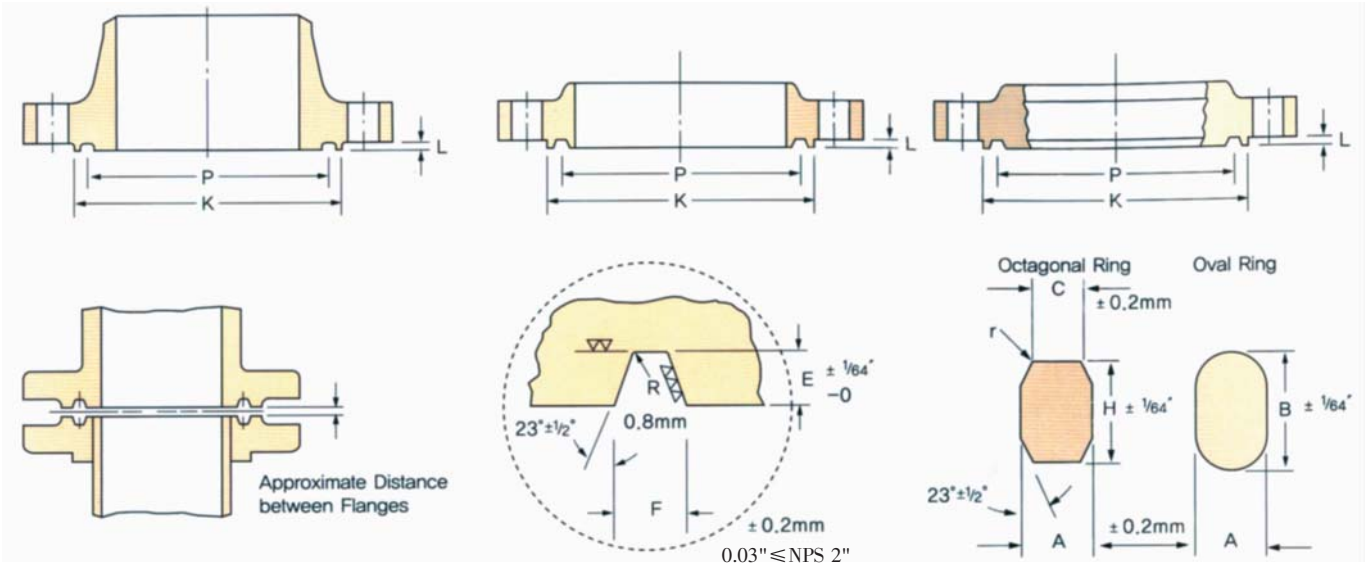
Notes

Unless otherwise specified by the customer,Ring Type Joint Flanges will be furnished 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 tolerances for"E"
*A plus tolerance of 3/64 in.for height 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"(25.4mm)and over.

CLASS 2500 FLANGES

RING JOINT FLANGES FACING DIMENSIONS

WELDING NECK SLIP–ON THREADED



0.03"≤NPS 2"
R=0.06" =NPS 2½"–8"
0.09"≥NPS 10"

Unit:mm

Nominal Pipe Size	Pitch Diam.of Ring and Groove	Width of Ring	HEIGHT OF RING		Width of Flat on Octagonal Ring	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)		
1/2	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	102.0	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	340.0	R51	5.0
10	342.9	28.6	36.5	34.9	19.8	30.2	17.5	425.5	R55	6.0
12	406.4	31.8	39.7	38.1	22.3	33.4	17.5	495.3	R60	8.0

Notes

Unless otherwise specified by the customer,Ring Type Joint Flanges will be furnished 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 tolerances for"E"

*A plus tolerance of 3/64 in.for height 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"(25.4mm)and over.

REDUCING FLANGES

THREADED AND SLIP-ON TYPES

HUB–For hub diameter(X)and height of hub above the back of the flange(N)refer to the list of standard flange specification of the same type and pressure and use the dimensions of a flange **one nominal pipe size smaller** than the nominal pipe size from which the reduction is being made.

FLANGE O.D.,DRILLING TEMPLATEAND THICKNESS–Outside diameter ,drilling template and flange thickness Q (seenote on FACINGS)agree with the dimention of a standard flange of the nominal pipe size from wich the reduction is being made.

FACING–Facing dimensions also agree with the dimensions of a standard flanges of the nominal pipe size from which the reduction is being made.150 lb.and 300 lb.forged steel Threaded,Slip–On,Welding Neck and Blind flanges are furnished with American Standard 1/16"raised face which is included in flange thickness.Q.400 lb.,600lb.,900lb.,1500lb.and 2500lb.flanges are supplied with American Standard 1/4"raised face which is not included in flange thickness(Q).

BORE OR TAPPING–The bore or tapping is machined to accept a pipe of the nominal pipe size to which the reduction is being made.For reduction to sizes smaller than shown,BLIND FLANGES are tapped or bored to specified nominal pipe size.

EXAMPLE

A.The size designation is NPS 6×2 $^{1}/_{2}$–class 300reducing threaded flange.This flange has the following dimensions:

NPS 2 $^{1}/_{2}$=taper pipe thread tapping(ASME B1.20.1).

12.5 in.=diameter of regular NPS 6 Class 300 threaded flange.

1.44 in.=thickness of regular NPS 6 Class 300 threaded flange.

7.0 in.=diameter of hub for regular NPS 5 Class 300 threaded flange.hub diameter may be one size smaller to reduce machining. In this example a hub diameter of NPS 2 $^{1}/_{2}$ would be the smallest acceptable.

0.62 in.=height of hub for regular NPS 5 Class 300 threaded flange.

Other dimensions the same as for regular NPS 6 Class 300 threaded flange,Table F12.

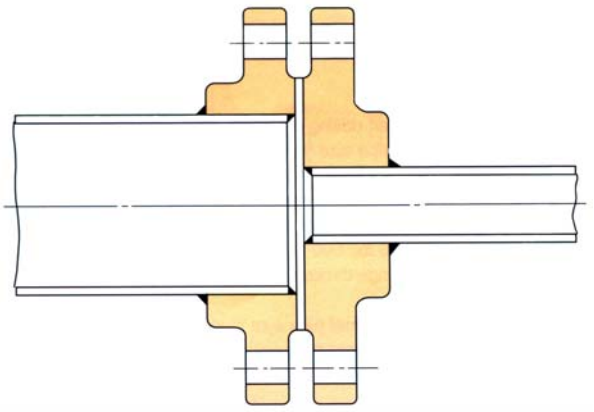
B.The size designation is NPS 6×2–class 300 reducing threaded flange.Use regular NPS 6 Class 300 blind flange tapped with NPS 2taper pipe thread(ASME B1.20.1).

WELDING NECK TYPES

On Reducing Welding Neck Flanges,which are made only on special order ,the hub dimensions agree with the hub dimensions of standard flanges of the size to which reduction is being made.Other flange dimensions ,including the drilling template,agree with the standard dimensions of the size from which the reduction is being made.

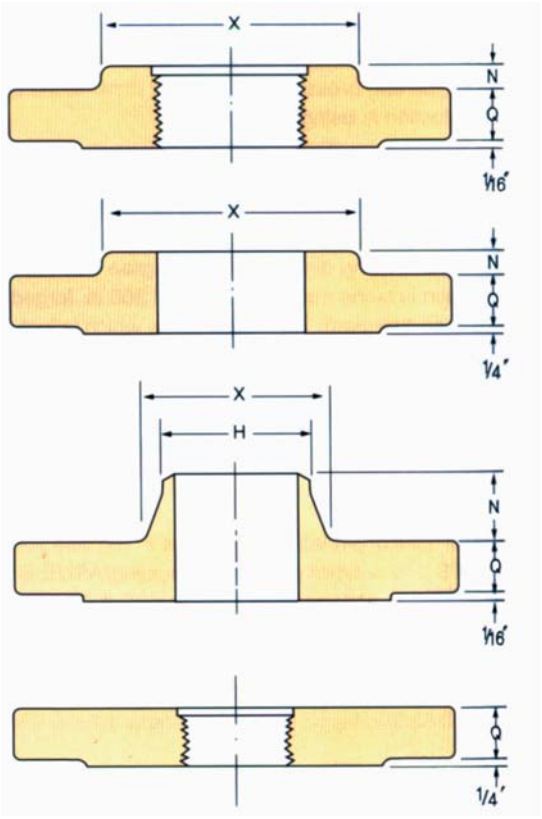
REDUCING FLANGES

THREADED–SLIP ON–WELDING NECK



In ordering Reducing Flanges:
specify (1) nominal pipe size of the tapping or bore to which the reduction is being made ,(2) the outside diameter of the flange from which the reduction is being made and (3)pressure rating.

EXAMPLE:
A 300 lb.Reducing Flange for reducing from a 6´´ (152.4mm) to a 3´´ (76.2mm)nominal pipe size should be designated as a 3´´ (76.2mm)× 12½´´–300lb. Reducing Flange.
Whether Threaded,Slip –On,or Welding Neck type is desired must also be specified.



ASME B16.5 FORGED FLANGES

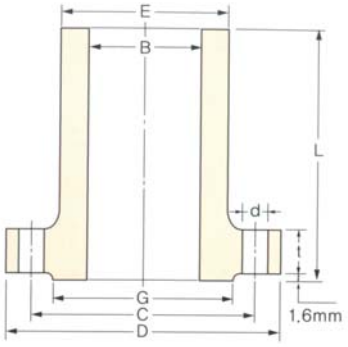
Dimensions in mm

	Nominal Flange	OUTSIDE DIAMETER OF FLANGE FROM WHICH REDUCTION IS BEING MADE							Smallest SizeBore or Tapping Requiring Hub Flange
		150lb. Standard	300lb. Standard	400lb. Standard	600lb. Standard	900lb. Standard	1500lb. Standard	2500lb. Standard	
Nominal Pipe Size to Which Reduction is to be Made to be Specified by Purchaser	¾	98.4	117.5	117.5	117.5	130.2	130.2	139.7	12.7
	1	108.0	123.8	123.8	123.8	149.2	149.2	158.8	12.7
	1 ¼	117.5	133.4	133.4	133.4	158.8	158.8	184.2	12.7
	1 ½	127.0	155.6	155.6	155.6	177.5	177.8	203.2	12.7
	2	152.4	165.1	165.1	165.1	215.9	215.9	235.0	25.4
	2 ½	177.8	190.5	190.5	190.5	244.5	244.5	266.7	31.8
	3	190.5	209.6	209.6	209.6	241.3	266.7	304.8	31.8
	3 ½	215.9	228.6	228.6	228.6	_	_	_	38.1
	4	228.6	254.0	254.0	273.1	292.1	311.2	355.6	38.1
	5	254.0	279.4	279.4	330.2	349.3	374.7	419.1	38.1
	6	279.4	317.5	317.5	355.6	381.0	393.7	482.6	63.5
	8	342.9	381.0	381.0	419.1	469.9	482.6	552.5	76.2
	10	406.4	444.5	444.5	508.0	546.1	584.2	673.1	88.9
	12	482.6	520.7	520.7	558.8	609.6	673.1	762.0_	88.9
	14	533.4	584.2	584.2	603.3	641.4	_	_	88.9
	16	596.9	647.7	647.7	685.8	704.9	_	_	101.6
	18	635.0	711.2	711.2	743.0	787.4	_	_	108.0
	20	698.5	774.7	774.7	812.8	857.3	_	_	101.6
	24	812.8	914.4	914.4	939.8	1041.1	–	_	101.6

Notes
For reductions to sizes smaller than shown,blind flanges are tapped or bored for specified nominal pipe size.

CLASS 150 FLANGES

LONG WELDING NECK



Unit:mm

Nominal Pipe Size	Outside Diameter	O.D.of Raised Face	Hub Diameter at Bevel	Diameter of Bore	Thickness of Flange Min.	Length Through Hub	DRILLING		
							Diameter of Bolt Circie	Number of Holes	Diameter of Holes
	D	G	E	B	t	L	C		d
1/2	89	35.1	30.2	12.7	11.2	228.6	60.5	4	15.7
3/4	99	42.9	38.1	19.1	12.7	228.6	69.9	4	15.7
1	108	50.8	50.8	25.4	14.2	228.6	79.2	4	15.7
1 1/4	117	63.5	60.5	31.8	15.7	228.6	88.9	4	15.7
1 1/2	127	73.2	66.5	38.1	17.5	228.6	98.6	4	15.7
2	152	91.9	82.6	50.8	19.1	228.6	120.7	4	19.1
2 1/2	178	104.6	95.3	63.5	22.4	228.6	139.7	4	19.1
3	191	127.0	108.0	76.2	23.9	228.6	152.4	4	19.1
3 1/2	216	139.7	124.0	88.9	23.9	228.6	177.8	8	19.1
4	229	157.2	139.7	101.6	23.9	304.8	190.5	8	19.1
5	254	185.7	165.1	127.0	23.9	304.8	215.9	8	22.4
6	279	215.9	196.9	152.4	25.4	304.8	241.3	8	22.4
8	343	269.7	247.7	203.2	28.4	304.8	298.5	8	22.4
10	406	323.9	304.8	254.0	30.2	304.8	362.0	12	25.4
12	483	381.0	365.3	304.8	31.8	304.8	431.8	12	25.4
14	533	412.8	406.4	355.6	35.1	304.8	476.3	12	28.4
16	597	469.9	457.2	406.4	36.6	304.8	539.8	16	28.4
18	635	533.4	508.0	457.2	39.6	304.8	577.9	16	31.8
20	699	584.2	558.8	508.0	42.9	304.8	635.0	20	31.8
24	813	692.2	666.8	609.6	47.8	304.8	749.3	20	35.1

CLASS 300 FLANGES

LONG WELDING NECK

Unit:mm

Nominal Pipe Size	Outside Diameter	O.D.of Raised Face	Hub Diameter at Bevel	Diameter of Bore	Thickness of Flange Min.	Length Through Hub	DRILLING		
							Diameter of Bolt Circie	Number of Holes	Diameter of Holes
	D	G	E	B	t	L	C		d
1/2	95	35.1	38.1	12.7	14.2	228.6	66.5	4	15.7
3/4	117	42.9	47.8	19.1	15.7	228.6	82.6	4	19.1
1	124	50.8	53.8	25.4	17.5	228.6	88.9	4	19.1
1 1/4	133	63.5	63.5	31.8	19.1	228.6	98.6	4	19.1
1 1/2	155	73.2	69.9	38.1	20.6	228.6	114.3	4	22.4
2	165	91.9	84.1	50.8	22.4	228.6	127.0	8	19.1
2 1/2	191	104.6	100.1	63.5	25.4	228.6	149.4	8	22.4
3	210	127.0	117.3	76.2	28.4	228.6	168.1	8	22.4
3 1/2	229	139.7	133.4	88.9	30.2	228.6	184.2	8	22.4
4	254	157.2	146.1	101.6	31.8	304.8	200.2	8	22.4
5	279	185.7	177.8	127.0	35.1	304.8	235.0	8	22.4
6	318	215.9	206.2	152.4	36.6	304.8	269.7	12	22.4
8	381	269.7	260.4	203.2	41.1	304.8	330.2	12	25.4
10	445	323.9	320.5	254.0	47.8	304.8	387.4	16	28.4
12	521	381.0	374.7	304.8	50.8	304.8	450.9	16	31.8
14	584	412.8	425.5	355.6	53.8	304.8	514.4	20	31.8
16	648	469.9	482.6	406.4	57.2	304.8	571.5	20	35.1
18	711	533.4	533.4	457.2	60.5	304.8	628.7	24	35.1
20	775	584.2	587.2	508.0	63.5	304.8	685.8	24	35.1
24	914	692.2	701.5	609.6	69.9	304.8	812.8	24	41.1

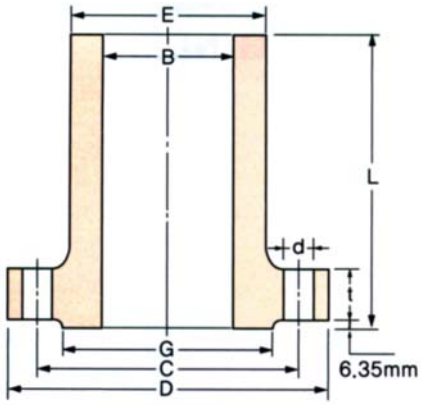
Notes

(1) Bore (B) is the same as nominal pipe size.

(2) Welding necks longer than listed are available in all sizes on special order.

CLASS 400 FLANGES

LONG WELDING NECK



Unit:mm

Nominal Pipe Size	Outside Diameter	O.D.of Raised Face	Hub Diameter at Bevel	Diameter of Bore	Thickness of Flange Min.	Length Through Hub	DRILLING		
							Diameter of Bolt Circie	Number of Holes	Diameter of Holes
	D	G	E	B	t	L	C		d
1	Use Class 600 dimensions in these sizes.								
1 1/4									
1 1/2									
2									
2 1/2									
3									
3 1/2									
4	254	157.2	146.1	101.6	35.1	304.8	200.2	8	25.4
5	279	185.7	177.8	127.0	38.1	304.8	235.0	12	25.4
6	318	215.9	206.2	152.4	41.1	304.8	269.7	12	25.4
8	381	269.7	260.4	203.2	47.8	304.8	330.2	12	28.4
10	445	323.9	320.5	254.0	53.8	304.8	387.4	16	31.8
12	521	381.0	374.7	304.8	57.2	304.8	450.9	16	35.1
14	584	412.8	425.5	355.6	60.5	304.8	514.4	20	35.1
16	648	469.9	482.6	406.4	63.5	304.8	571.5	24	38.1
18	711	533.4	533.4	457.2	66.5	304.8	628.7	24	38.1
20	775	584.2	587.2	508.0	69.9	304.8	685.8	24	41.1
24	914	692.2	701.5	609.6	76.2	304.8	812.8	24	47.8

CLASS 600 FLANGES

LONG WELDING NECK

Unit:mm

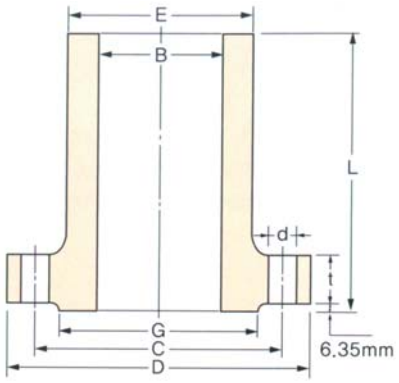
Nominal Pipe Size	Outside Diameter	O.D.of Raised Face	Hub Diameter at Bevel	Diameter of Bore	Thickness of Flange Min.	Length Through Hub	DRILLING		
							Diameter of Bolt Circie	Number of Holes	Diameter of Holes
	D	G	E	B	t	L	C		d
1	124	50.8	53.8	25.4	17.5	228.6	88.9	4	19.1
1 1/4	133	63.5	63.5	31.8	20.6	228.6	98.6	4	19.1
1 1/2	155	73.2	69.9	38.1	22.4	228.6	114.3	4	22.4
2	165	91.9	84.1	50.8	25.4	228.6	127.0	8	19.1
2 1/2	191	104.6	100.1	63.5	28.4	228.6	149.4	8	22.4
3	210	127.0	117.3	76.2	31.8	228.6	168.1	8	22.4
3 1/2	229	139.7	133.4	88.9	35.1	228.6	184.2	8	25.4
4	273	157.2	152.4	101.6	38.1	304.8	215.9	8	25.4
5	330	185.7	190.5	127.0	44.5	304.8	266.7	8	28.4
6	356	215.9	222.3	152.4	47.8	304.8	292.1	12	28.4
8	419	269.7	273.1	203.2	55.6	304.8	349.3	12	31.8
10	508	323.9	342.9	254.0	63.5	304.8	431.8	16	35.1
12	559	381.0	400.1	304.8	66.5	304.8	489.0	20	35.1
14	603	412.8	431.8	355.6	69.9	304.8	527.1	20	38.1
16	686	469.9	495.3	406.4	76.2	304.8	603.3	20	41.1
18	743	533.4	546.1	457.2	82.6	304.8	654.1	20	44.5
20	813	584.2	609.6	508.0	88.9	304.8	723.9	24	44.5
24	940	692.2	717.6	609.6	101.6	304.8	838.2	24	50.8

Notes

(1) Bore (B) is same as nominal pipe size.
(2) Welding necks longer than listed are available in all sizes on special order.

CLASS 900 FLANGES

LONG WELDING NECK



Unit:mm

Nominal Pipe Size	Outside Diameter	O.D.of Raised Face	Hub Diameter at Bevel	Diameter of Bore	Thickness of Flange Min.	Length Through Hub	DRILLING		
							Diameter of Bolt Circle	Number of Holes	Diameter of Holes
	D	G	E	B	t	L	C		d
1	Use Class 1500 dimensions in these sizes.								
1 1/4									
1 1/2									
2									
2 1/2									
3	241	127.0	127.0	76.2	38.1	304.8	190.5	8	25.4
4 1/2	292	157.2	158.8	101.6	44.5	304.8	235.0	8	31.8
5	349	185.7	190.5	127.0	50.8	304.8	279.4	8	35.1
6	381	215.9	235.0	152.4	55.6	304.8	317.5	12	31.8
8	470	269.7	298.5	203.2	63.5	304.8	393.7	12	38.1
10	546	323.9	368.3	254.0	69.9	406.4	469.9	16	38.1
12	610	381.0	419.1	304.8	79.2	406.4	533.4	20	38.1
14	641	412.8	450.9	355.6	85.9	To be specified by Purchaser	558.8	20	41.1
16	705	469.9	508.0	406.4	88.9		616.0	20	44.5
18	787	533.4	565.2	457.2	101.6		685.8	20	50.8
20	857	584.2	622.3	508.0	108.0		749.3	20	53.8
24	1041	692.2	749.3	609.6	139.7		901.7	20	66.5

CLASS 1500 FLANGES

LONG WELDING NECK

Unit:mm

Nominal Pipe Size	Outside Diameter	O.D.of Raised Face	Hub Diameter at Bevel	Diameter of Bore	Thickness of Flange Min.	Length Through Hub	DRILLING		
							Diameter of Bolt Circle	Number of Holes	Diameter of Holes
	D	G	E	B	t	L	C		d
1	149	50.8	52.3	25.4	28.4	228.6	101.6	4	25.4
1 1/4	159	63.5	63.5	31.8	28.4	228.6	111.3	4	25.4
1 1/2	178	73.2	69.9	38.1	31.8	228.6	124.0	4	28.4
2	216	91.9	104.6	50.8	38.1	228.6	165.1	8	25.4
2 1/2	244	104.6	124.0	63.5	41.1	304.8	190.5	8	28.4
3	267	127.0	133.4	76.2	47.8	304.8	203.2	8	31.8
4	311	157.2	162.1	101.6	53.8	304.8	241.3	8	35.1
5	375	185.7	196.9	127.0	73.2	304.8	292.1	8	41.1
6	394	215.9	228.6	152.4	82.6	304.8	317.5	12	38.1
8	483	269.7	292.1	203.2	91.9	304.8	393.7	12	44.5
10	584	323.9	368.3	254.0	108.0	406.4	482.6	12	50.8
12	673	381.0	450.9	304.8	124.0	406.4	571.5	16	53.8
14	749	412.8	495.3	355.6	133.4	To be specified by Purchaser	635.0	16	60.5
16	826	469.9	552.5	406.4	146.1		704.9	16	66.5
18	914	533.4	596.9	457.2	162.1		774.7	16	73.2
20	984	584.2	641.4	508.0	177.8		831.9	16	79.2
24	1168	692.2	762.0	609.6	203.2		990.6	16	91.9

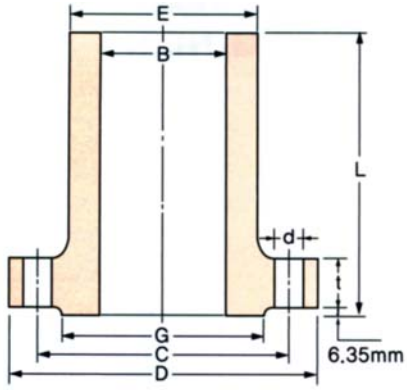
Notes

(1) Bore (B) is the same as nominal pipe size.

(2) Welding necks longer than listed are available in all sizes on special order.

CLASS 2500 FLANGES

LONG WELDING NECK



Unit:mm

Nominal Pipe Size	Outside Diameter	O.D.of Raised Face	Hub Diameter at Bevel	Diameter of Bore	Thickness of Flange Min.	Length Through Hub	DRILLING		
							Diameter of Bolt Circle	Number of Holes	Diameter of Holes
	D	G	E	B	t	L	C		d
1	159	50.8	57.2	25.4	35.1	228.6	108.0	4	25.4
1 1/4	184	63.5	73.2	31.8	38.1	228.6	130.0	4	28.4
1 1/2	203	73.2	79.2	38.1	44.5	228.6	146.1	4	31.8
2	235	91.9	95.3	50.8	50.8	228.6	171.5	8	28.4
2 1/2	267	104.6	114.3	63.5	57.2	304.8	196.9	8	31.8
3	305	127.0	133.4	76.2	66.5	304.8	228.6	8	35.1
4	356	157.2	165.1	101.6	76.2	304.8	273.1	8	41.1
5	419	185.7	203.2	127.0	91.9	304.8	323.9	8	47.8
6	483	215.9	235.0	152.4	108.0	304.8	3683	8	53.8
8	552	269.7	304.8	203.2	127.0	304.8	438.2	12	53.8
10	673	323.9	374.7	254.0	165.1	406.4	539.8	12	66.5
12	762	381.0	441.5	304.8	184.2	406.4	619.3	16	73.2

Notes

(1) Bore (B) is the same as nominal pipe size.

(2) Welding necks longer than listed are available in all sizes on special order.

GUIDE TO MATERIAL LAYOUT & SPECIFICATIONS

Pipe	Weld Fittings	Screwed & Socket Fittings	Flanges	Valves
A–53	A–234 WPB	A–105 A–181 Gr.60 or 70	A–105 A–181 Gr.60 or 70	A–105 A–216 WCB
A–106B	A–234 WPB	A–105 A–181 Gr.60 or 70	A–105 A–181 Gr.60 or 70	A–105 A–216 WCB
A–312 T304	A–403 WP–304	A–182 F–304	A–182 F–304	A–182 F–304 CMO
A–312 T316	A–403 WP–316	A–182 F–316	A–182 F–316	A–182 F–316 CM 8MO
A–333 Gr.1or6	A–420 WPL 1&6	A–350 LF–1	A–350 LF–1	A–350 LF–1 A–352 LCB
A–333 Gr.3	A–420 WPL–3	A–350 LF–3	A–350 LF–3	A–350 LF–3 A–352 LC3
A–335 P–1	A–234 WP–1	A–182 F–1	A–182 F–1	A–217 WC–6
A–335 P–11	A–234 WP–11	A–182 F–11	A–182 F–11	A–182 F–11 A–217 WC–6
A–335 P–12	A–234 WP–12	A–182 F–12	A–182 F–12	A–217 WC–6
A–335 P–22	A–234 WP–22	A–182 F–22	A–182 F–22	A–182 F–22 A–217 WC–9
A–335 P–5	A–234 WP–5	A–182 F–5	A–182 F–5	A–182 F–5 A–216 WC–5
A–335 P–7	A–234 WP–7	A–182 F–7	A–182 F–7	A–182 F–7 A–217 WC–12
A–335 P–9	A–234 WP–9	A–182 F–9	A–182 F–9	A–182 F–9 A–217 WC–12

ASME ORIFICE FLANGE

(ASME B16.36) FORGED FLANGES

ORIFICE FLANGES are widely used in conjunction with orifice meters for measuring the rate of flow of liquids and gases. They are basically the same as standard welding neck,slip–on and screwed flanges except for the provision of radial,tapped holes in the flange ring for meter connections and additional bolts to act as jack screws to facilitate separating the flanges for inspection or replacement of the orifice plate.

NOTES

1.JACK SCREW PROVISION

(1)Each flange shall have a machine bolt mounted in a hole drilled on the flange centerline at 90 deg.from the pressure taps,for use as a jackscrew.Machine bolt shall be regular,with one heavy hex. nut.

(2)A slot shall be provided in the flange 0.06 in.(1.6mm) wider than the width across flats of the nut.The depth of the slot shall admit the nut so that there is no interference with the joining of the flanges when bolted together without orifice plate.

2.PRESSURE TAPS

(1)Each orifice flange is provided with two pressure tap holes extending radially from the outside diameter of the flange to the inside diameter of the flange. Corner taps may be used on NPS $1^1/_2$ and smaller if space permits.

(2)The 0.94 in.(23.8mm) locating dimension for raised face and 0.75 in.(19.1mm) for ring joint shall be measured at the bore.

(3)Each pressure tap hole shall be equipped with a pipe plug.

3. FACING

The finish of contact faces shall conform to the requirements of ASME B16.5.

4.FLANGE THREADS

(1)Threaded flanges shall have an American National Standard taper pipe thread conforming to ASME B1.20.1.

(2)The thread shall be concentric with the axis of the flange and variations in alignment shall not exceed 0.06 in.(1.6mm)per foot .

(3)The flanges are made with counterbores at the back of the flange and the threads shall be chamfered to the diameter of the counterbore at an angle of approximately 45 degrees with the axis of the thread to afford easy entrance in making a joint.The counterbore and chamfer shall be concentric with the thread.

(4)In order to permit the pipe to be inserted to the face of the flange,the threads should have full root diameters through to the face of the flange,or shall have a counterbore at the face of the flange.

(5)The gaging notch of the working gage shall come flush with the bottom of the chamfer in all threaded flanges and shall be considered as being the intersection of the chamfer cone and the pitch cone of the thread.

This depth of chamfer is approximately equal to $^1/_2$ of the pitch of the thread.

(6)The maximum allowable thread variation is one turn large or small from the gaging notch.

5.TOLERANCES

Tolerances on all dimensions shall be as shown in ASME B16.5 except for those shown below.

(1)Tolerances on location of center of pressure tap hole[2] from flange face shall be:

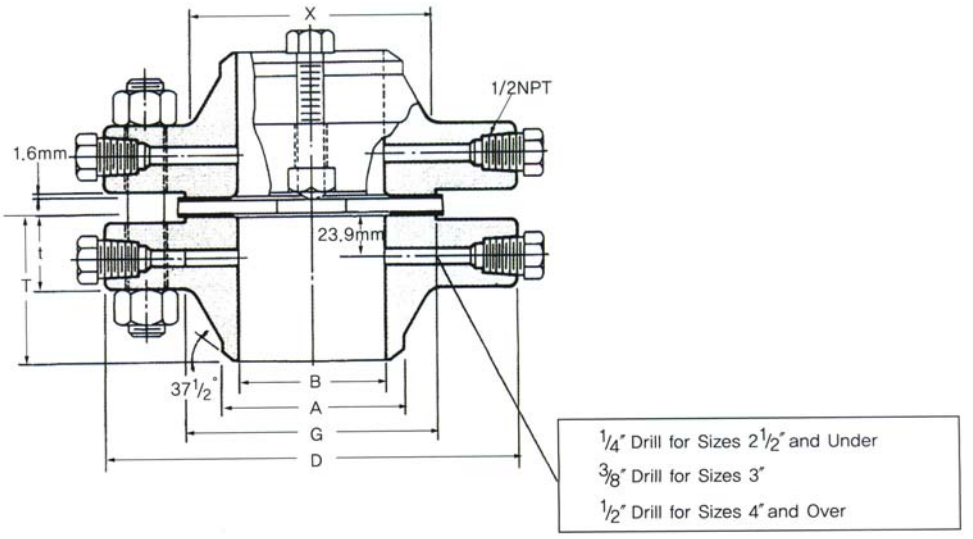
a.Flanges smaller than NPS,4$\pm$0.02 in.(0.5mm)

b.Flanges NPS 4 and larger,$\pm$0.03 in.(0.8mm)

(2)Bore diameter tolerance (welding neck flanges only)is$\pm$0.5% of nominal value.

CLASS 300 ORIFICE FLANGES

WELDING NECK (RAISED FACE)



ASME B16.36 FORGED FLANGES

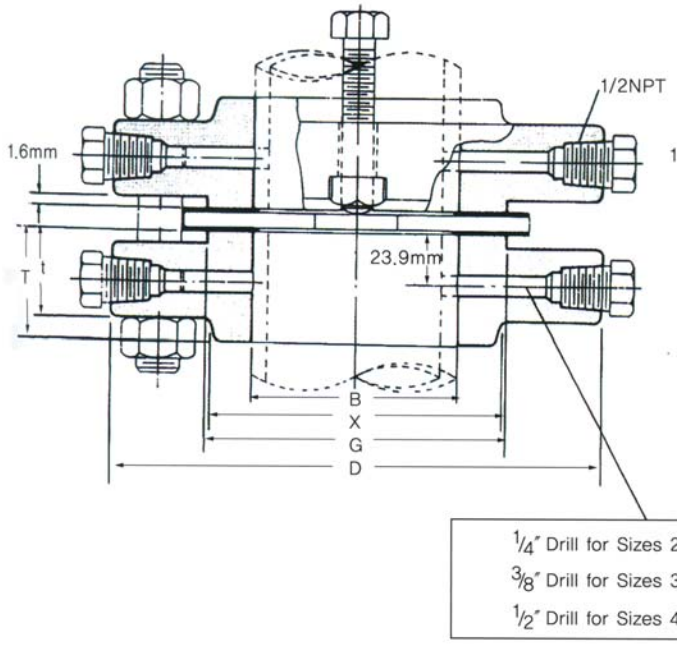
Unit:mm

Nominal Pipe Size	Outside Diam.of Flange	THICKNESS OF FLANGE(t)	Diam.of Hub at Base	Diam.of Raised Face	Diam.of Hub at Bevel	LENGTH THRU HUB(T)		BORE(B)	
						Welding Neck	Slip-on & Threaded	Welding Neck	Slip-on
	D	Raised Face	X	G	A	Raised Face	Raised Face		
1	124	38.1	53.8	50.8	33.5	82.6	47.8	26.7	34.5
1 1/4	133	38.1	63.5	63.5	42.2	84.1	46.0	35.1	43.2
1 1/2	155	38.1	69.9	73.2	48.3	85.9	47.8	40.9	49.5
2	165	38.1	84.1	91.9	60.5	85.9	49.3	52.6	62.0
2 1/2	191	38.1	100.1	104.6	73.2	88.9	50.8	62.7	74.7
3	210	38.1	117.3	127.0	88.9	88.9	52.3	78.0	90.7
4	254	38.1	146.1	157.2	114.3	91.9	53.8	102.4	116.1
5	279	38.1	177.8	185.7	141.2	101.6	53.8	128.3	143.8
6	318	38.1	206.2	215.9	168.4	100.1	53.8	154.2	170.7
8	381	41.1	260.4	269.7	219.2	111.3	62.0	202.7	221.5
10	445	47.8	320.5	323.9	273.1	117.3	66.5	254.5	276.4
12	521	50.8	374.7	381.0	323.9	130.0	73.2	304.8	327.2
14	584	53.8	425.5	412.8	355.6	142.7	76.2	336.6	359.2
16	648	57.2	482.6	469.9	406.4	146.1	82.6	387.4	410.5
18	711	60.5	533.4	533.4	457.2	158.8	88.9	438.2	461.8
20	775	63.5	587.2	584.2	508.0	162.1	95.3	489.0	513.1
24	914	69.9	701.5	692.2	609.6	168.1	106.4	590.6	616.0

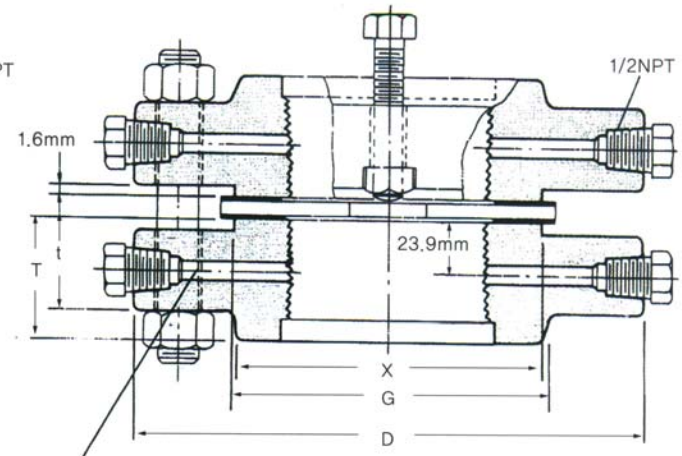
Notes

(1)For the ´Bore´(B) of Welding Neck Flanges other than Standard Wall Thickness,refer to 50,51.
(2)Class 300 Welding Neck Flanges of size 24´´(609.6mm)and smaller will be bored to match Standard Wall Pipe unless otherwise specified.
(3)Class 300 Orifice flanges will be furnished with 0.06´´(1.6mm) raised face,which is included in´Thickness´(t) and ´Length throngh Hub´(T)
(4)Bolt lengths for raised face flanges include allowance for orifice and gasket thickness of 0.25´´(6.4mm)for NPS 1–12 and 0.38´´(9.7mm) for NPS 14–24.

SLIP–ON



THREADED



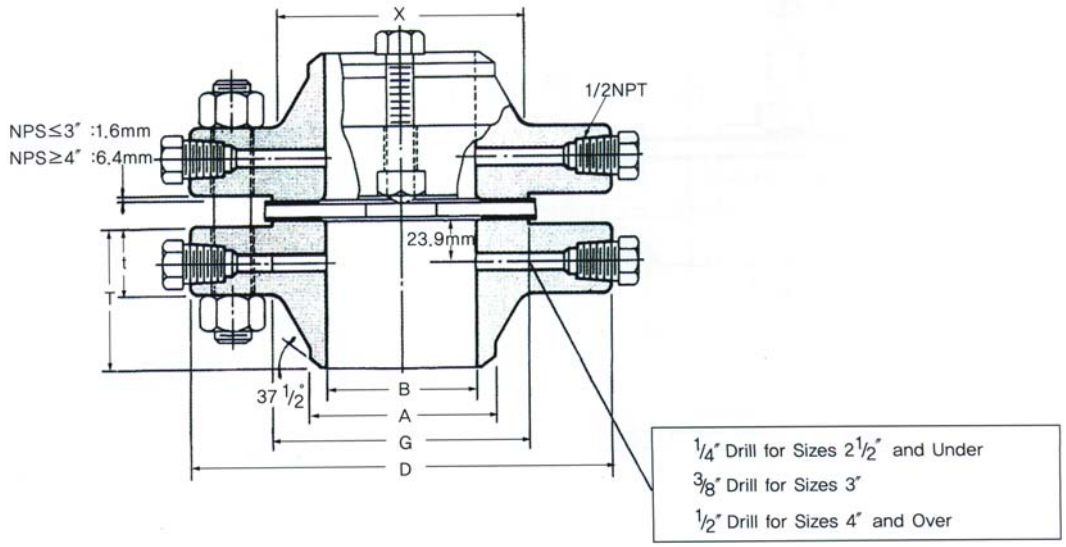
Unit:mm

Nominal Pipe Size	Pitch Diam.of Ring and Groove	Ring Number	DEPTH OF JACK SCREW SLOT	JACK SCREW SIZE	DRILLING TEMPLATE				
	P		Raised Face	Raised Face	Diam.of Bolt Circle	Number of Bults	Diam.of Stud Bolts(inch)	Diam.of Bolt Holes	Length of Stud Bolts Raised Face
1	50.8	R16	9.7	Jack screw size for 1"thru24"those shown for length and diameter of bolts.	88.9	4	5/8	17.5	139.7
1 1/4	60.3	R18	9.7		98.6	4	5/8	17.5	152.4
1 1/2	68.3	R20	12.7		114.3	4	3/4	20.6	152.4
2	82.6	R23	9.7		127.0	8	5/8	17.5	152.4
2 1/2	101.6	R26	12.7		149.4	8	3/4	20.6	152.4
3	123.8	R31	12.7		168.1	8	3/4	20.6	152.4
4	149.2	R37	12.7		200.2	8	3/4	20.6	152.4
5	181.0	R41	12.7		235.0	8	3/4	22.4	152.4
6	211.1	R45	12.7		269.7	12	3/4	22.4	152.4
8	269.9	R49	15.7		330.2	12	7/8	25.4	158.8
10	323.9	R53	19.1		387.4	16	1	28.4	165.1
12	381.0	R57	22.4		450.9	16	1 1/8	31.8	177.8
14	419.1	R61	22.4		514.4	20	1 1/8	31.8	184.2
16	469.9	R65	25.4		571.5	20	1 1/4	35.1	196.9
18	533.4	R69	25.4		628.7	24	1 1/4	35.1	203.2
20	584.2	R73	25.4		685.8	24	1 1/4	35.1	215.9
24	692.2	R77	31.8		812.8	24	1 1/2	41.1	241.3

(5)Unless otherwise specified,unions of 1´´(25.4mm)thru 24´´(609.6mm)furnished with carbon steel regular square headed bolts with semifinished American Standard heavy series hex nuts.

CLASS 400 ORIFICE FLANGES

WELDING NECK (RAISED FACE)



ASME B16.36 FORGED FLANGES

Unit:mm

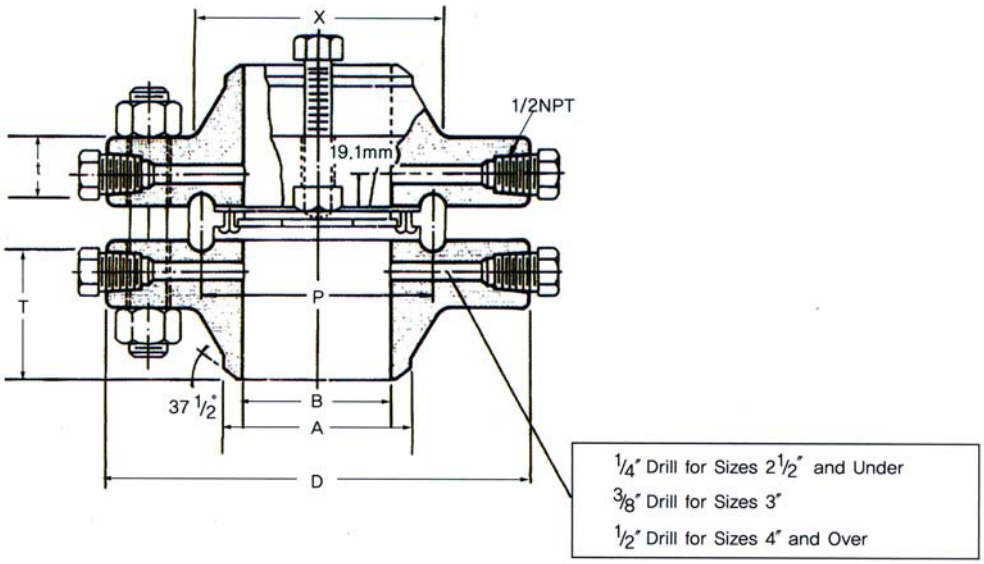
Nominal Pipe Size	Outside Diam.of Flange	THICKNESS OF FLANGE(t)		Diam.of Hub at Base	Diam.of Raised Face	Diam.of Hub at Bevel	LENGTH THRU HUB(T)				BORE(B)	
							Welding Neck		Slip-on & Threaded		Welding Neck	Slip-on
	D	Raised Face	Ring Joint	X	G	A	Raised Face	Ring Joint	Raised Face	Ring Joint		
1	124	38.1	31.8	53.8	50.8	33.5	82.6	76.2	47.8	41.1		34.5
1 1/4	133	38.1	31.8	63.5	63.5	42.2	84.1	77.7	46.0	39.6		43.2
1 1/2	155	38.1	31.8	69.9	73.2	48.3	85.9	79.2	47.8	41.1		49.5
2	165	38.1	31.8	84.1	91.9	60.5	85.9	79.2	49.3	42.9		62.0
2 1/2	191	38.1	31.8	100.1	104.6	73.2	88.9	82.6	50.8	44.5		74.7
3	210	38.1	31.8	117.3	127.0	88.9	88.9	82.6	52.3	46.0		90.7
4	254	35.1	35.1	146.1	157.2	114.3	88.9	88.9	50.8	50.8		116.1
5	279	38.1	38.1	177.8	185.7	141.2	101.6	101.6	53.8	53.8		143.8
6	318	41.1	41.1	206.2	215.9	168.4	103.1	103.1	57.2	57.2		170.7
8	381	47.8	47.8	260.4	269.7	219.2	117.3	117.3	68.3	68.3		221.5
10	445	53.8	53.8	320.5	323.9	273.1	124.0	124.0	73.2	73.2		276.4
12	521	57.2	57.2	374.7	381.0	323.9	136.7	136.7	79.2	79.2		327.2
14	584	60.7	60.5	425.5	412.8	355.6	149.4	149.4				359.2
16	648	63.5	63.5	482.6	469.9	406.4	152.4	152.4				410.5
18	711	66.5	66.5	533.4	533.4	457.2	165.1	165.1				461.8
20	775	69.9	69.9	587.2	584.2	508.0	168.1	168.1				513.1
24	914	76.2	76.2	701.5	692.2	609.6	174.8	174.8				564.4

To be specified by purchaser See Note(1)

Notes

(1)For the inside diameter of pipes (corresponding to ´Bore´(B) of Welding Neck Flanges),refer to page 50,51.
(2)Class 400 Flanges of sizes 3´´(76.2mm) and smaller will be furnished with 0.06´´(1.6mm) raised face,which is included in ´Thickness´(t) and ´Lengththrough Hub´(T)
The 0.25´´(6.35mm) raised face for sizes 4´´(101.6mm) and larger is not included in (t) and (T).
(3)Each union includes two carbon steel jack screw bolts with hex nuts.

WELDING NECK (RING–JOINT TYPE)



Unit:mm

Nominal Pipe Size	Pitch Diam.of Ring and Groove	Ring Number	DEPTH OF JACK SCREW SLOT		JACK SCREW SIZE		DRILLING TEMPLATE					
			Raised Face	Ring Joint	Raised Face (inch)	Ring Joint (inch)	Diam.of Bolt Circle	Number of Bolt	Diam.of Stud Bolts(inch)	Diam.of Bolt Holes	Length of Stud Bolts	
	P										Raised Face	Ring Joint
1	50.8	R16	9.7	6.4	5/8×4.00	5/8×4.75	88.9	4	5/8	17.5	127.0	146.1
1 1/4	60.3	R18	9.7	6.4	5/8×4.00	5/8×4.75	98.6	4	5/8	17.5	127.0	120.7
1 1/2	68.3	R20	12.7	6.4	3/4×4.25	3/4×5.00	114.3	4	3/4	21.0	133.4	152.4
2	82.6	R23	9.7	6.4	5/8×4.00	5/8×4.75	127.0	8	5/8	17.5	127.0	152.4
2 1/2	101.6	R26	12.7	6.4	3/4×4.25	3/4×5.00	149.4	8	3/4	20.6	133.4	158.8
3	123.8	R31	12.7	6.4	3/4×4.25	3/4×5.00	168.1	8	3/4	20.6	133.4	158.8
4	149.2	R37	6.4	15.7	3/4×3.00	3/4×4.00	200.2	8	7/8	25.4	139.7	152.4
5	181.0	R41	6.4	15.7	3/4×3.00	3/4×4.00	235.0	8	7/8	25.4	146.1	158.8
6	211.1	R45	12.7	22.4	1×3.50	1×4.00	269.7	12	7/8	25.4	158.8	165.1
8	269.9	R49	12.7	22.4	1×3.50	1×4.50	330.2	12	1	28.4	171.5	184.2
10	323.9	R53	12.7	22.4	1×4.00	1×4.50	387.4	16	1 1/8	31.8	190.5	203.2
12	381.0	R57	12.7	22.4	1×4.00	1×5.00	450.9	16	1 1/4	35.1	203.2	215.9
14	419.1	R61	12.7	22.4	1×4.25	1×5.00	514.4	20	1 1/4	35.1	209.6	228.6
16	469.9	R65	12.7	22.4	1×4.25	1×5.00	571.5	20	1 3/8	38.1	222.3	235.0
18	533.4	R69	12.7	22.4	1×4.50	1×5.00	628.7	24	1 3/8	38.1	235.0	241.3
20	584.2	R73	12.7	22.4	1×4.75	1×5.50	685.8	24	1 1/2	41.1	247.7	260.4
24	692.2	R77	12.7	22.4	1×5.00	1×6.00	812.8	24	1 3/4	47.8	279.4	285.8

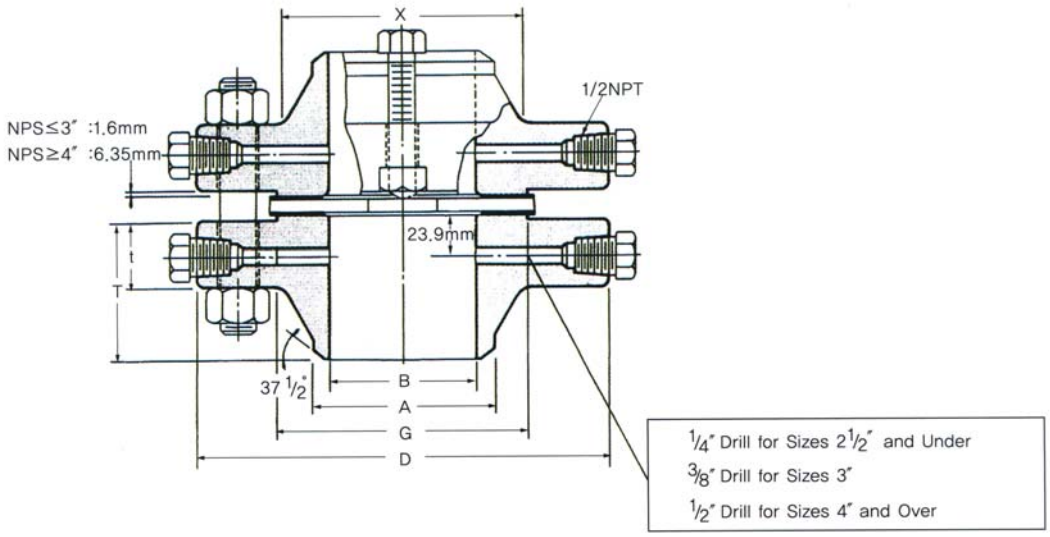
(4)Unless otherwise specified,raised face union are furnished with alloy bolt studs per ASTM A193 Grade B7 with Americn Standard heavy series hex nuts ASTM A194 Class 2H.

(5)On ring joint flanges having a groove depth 0.375´´(9.5mm)ang less,the distance from the center line of the tap hole to the flange face is 0.750´´(19.1mm).When the depth of groove is 0.438´´(11.1mm)or greater ,changes indrill size or method of drilling are necessary.

(6)Bolt lengths for raised face flanges include allowance for orifice and gasket thickness of 0.25´´(6.4mm)for NPS 4–12 and 0.38´´(9.7mm)for NPS 14–24.Bolt lengths for ring type joint flanges include allowance of 0.62´´(15.7mm) for NPS 4–10,0.75´´(19.1mm)for NPS 12–18 and 0.88´´(22.4mm) for NPS 20.

CLASS 600 ORIFICE FLANGES

WELDING NECK (RAISED FACE)



ASME B16.36 FORGED FLANGES

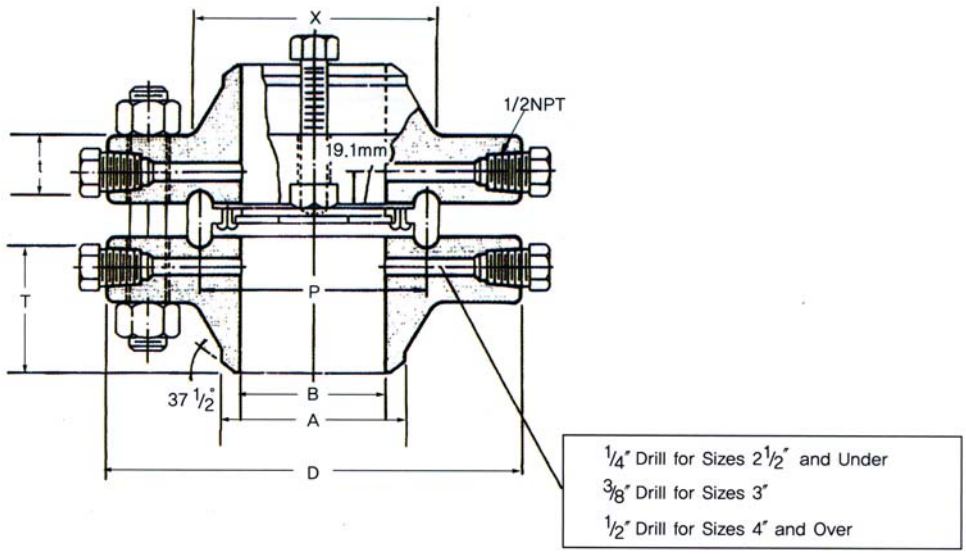
Unit:mm

Nominal Pipe Size	Outside Diam.of Flange	THICKNESS OF FLANGE(f)		Diam.of Hub at Base	Diam.of Raised Face	Diam.of Hub at Bevel	LENGTH THRU HUB(T)				BORE(B)	
							Welding Neck		Slip–on & Threaded			
	D	Raised Face	Ring Joint	X	G	A	Raised Face	Ring Joint	Raised Face	Ring Joint	Welding Neck	Slip–on
1	124	38.1	31.8	53.8	50.8	33.5	82.6	76.2	47.8	41.1	See Note(1) To be specified by purchaser	34.5
1 1/4	133	38.1	31.8	63.5	63.5	42.2	84.1	77.7	46.0	39.6		43.2
1 1/2	155	38.1	31.8	69.9	73.2	48.3	85.9	79.2	47.8	41.1		49.5
2	165	38.1	31.8	84.1	91.9	60.5	85.9	79.2	49.3	42.9		62.0
2 1/2	191	38.1	31.8	100.1	104.6	73.2	88.9	82.6	50.8	44.5		74.7
3	210	38.1	31.8	117.3	127.0	88.9	88.9	82.6	52.3	46.0		90.7
4	273	38.1	38.1	152.4	157.2	114.3	101.6	101.6	53.8	53.8		116.1
5	330	44.5	44.5	189.0	185.7	141.2	114.3	114.3	60.5	60.5		143.8
6	356	47.8	47.8	222.3	215.9	168.4	117.3	117.3	66.5	66.5		170.7
8	419	55.6	55.6	273.1	269.7	219.2	133.4	133.4	76.2	76.2		221.5
10	508	63.5	63.5	342.9	323.9	273.1	152.4	152.4	85.9	85.9		276.4
12	559	66.5	66.5	400.1	381.0	323.9	155.4	155.4	91.9	91.9		327.2
14	603	69.9	69.9	431.8	412.8	355.6	165.1	165.1				
16	686	76.2	76.2	495.3	469.9	406.4	177.8	177.8				
18	743	82.6	82.6	546.1	533.4	457.2	184.2	184.2				
20	813	88.9	88.9	609.6	584.2	508.0	190.5	190.5				
24	940	101.6	101.6	717.6	692.2	609.6	203.2	203.2				

Notes

(1)For the inside diameter of pipes(corresponding to ´Bore´ (B1)of Welding Neck Flanges),refer to page 50,51.
(2)Class 600 Flanges of sizes 3"(76.2mm)and smaller will be furnished with 0.06"(1.6mm)raised face,which is included in ´Thickness´(t) and´:Length through Hub´(T)
The 0.25"(6.4mm)raised face for sizes 4"(101.6mm)and larger is not included in (t)and (T).
(3)Each union includes two carbon steel jack screw bolts with hex nuts.
(4)Bolt lengths for raised face flanges include allowance for orifice and gasket thickness of 0.25"(6.4mm)for NPS 1–12 and 0.38"(9.7mm)for NPS 14–24,Bolt lengths for ring type joint flanges include allowance of 0.62"(15.7mm)for NPS 1–10, 0.75"(19.1mm)for NPS 12–18 and 0.88"(22.4mm)for NPS 20.

WELDING NECK (RING–JOINT TYPE)



Unit:mm

Nominal Pipe Size	Pitch Diam.of Ring and Groove P	Ring Number	DEPTH OF JACK SCREW SLOT		JACK SCREW SIZE		DRILLING TEMPLATE						
			Raised Face	Ring Joint	Raised Face (inch)	Ring JOint (inch)	Diam.of Bolt Circle	Number of Bolt	Diam.of Stud Bolts (inch)	Diam.of Bolt Holes		Length of Stud Bolts	
										RF	RTJ	Raised Face	Ring Joint
1	50.8	R16	9.7	6.4	5/8×4.00	5/8×4.75	88.9	4	5/8	17.5	19.1	127.0	146.1
1 1/4	60.3	R18	9.7	6.4	5/8×4.00	5/8×4.75	98.6	4	5/8	17.5	–	127.0	146.1
1 1/2	68.3	R20	12.7	6.4	3/4×4.25	3/4×5.00	114.3	4	3/4	20.6	22.4	133.4	152.4
2	82.6	R23	9.7	6.4	5/8×4.00	5/8×4.75	127.0	8	5/8	17.5	19.7	127.0	152.4
2 1/2	101.6	R26	12.7	6.4	3/4×4.25	3/4×5.00	149.4	8	3/4	20.6	22.4	133.4	158.8
3	123.8	R31	12.7	6.4	3/4×4.25	3/4×5.00	168.1	8	3/4	20.6	22.4	133.4	158.8
4	149.2	R37	6.4	15.7	3/4×3.00	3/4×4.00	215.9	8	7/8	25.4	25.4	152.4	165.1
5	181.0	R41	6.4	15.7	3/4×3.50	3/4×4.50	266.7	8	1	28.4	28.4	139.7	177.8
6	211.1	R45	12.7	22.4	1×3.50	1×4.50	292.1	12	1	28.4	28.4	177.8	190.5
8	269.9	R49	12.7	22.4	1×4.00	1×4.75	349.3	12	1 1/8	31.8	31.8	196.9	209.6
10	323.9	R53	12.7	22.4	1×4.00	1×5.00	431.8	16	1 1/4	35.1	35.1	222.3	235.0
12	381.0	R57	12.7	22.4	1×4.50	1×5.00	489.0	20	1 1/4	35.1	35.1	228.6	241.3
14	419.1	R61	12.7	22.4	1×5.00	1×5.50	527.1	20	1 3/8	38.1	38.1	241.3	254.0
16	469.9	R65	12.7	22.4	1×5.00	1×5.50	603.3	20	1 1/2	41.1	41.4	260.4	273.1
18	533.4	R69	12.7	22.4	1×5.00	1×5.75	654.1	20	1 5/8	44.5	44.5	279.4	292.1
20	584.2	R73	12.7	22.4	1×6.00	1×6.25	723.9	24	1 5/8	44.5	44.5	298.5	317.5
24	692.2	R77	12.7	22.4	1×6.00	1×7.00	838.2	24	1 7/8	50.8	50.8	336.6	342.9

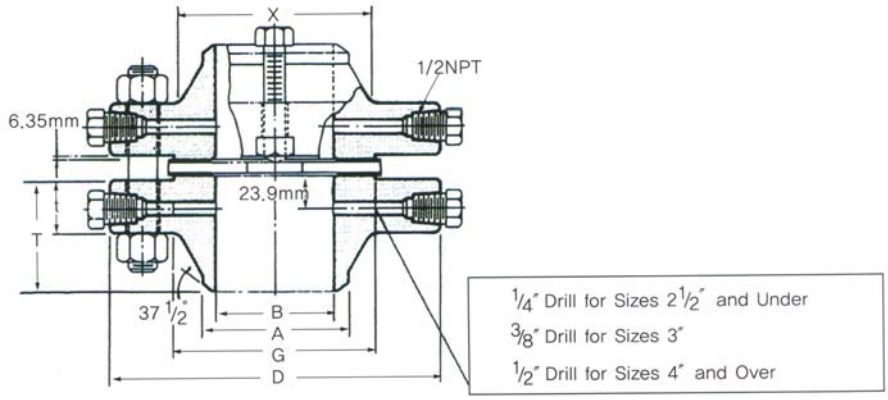
(5)Unless otherwise specified,raised face union are furnished with alloy bolt studs per ASTM A193 Grade B7 with Americn Standard heavy series hex nuts ASTM A194 Class 2H.

(6)On ring joint flanges having a groove depth 0.375´(9.5mm)and less,the distance from the center line of the tap hole to the flange face is 0.75"(19.1mm).When the depth of groove is 0.438"(11.1mm)or greater, changes in drill size or method of driling are necessary.

C&N Pipeline Limited

CLASS 900–1500 ORIFICE FLANGES

WELDING NECK(RAISED FACE)



ASME B16.36 FORGED FLANGES

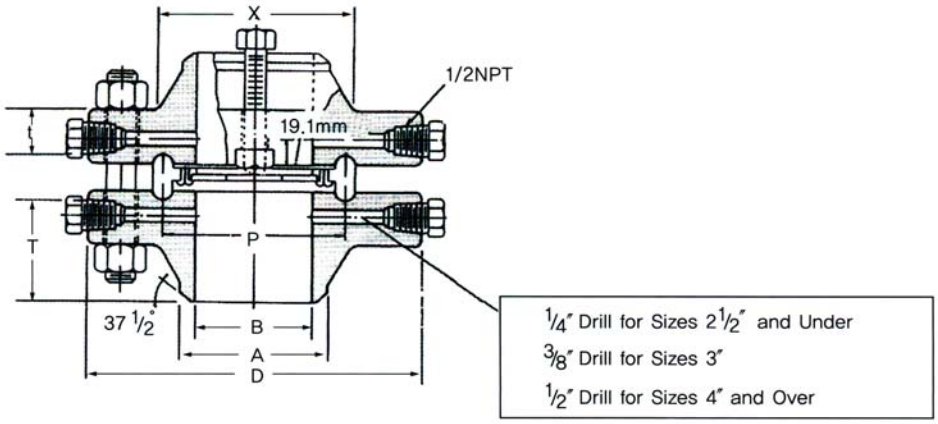
Unit:mm

Nominal pipe Size	Outside Diam.of Flange	THICKNESS OF FLANGE(t)		Diam.of Hub at Base	Diam.of Raised Face	Diam.of Hub at Bevel	LENGTH THRU HUB(T)				BORE(B)	
							Welding Neck		Slip-on & Threaded		Welding Neck	Slip-on
	D	Raised Face	Ring Joint	X	G	A	Raised face	Ring Joint	Raised Face	Ring Joint		
CLASS 900												
3	241	38.1	38.1	127.0	127.0	88.9	101.6	101.6	53.8	53.8	To be specified by purchaser	90.7
4	292	44.5	44.5	158.8	157.2	114.3	114.3	114.3	69.9	69.9		116.1
5	349	50.8	50.8	190.5	185.7	141.2	127.0	127.0	79.2	79.2		143.8
6	381	55.6	55.6	235.0	215.9	168.4	139.7	139.7	85.9	85.9		170.7
8	470	63.5	63.5	298.5	269.7	219.2	162.1	162.1	101.6	101.6		221.5
10	546	69.9	69.9	368.3	323.9	273.1	184.2	184.2	108.0	108.0		276.4
12	610	79.2	79.2	419.1	381.0	323.9	200.2	200.2	117.3	117.3		327.2
14	641	85.9		450.9	412.8	355.6	212.9					
16	705	88.9		508.0	469.9	406.4	215.9					
18	787	101.6		565.2	533.4	457.2	228.6					
20	857	108.0		622.3	584.2	508.0	247.7					
24	1041	139.7		749.3	692.2	609.6	292.1					
CLASS 1500												
1	149	38.1	38.1	52.3	50.8	33.5	82.6	82.6	47.8	44.5	To be specified by purchaser	34.5
1 1/4	159	35.1	35.1	63.5	63.5	42.2	73.2	73.2	47.8	44.5		43.2
1 1/2	178	38.1	38.1	69.9	73.2	48.3	88.9	88.9	47.8	44.5		49.5
2	216	38.1	38.1	104.6	91.9	60.5	101.6	101.6	57.2	57.2		62.0
2 1/2	244	41.1	41.1	124.0	104.6	73.2	104.6	104.6	63.5	63.5		74.7
3	267	47.8	47.8	133.4	127.0	88.9	117.3	117.3	73.2	73.2		90.7
4	311	53.8	53.8	162.1	157.2	114.3	124.0	124.0	90.4	90.4		116.1
5	375	73.2	73.2	196.9	185.7	141.2	155.4	104.6	104.6	104.6		143.8
6	394	82.6	82.6	228.6	215.9	168.4	171.5	171.5	119.1	119.1		170.7
8	483	92.0	92.0	292.1	269.7	219.2	212.9	212.9	142.7	142.7		221.5
10	584	108.0	108.0	368.3	323.9	273.1	254.0	254.0	158.8	158.8		276.4
12	673	124.0	124.0	450.9	381.0	323.9	282.4	282.4	180.8	180.8		327.2
14	749	133.4		495.3	412.8	355.6	298.5					
16	826	146.1		552.5	469.9	406.4	311.2					
18	914	162.1		596.9	533.4	457.2	327.2					
20	984	177.8		641.4	584.2	508.0	355.6					
24	1168	203.2		762.0	692.2	609.6	406.4					

Notes

(1)For the inside diameter of pipes(corresponding to ´Bore´(B)of Welding Neck Flanges),refer to page 50,51.
(2)Class 900 dimendions of size 1"(25.4mm)through 2 1/2" are the same as for Class 1500.
(3)Class 900 and 1500 is not included in ´thickness ´(t)and ´Length through Hub´(T).
(4)Each union includes two carbon steel jack screw bolts with hex nuts.

WELDING NECK (RING–JOINT TYPE)



Unit:mm

Nominal Pipe Size	Pitch Diam.of Ring and Groove P	Ring Number	DEPTH OF JACK SCREW SLOT		JACK SCREW SIZE		DRILLING TEMPLATE					
			Raised Face	Ring Joint	Raised Face (inch)	Ring Joint (inch)	Diam.of Bolt Circle	Number of Bolt	Diam.of Stud Bolts (inch)	Diam.of Bolt Holes	Length of Stud Bolts Raised Face	Length of Stud Bolts Ring Joint
CLASS 900												
3	123.8	R31	9.7	15.7	3/4×3.50	3/4×4.00	190.5	8	7/8	25.4	152.4	165.1
4	149.2	R37	9.7	15.7	3/4×3.50	3/4×4.50	235.0	8	1 1/8	31.8	177.8	190.5
5	181.0	R41	9.7	15.7	3/4×3.50	3/4×4.50	279.4	8	1 1/4	35.1	190.5	203.2
6	211.1	R45	15.7	22.4	1×4.50	1×4.75	317.5	12	1 1/8	31.8	196.9	209.6
8	269.9	R49	15.7	22.4	1×4.50	1×5.00	393.7	12	1 3/8	38.1	228.6	241.3
10	323.9	R53	15.7	22.4	1×4.50	1×5.25	469.9	16	1 3/8	38.1	241.3	254.0
12	381.0	R57	15.7	22.4	1×4.50	1×5.50	533.4	20	1 3/8	38.1	260.4	273.1
14							558.8	20	1 1/2	41.1	279.4	
16							616.0	20	1 5/8	44.5	292.1	
18							685.8	20	1 7/8	50.8	330.2	
20							749.3	20	2	53.8	355.6	
24							901.7	20	2 1/2	66.5	444.5	
CLASS 1500												
1	50.8	R16	6.4	12.7	5/8×3.00	5/8×3.50	101.6	4	7/8	25.4	152.4	158.8
1	60.3	R18	6.4	12.7	5/8×3.00	5/8×3.50	111.3	4	7/8	25.4	139.7	146.1
1 1/4	68.3	R20	6.4	12.7	5/8×3.00	5/8×3.50	124.0	4	1	28.4	158.8	165.1
2 1/2	95.3	R24	6.4	12.7	5/8×3.00	5/8×4.00	165.1	8	1 7/8	25.4	152.4	165.1
2	108.0	R27	6.4	12.7	5/8×3.00	5/8×4.00	190.5	8	1	28.4	165.1	177.8
3 1/2	136.5	R35	9.7	15.7	5/8×3.50	3/4×4.00	203.2	8	1 1/8	31.8	184.2	196.9
4	161.9	R39	9.7	15.7	3/4×3.50	3/4×4.50	241.3	8	1 1/4	35.1	203.2	215.9
5	193.7	R44	9.7	15.7	3/4×3.50	3/4×4.50	292.1	8	1 1/2	41.1	247.7	260.4
6	211.1	R46	15.8	22.4	1×6.00	1×6.50	317.5	12	1 3/8	38.1	266.7	279.4
8	269.9	R50	15.7	22.4	1×6.50	1×6.50	393.7	12	1 5/8	44.5	298.5	317.5
10	323.9	R54	15.7	22.4	1×6.50	1×7.00	482.6	12	1 7/8	50.8	342.9	362.0
12	381.0	R58	15.7	22.4	1×6.50	1×8.00	571.5	16	2	53.8	381.0	406.4
14							635.0	16	2 1/4	60.5	412.8	
16							704.9	16	2 1/2	66.5	450.9	
18							774.7	16	2 3/4	73.2	501.7	
20							831.9	16	3	79.2	546.1	
24							990.6	16	3 1/2	91.9	622.3	

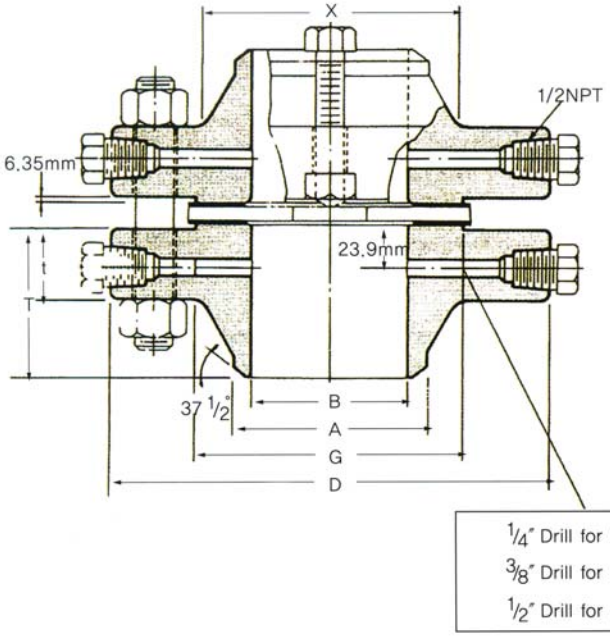
(5)Unless otherwise specified,raisde face union are furnished with alloy bolt studs per ASTM A193Grade B7with Americn Standard heavyseries hex nuts ASTM A194 Class 2H.

(6)On ring joint flanges having a groove depth 0.375"(9.5mm)andless,the distance from the center line of the tap hole to the flange face is 0.750"(19.1mm).Whenthe depth of groove is 0.438"(11.1mm)or greater,changes in drill size or method of drilling are necessary.

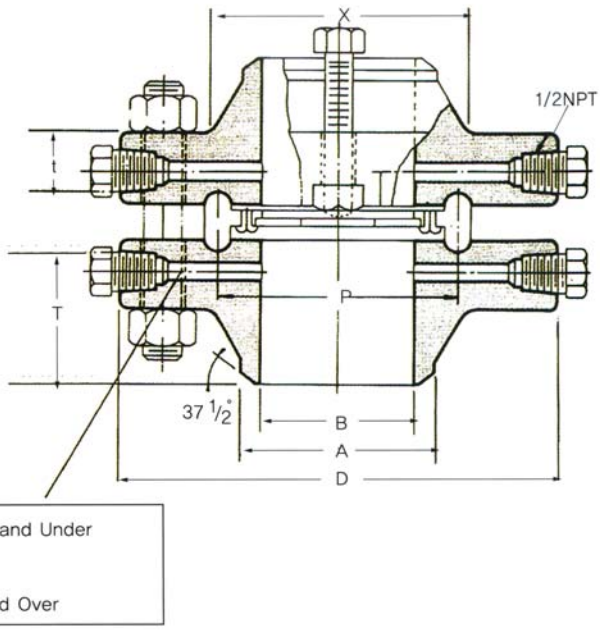
(7)Bolt lengths for raised face flanges include allowance for orifice and gasket thickness of 0.25"(6.4mm)for NPS 3–12(#900), 1–12(#1500) and 0.38"(9.7mm)for NPS 14–24(#900,#1500).Bolt lengths for ring type joint flanges include allowance of 0.62"(15.7mm)for NPS 3–10(#900), 1–6(#1500)and 0.75 in.for NPS 12(#900).

CLASS 2500 ORIFICE FLANGES

WELDING NECK (RAISED FACE)



WELDING NECK (RING–JOINT TYPE)



1/4" Drill for Sizes 2 1/2" and Under
3/8" Drill for Sizes 3"
1/2" Drill for Sizes 4" and Over

ASME B16.36 FORGED FLANGES

Unit:mm

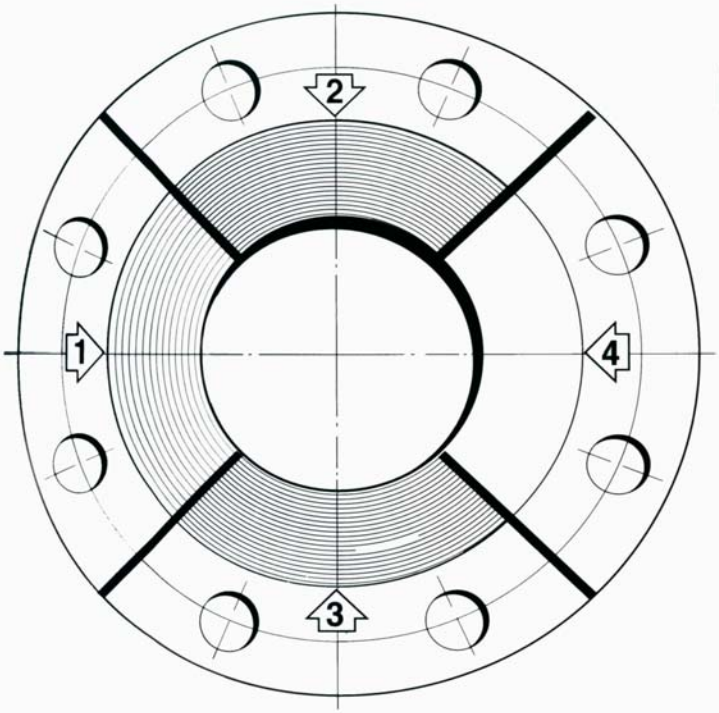
Nominal Pipe Size	O.D.of Flange Face	O.D.of Raised Flange	Thickness of Flange	Length Thru	Diam.of Hub	Diam.of Hub at Bevel	Bore	Ring Joint Type Pitch Diam.	Ring Number	DRILLING TEMPLATE					
										Diam. Bolt Circle	Number of Holes	Diam.of Holes	Diam.of Bolt (inch)	Length of Stud Bolts	
														Raised Face	Ring Joint
	D	G	t	T	X	A	B	P							
1	159	50.8	38.1	91.9	57.2	33.5	See Note(1) To be specified by purchaser	60.3	R18	108.0	4	25.4	7/8	152.4	158.8
1 1/4	203	73.2	44.5	111.3	79.2	48.3		82.6	R23	146.1	4	31.8	1 1/8	177.8	190.5
2 1/2	235	91.9	50.8	127.0	95.3	60.5		101.6	R26	171.5	8	28.4	1	184.2	196.9
2	267	104.6	57.2	142.7	114.3	73.2		111.1	R28	196.9	8	31.8	1 1/8	203.2	215.9
3 1/2	305	127.0	66.5	168.1	133.4	88.9		127.0	R32	228.6	8	35.1	1 1/4	228.6	241.3
4	356	157.2	76.2	190.5	165.1	114.3				273.1	8	41.1	1 1/2	260.4	
6	483	215.9	108.0	273.1	235.0	168.4				368.3	8	53.8	2	349.3	
8	552	269.7	127.0	317.5	304.8	219.2				438.2	12	53.8	2	387.4	
10	673	323.9	165.1	419.1	374.7	273.1				539.8	12	66.5	2 1/2	489.0	
12	762	381.0	184.2	463.6	441.5	323.9				619.3	12	73.2	2 3/4	539.8	

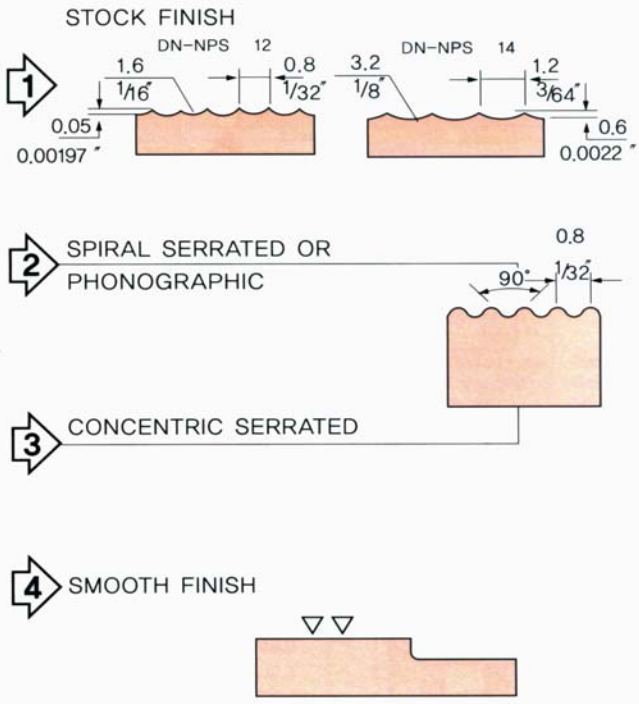
Notes

(1)For the inside diameter of pipes (corresponding to ´Bore´(B)of Welding Neck Flanges),refer to page 50,51.
(2)Class 2500 flanges will be furnished with 0.25"(6.4mm)raised face,whichis not included in ´Thickness´(t) and ´Length through Hub´(T).
(3)Each union includes two carbon steel jack screw bolts with hex nuts.
(4)Unless otherwise specified,raised face union are furnished with alloy bolt studs per ASTM A193 Grade B7 with Americn Standard heavy series hex nuts ASTM A194Class 2H.
(5)On ring joint flanges having a groove depth 0.375"(9.5mm)and less,the distance from the center line of the tap hole to the flange face is 0.750"(19.1mm).When the depth of groove is 0.438"(11.1mm)or greater, changes in drill size or method of drilling are necessary.
(6)Class 2500 Slip–on flanges are not covered by ANSI B16.5.
(7)Bolt lengths for raised face flanges include allowance for orifice and gasket thickness of 0.25"(6.4mm)for NPS 4–12 and 0.38"(9.7mm) for NPS 14–24,Bolt lengths for ring type joint flanges include allowance of 0.62"(15.7mm)for NPS 4–10,0.75"(19.1mm)for NPS 12–18 and 0.88"(22.4mm)for NPS 20.

STANDARD FINISH

STANDARD FINISHES for Face of Flange(ASME B16.5)





STOCK FINISH:

The most widely used of any gasket finish,because practically,is suitable for all ordinary service conditions.This is a continuousspiral groove, Flanges sizes 12"(304.8mm)and smaller are produced with a1/16"round–nosed tool at a feed of 1/32"per revolution.For size 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 inch to 250 inch(ANSI B16.5 para 6.4.5)

1、RAISED FACE, AND LARGE MALE AND FEMALE

Either a serrated–concentric or serrated–spiral finish having from45 to 55 grooves per inch is used (1.8to 2.2 grooves per mm). The cutting tool employed has an approximate 0.06 inch radius. The resultant surface finish shall have a 125 inch(3.2mm)to 250 inch(6.3) approximate roughness.

2、TONGUE AND GROOVE,AND SMALL MALE AND FEMALE

The gasket contact surface finish shall not exceed 125 inch(3.2)roughness.

3、RING JOINT

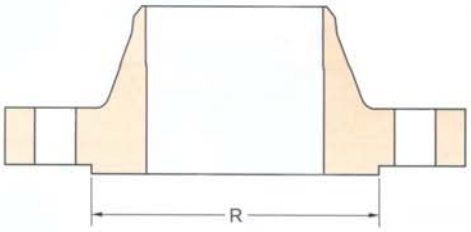
The side wall surface finish of the gasket groove shall not exceed 63 inch(1.6)roughness.

4、BLIND

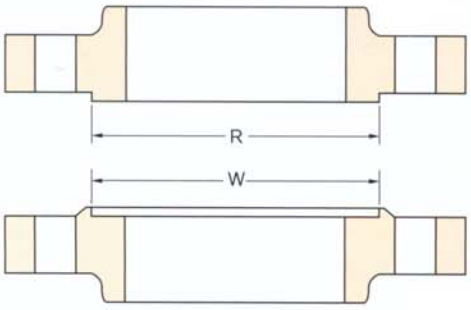
Blind flanges need not be faced in the center if when this center part is raised ,its diameter is at least 1 inch smaller than the inside diameter of fittings of the corresponding pressure class.When the center part is depressed ,its diameter is not greater than the inside diameter of the corresponding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

FLANGES FACINGS

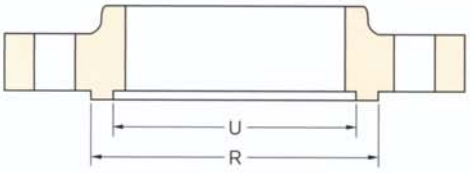
DIMENSIONS OF FLANGE FACINGS

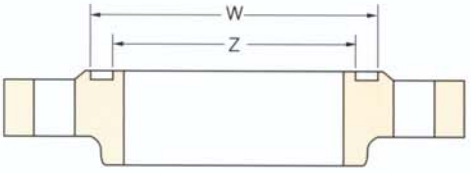


RAISED FACE

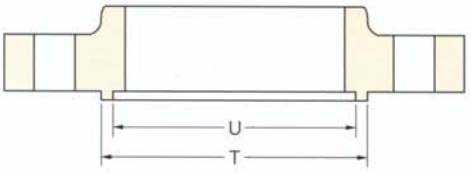


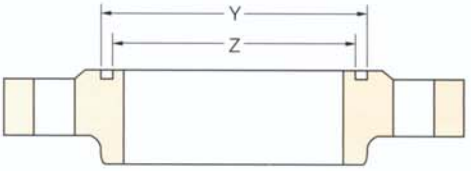
LARGE MALE–FEMALE



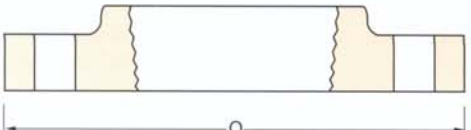


LARGE TONGUE AND GROOVE

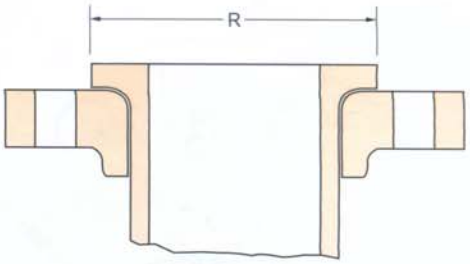




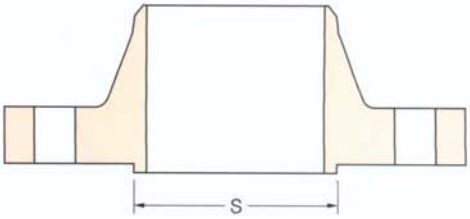
SMALL TONGUE AND GROOVE



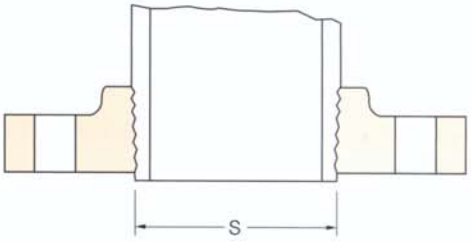
FLAT FACE

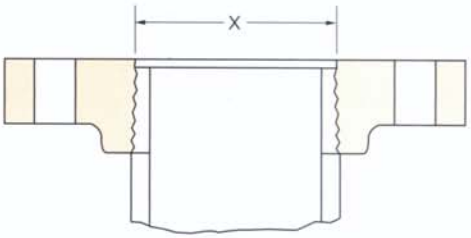


LAPPED JOINT

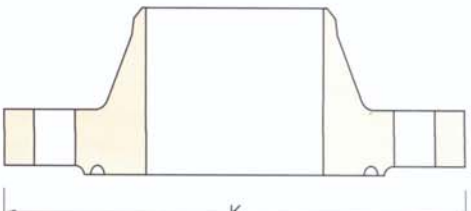


SMALL MALE AND FEMALE

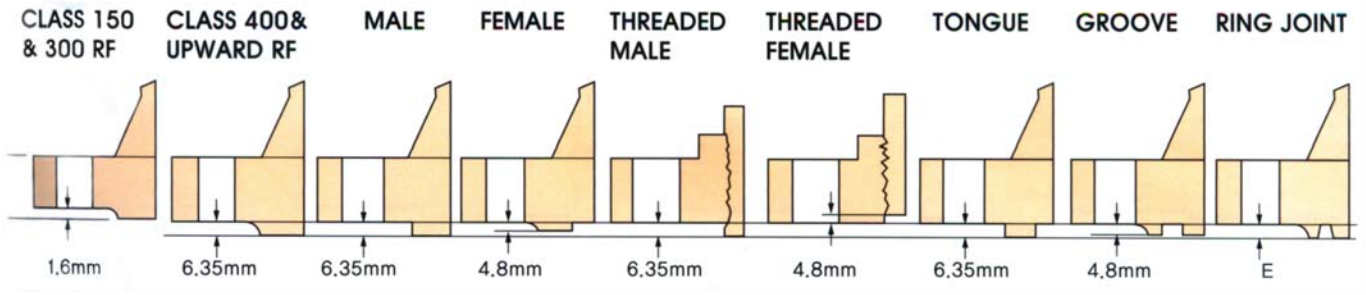




SMALL MALE AND FEMALE



RING JOINT



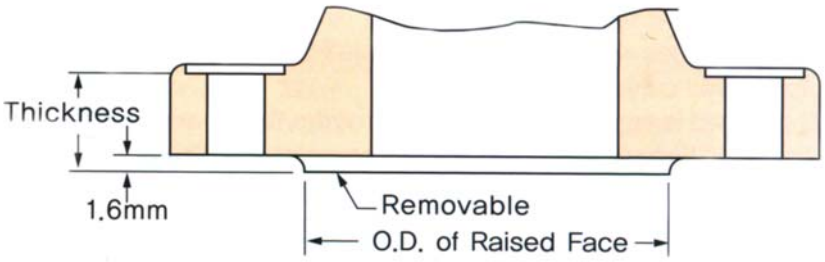
ASME B16.5 FORGED FLANGES

Unit:mm

Nominal Pipe Size	OUTSIDE DIAMETER			L.D.of Large and Small Tongue	OUTSIDE DIAMETER				L.D.of Large and Small Groove	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 ST´ DS	Raised Face, Large and Small Male and Tongue Classes 400 2500 ST´ DS	
	R	S	T	U	W	L	X	Y	Z			
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	3 3.3	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	17 4.8	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	544.6	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

Notes

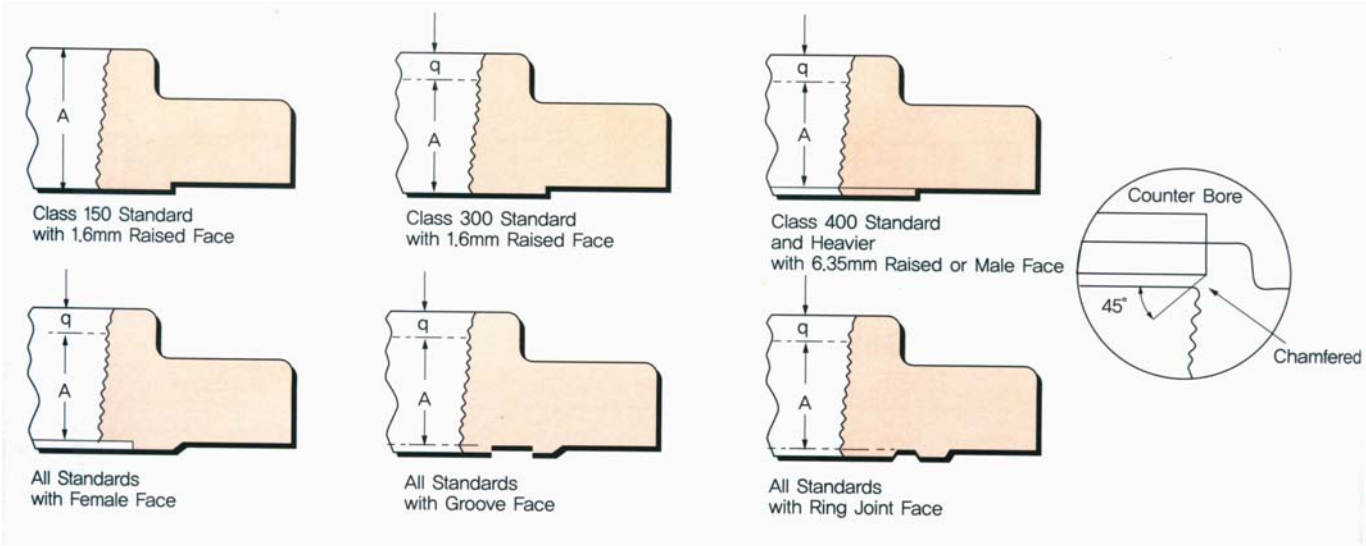
(1)Small male and female faces are not applicable to Slip–on Flange.
(2)Large male and female faces are not applicable to Class 150 Flanges.
(3)For flanges of Class 150 and 300 where they are to be bolted to ANSI Class 125 and 250 Cast–Iron Flanges or required with flat face,flat face can be made by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



*Tolerances are ±0.03″(±0.8mm) for 0.06″(1.6) RF and ±0.02″(±0.5mm) for 0.25″(6.35mm) RF Large Male and Large Tongue.

THREAD

THREAD AND STANDARDS FOR ANSI FLANGES(ANSI B2.1)



ASME B16.5 FORGED FLANGES

Unit:mm

Nominal Pipe Size	A–THREAD LENGTHS						
	Class150	Class 300	Class 400	Class 600	Class 900	Class 1500	Class 2500
1/2	15.9	15.9	15.9	15.9	22.2	22.2	28.6
3/4	15.9	15.9	15.9	15.9	25.4	25.4	31.8
1	17.5	17.5	17.5	17.5	28.6	28.6	34.9
1 1/4	20.7	20.7	20.7	20.7	30.2	30.1	38.1
1 1/2	22.2	22.2	22.2	22.2	31.8	31.8	44.5
2	25.4	28.6	28.6	28.6	38.1	38.1	50.8
2 1/2	28.6	31.8	31.8	31.8	47.6	47.6	57.2
3	30.1	31.8	34.9	34.9	41.3	50.8	63.5
3 1/2	31.8	36.5	39.7	39.7			
4	33.4	36.5	36.5	41.3	47.6	57.2	69.9
5	36.5	42.9	42.9	47.63	54.0	63.5	76.2
6	39.7	46.1	46.1	50.8	57.2	69.9	82.6
8	44.5	50.8	50.8	60.3	63.5	76.2	95.3
10	49.2	55.6	55.6	65.1	71.5	84.2	108.0
12	55.6	60.3	60.3	69.9	76.2	92.1	120.7
14	57.2	63.5	63.5	73.0	82.6		
16	63.5	68.3	68.3	77.8	85.7		
18	68.3	69.9	69.9	79.4	88.9		
20	69.9	73.0	73.0	82.6	92.1		
24	82.6	82.6	82.6	92.1	101.6		

Notes

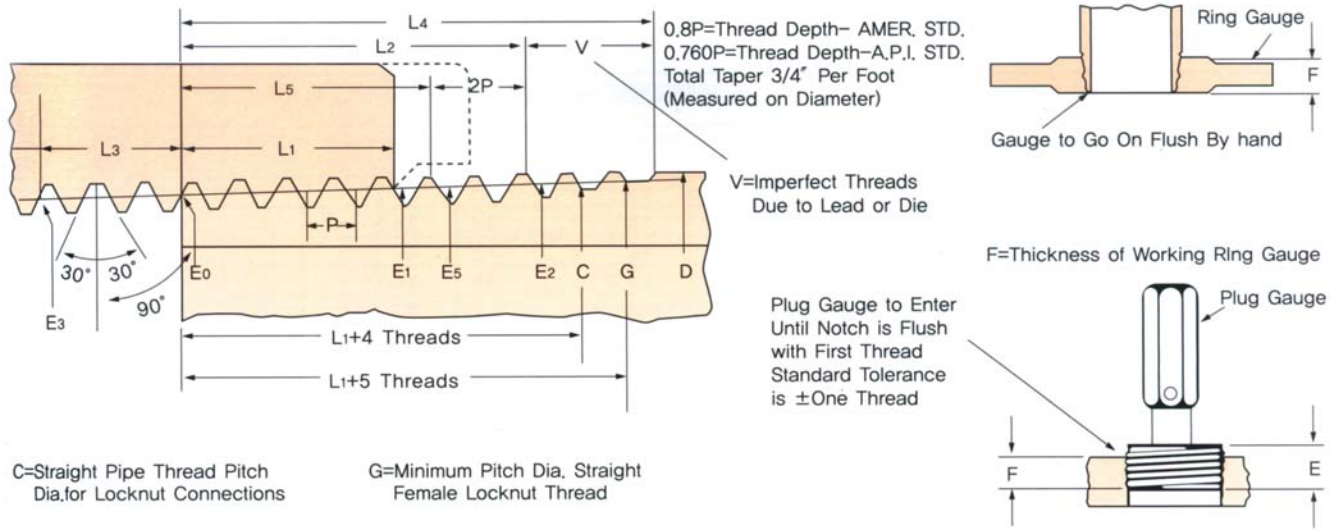
(1)Except flanges with small Male/Female Face(on pipe end),threaded flanges,have an American National Standard taper pipe thread conforming to ANSI B2.1

(2)The thread is concentric with the axis of the flange and variations in alignment do not exceed 0.06(1.6mm)in.per foot(0.5 percent)

(3)Class 150 flanges are made without counterbore.The threads are chamfered approximately to the major diameter of the thread at the back of the flange at an angle of approximately 45 degrees with the axis of the thread.The chamfer is concentric with the thread and include in the measurement of the thread length.

(4)Class 300 and higher pressure flanges are made with a counterbore at the back of the flange.The threads are chamfed to the diameter of the counterbore at an angle of approximately 45 degrees with the axis of the thread.The counterbore and chamfer are concentric with the thread.

(5)The minimum length of effective thread in reducing flanges is at least equalk to dimension Q of the corresponding class of threaded flange as shown in the above tables.Threads do not necessarily extend to the face to the flange.



ASME B16.36 FORGED FLANGES

Unit:mm

Nominal Pipe Size	Outside Diameter of Pipe	Threads Per inch	Pitch of Thread	Pitch Diameter at Beginning of External Threads	Handtight Engadement		Effective Thread External		Wrench Make–Up Length for internal Threaded		Over all Length External Threads
					Length	Pitch Diameter	Length	Pitch Diameter	Length	Pitch Diameter	
	D	N	P	E_0	L_1	E_1	L_2	E_2	L_3	E_3	L
1/2	21	14	1.8	19.3	8.1	19.8	13.6	20.1	5.4	18.9	19.9
3/4	27	14	1.8	24.6	8.6	25.1	13.9	25.4	5.4	24.2	20.2
1	33	11 1/2	2.2	30.8	10.2	31.5	17.3	31.9	6.6	30.4	25.0
1 1/4	42	11 1/2	2.2	39.6	10.7	40.2	18.0	40.7	6.6	39.1	25.6
1 1/2	48	11 1/2	2.2	45.6	10.7	46.3	18.4	46.8	6.6	45.2	26.0
2	60	11 1/2	2.2	57.6	11.1	58.3	19.2	58.8	6.6	57.2	26.9
2 1/2	73	8	3.2	69.1	17.3	70.2	28.9	70.9	6.4	68.7	39.9
3	89	8	3.2	84.9	19.5	86.1	30.5	86.8	6.4	84.5	41.5
3 1/2	102	8	3.2	97.5+	20.9	98.8	31.8	99.5	6.4	97.1	42.8
4	114	8	3.2	110.1	21.4	111.4	33.0	112.2	6.4	109.7	44.0
4 1/2	127	8	3.2	122.7	22.2	124.1	34.3	123.0			
5	141	8	3.2	136.9	23.8	138.4	35.7	139.2	6.4	136.5	46.7
6	168	8	3.2	163.7	24.3	165.3	38.4	166.1	6.4	163.3	49.4
7	194	8	3.2	189.0	25.4	190.6	41.0	189.3			
8	219	8	3.2	214.2	27.0	215.9	43.5	216.9	6.4	213.8	54.5
9	244	8	3.2	239.5	28.7	241.2	46.0	239.8			
10	273	8	3.2	267.9	30.7	269.8	48.9	270.9	6.4	267.5	59.9
11	298	8	3.2	293.1	32.6	295.1	51.4	293.5			
12	324	8	3.2	318.3	34.5	320.5	54.0	321.7	6.4	317.9	65.0
14	356	8	3.2	349.9	39.7	352.4	57.2	353.5	6.4	349.5	68.2
15	381	8	3.2	375.1	42.8	377.8	59.7	375.6			
16	406	8	3.2	400.4	46.0	403.2	62.2	404.3	6.4	400.0	73.2
17	432	8	3.2	425.6	48.3	428.6	64.8	426.1			
18	457	8	3.2	450.9	50.8	454.0	67.3	455.1	6.4	450.5	78.3
20	508	8	3.2	501.3	54.0	504.7	72.4	505.9	6.4	500.9	83.4
22	559	8	3.2	551.8	57.2	555.4	77.5	552.4			
24	610	8	3.2	602.3	60.3	606.1	82.6	607.5	6.4	601.9	93.6

WELDED AND SEAMLESS PIPE
CARBON AND ALLOY STEEL

ANSI B36.10

Unit:mm

Nominal Pipe		Outside Diam	ID Wall	NOMINAL INSIDE DIAMETER AND WALL THICKNESS												
Inch (B)	mm (DN)			SCH. 5	SCH. 10	SCH. 20	SCH. 30	STD	SCH. 40	SCH. 60	SCH. xs	SCH. 80	SCH. 100	SCH. 120	SCH. 140	SCH. 160	SCH. xxs
1/8	6	10.3	I.D	–	–	–	–	6.8	6.8	–	5.5	5.5	–	–	–	–	–
			Wall	–	–	–	–	1.7	1.7	–	2.4	2.4	–	–	–	–	–
1/4	8	13.7	I.D	–	–	–	–	9.2	9.2	–	7.7	7.7	–	–	–	–	–
			Wall	–	–	–	–	2.2	2.2	–	3.0	3.0	–	–	–	–	–
3/8	10	17.1	I.D	–	–	–	–	12.5	12.5	–	10.7	10.7	–	–	–	–	–
			Wall	–	–	–	–	2.3	2.3	–	3.2	3.2	–	–	–	–	–
1/2	15	21.3	I.D	18.0	–	–	–	15.8	15.8	–	13.8	13.8	–	–	–	11.7	6.4
			Wall	1.7	–	–	–	2.8	2.8	–	3.7	3.7	–	–	–	4.8	7.5
3/4	20	26.7	I.D	23.4	–	–	–	21.0	21.0	–	18.9	18.9	–	–	–	15.6	11.1
			Wall	1.7	–	–	–	2.9	2.9	–	3.9	3.9	–	–	–	5.6	7.8
1	25	33.4	I.D	30.1	–	–	–	26.6	26.6	–	24.3	24.3	–	–	–	20.7	15.2
			Wall	1.1	–	–	–	3.4	3.4	–	4.6	4.6	–	–	–	6.4	9.1
1 1/4	32	42.2	I.D	38.9	–	–	–	35.1	35.1	–	32.5	32.5	–	–	–	29.5	22.8
			Wall	1.7	–	–	–	3.6	3.6	–	4.9	4.9	–	–	–	6.4	9.7
1 1/2	40	48.3	I.D	45.0	–	–	–	40.9	40.9	–	38.1	38.1	–	–	–	34.0	28.0
			Wall	1.7	–	–	–	3.7	3.7	–	5.1	5.1	–	–	–	7.1	10.2
2	50	60.3	I.D	57.0	–	–	–	52.5	52.5	–	49.2	49.2	–	–	–	42.8	38.2
			Wall	1.7	–	–	–	3.9	3.9	–	5.5	5.5	–	–	–	8.7	11.1
2 1/2	65	73.0	I.D	68.8	–	–	–	62.7	62.7	–	59.0	59.0	–	–	–	53.9	45.0
			Wall	2.1	–	–	–	5.2	5.2	–	7.0	7.0	–	–	–	9.5	14.0
3	80	88.9	I.D	84.7	–	–	–	77.9	77.9	–	73.7	73.7	–	–	–	66.6	58.4
			Wall	2.1	–	–	–	5.5	5.5	–	7.6	7.6	–	–	–	11.1	15.2
3 1/2	90	101.6	I.D	97.4	–	–	–	90.1	90.1	–	85.4	85.4	–	–	–	–	–
			Wall	2.1	–	–	–	5.7	5.7	–	8.1	8.1	–	–	–	–	–
4	100	114.3	I.D	110.1	–	–	–	102.3	102.3	–	97.2	97.2	–	92.0	–	87.3	80.1
			Wall	2.1	–	–	–	6.0	6.0	–	8.6	8.6	–	11.1	–	13.5	17.1
5	125	141.3	I.D	135.8	–	–	–	128.2	128.2	–	122.2	122.2	–	115.9	–	109.5	103.2
			Wall	2.8	–	–	–	6.6	6.6	–	9.5	9.5	–	12.7	–	15.9	19.1
6	150	168.3	I.D	162.8	–	–	–	154.1	154.1	–	146.4	146.4	–	139.8	–	131.8	124.4
			Wall	2.8	–	–	–	7.1	7.1	–	11.0	11.0	–	14.3	–	18.3	22.0
8	200	219.1	I.D	213.6	–	206.4	205.0	202.7	202.7	198.5	193.7	193.7	188.9	182.6	177.9	173.1	174.6
			Wall	2.8	–	6.4	7.0	8.2	8.2	10.3	12.7	12.7	15.1	18.3	20.6	23.0	22.2
10	250	273.0	I.D	266.2	–	260.3	257.4	254.5	254.5	247.6	247.6	242.8	236.5	230.1	222.2	215.8	222.2
			Wall	3.4	–	6.4	7.8	9.3	9.3	12.7	12.7	15.1	18.3	21.4	25.4	28.6	25.4
12	300	323.8	I.D	315.9	–	311.1	307.0	304.7	303.2	295.3	298.4	288.8	280.9	273.0	266.6	257.2	273.0
			Wall	4.0	–	6.4	8.4	9.5	10.3	14.3	12.7	17.5	21.4	25.4	28.6	33.3	25.4
14	350	355.6	I.D	347.7	342.9	339.8	336.5	336.5	333.3	325.4	330.2	317.5	307.9	300.0	292.1	284.2	–
			Wall	4.0	6.4	7.9	9.5	9.5	11.1	15.1	12.7	19.1	23.8	27.8	31.8	35.7	–
16	400	406.4	I.D	398.0	393.7	390.6	387.3	387.3	381.0	373.1	381.0	363.5	354.0	344.5	333.3	325.4	–
			Wall	4.2	6.4	7.9	9.5	9.5	12.7	16.7	12.7	21.4	26.2	31.0	36.5	40.5	–
18	450	457.0	I.D	448.6	444.3	441.2	434.7	437.9	428.5	418.9	431.6	409.3	398.3	387.1	377.7	366.5	–
			Wall	4.2	6.4	7.9	11.1	9.5	14.3	19.1	12.7	23.8	29.4	34.9	39.7	45.2	–
20	500	508.0	I.D	498.4	495.3	488.9	482.6	488.9	477.8	466.8	482.6	455.6	442.9	431.8	419.1	408.0	–
			Wall	4.8	6.4	9.5	12.7	9.5	15.1	20.6	12.7	26.2	32.5	38.1	44.5	50.0	–
22	550	559.0	I.D	549.4	546.3	539.9	533.6	539.9	–	514.5	533.6	501.8	489.1	476.4	463.7	451.0	–
			Wall	4.8	6.4	9.5	12.7	9.5	–	22.2	12.7	28.6	34.9	41.3	47.6	54.0	–
24	600	610.0	I.D	598.9	597.3	590.9	581.5	590.9	575.0	560.8	584.6	548.1	532.2	518.0	505.3	490.9	–
			Wall	5.5	6.4	9.5	14.3	9.5	17.5	24.6	12.7	31.0	38.9	46.0	52.4	59.5	–

The wall thickness shown represent nominal or average wall diamensions which are subject to a–12 1/2% mill tolerance.
Note that schedule 40in.sizes 12´´(304.8mm) and larger and that schedule 80 in.sizes 10´´(254mm) and larger do not agree with schedules 40S and 80S of ANSI B36.19 nor with standard weight and extra strong respectively.

WELDED AND SEAMLESS PIPE
STAINLESS STEEL

ANSI B36.19

Unit:mm

Nominal Pipe		Outside Diam	ID Wall	NOMINAL INSIDE DIAMETER AND WALL THICKNESS			
Inch (B)	mm (DN)			SCH.* 5S	SCH.* 10S	SCH. 40S	SCH. 80S
1/8	6	10.3	I.D	–	7.8	6.8	5.5
			Wall	–	1.2	1.7	2.4
1/4	8	13.7	I.D	–	10.4	9.2	7.7
			Wall	–	1.7	2.2	3.0
3/8	10	17.1	I.D	–	13.8	12.5	10.7
			Wall	–	1.7	2.3	3.2
1/2	15	21.3	I.D	18.0	17.1	15.8	13.8
			Wall	1.7	2.1	2.8	3.7
3/4	20	26.7	I.D	23.4	22.5	21.0	18.9
			Wall	1.7	2.1	2.9	3.9
1	25	33.4	I.D	30.1	27.9	26.6	24.3
			Wall	1.7	2.8	3.4	4.6
1 1/4	32	42.2	I.D	38.9	36.7	35.1	32.5
			Wall	1.7	2.8	3.6	4.9
1 1/2	40	48.3	I.D	45.0	42.8	40.9	38.1
			Wall	1.7	2.8	3.7	5.1
2	50	60.3	I.D	57.0	54.8	52.5	49.2
			Wall	1.7	2.8	3.9	5.5
2 1/2	65	73.0	I.D	68.8	66.9	62.7	59.0
			Wall	2.1	3.1	5.2	7.0
3	80	88.9	I.D	84.7	82.8	77.9	73.7
			Wall	2.1	3.1	5.5	7.6
3 1/2	90	101.6	I.D	97.4	95.5	90.1	85.4
			Wall	2.1	3.1	5.7	8.1
4	100	114.3	I.D	110.1	108.2	102.3	97.2
			Wall	2.1	3.1	6.0	8.6
5	125	141.3	I.D	135.8	134.5	128.2	122.2
			Wall	2.8	3.4	6.6	9.5
6	150	168.3	I.D	162.8	161.5	154.1	146.4
			Wall	2.8	3.4	7.1	11.0
8	200	219.1	I.D	213.6	211.6	202.7	193.7
			Wall	2.8	3.8	8.2	12.7
10	250	273.0	I.D	266.2	264.7	254.6	247.7**
			Wall	3.4	4.2	9.3	12.7**
12	300	323.8	I.D	315.9	314.8	304.8**	298.5**
			Wall	4.0	4.6	9.5**	12.7**
14+	350	355.6	I.D	347.7	346.0	–	–
			Wall	4.0	4.8	–	–
16+	400	406.4	I.D	398.0	396.8	–	–
			Wall	4.2	4.8	–	–
18+	450	457.0	I.D	448.6	447.4	–	–
			Wall	4.2	4.8	–	–
20+	500	508.0	I.D	498.4	496.9	–	–
			Wall	4.8	5.5	–	–
22+	550	559.0	I.D	549.4	547.9	–	–
			Wall	4.8	5.5	–	–
24+	600	610.0	I.D	598.9	597.3	–	–
			Wall	5.5	6.35	–	–

The wall thickness shown represent nominal or average wall diamensions which are subject to a–12 1/2% mill tolerance.
‡Size 14´´(355.6mm) through 30´´(762.0mm) are not at publication date covered in B36.19,and diamrnsions listed are those commonly used in the industry.
*Schedules 5S and 10S wall thicknesses do not permit threading in accordance with ANSI B2.1
**Noth that schedule 40S and schedule 80S in these size do not agree with schedule 40 and schedule 80 of ANSI B36.10. and that they are identical to standard weight and extra strong respectively of ANSI B36.10.

MATERIAL SPECIFICATIONS

ASTM STANDARD

ASTM	Grade	UNS Designation	CHEMICAL COMPOSITION								MECHANICAL PROPERTIES				
			C%	Mn%	P Max.%	S Max.%	Si%	Ni%	Cr%	Mo%	T.S.Min. kis (MPa)	Y.S.Min. ksi (MPa)	EL. Min. %	Red. Min. %	HB
A105			MAX 0.35	0.60~ 1.05	0.035	0.040	0.10~ 0.35	MAX 0.40	MAX 0.30	MAX 0.12	70 (485)	36 (250)	22	30	MAX 187
A266	CL1		MAX 0.30	0.40~ 1.05	0.025	0.025	0.15~ 0.35				60~85 (415~585)	30 (205)	23	38	
A266	CL2		MAX 0.30	0.40~ 1.05	0.025	0.025	0.15~ 0.35				70~95 (485~655)	36 (250)	20	33	
A266	CL3		MAX 0.35	0.80~ 1.35	0.025	0.025	0.15~ 0.35				70~95 (485~655)	36 (250)	20	33	
A266	CL4		MAX 0.30	0.80~ 1.35	0.025	0.025	0.15~ 0.35				75~100 (515~690)	37.5 (260)	19	30	
A181	60		MAX 0.35	MAX 1.10	0.05	0.05	0.10~ 0.30				60 (415)	30 (205)	22	35	
A181	70		MAX 0.35	MAX 1.10	0.05	0.05	0.10~ 0.35				70 (485)	36 (250)	18	24	
A350	LF1		MAX 0.30	0.60~ 1.35	0.035	0.04	0.15~ 0.30	MAX 0.40	MAX 0.30	MAX 0.12	60~85 (415~585)	30 (205)	25	38	
A350	LF2		MAX 0.30	0.60~ 1.35	0.035	0.04	0.15~ 0.30	MAX 0.40	MAX 0.30	MAX 0.12	70~95 (485~655)	36 (250)	22	30	
A350	LF3		MAX 0.20	MAX 0.90	0.035	0.04	0.2 ~ 0.35	3.3~3.7	MAX 0.30	MAX 0.12	70~95 (485~655)	37.5 (260)	22	35	
A182	F1	K12822	MAX 0.28	0.60~ 0.90	0.045	0.045	0.15~ 0.35			0.44~ 0.65	70 (485)	40 (275)	20	30	143~ 192
A182	F5	K41545	MAX 0.15	0.30~ 0.60	0.030	0.030	MAX 0.50	MAX 0.50	4.0~ 6.00	0.44~ 0.65	70 (485)	40 (275)	20	35	143~ 217
A182	F5a	K42544	MAX 0.25	MAX 0.60	0.040	0.030	MAX 0.50	MAX 0.50	4.0~ 6.00	0.44~ 0.65	90 (620)	65 (450)	22	50	187~ 248
A182	F11-1	K11597	0.05~ 0.15	0.30~ 0.60	0.030	0.030	0.50~ 1.00		1.00~ 1.50	0.44~ 0.65	60 (415)	30 (205)	20	45	121~ 174
A182	F11-2	K11572	0.10~ 0.20	0.30~ 0.80	0.040	0.040	0.50~ 1.00		1.00~ 1.50	0.44~ 0.65	70 (485)	40 (275)	20	30	143~ 207
A182	F11-3	K11572	0.10~ 0.20	0.30~ 0.80	0.040	0.040	0.50~ 1.00		1.00~ 1.50	0.44~ 0.65	75 (515)	45 (310)	20	30	156~ 207
A182	F12-1	K11562	0.05~ 0.15	0.30~ 0.60	0.045	0.045	MAX 0.50		0.80~ 1.25	0.44~ 0.65	60 (415)	32 (220)	20	45	121~ 174
A182	F12-2	K11564	0.10~ 0.20	0.30~ 0.80	0.040	0.040	0.10~ 0.60		0.80~ 1.25	0.44~ 0.65	70 (485)	40 (275)	20	30	143~ 207
A182	F22-3	K21590	0.05~ 0.15	0.30~ 0.60	0.040	0.040	MAX 0.50		2.00~ 2.50	0.87~ 1.13	75 (515)	45 (310)	20	30	156~ 207
A182	F304	S30400	MAX 0.08	MAX 2.00	0.045	0.030	MAX 1.00	8.00~ 11.00	18.00~ 20.00		75 (515)	30 (205)	30	50	
A182	F304L	S30403	MAX 0.030	MAX 2.00	0.045	0.030	MAX 1.00	8.00~ 13.00	18.00~ 20.00		70 (485)	25 (170)	30	50	
A182	F316	S31600	MAX 0.08	MAX 2.00	0.045	0.030	MAX 1.00	10.00~ 14.00	16.00~ 18.00	2.00~ 3.00	75 (515)	30 (205)	30	50	
A182	F316L	S31603	MAX 0.030	MAX 2.00	0.045	0.030	MAX 1.00	10.00~ 15.00	16.00~ 18.00	2.00~ 3.00	70 (485)	25 (170)	30	50	
A182	F321	S32100	MAX 0.08	MAX 2.00	0.045	0.030	MAX 1.00	9.00~ 12.00	17.00~ 19.00		75 (515)	30 (205)	30	50	
A182	F347	S34700	MAX 0.08	MAX 2.00	0.045	0.030	MAX 1.00	9.00~ 13.00	17.00~ 20.00		75 (515)	30 (205)	30	50	
A182	F44	S31254	MAX 0.020	MAX 1.00	0.030	0.010	MAX 0.80	17.5~ 18.5	19.5~ 20.5	6.0~6.5	94 (650)	44 (300)	35	50	
A182	F904L	N08904	MAX 0.020	MAX 2.00	0.040	0.030	MAX 1.00	23.0~ 28.0	19.00~ 23.00	4.0~5.0	71 (490)	31 (215)	35		
A182	F51	S31803	MAX 0.030	MAX 2.00	0.030	0.020	MAX 1.00	4.5~6.5	21.00~ 23.00	2.50~ 3.50	90 (620)	65 (450)	25	45	

APPLICABLE ASTM SPECIFICATIONS

	GROUP 1 MATERIALS			PRODUCTFORMS			
Material Group No.	Nominal Designation Steel	Forgings Spec.–Gr.	Notes	Castings Spec.–Gr.	Notes	Plates Spec.–Gr.	Notes
1.1	C–Si	A105	(1)(3)	A216–WCB	(1)	A515.70	(1)
	C–Mn–Si	A350–LF2				A516.70	(1)
	3 1/2Ni	A350–LF3					
1.2	C–Mn–Si			A216–WCC	(1)		
				A352–LCC			
	2 1/2Ni			A352–LC2		A203–B	
	3 1/2Ni			A352–LC3		A203–E	
1.3	C–Si			A352–LCB	(1)	A515–65	
	C–Mn–Si					A516–65	
	2 1/2Ni					A203–A	
	3 1/2Ni					A203–D	
1.4	C–Si					A515–60	(1)
	C–Mn–Si	A350–LF1 CI.1				A516–60	
1.5	C–1/2Mo	A182–F1	(2)			A204–A	(2)
						A204–B	(2)
1.7	1/2Cr–1/2Mo	A182–F2					
	Ni–1/2Cr–1/2Mo			A217–WC4	(4)		
	3/4Ni–3/4Cr–1Mo			A217–WC5	(4)		
1.9	1/4Cr–1/2Mo			A217–WC6			
	1–1/4Cr–1/2Mo–Si				(4)	A378–11 CI.2	
1.10	2–1/4Cr–1Mo	A182–F22 CI.3		A217–WC9	(4)	A378–22 CI.2	
1.13	5Cr–1/2Mo	A181–F5a		A217–C5	(4)		
1.14	9Cr–1 Mo	A182–F9		A217–C12	(4)		

	GROUP 2 MATERIALS			PRODUCT FORMS			
2.1	18 Cr–8 Ni	A182–F304	(5)	A351–CF3		A240–304	(5)(6)
		A182–F304H		A351–CF8	(5)	A240–304H	
2.2	16 Cr–12 Ni–2 Mo	A182–F316	(5)	A351–CF3M		A240–316	(5)(6)
		A182–F316H		A351–CF8M		A240–316H	
	18 Cr–13 Ni–3 Mo	A182–F317				A240–317	(5)(6)
	19 Cr–10 Ni–3 Mo			A351–CG8M			
				A351–CF8M	(5)		
2.3	18 Cr–8 Ni	A182–F304L				A240–304L	
	16 Cr–12 Ni–2 Mo	A182–F316L				A240–316L	
2.4	18 Cr–10 Ni–Ti	A182–F321	(5)			A240–321	(5)(6)
		A182–F321H				A240–321H	
2.5	18 Cr–10 Ni–Cb	A182–F347	(5)			A240–347	(5)(6)
		A182–F347H				A240–347H	
		A182–F348	(5)			A240–348	(5)(6)
		A182–F348H				A240–348H	
2.6	23 Cr–12Ni					A240–309H	(5)(6)
2.7	25 Cr–12 Ni	182–F310	(5)(9)			A240–310H	(5)(6)(7)

General Notes

a)For temperature limitations,see notes in Table of´Pressure–Temperature Ratings´in ANSI B16.5.

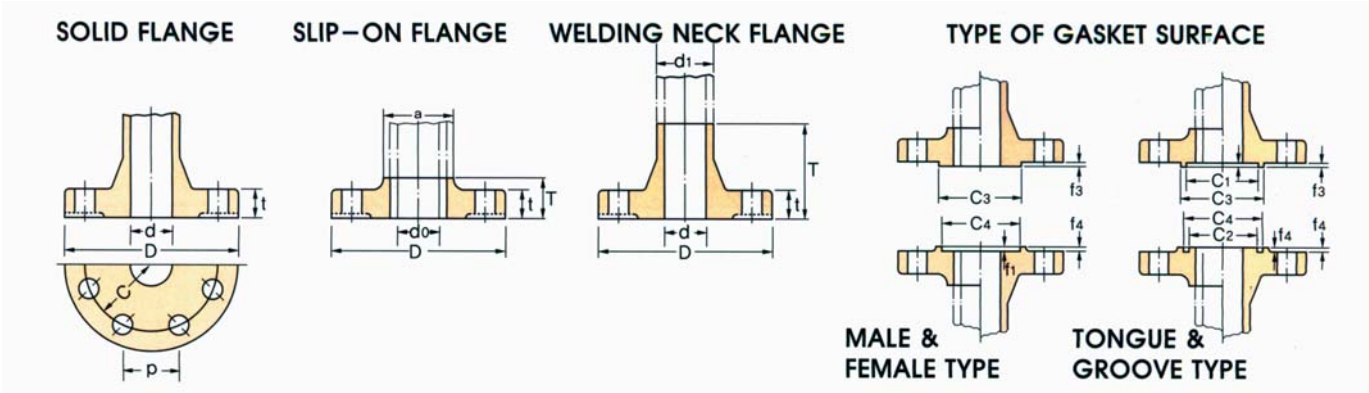
b)Plate materials are listed only for use as blind flanges and reducing flanges without hubs (see para.5.1).Additional plate materials listed in ASME B16.34 may also be used,with corresponding B16.34 Standard Class ratings.

NOTES

(1)ASME Boiler and Pressure Vessel Clde,Section Ⅱ materials may also be used provided the requirements of the ASME specification are identical to or more stringent than the corresponding ASTMspecification for the Grade,Class,or Type listed.

TOLERANCE

ASME B16.5 FORGED FLANGES



THREAD,SOCKET–WELDING, SLIP–ON,LAP JOINT AND BLIND.

Outside Diameter	When O.D.is 24"or less	±1/16"(1.5mm)*
	When O.D.is Over 24"	±1/8"(3.0mm)*
Inside Diameter	Threaded	To Standard gauge limit
	Socket–Welding Slip–on and Lap joint	10"& Smaller +1/32"(1.00mm),–0" 12"& Larger +1/16"(1.5mm),–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	±1/32"(1.0mm)
	1/4"Raised Face Tongue & Groove Male,Female	±1/64"(0.4mm)
Diameter of Counterbore	Same as for inside Diameter	
Drilling	Bolt Circle	±1/16"(1.5mm)
	Bolt Hole Spacing	±1/32"(0.8mm)
	Eccentricity of Bolt Circle with Respect to Facing 2 1/2" & Smaller 3"& Larger	1/32"(0.8mm)Max. 1/16"(1.5mm)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"(3.0mm),–0"
	20"and Larger	+3/16"(5.0mm),–0"
Length Thru Hub	4"and Smaller	±1/16"(1.5mm)
	5"thru 10"	+1/16"(1.5mm) –1/8"(3.0mm)
	12"and Larger	+1/8"(3.0mm) –3/16"(5.0mm)

Notes
* This tolerance is not covered in ANSI B16.5, but maker ´s option.

WELDING NECK

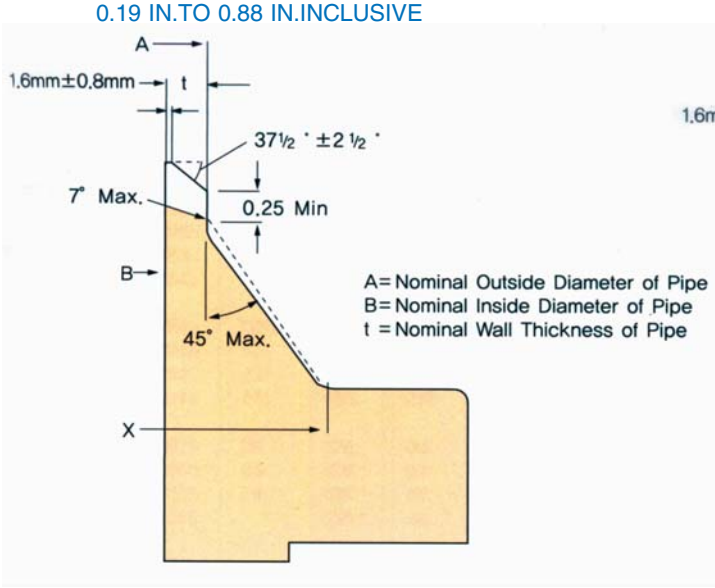
Outside Diameter	When O.D.is 24"or less	±1/16"(1.5mm)*
	When O.D.is Over 24"	±1/8"(3.0mm)*
Inside Diameter	10"and Smaller	±1/32"(1.0mm)
	12"thru 18"	±1/16"(1.5mm)
	20"and Larger	+1/8"(3.0mm) –1/16"(1.5mm)
Diameter of Contact Face	1/16"Raised Face	±1/32"(1.0mm)
	1/4"Raised Face Tongue & Groove Male,Female	±1/64"(0.4mm)
Diameter of Hub at Base	When Hub Base is 24"or Smaller	±1/16"(1.5mm)*
	When Hub Base is Over 24"	±1/8"(3.0mm)*
Diameter of Hub at Point of Welding	5"and Smaller	+3/32"(2.0mm)* –1/32"(1.0mm)
	6"and Larger	+5/32"(4.0mm) –1/32"(1.0mm)
Drilling	Bolt Circle	±1/16"(1.5mm)
	Bolt Hole Spacing	±1/32"(0.8mm)
	Eccentricity of Bolt Circle with Respect to Facing 2 1/2" & Smaller 3"& Larger	1/32"(0.8mm)Max. 1/16"(1.5mm)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"(3.0mm),–0"
	20"and Larger	+3/16"(5.0mm),–0"
Length Thru Hub	4"and Smaller	±1/16"(1.5mm)
	5"thru 10"	+1/16"(1.5mm) –1/8"(3.0mm)
	12"and Larger	+1/8"(3.0mm) –3/16"(5.0mm)

Notes
* This tolerance is not covered in ANSI B16.5, but maker ´s option.

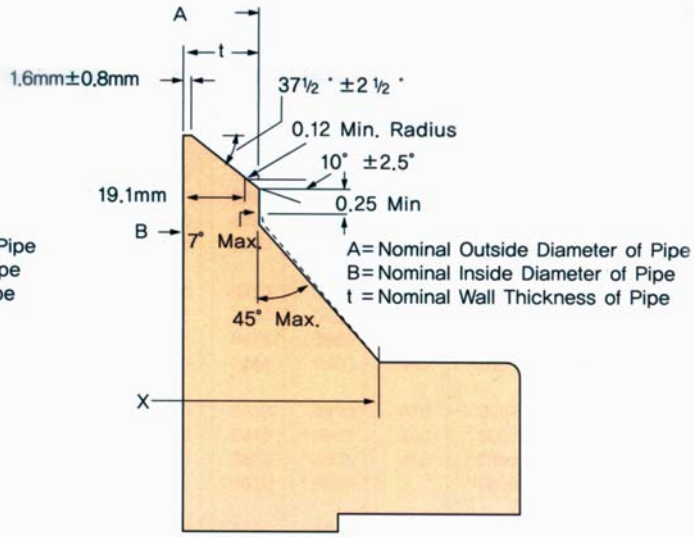
WELDING ENDS

ASME B16.5 FORGED FLANGES

BEVEL FOR WALL THICKNESS(t)
0.19 IN.TO 0.88 IN.INCLUSIVE

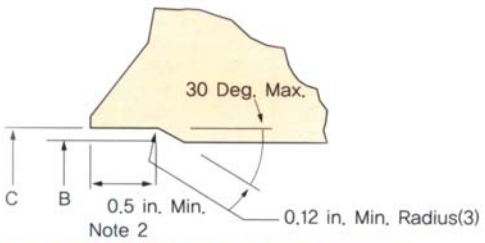


BEVEL FOR WALL THICKNESSES(t)
GREATER THAN 0.88 IN.

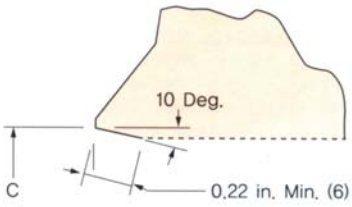


Notes

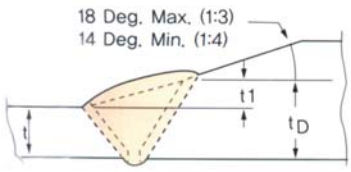
When the thickness of the hub at the bevel is greater than that of the pipe to which the flange is joined and the additional thickness is provided on the outside diameter,a taper weld having a slope not exceeding 1 to 3 may be employed or,alternatively,the greater outside diameter may be tapered at the same maximum slope or less,from a point on the welding bevel equal to the outside diameter of the mating pipe.Similary,when the greater thickness is provided on the inside of the flange,it shall be taper–bored from the welding end at a slope not exceeding 1 to 3.
When flanges covered by this standard are intended for services with light wall,higher strength pipe,the thickness of the hub at bevel may be greater than that of the pipe to which the flange is joined.Under these conditions,a single taper hub may be provided,and the outside diameter of the hub at the base(Dimension X)may also be modified.
The additional thickness may be provided on either inside or outside or partially on each side,but the total additional thickness shall not exceed one–half times the nominal wall thickness of intended mating pipe.



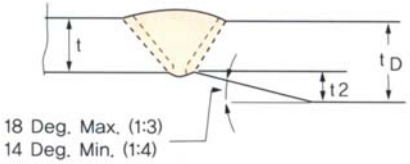
INSIDE CONTOUR FOR USE WITH RECTANGULAR BACKING RING



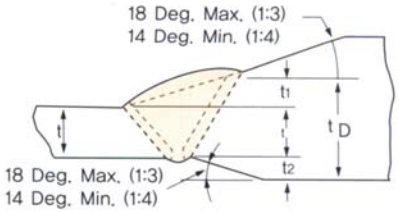
INSIDE CONTOUR FOR USE WITH TAPER BACKING RING



BEVEL FOR OUTSIDE THICKNESS



BEVEL FOR INSIDE THICKNESS



BEVEL FOR COMBINED THICKNESS

Notes

(1)When the materials joined have equal minimum specified yield strength,there shall be no restriction on the minimum slope.
(2)Neither t1,t2,nor their sum(t1+t2)shall exceed 0.5t.
(3)When the minimum specitied yield strengths of the sections to be joined are unequal ,the value of t D shall at least equal times the ratio of minmum specified yield srtength of the pipe to minimum specified yield strength of the flange.

PRESSURE–TEMPERATURE RATINGS

ANSI B16.5 FORGED FLANGES

CLASS 150 PRESSURE–TEMPERATURE RATINGS

Material Group	1.1	1.2	1.4	1.5	1.7	1.9	1.10	1.13	1.14	2.1	2.2	2.3	2.4	2.5	2.7
Materials / Temp.°F	A105 A350 LF2	A350 LF6 CL.2	A350 LF1	A182 F1	A182 F2	A182 F11	A182 F22	A182 F5a	A182 F9	F304(1) F304H	F316(1) F316H	F304L (2) / F316L	F321	F347 F348	F310 (1),(3)
–20 to 100	285	290	235	265	290	290	290	290	290	275	275	230	275	275	275
200	260	260	215	260	260	260	260	260	260	230	235	195	250	255	245
300	230	230	210	230	230	230	230	230	230	205	215	175	230	230	225
400	200	200	200	200	200	200	200	200	200	190	195	160	200	200	200
500	170	170	170	170	170	170	170	170	170	170	170	150	170	170	170
600	140		140	140	140	140	140	140	140	140	140	140	140	140	140
650	125		125	125	125	125	125	125	125	125	125	125	125	125	125
700	110		110	110	110	110	110	110	110	110	110	110	110	110	110
750	95		95	95	95	95	95	95	95	95	95	95	95	95	95
800	80*		80*	80	80	80	80	80	80	80	80	80	80	80	80
850	65*		65*	65	65	65	65	65	65	65	65	65	65	65	65
900	50*		50*	50*	50	50	50	50	50	50	50		50	50	50
950	35*		35*	35*	35	35	35	35	35	35	35		35	35	35
1000	20*		20*	20*	20	20	20	20	20	20	20		20	20	20

CLASS 300 PRESSURE–TEMPERATURE RATINGS

Material Group	1.1	1.2	1.4	1.5	1.7	1.9	1.10	1.13	1.14	2.1	2.2	2.3	2.4	2.5	2.7
Materials / Temp.°F	A105 A350 LF2	A350 LF6 CL.2	A350 LF1	A182 F1	A182 F2	A182 F11	A182 F22	A182 F5a	A182 F9	F304(1) F304H	F316(1) F316H	F304L(2) / F316L	F321	F347 F348	F310 (1),(3)
–20 to 100	740	750	615	695	750	750	750	750	750	720	720	600	720	720	720
200	680	750	565	695	750	750	750	750	750	600	620	510	650	660	635
300	655	730	545	685	730	720	730	730	730	540	560	455	595	615	580
400	635	705	525	660	705	695	705	705	705	495	515	420	550	575	540
500	605	665	500	640	665	665	665	665	665	465	480	395	515	540	515
600	570		475	605	605	605	605	605	605	440	450	370	485	515	495
650	550		455	590	590	590	590	590	590	430	440	365	475	505	485
700	530		440	570	570	570	570	570	570	420	435	360	465	495	480
750	505		430	530	530	530	530	530	530	415	425	355	460	490	470
800	410*		370*	510	510	510	510	510	510	405	420	345	450	485	465
850	320*		300*	485	485	485	485	485	485	395	420	340	445	485	460
900	230*		170*	450*	450	450	450	375	450	390	415		440	450	450
950	135*		135*	280*	315	320	385	275	375	380	385		385	385	385
1000	85*		85*	165*	200	215	265	200	255	355	365		365	365	365
1050						145	175	145	170	325	360				355
1100						95*	110*	100	115	255	305				260
1150						65*	70*	60	75	205	235				190
1200						40*	40*	35	50	165	185				135
1250										135	145				105
1300										115	115				75
1350										95	95				60
1400										75	75				45
1450										60	60				35
1500										40	40				25

CLASS 400 PRESSURE–TEMPERATURE RATINGS

Material Group	1.1	1.2	1.4	1.5	1.7	1.9	1.10	1.13	1.14	2.1	2.2	2.3	2.4	2.5	2.7
Materials	A105 A350 LF2	A350 LF6 CL.2	A350 LF1	A182 F1	A182 F2	A182 F11	A182 F22	A182 F5a	A182 F9	F304(1) F304H	F316(1) F316H	F304L(2)	F321	F347 F348	F310 (1),(3)
Temp.°F												F316L			
–20 to 100	985	1000	825	930	1000	1000	1000	1000	1000	960	960	800	960	960	960
200	905	1000	755	930	1000	1000	1000	1000	1000	800	825	680	865	885	850
300	870	970	725	915	970	965	970	970	970	715	745	610	795	820	775
400	845	940	700	885	940	925	940	940	940	660	685	560	735	770	725
500	805	885	670	855	885	885	885	885	885	620	635	525	690	725	685
600	755		630	805	805	805	805	805	805	590	600	495	650	690	660
650	730		610	785	785	785	785	785	785	575	590	485	635	675	645
700	710		590	755	755	755	755	755	755	565	580	480	620	660	635
750	675		570	710	710	710	710	710	710	550	570	470	610	655	625
800	550*		495*	675	675	675	675	675	755	540	565	460	600	650	620
850	425*		400*	650	650	650	650	650	710	530	555	450	595	645	610
900	305*		230*	600*	600	600	600	500	675	520	555		590	600	600
950	185*		185*	375*	420	425	515	365	650	510	515		515	515	515
1000	115*		115*	220*	270	290	355	265	600	470	485		485	485	485
1050						190	235	190	505	435	480				470
1100						130*	145*	135	340	345	405				345
1150						85*	90*	80	230	275	315				250
1200						55*	55*	45	150	220	245				185
1250									100	180	195				135
1300									70	150	155				100
1350										125	130				80
1400										100	100				60
1450										80	80				45
1500										55	55				35

CLASS 600 PRESSURE–TEMPERATURE RATINGS

Material Group	1.1	1.2	1.4	1.5	1.7	1.9	1.10	1.13	1.14	2.1	2.2	2.3	2.4	2.5	2.7
Materials	A105 A350 LF2	A350 LF6 CL.2	A350 LF1	A182 F1	A182 F2	A182 F11	A182 F22	A182 F5a	A182 F9	F304(1) F304H	F316(1) F316H	F304L(2)	F321	F347 F348	F310 (1),(3)
Temp.°F												F316L			
–20 to 100	1480	1500	1235	1395	1500	1500	1500	1500	1500	1440	1440	1200	1440	1440	1440
200	1360	1500	1130	1395	1500	1500	1500	1500	1500	1200	1240	1020	1295	1325	1270
300	1310	1455	1090	1375	1455	1455	1455	1455	1455	1075	1120	910	1190	1235	1160
400	1265	1405	1055	1325	1410	1385	1410	1410	1410	995	1025	840	1105	1150	1085
500	1205	1330	1005	1285	1330	1330	1330	1330	1330	930	955	785	1030	1085	1025
600	1135		945	1210	1210	1210	1210	1210	1210	885	900	745	975	1030	990
650	1100		915	1175	1175	1175	1175	1175	1175	865	885	730	950	1015	970
700	1060		885	1135	1135	1135	1135	1135	1135	845	870	720	930	995	955
750	1015		855	1065	1065	1065	1065	1065	1065	825	855	705	915	985	940
800	825*		740*	1015	1015	1015	1015	1015	1015	810	845	690	900	975	930
850	640*		595*	975	975	975	975	975	975	790	835	675	895	970	915
900	460*		345*	900*	900	900	900	745	900	780	830		885	900	900
950	275*		275*	560*	630	640	775	550	755	765	775		775	775	775
1000	170*		170*	330*	405	430	535	400	505	710	725		725	725	725
1050						290	350	290	345	650	720				705
1100						190*	220*	200	225	515	610				520
1150						130*	135*	125	150	410	475				375
1200						80*	80*	70	105	330	370				275
1250								60		265	295				205
1300								35	75	225	235				150
									50						
1350										185	190				115
1400										150	150				90
1450										115	115				65
1500										85	85				50

C&N Pipeline Limited

PRESSURE–TEMPERATURE RATINGS

ANSI B16.5 FORGED FLANGES

CLASS 900 PRESSURE–TEMPERATURE RATINGS

MATERIAL Group	1.1	1.2	1.4	1.5	1.7	1.9	1.10	1.13	1.14	2.1	2.2	2.3	2.4	2.5	2.7
Materials	A105 A350 LF2	A350 LF6 CL.2	A350 LF1	A182 F1	A182 F2	A182 F11	A182 F22	A182 F5a	A182 F9	F304(1) F304H	F316(1) F316H	F304L(2) F316L	F321	F347 F348	F310 (1),(3)
Temp.°F															
–20 to 100	2220	2250	1850	2090	2250	2250	2250	2250	2250	2160	2160	1800	2160	2160	2160
200	2035	2250	1695	2090	2250	2250	2250	2250	2250	1800	1860	1535	1945	1985	1910
300	1965	2185	1635	2060	2185	2165	2185	2185	2185	1615	1680	1370	1785	1850	1740
400	1900	2110	1580	1985	2115	2080	2115	2115	2115	1490	1540	1260	1655	1730	1625
500	1810	1995	1505	1925	1995	1995	1995	1995	1995	1395	1435	1180	1550	1625	1540
600	1705		1420	1815	1815	1815	1815	1815	1815	1325	1355	1115	1460	1550	1485
650	1650		1370	1765	1765	1765	1765	1765	1765	1295	1325	1095	1425	1520	1455
700	1590		1325	1705	1705	1805	1705	1705	1705	1265	1305	1080	1395	1490	1435
750	1520		1285	1595	1595	1595	1595	1595	1595	1240	1280	1060	1375	1475	1410
800	1235*		1110*	1525	1525	1525	1525	1525	1525	1215	1265	1035	1355	1460	1395
850	955*		895*	1460	1460	1460	1460	1460	1460	1190	1255	1015	1340	1455	1375
900	690*		515*	1350*	1350	1350	1350	1120	1350	1165	1245		1325	1350	1350
950	410*		410*	845*	945	955	1160	825	1130	1145	1160		1160	1160	1160
1000	255*		255*	495*	605	650	800	595	760	1065	1090		1090	1090	1090
1050						430	525	430	515	975	1080				1060
1100						290*	330*	300	340	770	915				780
1150						195*	205*	185	225	615	710				565
1200						125*	125*	105	155	495	555				410
1250										400	440				310
1300										340	350				225
1350										280	290				175
1400										225	225				135
1450										175	175				100
1500										125	125				75

CLASS 1500 PRESSURE–TEMPERATURE RATINGS

MATERIAL Group	1.1	1.2	1.4	1.5	1.7	1.9	1.10	1.13	1.14	2.1	2.2	2.3	2.4	2.5	2.7
Materials	A105 A350 LF2	A350 LF6 CL.2	A350 LF1	A182 F1	A182 F2	A182 F11	A182 F22	A182 F5a	A182 F9	F304(1) F304H	F316(1) F316H	F304L(2) F316L	F321	F347 F348	F310 (1),(3)
Temp.°F															
–20 to 100	3705	3750	3085	3480	3750	3750	3750	3750	3750	3600	3600	3000	3600	3600	3600
200	3395	3750	2830	3480	3750	3750	3750	3750	3750	300	3095	2555	3240	3310	3180
300	3270	3640	2725	3435	3640	3610	3640	3640	3640	2690	2795	2280	2975	3085	2905
400	3170	3520	2635	3310	3530	3465	3530	3530	3530	2485	2570	2100	2760	2880	2710
500	3015	3325	2510	3210	3325	3325	3325	3325	3325	2330	2390	1970	2580	2710	2570
600	2840	3025	2365	3025	3025	3025	3025	3025	3025	2210	2255	1860	2435	2580	2470
650	2745	2940	2285	2940	2940	2940	2940	2940	2940	2160	2210	1825	2375	2530	2425
700	2655	2775	2210	2840	2840	2840	2840	2840	2840	2110	2170	1800	2330	2485	2390
750	2535	2535	2140	2660	2660	2660	2660	2660	2660	2065	2135	1765	2290	2460	2350
800	2055☆	2055	1850☆	2540	2540	2540	2540	2540	2540	2030	2110	1730	2255	2435	2330
850	1595☆	1595	1490☆	2435	2435	2435	2435	2435	2435	1980	2090	1690	2230	2425	2290
900	1150☆	1115	855☆	2245☆	2245	2245	2245	1870	2245	1945	2075		2210	2245	2245
950	685☆	685	685☆	1405☆	1575	1595	1930	1370	1885	1910	1930		1930	1930	1930
1000	430☆	430	430☆	825☆	1010	1080	1335	995	1270	1770	1820		1820	1820	1820
1050						720	875	720	855	1630	1800				1765
1100						480☆	550☆	495	565	1285	1525				1305
1150						325☆	345☆	310	375	1030	1185				945
1200						205☆	205☆	170	255	825	925				685
1250										670	735				515
1300										565	585				375
1350										465	480				290
1400										380	380				225
1450										290	290				165
1500										205	205				130

CLASS 2500 PRESSURE–TEMPERATURE RATINGS

MATERIAL Group	1.1	1.2	1.4	1.5	1.7	1.9	1.10	1.13	1.14	2.1	2.2	2.3	2.4	2.5	2.7
Materials	A105 A350 LF2	A350 LF6 CL.2	A350 LF1	A182 F1	A182 F2	A182 F11	A182 F22	A182 F5a	A182 F9	F304(1) F304H	F316(1) F316H	F304L(2) F316L	F321	F347 F348	F310 (1),(3)
Temp.°F															
–20 to 100	6170	6250	5145	5805	6250	6250	6250	6250	6250	6000	6000	5000	6000	6000	6000
200	5655	6250	4715	5805	6250	6250	6250	6250	6250	5000	5160	4260	5400	5520	5300
300	5450	6070	4545	5725	6070	6015	6070	6070	6070	4480	4660	3800	4960	5140	4840
400	5280	5865	4390	5520	5880	5775	5880	5880	5880	4140	4280	3500	4600	4800	4520
500	5025	5540	4185	5350	5540	5540	5540	5540	5540	3880	3980	3280	4300	4520	4280
600	4730		3945	5040	5040	5040	5040	5040	5040	3680	3760	3100	4060	4300	4120
650	4575		3805	4905	4905	4905	4905	4905	4905	3600	3680	3040	3960	4220	4040
700	4425		3685	4730	4730	4730	4730	4730	4730	3520	3620	3000	3880	4140	3980
750	4230		3565	4430	4430	4430	4430	4430	4430	3440	3560	2940	3820	4100	3920
800	3430*		3085*	4230	4230	4230	4230	4230	4230	3380	3520	2880	3760	4060	3880
850	2655*		2485*	4060	4060	4060	4060	4060	4060	3300	3480	2820	3720	4040	3820
900	1915*		1430*	3745*	3745	3745	3745	3115	3745	3240	3460		3680	3745	3745
950	1145*		1145*	2345*	2630	2655	3220	2285	3145	3180	3220		3220	3220	3220
1000	715*		715*	1370*	1685	1800	2230	1655	2115	2950	3030		3030	3030	3030
1050					1315	1200	1455	1200	1430	2715	3000				2945
1100						800*	915*	830	945	2145	25455				2170
1150						545*	570*	515	630	1715	1970				1570
1200						345*	345*	285	430	1370	1545				1145
1250										1115	1230				855
1300										945	970				630
1350										770	800				485
1400										630	630				370
1450										485	485				275
1500										345	345				215

Notes

Pressures are in pounds per square inch.gage(psig).

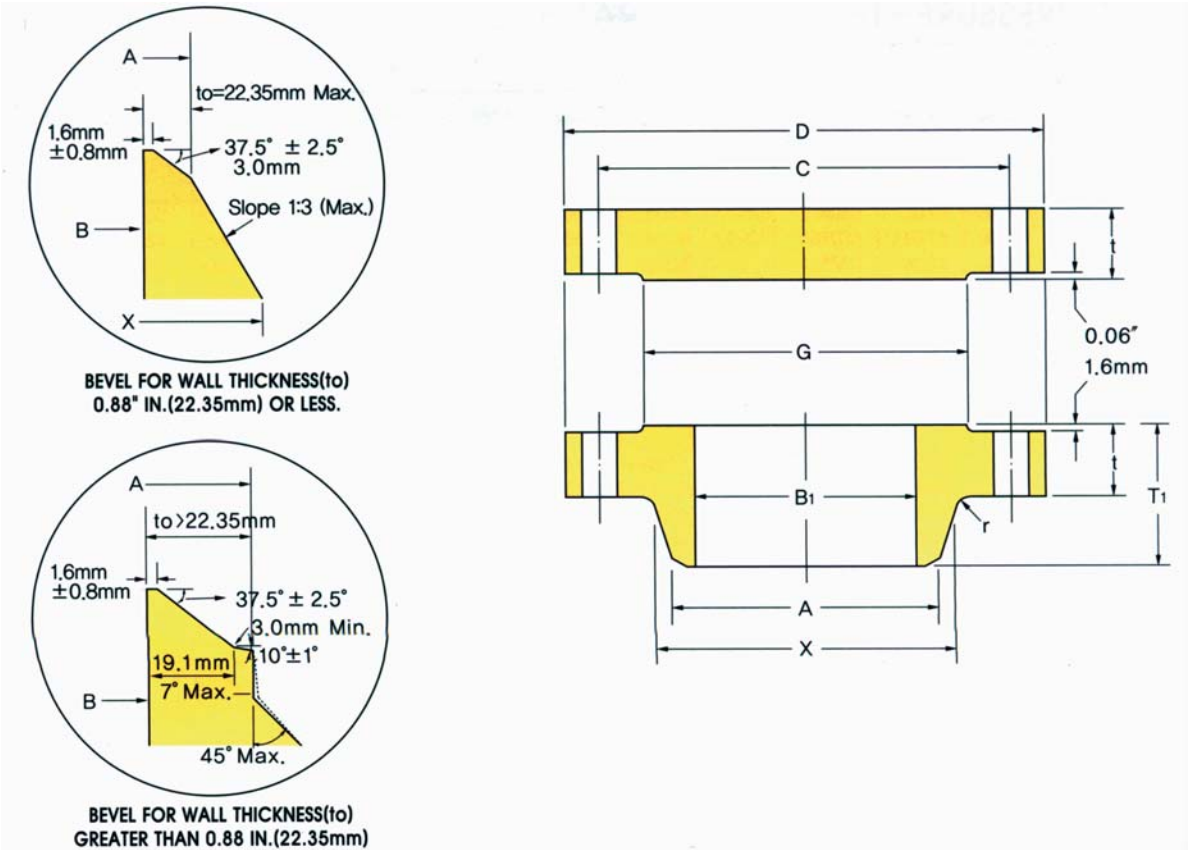
(1)At temperatures over 1000°F, use only when the carbon content is 0.04% or higher.

(2)Not to be used over 800°F.
(3)Service temperatures of 1050°F and above should be used only when assurance is provided that grain size is not finer than ASTM6.

☆Permissible, but not recommended for prolonged use.

CLASS 75 FLANGES

ASME B16.47 SER. B (API 605)



Unit:mm

Nominal Pipe Size	Outside Diam.	O.D.of Raised Face	Diam of Hub at Base	Diam. of Hub at bevel	BORE Wall Thickness 6.35mm	BORE Wall Thickness 9.5mm	BORE Wall Thickness 12.7mm	Length Thru Hub	THICKNESS Blind	THICKNESS Welding neck	Radius at Base of Hub	DRILLING Bolt Circle Diam.	DRILLING Number of Holes	DRILLING Diam. of Holes	Approximate Weight(kg) Welding neck	Approximate Weight(kg) Blind
	D	G	X	A	B1			T1	t	t	r	c				
26	762	704.9	676.1	661.9	647.7	641.4	635.0	58.7	33.3	33.3	7.9	723.9	36	19.1	36.3	115.7
28	813	755.7	726.9	712.7	698.5	692.2	685.8	62.0	33.3	33.3	7.9	774.7	40	19.1	38.6	131.5
30	864	806.5	777.7	763.5	749.3	743.0	736.6	65.0	33.3	33.3	7.9	825.5	44	19.1	40.8	149.7
32	914	857.3	828.5	814.3	800.1	793.8	787.4	69.9	36.6	35.1	7.9	876.3	48	19.1	47.6	176.9
34	965	908.1	879.3	865.1	850.9	844.6	838.2	73.2	38.1	35.1	7.9	927.1	52	19.1	49.9	195.0
36	1034	965.2	935.0	915.9	850.9	895.4	889.0	85.9	42.4	36.6	9.7	992.1	40	22.4	65.8	235.0
38	1084	1016.0	985.8	966.7	952.5	946.2	939.8	88.9	44.5	38.1	9.7	1042.9	40	22.4	72.6	269.9
40	1135	1066.8	1036.6	1017.5	1003.3	997.0	990.6	91.9	44.5	38.1	9.7	1093.7	44	22.4	77.1	344.7
42	1186	1117.6	1087.4	1068.3	1054.1	1047.8	1041.4	95.3	47.8	39.6	9.7	1144.5	48	22.4	83.9	406.0
44	1251	1174.8	1140.0	1119.1	1104.9	1049.4	1143.0	104.6	49.3	42.9	9.7	1203.5	36	25.4	104.3	483.1
46	1302	1225.6	1190.8	1169.9	1155.7	1149.4	1143.0	108.0	50.8	44.5	9.7	1254.3	40	25.4	111.1	537.5
48	1353	1276.4	1241.6	1220.7	1206.5	1200.2	1193.8	111.3	53.8	46.0	9.7	1305.1	44	25.4	122.5	596.5
50	1403	1327.2	1293.9	1271.5	1257.3	1251.0	1244.6	115.8	55.4	47.8	9.7	1355.9	44	25.4	131.5	682.7
52	1457	1378.0	1344.7	1322.3	1308.1	1301.8	1295.4	120.7	57.2	47.8	9.7	1409.7	48	25.4	140.6	755.2
54	1508	1428.8	1397.0	1373.1	1358.9	1352.6	1346.2	125.5	60.5	49.3	9.7	1460.5	48	25.4	154.2	834.6
56	1575	1485.9	1450.8	1423.9	1409.7	1403.4	1397.0	134.9	62.0	50.8	11.2	1521.0	40	28.4	181.4	957.1
58	1626	1536.7	1501.6	1474.7	1460.5	1454.2	1447.8	138.2	63.5	52.3	11.2	1571.8	44	28.4	195.0	1043.3
60	1676	1587.5	1552.4	1525.5	1511.3	1505.0	1498.6	144.5	66.5	55.6	11.2	1622.6	44	28.4	215.5	1134.0

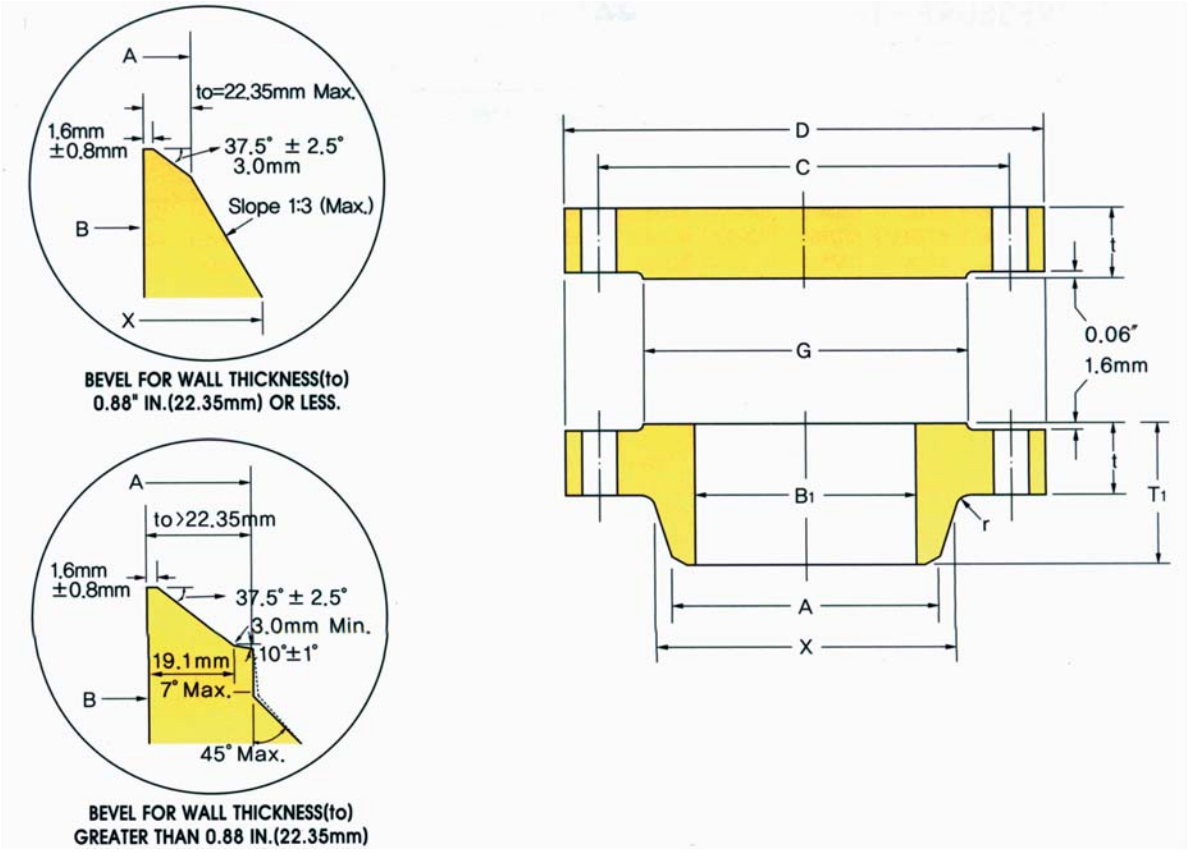
Notes

(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 thru Hub´(T1).

CLASS 150 FLANGES

ASME B16.47 SER. B (API 605)



Unit:mm

Nominal Pipe Size	Outside Diam.	O.D.of Raised Face	Diam of Hub at Base	Diam. of Hub at bevel	BORE Wall Thickness			Length Thru Hub	THICKNESS		Radius at Base of Hub	DRILLING			Approximate Weight(kg)	
					6.35mm	9.5mm	12.7mm		Blind	Welding neck		Bolt Circle Diam.	Number of Holes	Diam. of Holes	Welding neck	Blind
	D	G	X	A	B1			T1	t	t	r	c				
26	786	711.2	684.3	661.9	647.7	641.4	635.0	88.9	44.5	41.1	9.7	744.5	36	22.4	54.4	169.2
28	837	762.0	735.1	712.7	698.5	692.2	685.8	95.3	47.8	44.5	9.7	795.3	40	22.4	63.5	205.9
30	887	812.8	787.4	763.5	749.3	743.0	736.6	100.1	50.8	44.5	9.7	846.1	44	22.4	68.0	246.3
32	941	863.6	839.7	814.3	800.1	793.8	787.4	108.0	53.8	46.0	9.7	900.2	48	22.4	77.1	293.9
34	1005	920.8	892.0	865.1	850.9	844.6	838.2	110.2	57.2	49.3	9.7	957.3	40	25.4	95.3	355.2
36	1057	971.6	944.6	915.9	901.7	895.4	889.0	117.3	58.7	52.3	9.7	1009.7	44	25.4	108.9	403.7
38	1124	1022.4	997.0	968.2	952.5	946.2	939.8	124.0	63.5	53.8	9.7	1069.8	40	28.4	131.5	494.0
40	1175	1079.5	1049.3	1019.0	1003.3	997.0	990.6	128.5	66.5	55.6	9.7	1120.6	44	28.4	140.6	565.6
42	1226	1130.3	1101.9	1069.8	1054.1	1047.8	1041.4	133.4	68.3	58.7	11.2	1171.4	48	28.4	156.5	631.9
44	1276	1181.1	1152.7	1120.6	1104.9	1098.6	1092.2	136.7	71.4	60.5	11.2	1222.2	52	31.8	167.8	716.2
46	1341	1234.9	1205.0	1171.4	1155.7	1149.4	1143.0	144.5	74.7	62.0	11.2	1284.2	40	31.8	197.3	827.4
48	1392	1289.1	1257.3	1222.2	1206.5	1200.2	1193.8	149.4	77.7	65.0	11.2	1335.0	44	31.8	217.7	927.6
50	1443	1339.9	1308.1	1273.0	1257.3	1251.0	1244.6	153.9	80.8	68.3	11.2	1385.8	48	31.8	235.9	1036.0
52	1494	1390.7	1360.4	1323.8	1308.1	1301.8	1295.4	157.2	84.1	69.9	11.2	1436.6	52	31.8	249.5	1155.3
54	1549	1441.5	1412.7	1374.6	1358.9	1352.6	1346.2	162.1	87.4	71.4	11.2	1492.3	56	31.8	281.2	1291.9
56	1600	1492.3	1465.3	1425.4	1409.7	1403.4	1397.0	166.6	90.4	73.2	14.2	1543.1	60	31.8	294.8	1426.1
58	1675	1543.1	1516.1	1476.2	1460.5	1454.2	1447.8	174.8	93.5	74.7	14.2	1611.4	48	35.1	353.8	1614.8
60	1726	1600.2	1570.0	1527.0	1511.3	1505.0	1498.6	179.3	96.8	76.2	14.2	1662.2	52	35.1	385.6	1774.9

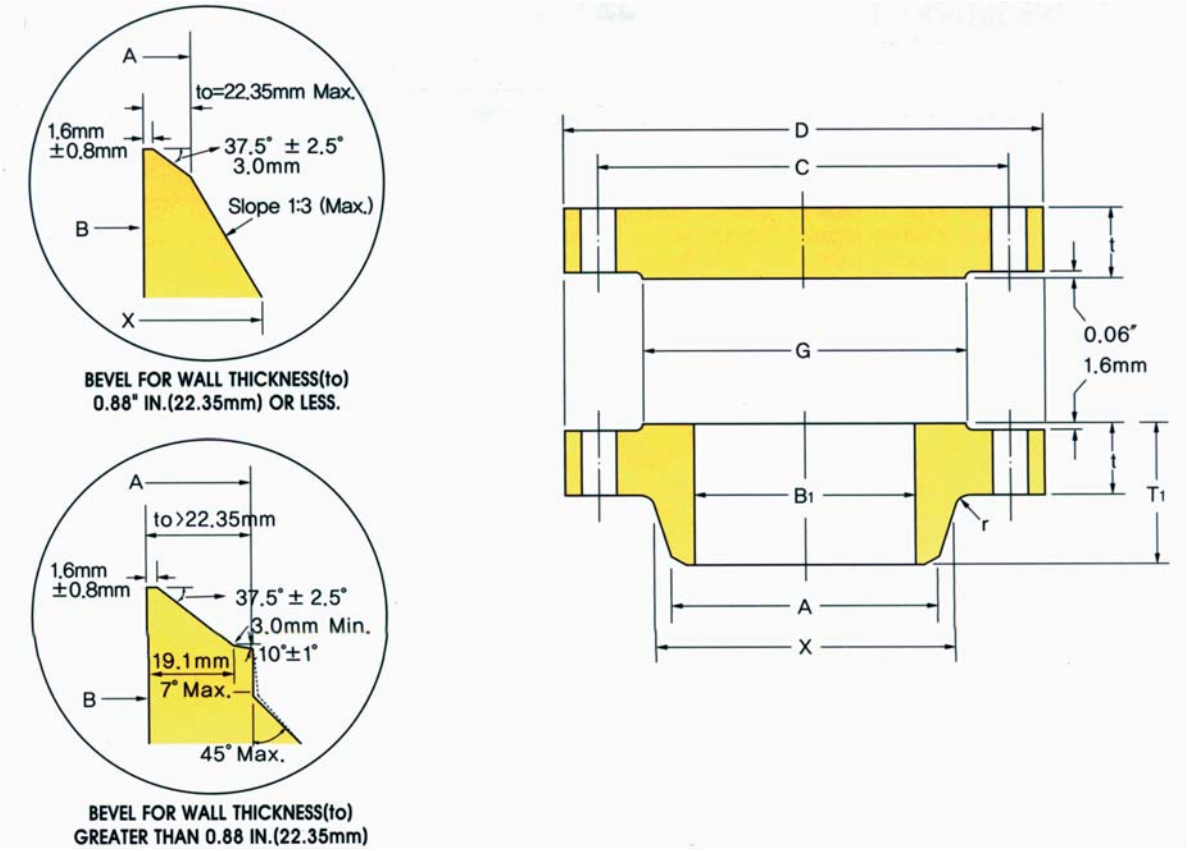
Notes

(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 thru Hub´(T1).

CLASS 300 FLANGES

ASME B16.47 SER. B (API 605)



Unit:mm

Nominal Pipe Size	Outside Diam.	O.D.of Raised Face	Diam of Hub at Base	Diam. of Hub at bevel	BORE Wall Thickness 6.35mm	BORE Wall Thickness 9.5mm	BORE Wall Thickness 12.7mm	Length Thru Hub	THICKNESS Blind	THICKNESS Welding neck	Radius at Base of Hub	DRILLING Bolt Circle Diam.	DRILLING Number of Holes	DRILLING Diam. of Holes	Approximat Weight(kg) Welding neck	Approximat Weight(kg) Blind
	D	G	X	A	B1			T1	t	t	r	c				
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	181.4	411.4
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	204.1	464.0
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	249.5	566.5
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	310.7	705.8
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	340.2	779.7
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	381.0	871.4
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	415.0	1023.8
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	449.1	1156.2
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	514.8	1304.6
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	560.2	1498.7
46	1461	1270.0	1228.9	1176.3	1155.7	1149.4	1143.0	222.3	130.0	128.5	15.7	1365.3	36	50.8	666.8	1708.3
48	1511	1327.2	1277.9	1227.1	1206.5	1200.2	1193.8	223.8	134.9	128.5	15.7	1416.1	40	50.8	714.4	1897.4
50	1562	1378.0	1330.5	1277.9	1257.3	1251.0	1244.6	235.0	139.7	138.2	15.7	1466.9	44	50.8	775.7	2099.7
52	1613	1428.8	1382.8	1328.7	1308.1	1301.8	1295.4	242.8	144.3	142.7	15.7	1517.7	48	50.8	834.6	2311.5
54	1673	1479.6	1435.1	1379.5	1358.9	1352.6	1346.2	239.8	149.4	136.7	15.7	1577.8	48	50.8	898.1	2575.5
56	1765	1536.7	1493.8	1430.3	1409.7	1403.4	1397.0	268.2	157.0	153.9	17.5	1651.0	36	60.5	1177.1	3012.8
58	1827	1593.9	1547.9	1481.1	1460.5	1454.2	1447.8	274.6	162.1	153.9	17.5	1712.0	40	60.5	1256.6	3332.6
60	1878	1651.0	1598.7	1531.9	1511.3	1505.0	1498.6	271.5	166.6	150.9	17.5	1763.8	40	60.5	1301.8	3619.7

Notes

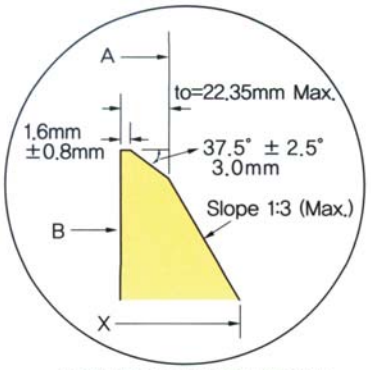
(1)´Bore´(B1)of flanges shall be specified by the purchaser.

(2)Class 300 flanges will be furnished with 0.06"(1.6mm) raised face which is included in ´Thickness´(t)and ´Length thru Hub´(T1).

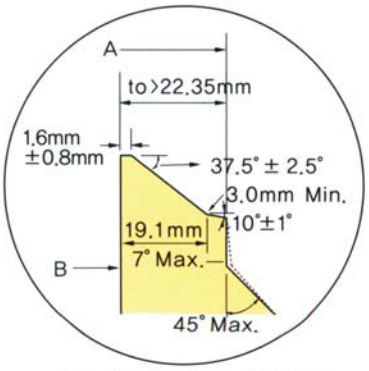
C&N Pipeline Limited

CLASS 400 FLANGES

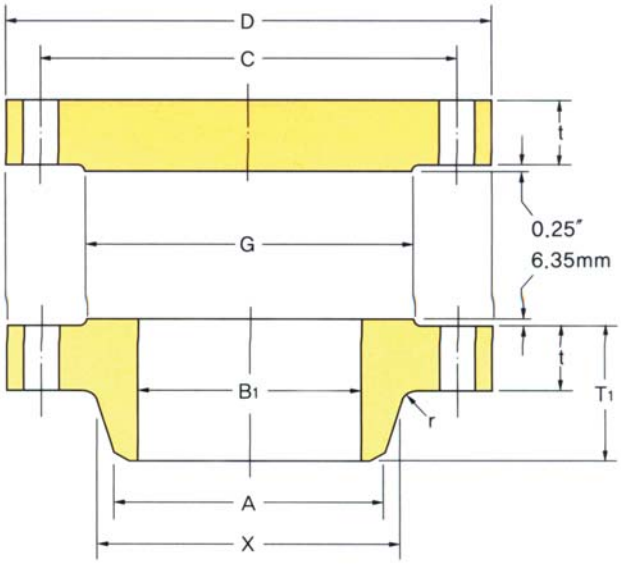
ASME B16.47 SER. B (API 605)



BEVEL FOR WALL THICKNESS(to)
0.88" IN.(22.35mm) OR LESS.



BEVEL FOR WALL THICKNESS(to)
GREATER THAN 0.88 IN.(22.35mm)



Unit:mm

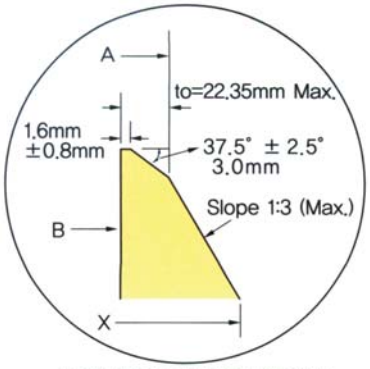
Nominal Pipe Size	Outside Diam.	O.D.of Raised Face	Diam of Hub at Base	Diam. of Hub at bevel	BORE Wall Thickness 6.35mm	BORE Wall Thickness 9.5mm	BORE Wall Thickness 12.7mm	Length Thru Hub	THICKNESS Blind	THICKNESS Welding neck	Radius at Base of Hub	DRILLING Bolt Circle Diam.	DRILLING Number of Holes	DRILLING Diam of Holes	Approximat Weight(kg) Welding neck	Approximat Weight(kg) Blind
	D	G	X	A	B1			T1	t	t	r	c				
26	850.9	711.2	688.8	660.4	647.7	641.4	635.0	149.4	88.9	88.9	11.2	781.1	28	38.1	163.3	396.4
28	914.4	762.0	739.6	711.2	698.5	692.2	685.8	158.8	95.3	95.3	12.7	838.2	24	41.1	204.1	490.3
30	971.6	819.2	793.8	762.0	749.3	743.0	736.6	169.9	101.6	101.6	12.7	895.4	28	41.1	240.4	590.6
32	1035.1	873.3	844.6	812.8	800.1	793.8	787.4	179.3	108.0	108.0	12.7	952.5	28	44.5	288.0	712.2
34	1085.9	927.1	898.7	863.6	850.9	844.6	838.2	187.5	111.3	111.3	14.2	1003.3	32	44.5	313.0	807.9
36	1155.7	980.9	952.5	914.4	901.7	895.4	889.0	200.2	119.1	119.1	14.2	1066.8	28	47.8	387.8	979.8
38	1206.5	1035.1	1003.3	965.2	952.5	946.2	939.8	206.2	124.0	124.0	14.2	1117.6	32	47.8	424.1	1111.3
40	1270.0	1092.2	1054.1	1016.0	1003.3	997.0	990.6	215.9	130.0	130.0	14.2	1174.8	32	50.8	494.4	1291.9
42	1320.8	1143.0	1107.9	1066.8	1054.1	1047.8	1041.4	223.8	133.4	133.4	14.2	1225.6	32	50.8	539.8	1432.9
44	1384.3	1200.2	1158.7	1117.6	1104.9	1098.6	1092.2	233.2	139.7	139.7	14.2	1282.7	32	53.8	623.7	1648.8
46	1441.5	1257.3	1212.9	1168.4	1155.7	1149.4	1143.0	244.3	146.1	146.1	14.2	1339.9	36	53.8	691.7	1868.8
48	1511.3	1308.1	1267.0	1219.2	1206.5	1200.2	1193.8	257.0	152.4	152.4	14.2	1403.4	28	60.5	811.9	2143.7
50	1568.5	1361.9	1320.8	1270.0	1257.3	1251.0	1244.6	268.2	158.8	157.2	14.2	1460.5	32	60.5	884.5	2405.4
52	1619.3	1412.7	1371.6	1320.8	1308.1	1301.8	1295.4	276.4	163.6	162.1	14.2	1511.3	32	60.5	963.9	2641.3
54	1701.8	1470.2	1425.4	1371.6	1358.9	1352.6	1346.2	289.1	171.5	169.9	14.2	1581.2	28	66.5	1163.5	3058.2
56	1752.6	1527.0	1479.6	1422.4	1409.7	1403.4	1397.0	298.5	176.3	174.8	14.2	1632.0	32	66.5	1229.3	3334.9
58	1803.4	1577.8	1530.4	1473.2	1460.5	1454.2	1447.8	306.3	180.8	177.8	14.2	1682.8	32	66.5	1465.1	3622.4
60	1886.0	1635.3	1584.5	1524.0	1511.3	1505.0	1498.6	319.0	189.0	185.7	14.2	1752.6	32	73.2	1732.8	4139.6

Notes

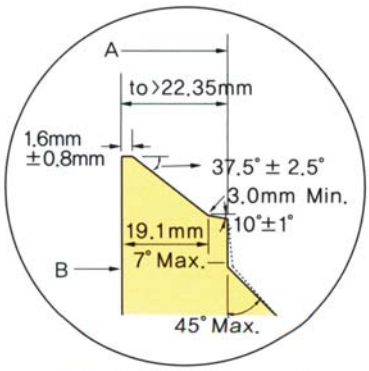
Dimensions for class 600,900 NPS 36´ and larger as the same as for series A flanges.

CLASS 600 FLANGES

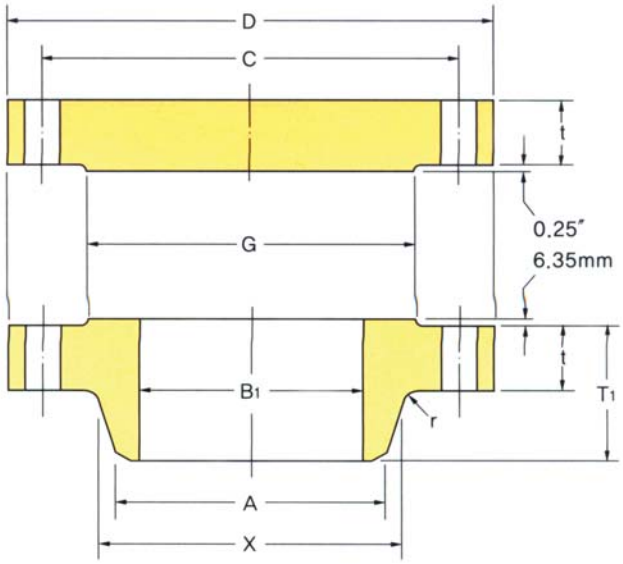
ASME B16.47 SER. B (API 605)



BEVEL FOR WALL THICKNESS(to)
0.88" IN.(22.35mm) OR LESS.



BEVEL FOR WALL THICKNESS(to)
GREATER THAN 0.88 IN.(22.35mm)



Unit:mm

Nominal Pipe Size	Outside Diam.	O.D.of Raised Face	Diam of Hub at Base	Diam. of Hub at bevel	BORE Wall Thickness 6.35mm	BORE Wall Thickness 9.5mm	BORE Wall Thickness 12.7mm	Length Thru Hub	THICKNESS Blind	THICKNESS Welding neck	Radius at Base of Hub	DRILLING Bolt Circle Diam.	DRILLING Number of Holes	DRILLING Diam. of Holes	Approximat Weight(kg) Welding neck	Approximat Weight(kg) Blind
	D	G	X	A	B1			T1	t	t	r	c				
26	889.0	726.9	698.5	660.4	647.7	641.4	635.0	180.8	111.3	111.3	12.70	806.5	28	44.5	249.5	541.6
28	952.5	784.4	752.3	711.2	698.5	692.2	685.8	190.5	115.8	115.8	12.70	863.6	28	47.8	294.8	647.3
30	1022.4	841.2	806.5	762.0	749.3	743.0	736.6	204.7	127.0	125.5	12.70	927.1	28	50.8	367.4	817.4
32	1085.9	895.4	860.6	812.8	800.1	793.8	787.4	215.9	134.9	130.0	12.70	984.3	28	53.8	430.9	979.3
34	1162.1	952.5	914.4	863.6	850.9	844.6	838.2	233.4	144.3	141.2	14.22	1054.1	24	60.5	546.6	1199.8
36	1212.9	1009.7	968.2	914.4	901.7	895.4	889.0	242.8	150.9	146.1	14.22	1104.9	28	60.5	607.8	1366.7
38	1270.0	1054.1	1022.4	965.2	952.5	946.2	939.8	254.0	155.4	152.4	14.22	1162.3	28	60.5	666.8	1544.1
40	1320.8	1111.3	1073.2	1016.0	1003.3	997.0	990.6	263.7	162.1	158.8	14.22	1212.9	32	60.5	739.4	1740.9
42	1403.4	1168.4	1127.3	1066.8	1054.1	1047.8	1041.4	279.4	171.5	168.1	14.22	1282.7	28	66.5	920.8	2079.8
44	1454.2	1225.6	1181.1	1117.6	1104.9	1098.6	1092.2	289.1	177.8	173.0	14.22	1333.5	32	66.5	979.8	2315.6
46	1511.3	1276.4	1234.9	1168.4	1155.7	1149.4	1143.0	300.0	185.7	179.3	14.22	1390.7	32	66.5	1093.2	2611.8
48	1593.9	1333.5	1289.1	1219.2	1206.5	1200.2	1193.8	316.0	195.3	189.0	14.22	1460.5	32	73.2	1295.0	3055.9
50	1670.1	1384.3	1343.2	1270.0	1257.3	1251.0	1244.6	328.7	203.2	196.9	14.22	1524.0	28	79.2	1510.5	3490.5
52	1720.9	1435.1	1394.0	1320.8	1308.1	1301.8	1295.4	336.6	209.6	203.2	14.22	1574.8	32	79.2	1614.8	3822.0
54	1778.0	1492.3	1447.8	1371.6	1358.9	1352.6	1346.2	349.3	217.4	209.6	14.22	1632.0	32	79.2	1778.1	4233.4
56	1854.2	1543.1	1501.6	1422.4	1409.7	1403.4	1397.0	362.0	225.6	217.4	15.75	1695.5	32	85.9	1941.4	4776.0
58	1905.0	1600.2	1552.4	1473.2	1460.5	1454.2	1447.8	369.8	231.6	222.3	15.75	1746.3	32	85.9	2104.7	5177.4
60	1993.9	1657.4	1609.9	1524.0	1511.3	1505.0	1498.6	388.9	242.8	233.4	17.53	1822.5	28	91.9	2268.0	5945.8

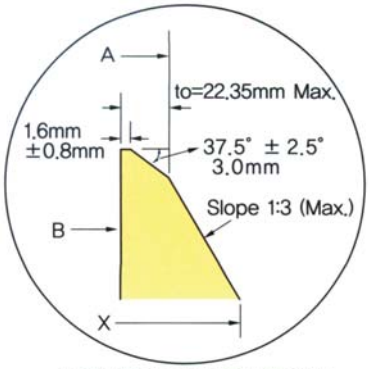
Notes

Dimenions for class600,900 NPS36" and larger as the same as for series A flanges.

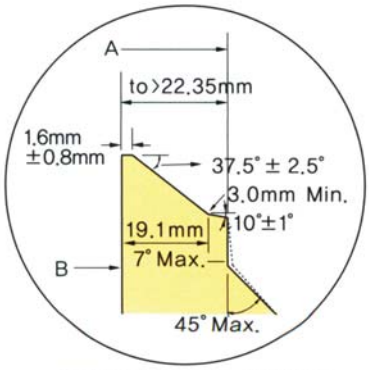
C&N Pipeline Limited

CLASS 900 FLANGES

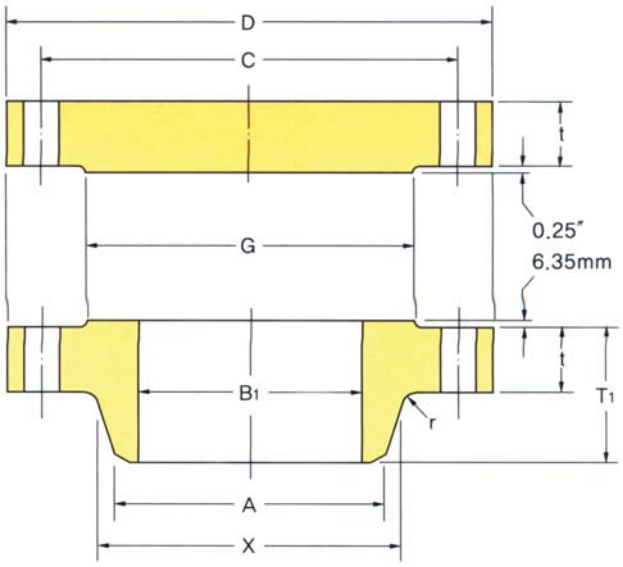
ASME B16.47 SER. B (API 605)



BEVEL FOR WALL THICKNESS(to)
0.88" IN.(22.35mm) OR LESS.



BEVEL FOR WALL THICKNESS(to)
GREATER THAN 0.88 IN.(22.35mm)



Unit:mm

Nominal Pipe Size	Outside Diam.	O.D.of Raised Face	Diam of Hub at Base	Diam. of Hub at bevel	BORE Wall Thickness 6.35mm	BORE Wall Thickness 9.5mm	BORE Wall Thickness 12.7mm	Length Thru Hub	THICKNESS Blind	THICKNESS Welding neck	Radius at Base of Hub	DRILLING Bolt Circle Diam.	DRILLING Number of Holes	DRILLING Diam. of Holes	Approximat Weight(kg) Welding neck	Approximat Weight(kg) Blind
	D	G	X	A	B1			T1	t	t	r	c				
26	1022.4	762.0	743.0	660.4	647.7	641.4	635.0	258.8	153.9	134.9	11.2	901.7	20	66.5	476.3	990.7
28	1104.9	819.2	797.1	711.2	698.5	692.2	685.8	276.4	166.6	147.6	12.7	971.6	20	73.2	689.5	1252.8
30	1181.1	876.3	850.9	762.0	749.3	743.0	736.6	289.1	176.0	155.4	12.7	1035.1	20	79.2	825.6	1512.3
32	1238.3	927.1	908.1	812.8	800.1	793.8	787.4	303.3	185.7	160.3	12.7	1092.2	20	79.2	936.7	1753.2
34	1314.5	990.6	962.2	863.6	850.9	844.6	838.2	319.0	195.1	171.5	14.2	1155.7	20	85.9	1111.3	2075.7
36	1346.2	1028.7	1016.0	914.4	901.7	895.4	889.0	325.4	201.7	173.0	14.2	1200.2	24	79.2	1143.1	2251.2
38	1460.5	1098.6	1073.2	965.2	952.5	946.2	939.8	352.6	215.9	190.5	19.1	1289.1	20	91.9	1535.4	2836.4
40	1511.3	1162.1	1127.3	1016.0	1003.3	997.0	990.6	363.5	223.8	196.9	20.6	1339.9	24	91.9	1642.0	3148.0
42	1562.1	1212.9	1176.3	1066.8	1054.1	1047.8	1041.4	371.3	231.6	206.2	20.6	1390.7	24	91.9	1796.3	3481.4
44	1648.0	1270.0	1234.9	1117.6	1104.9	1098.6	1092.2	390.7	242.8	214.4	22.4	1463.5	24	98.6	1950.5	4061.5
46	1733.6	1333.5	1292.4	1168.4	1155.7	1149.4	1143.0	411.0	255.5	225.6	22.4	1536.7	24	104.6	2104.7	4729.2
48	1784.4	1384.3	1343.2	1219.2	1206.5	1200.2	1193.8	419.1	263.7	233.4	23.9	1587.5	24	104.6	2258.9	5170.1

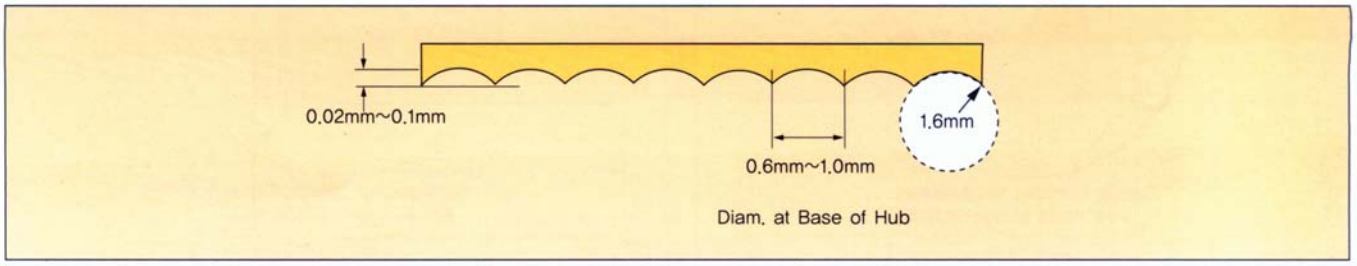
Notes

Dimensions for class 600,900 NPS36" and larger as the same as for series A flanges

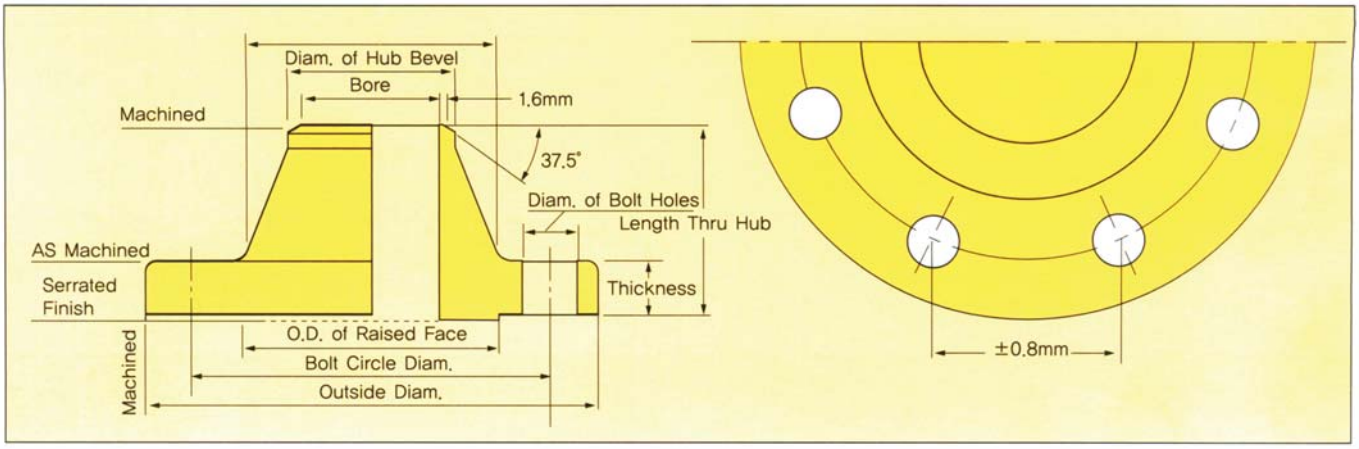
FINISH & TOLERANCE
ASME B16.47 SER.B FORGED FLANGES

1.Standard Finishes for Contact Face of Flanges

The flange face shall have a serrated finish consisting of 20 to 40 grooves per inch,0.002 in.to 0.005 in.deep,cut spirally or concentrically with a round–nose tool.



2.Dimensional Tolerances for ASME B16.47 SER.B Flanges



Dimension	Tolerance
Outside diameter of raised face	±0.8mm
Flange thickness	+4.8mm,–0mm
Length thru hub	±3.0mm
Diam.of hub at bevel	+4.1mm,–0.8mm
Bolt circle diameter	±1.6mm
Center–to–center of adjacent bolt holes	±0.8mm
Bore	+3.0mm,–1.6mm
Outside diameter	+3.0mm
Diameter at base of hub	±3.0mm

Notes

(1)Flanges shall have bearing surfaces for bolting that are parallel to the flange face within 1 degree.Any back facing or spot facing required to accomplish parallelism between the flange face and nut bearing surface on the back of the flange shall not reduce the flange thickness.

(2)Tolerance for the welding end of a welding neck flange shall be in conformance with ANSI B16.25.

(3)Other tolerances than specified the table shall be in accordance with ANSI B16.5.

(4)The flange shall be either back–faced or spot–faced at the bolt–holes on the flange back if the nut bearing surface at the back of the flange is not parallel with the flange face within the tolerances listed in Note(1),if the fillet at the hub interferes with the nut bearing surface or if the flange thickness exceed the minimum required thickness by more than 0.19 inch(4.8 millimeters).
The nut bearing surface is the spot–facing diameter at the bolt–holes as given in MSS SP–9.Spot–facing shall be in accordance with MSS SP–9

(5)Tolerances marked*are not covered in API 605.

ANSI B16.47 SER"A"(MSS SP 44)FLANGES

A.MATERIALS

a)The steel used in the manufacture of the flanges shall be selected to meet the following requirements.

b)The F48 and higher grades of Class 400,600 and 900 flanges shall be killed steel.

c)The steel used shall be suitable for field welding to other flanges,fittings,or pipe manufactured under ASTM specifications A105,A53,A106, A381,or

API Standards 5L and 5LX.

d)The steel used shall have a maximum carbon cotent of 0.35and a carbon equivalent computed by the following epuation:

$$C_E=C+\frac{Mn}{6}+\frac{Si+Cr+Mo}{5}+\frac{Ni+Cu}{15}$$

that should not exceed 0.50%,based on check analysis.If the carbon equivalent factor exceeds 0.50%, the acceptance of the flanges shall be based on agreement of customer.

e)The choice and used of alloying elements,combined with the elements within the limits prescribed in paragraph A.d(to give the required tensile properties prescribed in paragraph A.f) shall be made by FELIX and reported in the chemical analysis to identify the type of steel.

f)The steel used shall have tensile properties conforming to the requirements prescribed in following table.

B.HEAT TREATMENT

The F42 and higher grades of flanges of all pressure classes and the class 400 and higher classes of Grade F36 flanges shall be normalized or quen ched and tempered.

C.TEST SPECIMEN

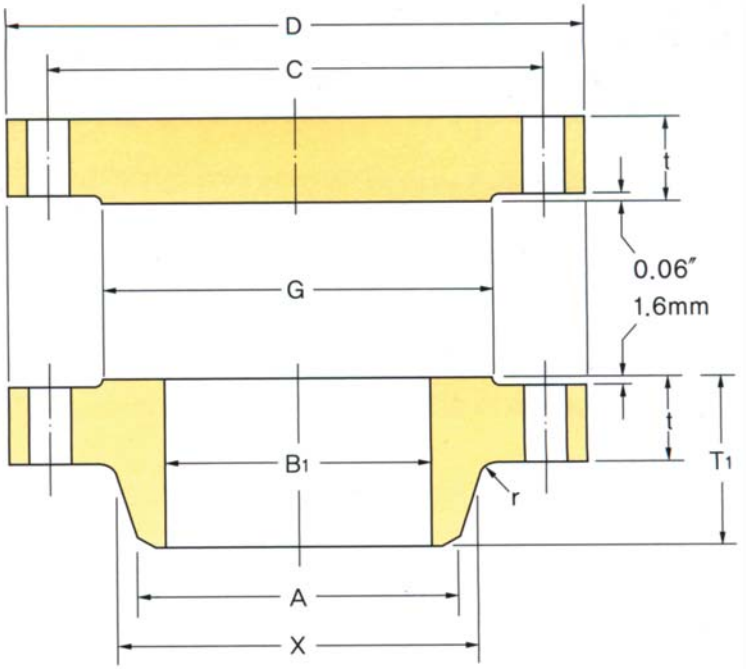
The test specimens may be taken from the forgings or ,at the manufacturers´option,from the billets or forging bar entering into the finished product,provided such test blank has undergone relatively the same forming and the equivalent heat treatment as the finished flange.The dimensions of the test blank must be such as to adequately reflect the heat treatment properties of the hub of the flange.

ASME B16.47 SER.A(MSS)FORGED FLANGES

Grade	Yield Point Min.		Tensile Strength. Min.		Elongation in 2 In. Min.Recent
	KSI	Mpa	KSI	Mpa	
F36	36	248	60	414	20
F42	42	290	60	414	20
F46	46	317	60	414	20
F48	48	331	62	427	20
F50	50	345	64	441	20
F52	52	359	66	455	20
F56	56	386	68	469	20
F60	60	414	75	517	20
F65	65	448	77	531	18

CLASS 150 FLANGES

ASME B16.47 SER. A (MSS SP 44)



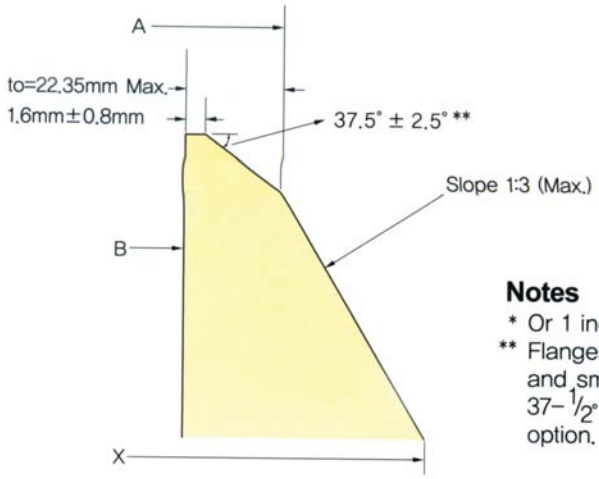
Unit:mm

Nominal Pipe Size	Outside Diam.	O.D.of Raised Face	Diam. at Base of Hub	Thickness	BORE		Length thru Hub
					Wall Thickness		
					9.5mm	12.7mm	
	D	G	X	t	B1		T1
12	483	381.0	365.3	31.8	304.8	298.5	114.3
14	533	412.8	400.1	35.1	336.6	330.2	127.0
16	597	469.9	457.2	36.6	387.4	381.0	127.0
18	635	533.4	505.0	39.6	438.2	431.8	139.7
20	699	584.2	558.8	42.9	489.0	482.6	144.5
22	749	641.4	609.6	46.0	539.8	533.4	149.4
24	813	692.2	663.4	47.8	590.6	584.2	152.4
26	870	749.3	676.1	68.3	641.4	635.0	120.7
28	927	800.1	726.9	71.4	692.2	685.8	125.5
30	984	857.3	781.1	74.7	743.0	736.6	136.7
32	1060	914.4	831.9	80.8	793.8	787.4	144.5
34	1111	965.2	882.7	82.6	844.6	838.2	149.4
36	1168	1022.4	933.5	90.4	895.4	889.0	157.0
38	1238	1073.2	990.6	87.4	946.2	939.8	157.2
40	1289	1124.0	1041.4	90.4	997.0	990.6	163.6
42	1346	1193.8	1092.2	96.8	1047.8	1041.4	171.5
44	1403	1244.6	1143.0	101.6	1098.6	1092.2	177.8
46	1454	1295.4	1196.8	103.1	1149.4	1143.0	185.7
48	1511	1358.9	1247.6	108.0	1200.2	1193.8	192.0
50	1568	1409.7	1301.8	111.3	1251.0	1244.6	203.2
52	1626	1460.5	1352.6	115.8	1301.8	1295.4	209.6
54	1683	1511.3	1403.4	120.7	1352.6	1346.2	215.9
56	1746	1574.8	1457.5	124.0	1403.4	1397.0	228.6
58	1803	1625.6	1508.3	128.5	1454.2	1447.8	235.0
60	1854	1676.4	1559.1	131.8	1505.0	1498.6	239.8

Notes

(1)For the ´Bore´(B1) other than wall thickness 0.375"(9.5mm)and 0.500"(12.7mm),refer to page 50,51.
(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)
(3)Dimensional tolerance are in accordance with ANSI B16.5

WELDING–ENDS FOR WELDING–NECK FLANGES

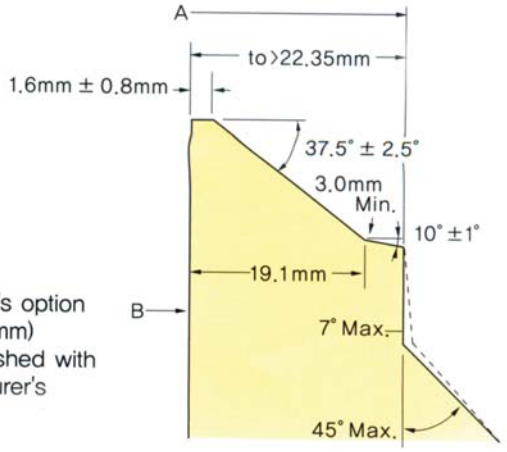


BEVEL FOR WALL THICKNESS(to) 0.88" IN.(22.35mm)* OR LESS.

Notes

* Or 1 inch at manufacturer's option

** Flanges sizes 24" (609.6mm) and smaller may be furnished with 37–1/2° bevel at manufacturer's option.



BEVEL FOR WALL THICKNESS(to) GREATER THAN 0.88 IN.(22.35mm)

Unit:mm

Nominal Pipe Size	Diam. of Hub Bevel	Radius of Fillet	DRILLING			Approximate Weight(kg)	
			Bolt Circle Diam.	Number of Holes	Diam. of Holes	Weld–neck	Blind
	A	r	C				
12	304.8	9.7	431.8	12	25.4	38.98	43.70
14	355.6	9.7	476.3	12	28.4	51.71	59.42
16	406.4	9.7	539.8	16	28.4	64.41	77.11
18	457.2	9.7	577.9	16	31.8	74.84	94.80
20	508.0	9.7	635.0	20	31.8	89.36	123.38
22	558.8	9.7	692.2	20	35.1	112.00	–
24	609.6	9.7	749.3	20	35.1	119.66	188–24
26	660.4	9.7	806.5	24	35.1	136.10	318.40
28	711.2	11.2	863.6	28	35.1	156.50	377.80
30	762.0	11.2	914.4	28	35.1	181.40	445.40
32	812.8	11.2	977.9	28	41.1	229.10	561.10
34	863.6	12.7	1028.7	32	41.1	244.90	627.80
36	914.4	12.7	1085.9	32	41.1	290.30	760.20
38	965.2	12.7	1149.4	32	41.1	326.60	825.10
40	1,016.0	12.7	1200.2	36	41.1	351.50	925.30
42	1,066.8	12.7	1257.3	36	41.1	403.70	1080.00
44	1,117.6	12.7	1314.5	40	41.1	449.10	1232.40
46	1,168.4	12.7	1365.3	40	41.1	480.80	1343.10
48	1,219.2	12.7	1422.4	44	41.1	537.50	1518.70
50	1,270.0	12.7	1479.6	44	47.8	576.10	1685.60
52	1,320.8	12.7	1536.7	44	47.8	639.60	1885.20
54	1,371.6	12.7	1593.9	44	47.8	719.00	2104.30
56	1,422.4	12.7	1651.0	48	47.8	798.30	2327.90
58	1,473.2	12.7	1708.2	48	47.8	868.60	2574.20
60	1,524.0	12.7	1759.0	52	47.8	927.60	2791.50

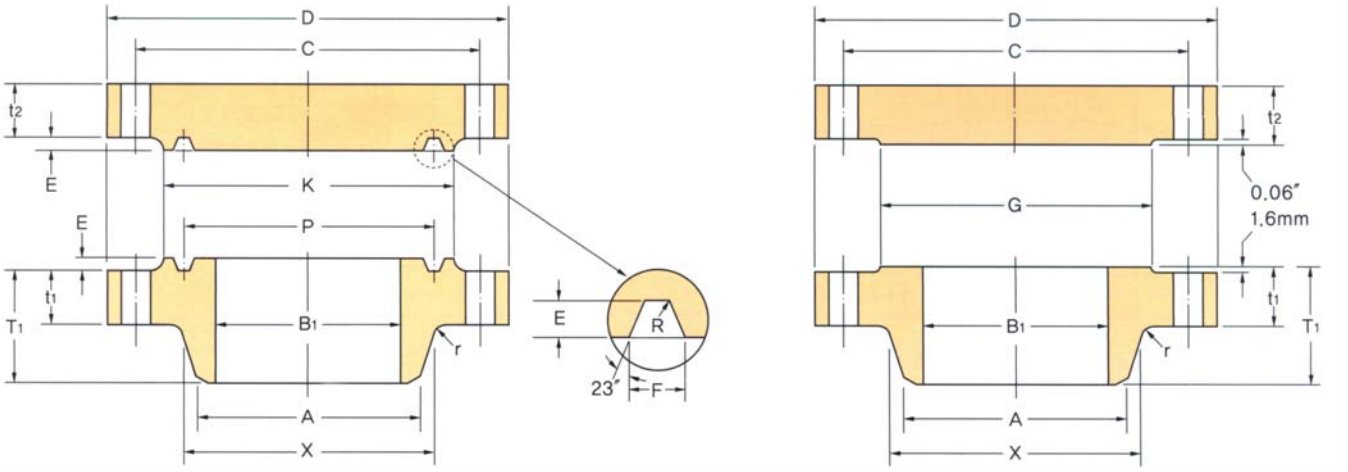
(4)Maximum Pressure Rating for raised face flanges is 285 psi(19.5BARS) at atmospheric temperature.

(5)Flange dimendions of size 12"(304.8mm) thrugh 24"(609.6mm) flanges except 22"(558.8mm) are in accordance with ANSI B16.5

C&N Pipeline Limited

CLASS 300 FLANGES

ASME B16.47 SER. A (MSS SP 44)



Unit:mm

Nominal Pipe Size	Outsid Diam.	O.D.of Raised Face	Diam. at Base of Hub	Thickness		BORE Wall Thickness		Length Thru Hub	Diam. of Hub at Bevel	Radius of Fillet
				Welding Neck	Blind	9.5mm	12.7mm			
	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	304.8	9.7
14	584	412.8	425.5	53.8	53.8	336.6	330.2	142.7	355.6	9.7
16	648	469.9	482.6	57.2	57.2	387.4	381.0	146.1	406.4	9.7
18	711	533.4	533.4	60.5	60.5	468.2	431.8	158.8	457.2	9.7
20	775	584.2	587.2	63.5	63.5	489.0	482.6	162.1	508.0	9.7
22	838	641.4	641.4	66.5	66.5	539.8	533.4	165.1	558.8	9.7
24	914	692.2	701.5	69.9	69.9	590.6	584.2	168.1	609.6	9.7
26	972	749.3	720.9	79.2	84.1	641.4	635.0	184.2	660.4	9.7
28	1035	800.1	774.7	85.9	90.4	692.2	685.8	196.9	711.2	11.2
30	1092	857.3	827.0	91.9	95.3	743.0	736.6	209.6	762.0	11.2
32	1149	914.4	881.1	98.6	100.1	793.8	787.4	222.3	812.8	11.2
34	1207	965.2	936.8	101.6	104.6	844.6	838.2	231.6	863.6	12.7
36	1270	1022.4	990.6	104.6	111.3	895.4	889.0	241.3	914.4	12.7
38	1168	1028.7	993.6	108.0	108.0	946.2	939.8	180.8	965.2	12.7
40	1238	1085.9	1047.8	114.3	114.3	997.0	990.6	193.5	1,016.0	12.7
42	1289	1136.7	1098.6	119.1	119.1	1047.8	1041.4	200.2	1,066.8	12.7
44	1353	1193.8	1149.4	124.0	124.0	1198.6	1092.2	206.2	1,117.6	12.7
46	1416	1244.6	1203.5	128.5	128.5	1149.4	1143.0	215.9	1,168.4	12.7
48	1467	1301.8	1254.3	133.4	133.4	1200.2	1193.8	223.8	1,219.2	12.7
50	1530	1358.9	1305.1	139.7	139.7	1251.0	1244.6	231.6	1,270.0	12.7
52	1581	1409.7	1355.9	144.5	144.5	1301.8	1295.4	238.3	1,320.8	12.7
54	1657	1466.9	1409.7	152.4	152.4	1352.6	1346.2	252.5	1,371.6	12.7
56	1708	1517.7	1463.5	153.9	153.9	1403.4	1397.0	260.4	1,422.4	12.7
58	1759	1574.8	1514.3	158.8	158.8	1454.2	1447.8	266.7	1,473.2	12.7
60	1810	1625.6	1565.1	163.6	163.6	1505.0	1498.6	273.1	1,524.0	12.7

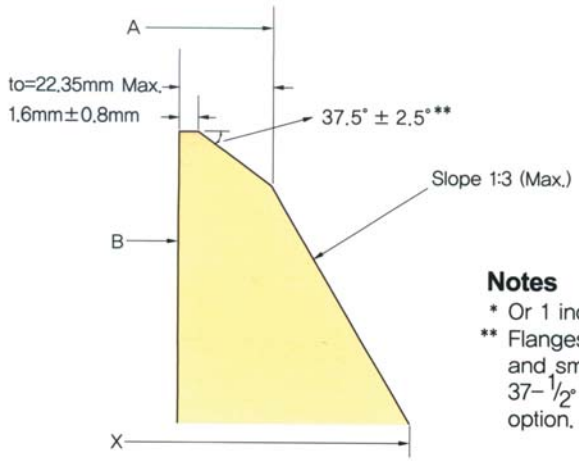
Notes

(1)For the ´Bore´(B1) other than wall thickness 0.375"(9.5mm) and 0.500"(12.7mm),refer to page 50,51.

(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)

(3)Dimensional tolerance are in accordance with ASME B16.5.

WELDING–ENDS FOR WELDING–NECK FLANGES

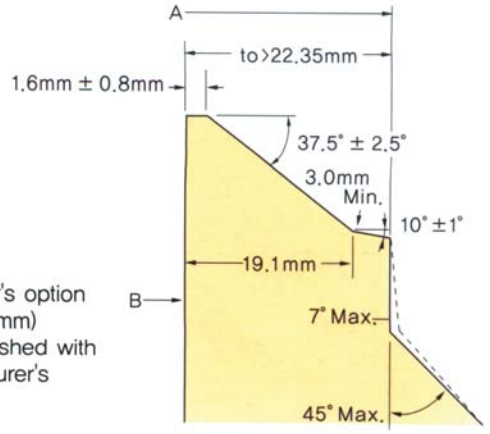


BEVEL FOR WALL THICKNESS(to) 0.88" IN.(22.35mm)* OR LESS.

Notes

* Or 1 inch at manufacturer's option

** Flanges sizes 24" (609.6mm) and smaller may be furnished with 37–1/2° bevel at manufacturer's option.



BEVEL FOR WALL THICKNESS(to) GREATER THAN 0.88 IN.(22.35mm)

Unit:mm

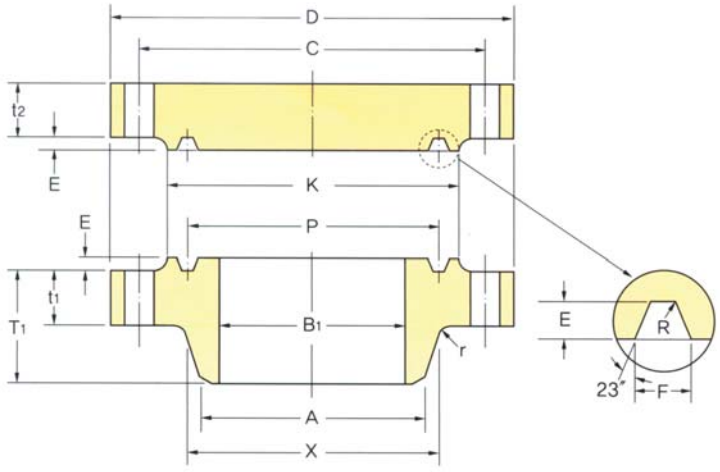
Nominal Pipe Size	DRILLING			Pitch Diam.	GROOVE DIMENSIONS			Diam. of Raised Face	Ring and Groove Number	Approximate Weight(kg)	
	Bolt Circle Diam.	Number of Holes	Diam. of Holes		width	Depth	Radius			Weld–neck	Blind
	C			P	F	E	R	K			
12	450.9	16	31.8	381.0	11.9	7.9	0.8	412.8	R57	64.41	78.90
14	514.4	20	31.8	419.1	11.9	7.9	0.8	457.2	R61	88.30	107.05
16	571.5	20	35.1	469.9	11.9	7.9	0.8	508.0	R65	112.94	139.25
18	628.7	24	35.1	533.4	11.9	7.9	0.8	574.5	R69	138.34	176.90
20	685.8	24	35.1	584.2	13.5	9.5	1.5	635.0	R73	167.37	223.17
22	743.0	24	41.1	635.0	15.1	11.1	1.5	685.8	R81	213.00	–
24	812.8	24	41.1	692.2	16.7	11.1	1.5	749.3	R77	235.41	342.00
26	876.3	28	44.5	749.3	19.8	12.7	1.5	809.8	R93	274.40	489.00
28	939.8	28	44.5	800.1	19.8	12.7	1.5	860.6	R94	337.90	596.50
30	997.0	28	47.8	857.3	19.8	12.7	1.5	917.4	R95	394.60	699.90
32	1054.1	28	50.8	914.4	23.0	14.3	1.5	984.3	R96	455.90	814.20
34	1104.9	28	50.8	965.2	23.0	14.3	1.5	1035.1	R97	519.40	938.00
36	1168.4	32	53.8	1022.4	23.0	14.3	1.5	1092.2	R98	578.30	1105.00
38	1092.2	32	41.1							315.30	907.70
40	1155.7	32	44.5							381.00	1079.60
42	1206.5	32	44.5							430.90	1219.30
44	1263.7	32	47.8							478.50	1396.60
46	1320.8	28	50.8							560.20	1587.10
48	1371.6	32	50.8							626.00	1767.20
50	1428.8	32	53.8							694.00	2014.90
52	1479.6	32	53.8							753.00	2225.40
54	1549.4	28	60.5							929.90	2578.30
56	1600.2	28	60.5							977.50	2766.10
58	1651.0	32	60.5							1029.70	3025.10
60	1701.8	32	60.5							1120.40	3299.50

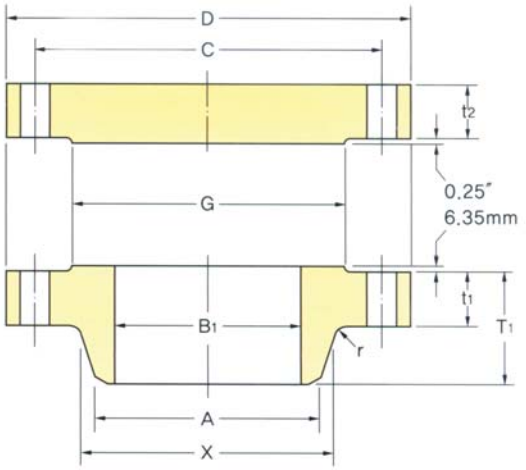
(4)Maximum Pressure Rating for raised face flanges is 740 psi (51 BARS) at atmospheric temperature.
(5)Flange dimendions of size 12"(304.8mm) through 24"(609.6mm)flanges except 22"(558.8mm) are in accordance with ASME B 16.5.
(6)For sizes 26"(660.4mm)and larger, Diameter of Hub at Bevel (A)are in accordance with ASME Boiler and pressure vessel code

C&N Pipeline Limited

CLASS 400 FLANGES

ASME B16.47 SER. A (MSS SP 44)





Unit:mm

Nominal Pipe Size	Outsid Diam.	O.D.of Raised Face	Diam. at Base of Hub	Thickness		BORE Wall Thickness		Length Thru Hub	Diam. of Hub at Bevel	Radius of Fillet
				Welding Neck	Blind	9.5mm	12.7mm			
	D	G	X	t1	t2	B1		T1	A	r
12	521	381.0	374.7	57.2	57.2	304.8	298.5	136.7	304.8	11.2
14	584	412.8	425.5	60.5	60.5	336.6	330.2	149.4	355.6	11.2
16	648	469.9	482.6	63.5	63.5	387.4	381.0	152.4	406.4	11.2
18	711	533.4	533.4	66.5	66.5	438.2	431.8	165.1	457.2	11.2
20	775	584.2	587.2	69.9	69.9	489.0	482.6	168.1	508.0	11.2
22	838	641.4	641.4	73.2	73.2	539.8	533.4	171.5	558.8	11.2
24	914	692.2	701.5	76.2	76.2	590.6	584.2	174.8	609.6	11.2
26	972	749.3	726.9	88.9	98.6	641.4	635.0	193.5	660.4	11.2
28	1035	800.1	782.6	95.3	104.6	692.2	685.8	206.2	711.2	12.7
30	1092	857.3	836.7	101.6	111.3	743.0	736.6	218.9	762.0	12.7
32	1149	914.4	889.0	108.0	115.8	793.8	787.4	231.6	812.8	12.7
34	1207	965.2	944.6	111.3	122.2	844.6	838.2	241.3	863.6	14.2
36	1270	1022.4	1000.3	114.3	128.5	895.4	889.0	251.0	914.4	14.2
38	1207	1035.1	1003.3	124.0	124.0	946.2	939.8	206.2	965.2	14.2
40	1270	1092.2	1054.1	130.0	130.0	997.0	990.6	215.9	1,016.0	14.2
42	1321	1143.0	1107.9	133.4	133.4	1047.8	1041.4	223.8	1,066.8	14.2
44	1384	1200.2	1158.7	139.7	139.7	1098.6	1092.2	233.4	1,117.6	14.2
46	1441	1257.3	1212.9	146.1	146.1	1149.4	1143.0	244.3	1,168.4	14.2
48	1511	1308.1	1267.0	152.4	152.4	1200.2	1193.8	257.0	1,219.2	14.2
50	1568	1361.9	1320.8	157.2	158.8	1251.0	1244.6	268.2	1,270.0	14.2
52	1619	1412.7	1371.6	162.1	163.6	1301.8	1295.4	276.4	1,320.8	14.2
54	1702	1470.2	1425.4	169.9	171.5	1352.6	1346.2	289.1	1,371.6	14.2
56	1753	1527.0	1479.6	174.8	176.3	1403.4	1397.0	298.5	1,422.4	14.2
58	1803	1577.8	1530.4	177.8	180.8	1454.2	1447.8	306.3	1,473.2	14.2
60	1886	1635.3	1584.5	185.7	189.0	1505.0	1498.6	319.0	1,524.0	14.2

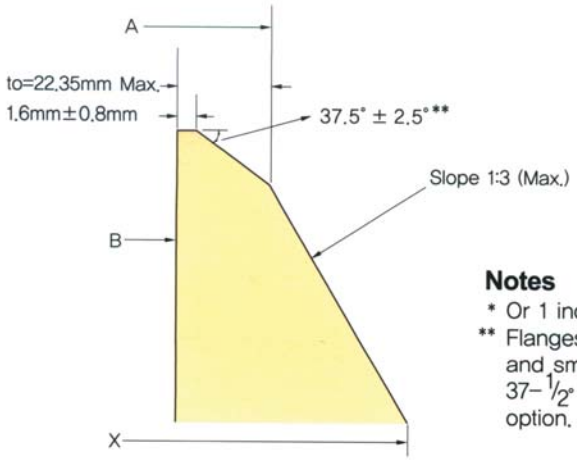
Notes

(1)For the ´Bore´(B1)other than wall thickness 0.375"(9.5mm)and 0.500"(12.7mm),refer to page50,51.

(2)Class 400 flanges will be furnished with 0.25"(6.4mm)raised face, which is included in ´Thickness´(t)and ´Length through Hub´(T1)

(3)Dimensional tolerance are in accordance with ASME B16.5

WELDING–ENDS FOR WELDING–NECK FLANGES

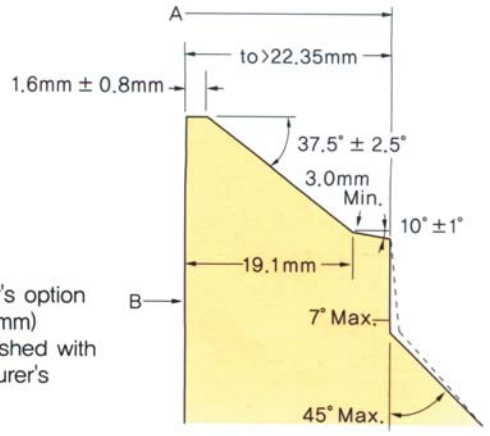


BEVEL FOR WALL THICKNESS(to)
0.88" IN.(22.35mm)* OR LESS.

Notes

* Or 1 inch at manufacturer's option

** Flanges sizes 24" (609.6mm) and smaller may be furnished with 37–1/2° bevel at manufacturer's option.



BEVEL FOR WALL THICKNESS(to)
GREATER THAN 0.88 IN.(22.35mm)

Unit:mm

Nominal Pipe Size	DRILLING			Pitch Diam.	GROOVE DIMENSIONS			Diam. of Raised Face	Ring and Groove Number	Approximate Weight(kg)	
	Bolt Circle Diam.	Number of Holes	Diam. of Holes		width	Depth	Radius			Weld–neck	Blind
	C			P	F	E	R	K			
12	450.9	16	35.1	381.0	11.9	7.9	0.8	412.8	R57	72.57	98.00
14	514.4	20	35.1	419.1	11.9	7.9	0.8	457.2	R61	105.69	131.66
16	571.5	20	38.1	469.9	11.9	7.9	0.8	508.0	R65	133.30	167.00
18	628.7	24	38.1	533.4	11.9	7.9	0.8	574.5	R69	158.90	206.57
20	685.8	24	41.1	584.2	13.5	9.5	1.5	635.0	R73	193.00	261.00
22	743.0	24	44.5	635.0	15.1	11.1	1.5	685.8	R81	235.00	
24	812.8	24	47.8	692.2	16.7	11.1	1.5	749.3	R77	281.48	395.00
26	876.3	28	47.8	749.3	19.8	12.7	1.5	809.8	R93	294.80	572.90
28	939.8	28	50.8	800.1	19.8	12.7	1.5	860.6	R94	356.10	690.40
30	997.0	28	53.8	857.3	19.8	12.7	1.5	917.4	R95	410.50	817.40
32	1054.1	28	53.8	914.4	23.0	14.3	1.5	984.3	R96	483.10	942.10
34	1104.9	28	53.8	965.2	23.0	14.3	1.5	1035.1	R97	544.30	1095.40
36	1168.4	32	53.8	1022.4	23.0	14.3	1.5	1092.2	R98	607.80	1276.90
38	1117.6	32	47.8							424.10	1111.30
40	1174.8	32	50.8							494.40	1291.90
42	1225.6	32	50.8							539.80	1432.90
44	1282.7	32	53.8							623.70	1648.80
46	1339.9	36	53.8							691.70	1868.80
48	1403.4	28	60.5							811.90	2143.7
50	1460.5	32	60.5							884.50	2405.40
52	1511.3	32	60.5							963.90	2641.30
54	1581.2	28	66.5							1163.50	3058.20
56	1632.0	32	66.5							1229.30	3334.90
58	1682.8	32	66.5							1465.10	3622.40
60	1752.6	32	73.2							1732.80	4139.60

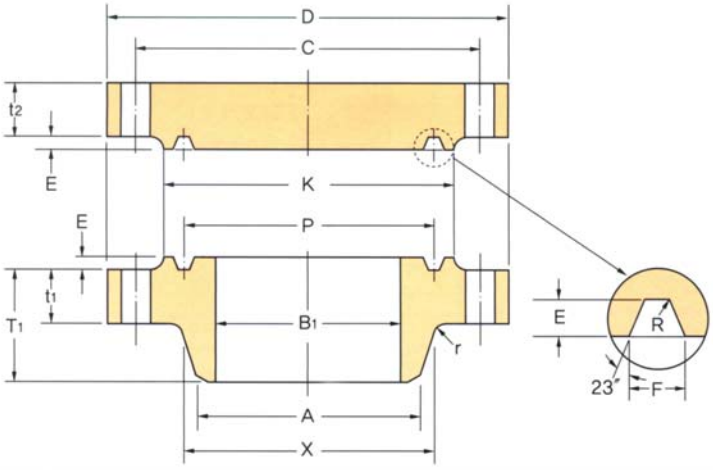
(4)Maximum Pressure Rating for raised face flanges is 985 psi (68BARS) at atmospheric temperature.

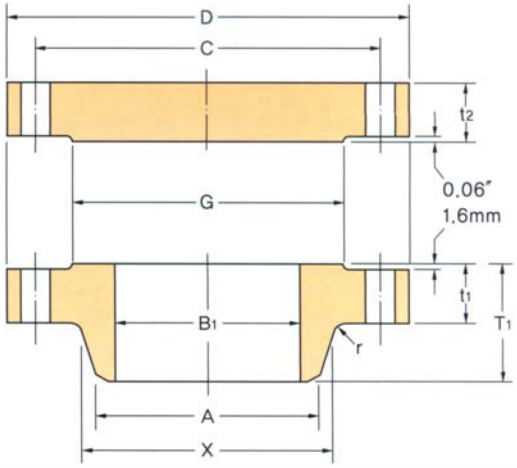
(5)Flange dimendions of size 12"(304.8mm) through 24"(609.6mm)flanges except 22"(558.8mm) are in accordance with ASME B 16.5

(6)For sizes 26"(660.4mm)and larger, Diameter of Hub at Bevel (A)are in accordance with ASME Boiler and pressure vessel code.

CLASS 600 FLANGES

ASME B16.47 SER. A (MSS SP 44)





Unit:mm

Nominal Pipe Size	Outsid Diam.	Diam. at Base of Hub	O.D.of Raised Face	Thickness		BORE Wall Thickness		Length Thru Hub	Diam. of Hub at Bevel	Radius of Fillet
				Welding Neck	Blind	9.5mm	12.7mm			
	D	X	Q	t1	t2	B1		T1	A	r
12	559	400.1	381.0	66.5	66.5	304.8	298.5	155.4	304.8	11.2
14	603	431.8	412.8	69.9	69.9	336.6	330.2	165.1	355.6	11.2
16	686	495.3	469.9	76.2	76.2	387.4	381.0	177.8	406.4	11.2
18	743	546.1	533.4	82.6	82.6	438.2	431.8	184.2	457.2	11.2
20	813	609.6	584.2	88.9	88.9	489.0	482.6	190.5	508.0	11.2
22	870	666.8	641.4	95.3	95.3	539.8	533.4	196.9	558.8	11.2
24	940	717.6	692.2	101.6	101.6	590.6	584.2	203.2	609.6	11.2
26	1016	747.8	749.3	108.0	125.5	641.4	635.0	222.3	660.4	12.7
28	1073	803.1	800.1	111.3	131.8	692.2	685.8	235.0	711.2	12.7
30	1130	862.1	857.3	114.3	139.7	743.0	736.6	247.7	762.0	12.7
32	1194	917.4	914.4	117.3	147.6	793.8	787.4	260.4	812.8	12.7
34	1245	973.1	965.2	120.7	153.9	844.6	838.2	269.7	863.6	14.2
36	1314	1031.7	1022.4	124.0	162.1	895.4	889.0	282.4	914.4	14.2
38	1270	1022.4	1054.1	152.4	155.4	946.2	939.8	254.0	965.2	14.2
40	1321	1073.2	1111.3	158.8	162.1	997.0	990.6	263.7	1,016.0	14.2
42	1403	1127.3	1168.4	168.1	171.5	1047.8	1041.4	279.4	1,066.8	14.2
44	1454	1181.1	1225.6	173.0	177.8	1098.6	1092.2	289.1	1,117.6	14.2
46	1511	1234.9	1276.4	179.3	185.7	1149.4	1143.0	300.0	1,168.4	14.2
48	1594	1289.1	1333.5	189.0	195.3	1200.2	1193.8	316.0	1,219.2	14.2
50	1670	1343.2	1384.3	196.9	203.2	1251.0	1244.6	328.7	1,270.0	14.2
52	1721	1394.0	1435.1	203.2	209.6	1301.8	1295.4	336.6	1,320.8	14.2
54	1778	1447.8	1492.3	209.6	217.4	1352.6	1346.2	349.3	1,371.6	14.2
56	1854	1501.6	1543.1	217.4	225.6	1403.4	1397.0	362.0	1,422.4	15.7
58	1905	1552.4	1600.2	222.3	231.6	1454.2	1447.8	369.8	1,473.2	15.7
60	1994	1609.9	1657.4	233.4	242.8	1505.0	1498.6	388.9	1,524.0	17.5

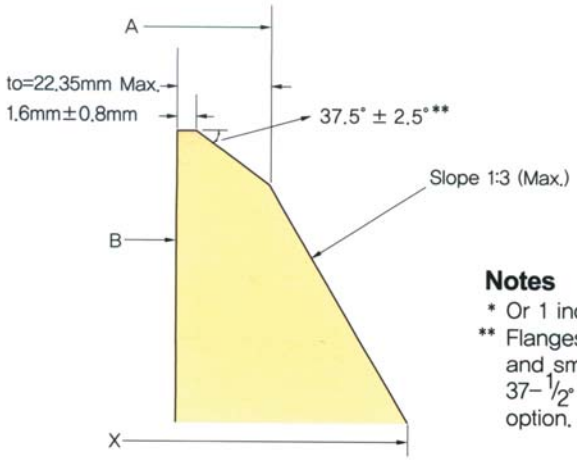
Notes

(1)For the ´Bore´(B1)other than wall thickness 0.375"(9.5mm)and 0.500"(12.7mm),refer to page50,51.

(2)Class 600 flanges will be furnished with 0.25"(6.35mm)raised face, which is included in ´Thickness´(t)and ´Length through Hub´(T1)

(3)Dimensional tolerance are in accordance with ASME B16.5.

WELDING–ENDS FOR WELDING–NECK FLANGES

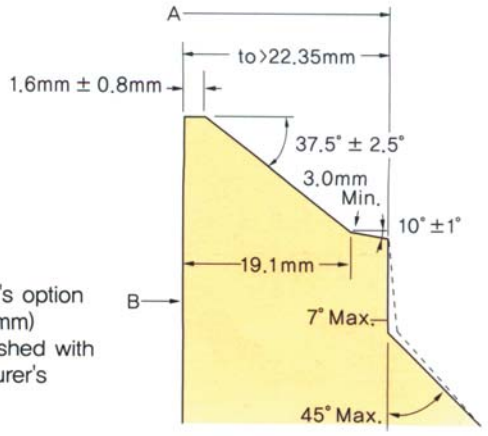


BEVEL FOR WALL THICKNESS(to)
0.88" IN.(22.35mm)* OR LESS.

Notes

* Or 1 inch at manufacturer's option

** Flanges sizes 24" (609.6mm) and smaller may be furnished with 37–1/2° bevel at manufacturer's option.



BEVEL FOR WALL THICKNESS(to)
GREATER THAN 0.88 IN.(22.35mm)

Unit:mm

Nominal Pipe Size	DRILLING			Pitch Diam.	GROOVE DIMENSIONS			Diam. of Raised Face	Ring and Groove Number	Approximate Weight(kg)	
	Bolt Circle Diam.	Number of Holes	Diam. of Holes		width	Depth	Radius			Weld–neck	Blind
	C			P	F	E	R	K			
12	489.0	20	35.1	381.0	11.9	7.9	0.8	412.8	R57	102.51	132.00
14	527.1	20	38.1	419.1	11.9	7.9	0.8	457.2	R61	121.56	158.00
16	603.3	20	41.1	469.9	11.9	7.9	0.8	508.0	R65	177.06	224.73
18	654.1	20	44.5	533.4	11.9	7.9	0.8	574.5	R69	215.65	285.00
20	723.9	24	44.5	584.2	13.5	9.5	1.5	635.0	R73	267.86	365.00
22	777.7	24	47.8	635.0	15.1	11.1	1.5	685.8	R81	330.00	
24	838.2	24	50.8	692.2	16.7	11.1	1.5	749.3	R77	372.00	533.45
26	914.4	28	50.8	749.3	19.8	12.7	1.5	809.8	R93	426.40	797.90
28	965.2	28	53.8	800.1	19.8	12.7	1.5	860.6	R94	480.80	934.90
30	1022.4	28	53.8	857.3	19.8	12.7	1.5	917.4	R95	548.90	1099.10
32	1079.5	28	60.5	914.4	23.0	14.3	1.5	984.3	R96	623.70	1295.50
34	1130.3	28	60.5	965.2	23.0	14.3	1.5	1035.1	R97	698.50	1468.30
36	1193.8	28	66.5	1022.4	23.0	14.3	1.5	1092.2	R98	773.40	1724.60
38	1162.1	28	60.5							666.80	1544.10
40	1212.9	32	60.5							739.40	1740.90
42	1282.7	28	66.5							920.80	2079.80
44	1333.5	32	66.5							979.80	2315.60
46	1390.7	32	66.5							1093.20	2611.80
48	1460.5	32	73.2							1295.00	3055.90
50	1524.0	28	79.2							1510.50	3490.50
52	1574.8	32	79.2							1614.80	3822.00
54	1632.0	32	79.2							1778.10	4233.40
56	1695.5	32	85.9							1941.40	4776.00
58	1746.3	32	85.9							2104.70	5177.40
60	1822.5	28	91.9							2268.00	5945.80

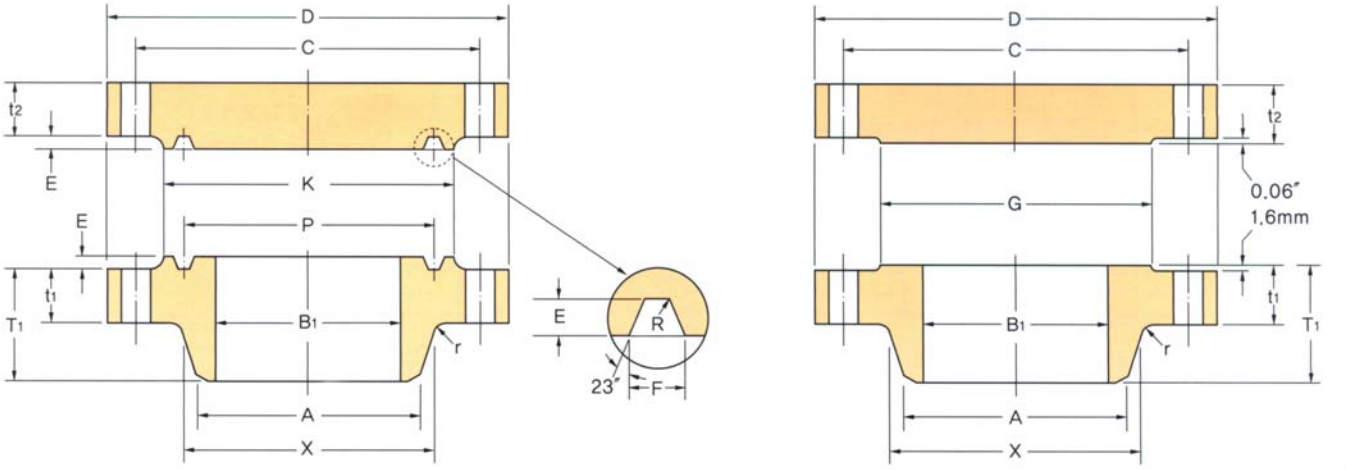
(4)Maximum Pressure Rating for raised face flanges is 1480 psi (102.1 BARS) at atmospheric temperature.

(5)Flange dimendions of size 12"(304.8mm) through 24"(609.6mm)flanges except 22"(558.8mm) are in accordance with ASME B 16.5

(6)For sizes 26"(660.4mm)and larger, Diameter of Hub at Bevel (A)are in accordance with ASME Boiler and pressure vessel code

CLASS 900 FLANGES

ASME B16.47 SER. A (MSS SP 44)



Unit:mm

Nominal Pipe Size	Outsid Diam.	Diam. at Base of Hub	O.D.of Raised Face	Thickness		BORE Wall Thickness		Length Thru Hub	Diam. of Hub at Bevel	Radius of Fillet
				Welding Neck	Blind	9.5mm	12.7mm			
	D	X	G	t1	t2	B1		T1	A	r
12	610	419.1	381.0	79.2	79.2	304.8	298.5	200.2	323.9	11.2
14	641	450.9	412.8	85.9	85.9	336.6	330.2	212.9	355.6	11.2
16	705	508.0	469.9	88.9	88.9	387.4	381.0	215.9	406.4	11.2
18	787	565.2	533.4	101.6	101.6	438.2	431.8	228.6	457.2	11.2
20	857	622.3	584.2	108.0	108.0	489.0	482.6	247.7	508.0	11.2
24	1041	749.3	692.2	139.7	139.7	590.6	584.2	292.1	609.6	11.2
26	1086	774.7	749.3	139.7	160.3	641.4	635.0	285.8	660.4	11.2
28	1168	831.9	800.1	142.7	171.5	692.2	685.8	298.5	711.2	12.7
30	1232	889.0	857.3	149.4	182.4	743.0	736.6	311.2	762.0	12.7
32	1314	946.2	914.4	158.8	193.5	793.8	787.4	330.2	812.8	12.7
34	1397	1006.3	965.2	165.1	204.7	844.6	838.2	349.3	863.6	14.2
36	1461	1063.8	1022.4	171.5	214.4	895.4	889.0	362.0	914.4	14.2
38	1461	1073.2	1098.6	190.5	215.9	946.2	939.8	352.6	965.2	19.1
40	1511	1127.3	1162.1	196.9	223.8	997.0	990.6	363.5	1016.0	20.6
42	1562	1176.3	1212.9	206.2	231.6	1047.8	1041.4	371.3	1066.8	20.6
44	1648	1234.9	1270.0	214.4	242.8	1098.6	1092.2	390.7	1117.6	22.4
46	1734	1292.4	1333.5	225.6	255.5	1149.4	1143.0	411.0	1168.4	22.4
48	1784	1343.2	1384.3	233.4	263.7	1200.2	1193.8	419.1	1219.2	23.9

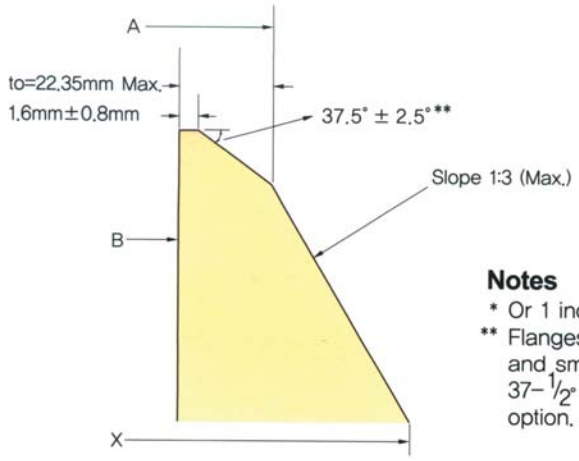
Notes

(1)For the ´Bore´(B1)other than wall thickness 0.375"(9.5mm)and 0.500"(012.7mm),refer to page50,51.

(2)Class 900 flanges will be furnished with 0.25"(6.35mm)raised face, which is included in ´Thickness´(t)and ´Length through Hub´(T1)

(3)Dimensional tolerance are in accordance with ASME B16.5.

WELDING–ENDS FOR WELDING–NECK FLANGES

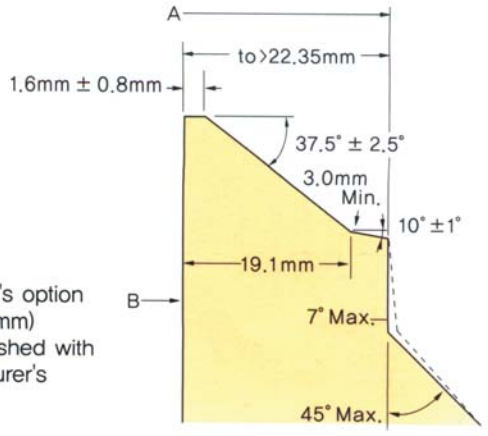


BEVEL FOR WALL THICKNESS(to)
0.88" IN.(22.35mm)* OR LESS.

Notes

* Or 1 inch at manufacturer's option

** Flanges sizes 24" (609.6mm) and smaller may be furnished with 37–1/2° bevel at manufacturer's option.



BEVEL FOR WALL THICKNESS(to)
GREATER THAN 0.88 IN.(22.35mm)

Unit:mm

Nominal Pipe Size	DRILLING			Pitch Diam.	GROOVE DIMENSIONS			Diam. of Raised Face	Ring and Groove Number	Approximate Weight(kg)	
	Bolt Circle Diam.	Number of Holes	Diam. of Holes		width	Depth	Radius			Weld–neck	Blind
	C			P	F	E	R	K			
12	533.4	20	38.1	381.0	11.9	7.9	0.8	419.1	R57	157.00	187.00
14	558.8	20	41.1	419.1	16.7	11.1	1.5	466.9	R62	181.00	224.07
16	616.0	20	44.5	469.9	16.7	11.1	1.5	523.7	R66	224.73	272.40
18	685.8	20	50.8	533.4	19.8	12.7	1.5	593.9	R70	308.72	385.90
20	749.3	20	53.8	584.2	19.8	12.7	1.5	647.7	R74	376.82	488.00
24	901.7	20	66.5	692.2	27.0	15.9	2.3	771.7	R78	685.00	905.00
26	952.5	20	73.2	749.3	30.2	17.5	2.3	831.9	R100	691.70	1163.90
28	1022.4	20	79.2	800.1	33.3	17.5	2.3	889.0	R101	821.00	1441.50
30	1085.9	20	79.2	857.3	33.3	17.5	2.3	946.2	R102	961.60	1704.60
32	1155.7	20	85.9	914.4	33.3	17.5	2.3	1003.3	R103	1154.40	2059.80
34	1225.6	20	91.9	965.2	36.5	20.6	2.3	1066.8	R104	1347.20	2460.80
36	1289.1	20	91.9	1022.4	36.5	20.6	2.3	1124.0	R105	1540.00	2816.40
38	1289.1	20	91.9							1535.40	2836.40
40	1339.9	24	91.9							1642.00	3148.00
42	1390.7	24	91.9							1796.30	3481.40
44	1463.5	24	98.6							1950.50	4061.50
46	1536.7	24	104.6							2104.70	4729.20
48	1587.5	24	104.6							2258.90	5170.10

(4)Maximum Pressure Rating for raised face flanges is 2220 psi (153.1 BARS) at atmospheric temperature.

(5)Flange dimendions of size 12"(304.8mm) through 24"(609.6mm) flanges are in accordance with ASME B 16.5.

(6)For sizes 26"(660.4mm)and larger, Diameter of Hub at Bevel (A)are in accordance with ASME Boiler and pressure vessel code.

GENERAL SPECIFICATIONS

AWWA C207 FLANGES

1.Standard Finishes for Contact Face of AwwA flanges

Flanges of all classes shall be flat faced–that is ,without projection or raised face ,The dimensions given for thickness are minimum. The flanges shall be faced smooth or may have a serrated finish of approximately 32 serrations per inch,approximately1/64 in. deep.Serrations may be either spiral or concentric.

2.Dimensional Tolerances for AWWA Flanges

Dimension		Tolerance in.
Bore		+ $^{1}/_{16}$–0
Outside diameter		±$^{1}/_{8}$
Thickness	18in.and smaller	+$^{1}/_{8}$ –0
	20 in,and larger	+ $^{3}/_{16}$ –0
Length Through Hub		+ $^{3}/_{16}$–$^{1}/_{16}$
Bolt Circle diameter		±$^{1}/_{16}$

Note:For other dimensional tolerances, see ANSI B 16.5, page 54.

3.Bolting

Bolts and nuts shall be carbon steel ASTM A307,Grades A or B.Bolts shall have regular unfinished square or hexagonal heads, and nuts shall have regular square or hexagonal diamensions all in accordance with ANSI B1 8.21 for wrench head bolts and nuts and wrench openings.

All bolts and nuts shall be threaded in accordance with ANSI B1,1for screw threads, coarse–thread series,
Class 2A and 2B fit.

4,Gaskets

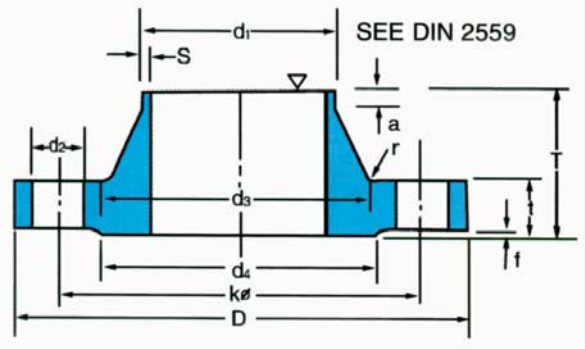
These standards are predicated on the user of either a cloth–inserted rubber gasket $^{1}/_{16}$in.thick or an absestos ring gasket that is either $^{1}/_{16}$in .or $^{1}/_{8}$in. thick , at the purchaser´soption:The gasket shall extend from the insied diameter of the flange to at least the inside edge of the bolt holes, or it may.

C&N Pipeline Limited

6BAR

DIN 2573 SLIP – ONFLANGES
DIN 2527 BLIND FLANGES
DIN 2631 WELDING NECK FLANGES

WELDING NECK



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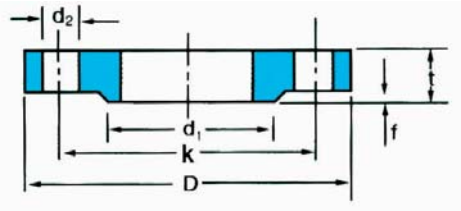

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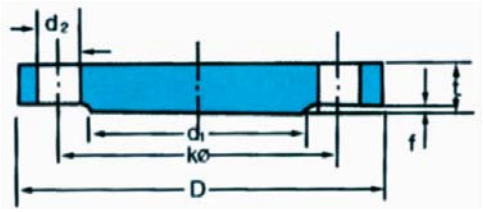
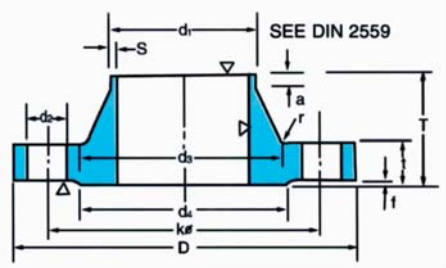


Bore		Cmmon Dimension						Hub					Raised Face		Drilling				Approx Weight (kg)	
Nomi-nal Bore	d1	D	t			k	T	d3	S		r	a≈	d4	f	Num-ber ofBolt	Dia. of Bolt		d2	DIN 2573	DIN 2633
			Weld-ing Neck	Slip–on	Blind				DIN	UNI										
10	14 17.2*)	75	12	12	12	50	28	22 30	1.8	2.3	4	6	35	2	4	M10	–	11.5	0.036	0.335
15	20 21.3*)	80	12	12	12	55	30	35 38	2.0	2.5	4	6	40	2	4	M10	–	11.5	0.410	0.329
20	25 26.9*)	90	14	14	14	65	32	28 26	2.3	2.5	4	6	50	2	4	M10	–	11.5	0.600	0.592
25	30 33.7*)	100	14	14	14	75	35	40 42	2.6	2.8	4	6	60	2	4	M10	–	11.5	0.740	0.747
32	38 42.4*)	120	14	16	14	90	35	50 55	2.6	3	6	6	70	2	4	M12	(1/2")	14	1.19	1.05
40	44.5 48.3*)	130	14	16	14	100	38	58 62	2.6	3	6	7	80	3	4	M12	(1/2")	14	1.39	1.18
50	57 60.3*)	140	14	16	14	110	38	70 74	2.9	3.5	6	8	90	3	4	M12	(1/2")	14	1.53	1.34
65	76.1*)	160	14	16	14	130	38	88	2.9	3.5	6	9	110	3	4	M12	(1/2")	14	1.89	1.67
80	88.9*)	190	16	18	16	150	42	102	3.2	3.7	8	10	128	3	4	M16	(1/2")	18	2.98	2.71
100	108 114.3*)	210	16	18	16	170	45	122 130	3.6	3.7	8	10	148	3	4	M16	(5/8")	18	3.46	3.24
125	133 139.7*)	240	18	20	18	200	48	148 155	4.0	4	8	10	178	3	8	M16	(5/8")	18	4.60	4.49
150	159 168.3*)	265	18	20	18	225	48	172 184	4.5	5	10	12	202	3	8	M16	(5/8")	18	5.22	5.15
200	216 219.1*)	320	20	22	20	280	55	230 236	5.9	5	10	15	258	3	8	M16	(5/8")	18	7.15	7.78
250	267 273*)	375	22	24	22	335	60	282 290	6.2	5.5	12	15	312	3	12	M16	(5/8")	18	9.61	10.8
300	318 323.9*)	440	22	24	22	395	62	335 342	7.1	6	12	15	365	4	12	M20	(3/4")	23	12.6	14.0
350	355.6*)	490	22	26	22	445	62	385	7.1	6.5	12	15	415	4	12	M20	(3/4")	23	15.6	16.1
400	368 406.4*) 419	540	22	28	22	495	65	438	7.1	7	12	15	455	4	16	M20	(3/4")	23	18.4	18.3
500	508*) 521	645	24	30	24	600	68	538	7.1	7.3	12	15	570	4	20	M20	(3/4")	23	24.5	24.6
600	609.6*) 622	755	24			705	70	640	7.1	7.3	12	16	670	5	20	M24	(7/8")	27		
700	711.2* 720	860	24			810	70	740	7.1	9	12	16	775	5	24	M24	(7/8")	27		
800	812.8*) 820	975	24			920	70	842	7.1	9	12	16	880	5	24	M27	(1")	30		
900	914.4* 920	1075	26			1020	70	945	7.1	9	12	16	980	5	24	M27	(1")	30		
1000	1016*) 1020	1175	26			1120	70	1045	7.1	9	16	16	1080	5	24	M27	(1")	30		

C&N Pipeline Limited

10BAR DIN 2576 SLIP – ONFLANGES
DIN 2527 BLIND FLANGES
DIN 2632 WELDING NECK FLANGES

WELDING NECK



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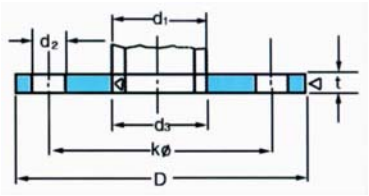

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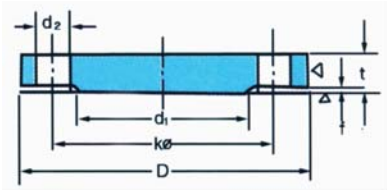
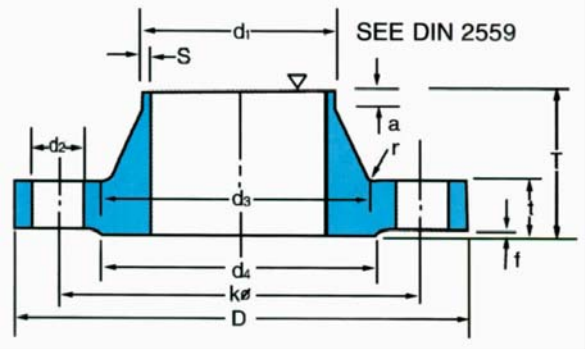


Bore		Cmmon Dimension						Hub					Raised Face		Drilling				Approx Weight (kg)	
Nomi-nal Bore	d1	D	t			k	T	d3	S		r	a≈	d4	f	Num-ber of Bolt	Dia. of Bolt		d2	DIN 2573	DIN 2633
			Weld-ing Neck	Slip–on	Blind				DIN	UNI										
10	14	90	14	14	14	60	35	25	1.8	2.3	4	6	40	2	4	M12	(1/2")	14	0.613	0.580
	17.2*)							28												
15	20	95	14	14	14	65	35	30	2.0	2.5	4	6	45	2	4	M12	(1/2")	14	0.675	0.648
	21.3*)							32												
20	25	105	16	16	16	75	38	38	2.3	2.5	4	6	58	2	4	M12	(1/2")	14	0.947	0.952
	26.9*)							40												
25	30	115	16	16	16	85	38	42	2.6	2.8	4	6	68	2	4	M12	(1/2")	14	1.14	1.14
	33.7*)							45												
32	38	140	16	16	16	100	40	52	2.6	3	6	6	78	2	4	M16	(5/8")	18	1.66	1.69
	42.4*)							56												
40	44.5	150	16	16	16	110	42	60	2.6	3	6	7	88	3	4	M16	(5/8")	18	1.89	1.86
	48.3*)							64												
50	57	165	18	18	16	125	45	72	2.9	3.5	6	8	102	3	4	M16	(5/8")	18	2.51	2.53
	60.3*)							75												
65	76.1*)	185	18	18	18	145	45	90	2.9	3.5	8	10	122	3	4	M16	(5/8")	18	3.00	3.06
80	88.9*)	200	20	20	20	160	50	105	3.2	3.7	8	10	138	3	4	M16	(5/8")	18	3.79	3.70
100	108	220	20	20	20	180	52	125	3.6	3.7	8	12	158	3	8	M16	(5/8")	18	4.20	4.62
	114.3*)							131												
125	133	250	22	22	22	210	55	150	4.0	4	8	12	188	3	8	M16	(5/8")	18	5.71	6.30
	139.7*)							156												
150	159	285	22	22	22	240	55	175	4.5	5	10	12	212	3	8	M20	(3/4")	23	6.72	7.75
	168.3*)							184												
200	216	340	24	24	24	295	62	232	5.9	5	10	16	268	3	8	M20	(3/4")	23	9.50	11.3
	219.1*)							235												
250	267	395	26	26	26	350	68	285	6.3	5.5	12	16	320	3	12	M20	(3/4")	23	12.5	14.7
	273*)							292												
300	318	445	26	26	28	400	68	335	7.1	6	12	16	370	4	12	M20	(3/4")	23	14.4	17.6
	323.9*)							344												
350	355.6*)	505	26	28	30	460	68	385	7.1	6.4	12	16	430	4	16	M20	(3/4")	23	20.6	23.6
	368																			
400	406.4*)	565	26	32	32	515	72	440	7.1	7	12	16	482	4	16	M24	(7/8")	27	27.9	28.6
	419																			
500	508*)	670	28	38	38	620	75	542	7.1	7.3	12	16	585	4	20	M24	(7/8")	27	41.1	38.1
	521																			
600	609.6*)	780	28			725	80	642	7.1	7.3	12	18	685	5	20	M27	(1")	30		
	622																			
700	711.2*	895	30			840	80	745	8.0	9	12	18	800	5	24	M27	(1")	30		
	720																			
800	812.8*)	1015	32			950	90	850	8.0	9	12	18	905	5	24	M30	($1^1/_8$")	33		
	820																			
900	914.4*	1115	34			1050	95	950	10.0	9	12	20	1005	5	28	M30	($1^1/_8$")	33		
1000	920	1230	34			1160	95	1052	10.0	9	16	20	1110	5	28	M33	($1^1/_4$")	36		
	1016*)																			
	1020																			

C&N Pipeline Limited

16BAR DIN 2573 SLIP – ONFLANGES
DIN 2527 BLIND FLANGES
DIN 2633 WELDING NECK FLANGES

WELDING NECK



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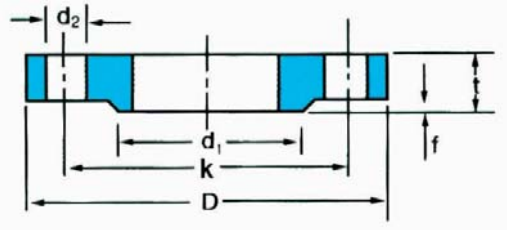

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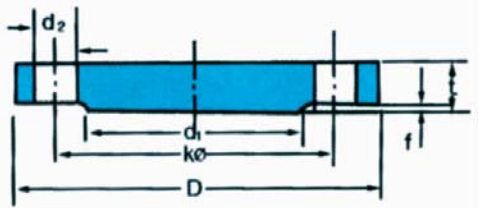
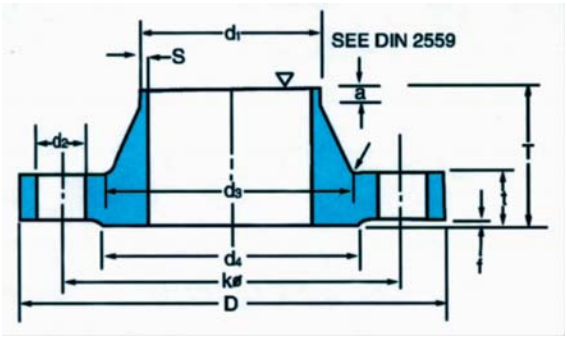


Bore		Cmmon Dimension						Hub					Raised Face		Drilling				Approx Weight (kg)	
Nomi-nal Bore	d1	D	t			k	T	d3	S		r	a≈	d4	f	Num-ber of Bolt	Dia. of Bolt		d2	DIN 2573	DIN 2633
			Welding Neck	Slip–on	Blind				DIN	UNI										
10	14	90	14		14	60	35	25	1.8	2.3	4	6	40	2	4	M12	(1/2")	14	0.63	0.58
	17.2*)							28												
15	20	95	14	14	14	65	35	30	2.0	2.5	4	6	45	2	4	M12	(1/2")	14	0.72	0.648
	21.3*)							32												
	25							38												
20	26.9*)	105	16	16	16	75	38	40	2.3	2.5	4	6	58	2	4	M12	(1/2")	14	1.01	0.952
25	30	115	16	16	16	85	38	42	2.6	2.8	4	6	68	2	4	M12	(1/2")	14	1.23	1.14
	33.7*)							45												
32	38	140	16	16	16	100	40	52	2.6	3	6	6	78	2	4	M16	(5/8")	18	1.80	1.69
	42.4*)							56												
	44.5							60												
40	48.3*)	150	16	16	16	110	42	64	2.6	3	6	7	88	3	4	M16	(5/8")	18	2.09	1.86
50	57	165	18	18	16	125	45	72	2.9	3.5	6	8	102	3	4	M16	(5/8")	18	2.88	2.53
	60.3*)							75												
65	76.1*)	185	18	18	18	145	45	90	2.9	3.5	6	10	122	3	4	M16	(5/8")	18	3.66	3.06
	88.9*)																			
80		200	20	20	20	160	50	105	3.2	3.7	8	10	138	3	8	M16	(5/8")	18	4.77	3.70
100	108	220	20	20	20	180	52	125	3.6	3.7	8	12	158	3	8	M16	(5/8")	18	5.65	4.62
	114.3*)							131												
125	133	250	22	22	22	210	55	150	4.0	4	8	12	188	3	8	M16	(5/8")	18	8.42	6.30
	139.7*)							156												
	159							175												
150	168.3*)	285	22	22	22	240	55	184	4.5	5	10	12	212	3	8	M20	(3/4")	23	10.4	7.75
200	216	340	24	24	24	295	62	232	5.9	5	10	16	268	3	12	M20	(3/4")	23	16.1	11.0
	219.1*)							235												
250	267	405	26	26	26	355	70	285	6.3	5.5	12	16	320	3	12	M24	(7/8")	27	24.9	15.6
	273*)							292												
	318							338												
300	323.9*)	460	28	28	26	410	78	344	7.1	6	12	16	378	4	12	M24	(7/8")	27	35.1	22.0
350	355.6*)	520	30	30	28	470	82	390	8.0	6.4	12	16	438	4	16	M24	(7/8")	27	47.8	31.2
	368																			
400	406.4*)	580	32	32	32	525	85	445	8.0	7	12	16	490	4	16	M27	(1")	30	63.5	39.3
	419																			
	508*)							548												
500	521	715	34	36	34	650	90		8.0	7.3	12	16	610	4	20	M30	($1^1/_8$")	33	102.0	61.0
600	609.6*)	840	36	40		770	95	652	8.8	7.3	12	18	725	5	20	M33	($1^1/_4$")	36		
	622																			
700	711.2*	910	36			840	100	755	8.8	9	12	18	795	5	24	M33	($1^1/_4$")	36		
	720																			
	812.8*)																			
800	820	1025	38			950	105	855	10.0	9	12	20	900	5	24	M36	($1^3/_8$")	39		
900	914.4*	1125	40			1050	110	955	10.0	10	12	20	1000	5	28	M36	($1^3/_8$")	39		
	920																			
	1016*)																			
1000	1020	1255	42			1170	120	1058	10.0	12	16	20	1115	5	28	M39	($1^1/_2$")	42		

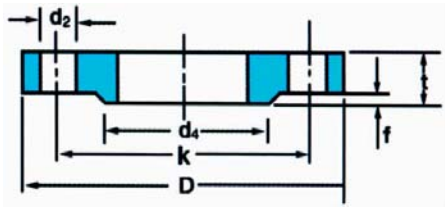
C&N Pipeline Limited

25BAR DIN 2544 SLIP – ONFLANGES
DIN 2527 BLIND FLANGES
DIN 2634 WELDING NECK FLANGES

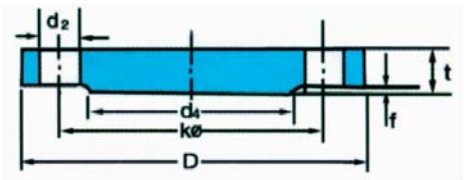
WELDING NECK



SLIP–ON



BLIND

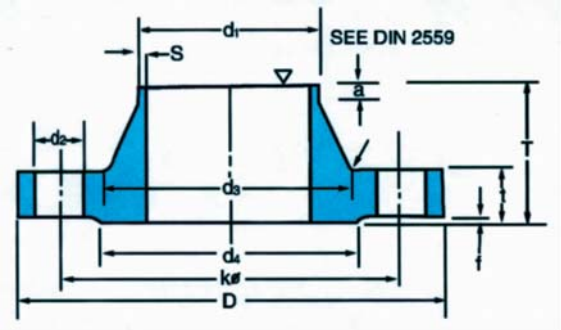


Bore		Cmmon Dimension						Hub				Raised Face		Drilling				Approx Weight (kg)	
Nomi-nal Bore	d1	D	t			k	T	d3	S	r	a≈	d4	f	Num-ber of Bolt	Dia. of Bolt		d2	DIN 2573	DIN 2633
			Weld-ing Neck	Slip–on	Blind														
10	14 17.2*)	90	16	16	16	60	35	25 28	1.8	4	6	40	2	4	M12	(1/2")	14	0.72	0.661
15	20 21.3*)	95	16	16	16	65	38	30 32	2.0	4	6	45	2	4	M12	(1/2")	14	0.81	0.746
20	25 26.9*)	105	18	18	18	75	40	38 40	2.3	4	6	58	2	4	M12	(1/2")	14	1.24	1.06
25	30 33.7*)	115	18	18	18	85	40	42 46	2.6	4	6	68	2	4	M12	(1/2")	14	1.38	1.29
32	38 42.4*)	140	18	18	18	100	42	52 56	2.6	6	6	78	2	4	M16	(5/8")	18	2.03	1.88
40	44.5 48.3*)	150	18	18	18	110	45	60 64	2.6	6	7	88	3	4	M16	(5/8")	18	2.35	2.34
50	57 60.3*)	165	20	20	20	125	48	72 75	2.9	6	8	102	3	4	M16	(5/8")	18	3.20	2.82
65	76.1*)	185	22	22	22	145	52	90	2.9	6	10	122	3	8	M16	(5/8")	18	4.29	3.74
80	88.9*)	200	24	24	24	160	58	105	3.2	8	12	138	3	8	M16	(5/8")	18	5.88	4.75
100	108 114.3*)	235	24	24	24	190	65	128 134	3.6	8	12	162	3	8	M20	(3/4")	23	7.54	6.52
125	133 139.7*)	270	26	26	26	220	68	155 162	4.0	8	12	188	3	8	M24	(7/8")	27	10.8	9.07
150	159 168.3*)	300	28	28	28	250	75	182 192	4.5	10	12	218	3	8	M24	(7/8")	27	14.5	11.8
200	216 219.1*)	360	30	30	30	310	80	240 244	6.3	10	16	278	3	12	M24	(7/8")	27	22.3	17.0
250	267 273*)	425	32	32	32	370	88	292 298	7.1	12	18	335	3	12	M27	(1")	30	33.5	24.4
300	318 323.9*)	485	34	34	34	430	92	345 352	8.0	12	18	395	4	16	M27	(1")	30	46.3	31.2
350	355.6*) 368	555	38	38	38	490	100	398	8.0	12	20	450	4	16	M30	($1^1/_8$")	33	68.0	47.2
400	406.4*) 419	620	40	40	40	550	110	452	8.8	12	20	505	4	16	M33	($1^1/_4$")	36	89.7	61.7
500	508*) 521	730	44	44	44	660	125	558	10.0	12	20	615	4	20	M33	($1^1/_4$")	36	138.0	89.6
600	609.6*) 622	845	46			770	125	660	11.0	12	20	720	5	20	M36	($1^3/_8$")	39		104.0
700	721.2* 720	960	46			875	125	760	12.5	12	20	820	5	24	M39	($1^1/_2$")	42		136.0
800	812.8*) 820	1085	50			990	135	865	14.2	12	22	930	5	24	M45	($1^3/_4$")	48		186.0
900	914.4* 930	1185	54			1090	145	968	16.0	12	24	1030	5	28	M45	($1^3/_4$")	48		236.0
1000	1016*) 1020	1320	58			1210	155	1070	17.5	16	24	1140	5	28	M52	(2")	56		307.0

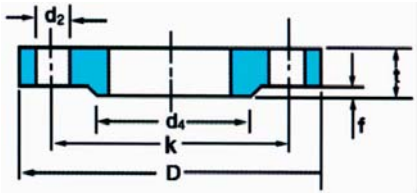
C&N Pipeline Limited

40BAR DIN 2545 SLIP – ONFLANGES
DIN 2527 BLIND FLANGES
DIN 2635 WELDING NECK FLANGES

WELDING NECK



SLIP–ON



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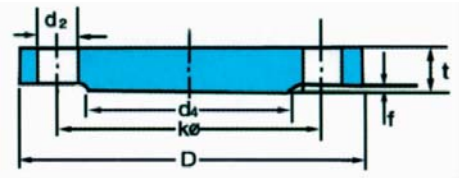
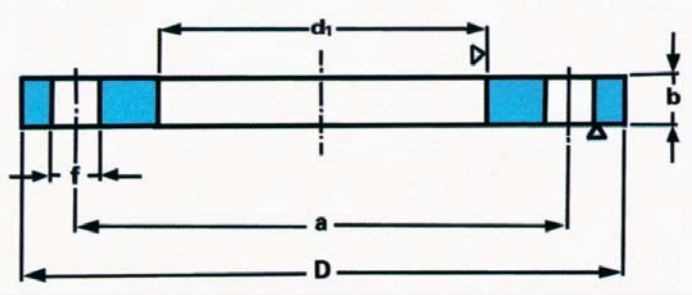


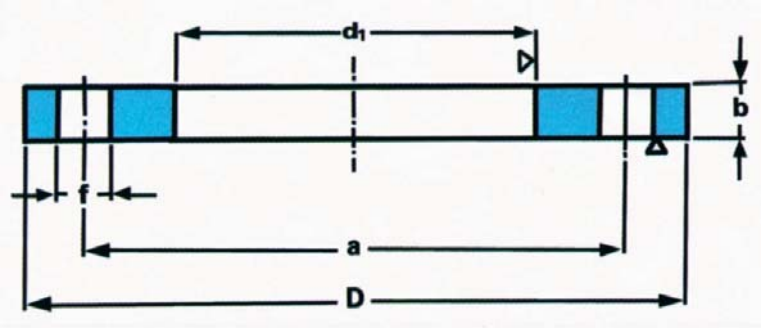
Bore		Cmmon Dimension						Hub				Raised Face		Drilling				Approx Weight (kg)	
Nomi-nal Bore	d1	D	t			k	T	d3	S	r	a≈	d4	f	Number of Bolt	Dia. of Bolt		d2	DIN 2573	DIN 2633
			Welding Neck	Slip–on	Blind														
10	14 17.2*)	90	16		16	60	35	25 28	1.8	4	6	40	2	4	M12	(1/2")	14	0.72	0.661
15	20 21.3*)	95	16	16	16	65	38	30 32	2.0	4	6	45	2	4	M12	(1/2")	14	0.81	0.746
20	25 26.9*)	105	18	18	18	75	40	38 40	2.3	4	6	58	2	4	M12	(1/2")	14	1.24	1.06
25	30 33.7*)	115	18	18	18	85	40	42 46	2.6	4	6	68	2	4	M12	(1/2")	14	1.38	1.29
32	38 42.4*)	140	18	18	18	100	42	52 56	2.6	6	6	78	2	4	M16	(5/8")	18	2.03	1.88
40	44.5 48.3*)	150	18	18	18	110	45	60 64	2.6	6	7	88	3	4	M16	(5/8")	18	2.35	2.33
50	57 60.3*)	165	20	20	20	125	48	72 75	2.9	6	8	102	3	4	M16	(5/8")	18	3.20	2.82
65	76.1*)	185	22	22	22	145	52	90	2.9	6	10	122	3	8	M16	(5/8")	18	4.29	3.74
80	88.9*)	200	24	24	24	160	58	105	3.2	8	12	138	3	8	M16	(5/8")	18	5.88	4.75
100	108 114.3*)	235	24	24	24	190	65	128 134	3.6	8	12	162	3	8	M20	(3/4")	23	7.54	6.52
125	133 139.7*)	270	26	26	26	220	68	155 162	4.0	8	12	188	3	8	M24	(7/8")	27	10.8	9.07
150	159 168.3*)	300	28	28	28	250	75	182 192	4.5	10	12	218	3	8	M24	(7/8")	27	14.5	11.80
(175)	(191) 193.7*)	350	32	32	32	295	82	215 218	5.6	10	15	260	3	12	M27	(1")	30	22.1	18.2
200	216 219.1*)	375	34	34	34	320	88	240 244	6.3	10	16	285	3	12	M27	(1")	30	27.2	21.5
250	267 273*)	450	38	38	38	385	105	298 306	7.1	12	18	345	3	12	M30	($1^1/_8$")	33	43.8	34.9
300	318 323.9*)	515	42	42	42	450	115	352 462	8.0	12	18	410	4	16	M30	($1^1/_8$")	33	63.3	49.7
350	355.6*)	580	46	46	46	510	125	408	8.8	12	20	465	4	16	M33	($1^1/_4$")	36	89.5	68.1
400	368 406.4*) 419	660	50	50	50	585	135	362	11.0	12	20	535	4	16	M36	($1^3/_8$")	39	127.0	96.5
500	508*) 521	755	52	52	52	670	140	562	14.2	12	20	615	4	20	M39	($1^1/_5$")	42	172.0	117.0

UNI 2276 PN6



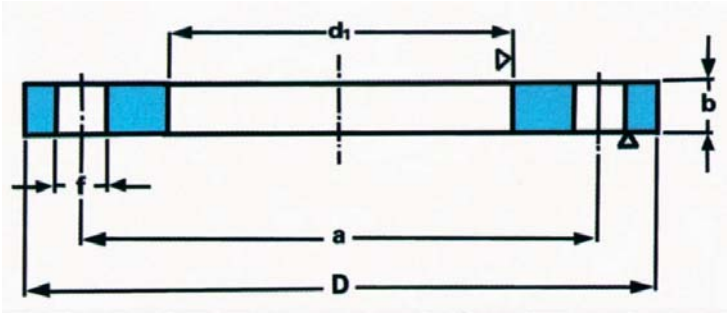
DN	TUBO		d1		a	D	b	f	VITI	N.FORI	kg.
	DIN	ISO	DIN	ISO							
10	13.5	17.2	14	17.5	50	75	10	11	M10	4	0.290
15	20	21.3	20.5	22	55	80	10	11	M10	4	0.330
20	25	26.9	25.5	27.5	65	90	12	11	M10	4	0.500
25	30	33.7	30.5	34	75	100	12	11	M10	4	0.610
32	38	42.4	38.5	43	90	120	14	14	M12	4	1.050
40	44.5	48.3	45	49	100	130	14	14	M12	4	1.230
50	57	60.3	58	61.5	110	140	14	14	M12	4	1.350
65	76.1		77		130	160	14	14	M12	4	1.680
80	88.9		90		150	190	16	18	M16	4	2.630
100	108	114.3	109	115.5	170	210	16	18	M16	4	2.920
125	133	139.7	134.5	141	200	240	18	18	M16	8	3.900
150	159	168.3	160.5	170	225	265	20	18	M16	8	4.780
200	219.1		221		280	320	22	18	M16	8	6.910
250	267	273	269	275	335	375	24	18	M16	12	9.040
300	323.9		326		395	440	24	22	M20	12	12.100
350	368	355.6	370.5	358	445	490	26	22	M20	12	17.000
400	419	406.4	422	409	495	540	28	22	M20	16	20.100
450	457.2		460.2		550	595	28	22	M20	16	25.800
500	508		511		600	645	30	22	M20	20	30.000
600	609.6		612.6		705	755	30	25	M22	20	37.900
700	711.2		714.2		810	860	32	25	M22	24	47.900
800	812.8		815.8		920	975	34	30	M27	24	62.900
900	914.4		917.4		1020	1075	36	30	M27	24	74.600
1000	1016		1019		1120	1175	36	30	M27	28	81.900

UNI 2277 PN 10



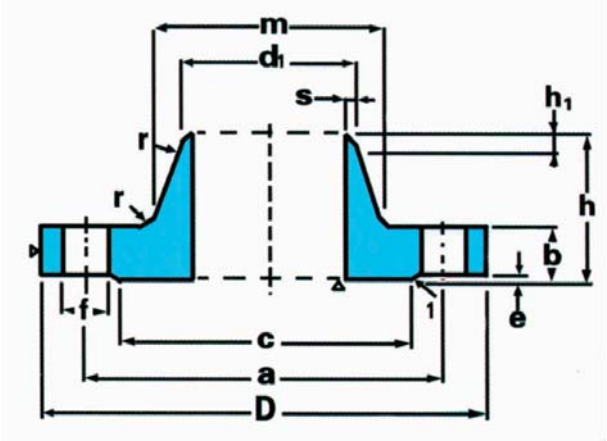
DN	TUBO		d1		a	D	b	f	VITI	N.FORI	kg.
	DIN	ISO	DIN	ISO							
10	13.5	17.2	14	17.5	60	90	12	14	M12	4	0.520
15	20	21.3	20.5	22	65	95	12	14	M12	4	0.660
20	25	26.9	25.5	27.5	75	105	14	14	M12	4	0.820
25	30	33.7	30.5	34	85	115	14	14	M12	4	1.010
32	38	42.4	38.5	43	100	140	16	18	M16	4	1.630
40	44.5	48.3	45	49	110	150	16	18	M16	4	1.850
50	57	60.3	58	61.5	125	165	18	18	M16	4	2.460
65	76.1		77		145	185	18	18	M16	4	3.000
80	88.9		90		160	200	20	18	M16	4	3.610
100	108	114.3	109	115.5	180	220	22	18	M16	8	4.400
125	133	139.7	134.5	141	210	250	24	18	M16	8	5.920
150	159	168.3	160.5	170	240	285	24	22	M20	8	7.170
200	219.1		221		295	340	26	22	M20	8	10.100
250	267	273	269	275	350	395	28	22	M20	12	12.900
300	323.9		326		400	445	28	22	M20	12	14.800
350	368	355.6	370.5	358	460	505	30	22	M20	16	22.000
400	419	406.4	422	409	515	565	32	25	M22	16	28.000
450	457.2		460.2		565	615	32	25	M22	20	33.300
500	508		511		620	670	34	25	M22	20	40.300
600	609.6		612.6		725	780	36	30	M27	20	53.000
700	711.2		714.2		840	895	38	30	M27	24	65.000
800	812.8		815.8		950	1015	40	33	M30	24	88.000
900	914.4		917.4		1050	1115	42	33	M30	28	100.000
1000	1016		1019		1160	1230	44	36	M33	28	128.000

UNI 2278 PN 16



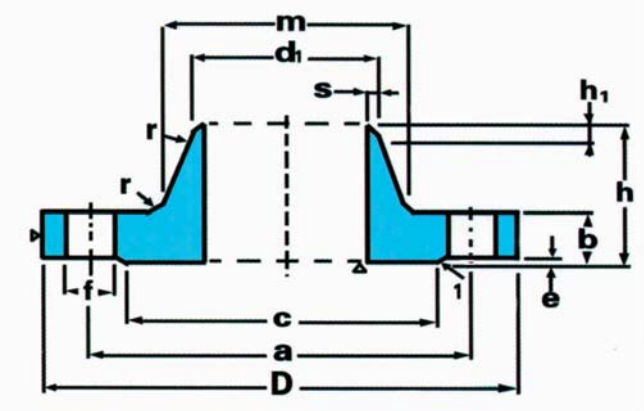
DN	TUBO		d1		a	D	b	f	VITI	N.FORI	kg.
	DIN	ISO	DIN	ISO							
10	13.5	17.2	14	17.5	60	90	12	14	M12	4	0.520
15	20	21.3	20.5	22	65	95	12	14	M12	4	0.660
20	25	26.9	25.5	27.5	75	105	14	14	M12	4	0.820
25	30	33.7	30.5	34	85	115	14	14	M12	4	1.010
32	38	42.4	38.5	43	100	140	16	18	M16	4	1.630
40	44.5	48.3	45	49	110	150	16	18	M16	4	1.850
50	57	60.3	58	61.5	125	165	18	18	M16	4	2.460
65	76.1		77		145	185	18	18	M16	4	3.000
80	88.9		90		160	200	20	18	M16	8	3.610
100	108	114.3	109	115.5	180	220	22	18	M16	8	4.400
125	133	139.7	134.5	141	210	250	24	18	M16	8	5.920
150	159	168.3	160.5	170	240	285	24	22	M20	8	7.170
200	219.1		221		295	340	26	22	M20	12	9.770
250	267	273	269	275	355	405	32	25	M22	12	16.000
300	323.9		326		410	460	32	25	M22	12	19.300
350	368	355.6	370.5	358	470	520	36	25	M22	16	29.400
400	419	406.4	422	409	525	580	38	30	M27	16	36.500
450	457.2		460.2		585	640	40	30	M27	20	42.000
500	508		511		650	715	42	33	M30	20	51.000
600	609.6		612.6		770	840	44	36	M33	20	70.000
700	711.2		714.2		840	910	46	36	M33	24	88.000
800	812.8		815.8		950	1025	48	39	M36×3	24	115.000
900	914.4		917.4		1050	1125	50	39	M36×3	28	125.000
1000	1016		1019		1170	1255	50	42	M39×3	28	160.000

UNI 2280 PN6



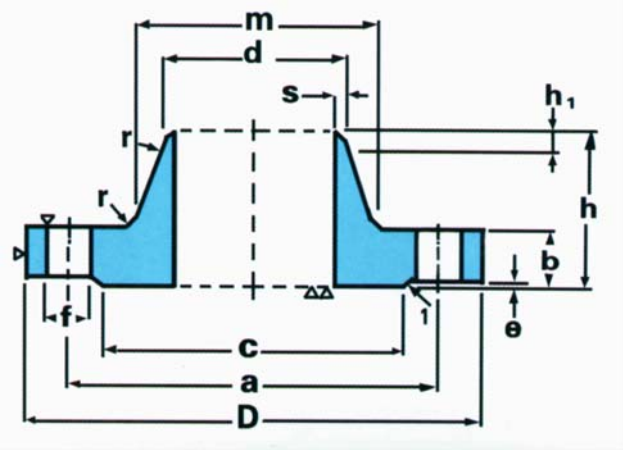
DN			d1		D	a	m		c	h	b	h1	e	r	s	f	VM	N.	kg.
	DIN	ISO	DIN				DIN	ISO										FORL	
10	13.5	17.2	14.5	18	75	50	22	26	35	28	12	6	2	4	2.3	11	M10	4	0.390
15	20	21.3	21	22.5	80	55	28	30	40	30	12	6	2	4	2.5	11	M10	4	0.450
20	25	26.9	26	28	90	65	35	38	50	32	14	6	2	4	2.5	11	M10	4	0.560
25	30	33.7	31	34.5	100	75	40	42	60	35	14	6	2	4	2.8	11	M10	4	0.820
32	38	42.4	39	43.5	120	90	50	55	70	35	14	6	2	6	3	14	M12	4	1.160
40	44.5	48.3	45.5	49.5	130	100	58	62	80	38	14	7	3	6	3	14	M12	4	1.380
50	57	60.3	58	61.5	140	110	70	74	90	38	14	8	3	6	3.5	14	M12	4	1.560
65	76.1		77		160	130	88		110	38	14	9	3	6	3.5	14	M12	4	1.980
80	88.9		90		190	150	102		128	42	16	10	3	8	3.7	18	M16	4	3.070
100	108	114.3	109	115.5	210	170	122	130	148	45	16	10	3	8	3.7	18	M16	4	3.850
125	133	139.7	134	141	240	200	148	155	178	48	18	10	3	8	4	18	M16	8	4.800
150	159	168.3	161	170.5	265	225	172	184	202	48	18	12	3	10	5	18	M16	8	5.520
200	219.1		221		320	280	236		258	55	20	15	3	10	5	18	M16	8	9.180
250	267	273	269	275	375	335	282	290	312	60	22	15	3	12	5.5	18	M16	12	11.100
300	323.9		326		440	395	342		365	62	22	15	4	12	6	22	M20	12	14.800
350	368	355.6	370	357.5	490	445	385		415	62	22	15	4	12	6.5	22	M20	12	19.500
400	419	406.4	421	408.5	540	495	438		465	65	22	15	4	12	7	22	M20	16	22.500
450	457.2		459		595	550	476		520	65	22	15	4	12	7.3	22	M20	16	25.000
500	508		510		645	600	538		570	68	24	15	4	12	7.3	22	M20	20	30.400
600	609.6		611.5		755	705	640		670	70	24	16	5	12	7.3	25	M22	20	38.000
700	711.2		715		860	810	740		775	70	24	16	5	12	9	25	M22	24	48.900
800	812.8		817		975	920	842		880	70	24	16	5	12	9	30	M27	24	55.000
900	914.4		918		1075	1020	942		980	70	26	16	5	12	9	30	M27	24	64.700
1000	1016		1020		1175	1120	1045		1080	70	26	16	5	16	9	30	M27	28	70.600
1200	1220		1224		1405	1340	1248		1295	90	28	20	5	16	9	33	M30	32	108.000
1400	1420		1424		1630	1560	1452		1510	90	32	20	5	16	9	36	M33	36	153.000
1600	1620		1624		1830	1760	1655		1710	90	34	20	5	16	11	36	M33	40	189.000
1800	1820		1824		2045	1970	1855		1920	100	36	20	5	16	11	39	M36×3	44	239.000
2000	2020		2024		2265	2180	2058		2125	110	38	25	5	16	12	42	M39×3	48	308.000

UNI 2281 PN 10



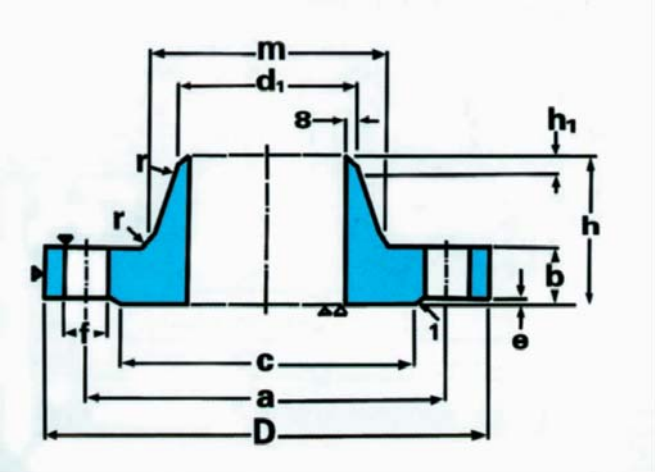
DN	TUBO		d1		D	a	m		c	h	b	h1	e	r	s	f	VM	N.	kg.
	DIN	ISO	DIN	ISO			DIN	ISO										FORL	
10	13.5	17.2	14.5	18	90	60	25	28	40	35	14	6	2	4	2.3	14	M12	4	0.650
15	20	21.3	21	22.5	95	65	30	32	45	35	14	6	2	4	2.5	14	M12	4	0.730
20	25	26.9	26	28	105	75	38	40	58	38	16	6	2	4	2.5	14	M12	4	1.030
25	30	33.7	31	34.5	115	85	42	45	68	38	16	6	2	4	2.8	14	M12	4	1.230
32	38	42.4	39	43.5	140	100	52	56	78	40	16	6	2	6	3	18	M16	4	1.800
40	44.5	48.3	45.5	49.5	150	110	60	64	88	42	16	7	3	6	3	18	M16	4	2.080
50	57	60.3	58	61.5	165	125	72	75	102	45	18	8	3	6	3.5	18	M16	4	2.780
65	76.1		77		185	145	90		122	45	18	10	3	6	3.5	18	M16	4	3.400
80	88.9		90		200	160	105		138	50	20	10	3	8	3.7	18	M16	4	4.200
100	108	114.3	109	115.5	220	180	125	131	158	52	20	12	3	8	3.7	18	M16	8	4.750
125	133	139.7	134	141	250	210	150	156	188	55	22	12	3	8	4	18	M16	8	6.450
150	159	168.3	161	170.5	285	240	175	184	212	55	22	12	3	10	5	22	M20	8	8.000
200	219.1		221		340	295	235		268	62	24	16	3	10	5	22	M20	8	11.400
250	267	273	269	275	395	350	285	292	320	68	26	16	3	12	5.5	22	M20	12	15.200
300	323.9		326		445	400	344		370	68	26	16	4	12	6	22	M20	12	18.000
350	368	355.6	370	357.5	505	460	385		430	68	26	16	4	12	6.4	22	M20	16	24.500
400	419	406.4	421	408.5	565	515	440		482	72	26	16	4	12	7	25	M22	16	30.200
450	457.2		459		615	565	478		532	72	26	16	4	12	7.3	25	M22	20	32.300
500	508		510		670	620	542		585	75	28	16	4	12	7.3	25	M22	20	40.400
600	609.5		611.5		780	725	642		685	80	28	18	5	12	7.3	30	M27	20	50.000
700	711.3		715		895	840	745		800	80	30	18	5	12	9	30	M27	24	66.400
800	812.8		817		1015	950	850		905	90	32	18	5	12	9	33	M30	24	89.300
900	914.4		918		1115	1050	950		1005	95	34	20	5	12	9	33	M30	28	104.000
1000	1016		1020		1230	1160	1052		1110	95	34	20	5	16	9	36	M33	28	121.000
1200	1220		1224		1455	1380	1255		1330	115	38	25	5	16	10	39	M36x3	32	180.000
1400	1420		1424		1675	1590	1460		1535	120	42	25	5	16	11	42	M39x3	36	248.000
1600	1620		1624		1915	1820	1665		1760	130	48	25	5	16	12	48	M45x3	40	352.000
1800	1820		1824		2115	2020	1868		1960	140	50	30	5	16	13	48	M45x3	44	433.000
2000	2020		2024		2325	2230	2072		2170	150	54	30	5	16	14	48	M45x3	46	543.000

UNI 2282 PN 16



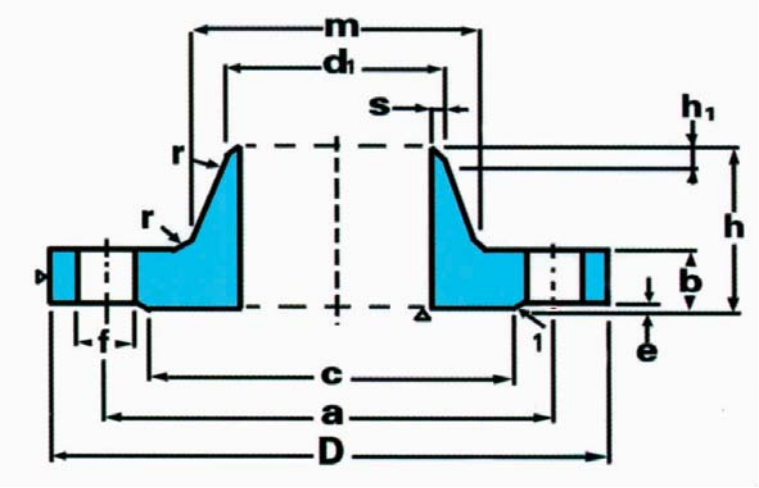
DN			d1		D	a	m		c	h	b	h1	e	r	s	f	VM	N.	kg.
	DIN	ISO	DIN	ISO			DIN	ISO										FORL	
10	13.5	17.2	14.5	18	90	60	25	28	40	35	14	6	2	4	2.3	14	M12	4	0.650
15	20	21.3	21	22.5	95	68	30	32	45	35	14	6	2	4	2.5	14	M12	4	0.730
20	25	26.9	26	28	105	75	38	40	58	38	16	6	2	4	2.5	14	M12	4	1.030
25	30	33.7	31	34.8	115	85	42	45	68	38	16	6	2	4	2.8	14	M12	4	1.230
32	38	42.4	39	43.5	140	100	52	56	78	40	16	6	2	6	3	18	M16	4	1.800
40	44.5	48.3	45.5	49.5	150	110	60	64	88	42	16	7	3	6	3	18	M16	4	2.080
50	57	60.3	58	61.5	165	125	72	75	102	45	18	8	3	6	3.5	18	M16	4	2.780
65	76.1		77		185	145	90		122	45	18	10	3	6	3.5	18	M16	4	3.400
80	88.9		90		200	160	105		138	50	20	10	3	8	3.7	18	M16	8	4.200
100	108	114.3	109	115.5	220	180	125	131	158	52	20	12	3	8	3.7	18	M16	8	4.750
125	133	139.7	134	141	250	210	150	156	188	55	22	12	3	8	4	18	M16	8	6.450
150	159	168.3	161	170.5	285	240	175	184	212	55	22	12	3	10	5	22	M20	8	8.000
200	219.1		221		340	295	235		268	62	24	16	3	10	5	22	M20	12	11.100
250	267	273	269	275	405	355	285	292	320	70	26	16	3	12	5.5	25	M22	12	15.300
300	323.9		326		460	410	344		378	78	28	16	4	12	6	25	M22	12	21.800
350	368	355.6	370	357.5	520	470	390		438	82	30	16	4	12	6.4	25	M22	16	31.700
400	419	406.4	421	408.5	580	525	445		490	85	32	16	4	12	7	30	M27	16	38.300
450	457.2		459		640	585	485		550	85	32	16	4	12	7.3	30	M27	20	45.400
500	508		510		715	650	548		610	90	34	16	4	12	7.3	33	M30	20	61.100
600	609.6		611.5		840	770	652		725	95	36	18	5	12	7.3	36	M33	20	84.600
700	711.3		715		910	840	755		795	100	36	18	5	12	9	36	M33	24	87.400
800	812.8		817		1025	950	855		900	105	38	20	5	12	9	39	M36×3	24	109.000
900	914.4		918		1125	1050	955		1000	110	40	20	5	12	10	39	M36×3	28	129.000
1000	1016		1020		1255	1170	1058		1115	120	42	22	5	16	12	42	M39×3	28	175.000
12000	1220		1224		1485	1390	1262		1330	130	48	30	5	16	14	48	M45×3	32	257.000
1400	1420		1424		1685	1590	1465		1530	145	52	30	5	16	16	48	M45×3	36	337.000
1600	1620		1624		1930	1820	1668		1750	160	58	35	5	16	17	56	M52×	40	481.000
1800	1820		1824		2130	2020	1870		1950	170	62	35	5	16	19	56	M52×3	44	591.000
2000	2020		2024		2345	2230	2072		2150	180	66	40	5	16	21	62	M52×3	48	727.000

UNI 2283 PN 25



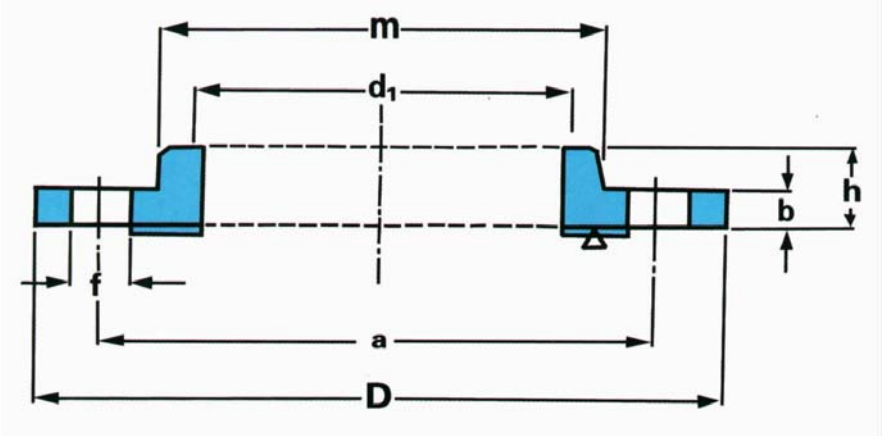
DN	TUBO		d1		D	a	m		c	h	b	h1	e	r	s	f	Vm	N.FORI	kg.
	DIN	ISO	DIN	ISO			DIN	ISO											
10	13.5	17.2	14.5	18	90	60	25	28	40	35	16	6	2	4	2.3	14	M12	4	0.740
15	20	21.3	21	22.5	95	65	30	32	46	38	18	6	2	4	2.5	14	M12	4	0.830
20	25	26.9	26	28	105	75	38	40	58	40	18	6	2	4	2.5	14	M12	4	1.150
25	30	33.7	31	34.5	115	85	42	45	68	40	18	6	2	4	2.8	14	M12	4	1.380
32	38	42.4	39	43.5	140	100	52	55	78	42	18	6	2	5	3	18	M16	4	2.010
40	44.5	48.3	45.5	49.5	150	110	60	64	88	45	18	7	3	5	3	18	M16	4	2.330
50	57	60.3	58	61.5	165	125	72	75	102	48	20	8	3	6	3.5	18	M16	4	3.080
65	76		77		185	145	90		122	52	22	10	3	6	3.5	18	M16	8	3.950
80	88.9		90		200	160	105		138	58	24	12	3	8	3.7	18	M16	8	4.980
100	108	114.3	109	115.5	235	190	128	134	162	65	24	12	3	8	3.7	22	M20	8	5.700
125	133	139.7	134	141	270	220	155	162	188	68	26	12	3	8	4	25	M22	8	9.200
150	159	168.3	161	170.5	300	250	182	192	215	75	28	12	3	10	5	25	M22	8	12.000
200	219.1		221		360	310	244		278	80	30	16	3	10	5	25	M22	12	16.800
250	267	273	269	275	425	370	292	298	335	88	32	18	3	12	5.5	30	M27	12	23.500
300	323.9		326		485	430	352		390	92	34	18	4	12	6	30	M27	16	30.500
350	368	355.6	370	357.5	555	490	398		450	100	38	20	4	12	6.4	33	M30	16	47.600
400	419	406.4	421	408.5	620	550	452		505	110	40	20	4	12	7.3	36	M33	16	62.100
450	457.2		459		670	600	492		555	115	40	20	4	12	8	36	M33	20	67.800
500	508		510		730	660	558		615	125	44	20	4	12	8	36	M33	20	88.800
600	609.6		611.5		845	770	660		720	125	46	20	5	12	8	39	M36x3	20	114.000
700	711.2		715		960	875	760		820	125	46	20	5	12	10	42	M39x3	24	138.000
800	812.8		817		1085	990	865		930	135	50	22	5	12	11	48	M45x3	24	185.000
900	914.4		918		1185	1090	968		1030	145	54	24	5	12	12	48	M45x3	28	224.000
1000	1016		1020		1320	1210	1070		1140	155	58	24	5	16	13	55	M52x3	28	293.000

UNI 2284 PN 40



DN	TUBO		d1		D	a	m		c	h	b	h1	e	r	s	f	VM	N.	kg.
	DIN	ISO	DIN				DIN	ISO										FORL	
10	13.5	17.2	14.5	18	90	60	25	28	40	35	16	6	2	4	2.3	14	M12	4	0.740
15	20	21.3	21	22.5	95	65	30	32	45	38	16	6	2	4	2.5	14	M12	4	0.830
20	25	26.9	26	28	105	75	38	40	58	40	16	6	2	4	2.5	14	M12	4	1.150
25	30	33.7	31	34.8	115	85	42	45	68	40	16	6	2	4	2.8	14	M12	4	1.380
32	38	42.4	39	43.5	140	100	52	56	78	42	18	6	2	6	3	18	M16	4	2.010
40	44.5	48.3	45.5	49.5	150	110	60	64	88	45	18	7	3	6	3	18	M16	4	2.330
50	57	60.3	58	61.5	165	125	72	75	102	48	20	8	3	6	3.5	18	M16	4	3.080
65	76		77		185	145	90		122	52	22	10	3	6	3.5	18	M16	8	3.950
80	88.9		90		200	160	105		138	58	24	12	3	8	3.7	18	M16	8	4.980
100	108	114.3	109	115.5	235	190	128	134	162	65	24	12	3	8	3.7	22	M20	8	5.700
125	133	139.7	134	141	270	220	155	162	188	68	26	12	3	8	4	25	M22	8	9.200
150	159	168.3	161	170.5	300	250	182	192	218	75	28	12	3	10	5	25	M22	8	12.000
200	219.1		221		375	320	244		286	88	34	16	3	10	6.5	30	M27	12	20.800
250	267	273	269	275	450	385	298	306	345	105	38	18	3	12	6.5	33	M30	12	33.800
300	323.9		326		515	450	352		410	115	42	18	4	12	7.3	33	M30	16	47.400
350	368	355.6	370	357.5	580	510	408		465	125	46	20	4	12	8	36	M33	16	69.000
400	419	406.4	421	408.5	660	586	462		535	135	50	20	4	12	9	39	M36×3	16	86.500
450	457.2		459		685	610	500		560	135	50	20	4	12	9	39	M36×3	20	91.600
500	508		510		755	670	562		615	140	52	20	4	12	10	42	M39×3	20	117.000
600	609.6		611.5		890	795	656		735	145	54	20	5	12	18	48	M45×3	20	145.000
700	711.2		715		995	900	788		840	146	58	20	5	12	18	48	M45×3	24	190.000
800	812.8		817		1140	1030	875		960	150	60	22	5	12	20	56	M52×3	24	260.000
900	914.4		915		1250	1140	980		1070	155	64	24	5	12	22	56	M52×3	28	335.000
1000	1016		1020		1360	1250	1090		1180	165	68	24	5	16	25	56	M52×3	28	440.000

UNI 2253 PN 6



Φ	DN	a	D	b	d1	f	h	m	BITI	N,FORL	kg.
3/8"	10	50	75	12	3/8"	11	20	25	M10	4	0.390
1/2"	15	55	80	12	1/2"	11	20	30	M10	4	0.430
3/4"	20	65	90	14	3/4"	11	24	40	M10	4	0.660
1"	25	75	100	14	1"	11	24	50	M10	4	0.820
1 1/4"	32	90	120	14	1 1/4"	14	26	60	M12	4	1.170
1 1/2"	40	100	130	14	1 1/2"	14	26	70	M12	4	1.400
2"	50	110	140	14	2"	14	28	80	M12	4	1.590
2 1/2"	65	130	160	14	2 1/2"	14	32	100	M12	4	2.170
3"	80	150	190	16	3"	18	34	110	M16	4	3.200
4"	100	170	210	16	4"	18	38	130	M16	4	3.590
5"	125	200	240	18	5"	18	40	160	M16	8	4.940
6"	150	225	265	18	6"	18	44	185	M16	8	5.830

UNI 2254 PN 16

Φ	DN	a	D	b	d1	f	h	m	BITI	N,FORL	kg.
3/8"	10	60	90	14	3/8"	14	20	30	M12	4	0.630
1/2"	15	65	95	14	1/2"	14	20	35	M12	4	0.700
3/4"	20	75	105	16	3/4"	14	24	45	M12	4	1.010
1"	25	85	115	16	1"	14	24	52	M12	4	1.210
1 1/4"	32	100	140	16	1 1/4"	18	26	60	M16	4	1.760
1 1/2"	40	110	150	16	1 1/2"	18	26	70	M16	4	2.040
2"	50	125	165	18	2"	18	28	85	M16	4	2.850
2 1/2"	65	145	185	18	2 1/2"	18	32	105	M16	4	3.530
3"	80	160	200	20	3"	18	34	118	M16	8	4.240
4"	100	180	220	20	4"	18	38	140	M16	8	4.900
5"	125	210	250	22	5"	18	40	168	M16	8	6.630
6"	150	240	285	22	6"	22	44	192	M20	8	8.490

UNI 2229

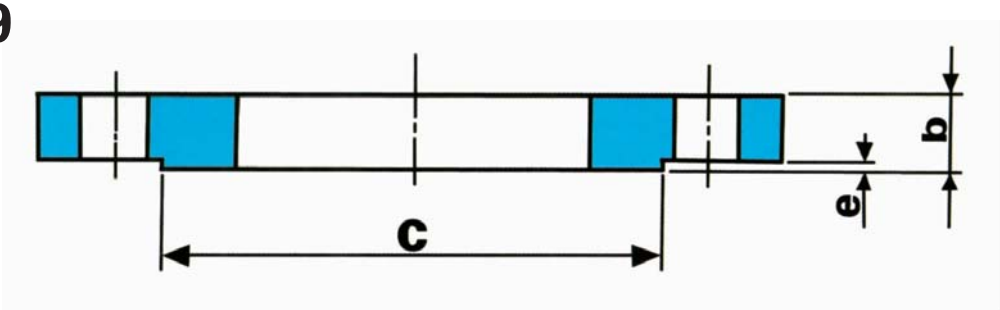
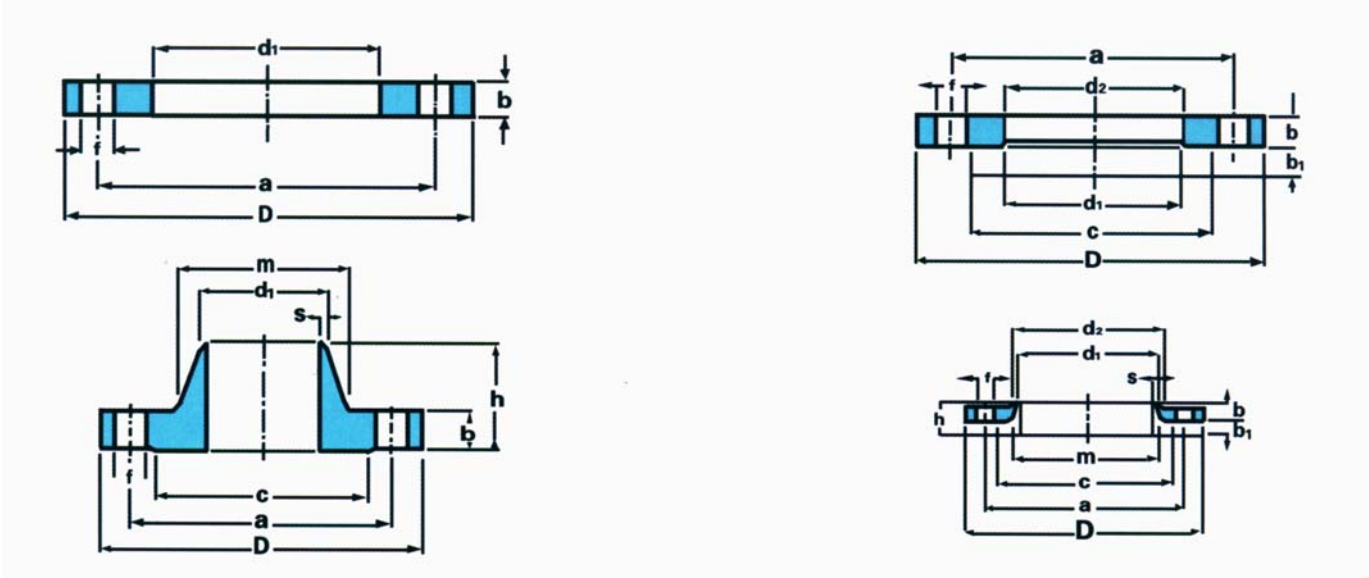


Tabella 2.1v–Risalti UNI2229(dimeuslonl in mm)

DN	e	C									
		PN2.5	PN6	PN10	PN16	PN25	PN40	PN64	PN100	PN160	PN250
10	2	35	35	40	40	40	40	40	40	40	40
15	2	40	40	45	45	45	45	45	45	45	45
20	2	50	50	58	58	58	58	58	58	58	58
25	2	60	60	68	68	68	68	65	65	65	65
32	2	70	70	78	78	78	78	75	75	75	75
40	3	80	80	88	40	88	88	85	85	85	85
50	3	90	90	102	45	102	102	95	95	95	95
65	3	110	110	122	58	122	122	120	120	120	120
80	3	128	128	138	98	138	138	130	130	130	130
100	3	148	148	158	78	162	162	160	160	160	160
125	3	175	175	188	188	188	188	185	185	185	185
150	3	202	202	212	212	218	218	215	215	215	215
175	3	232	232	242	242	148	260	245	245	250	270
200	3	258	258	268	268	178	285	270	270	280	300
250	3	312	312	320	320	335	345	325	325	325	350
300	4	365	365	370	378	410	410	375	375	375	
350	4	415	415	430	438	465	465	435	435		
400	4	465	465	482	490	505	535	485	485		
450	4	520	520	532	550	560	590	535	535		
500	4	570	570	585	610	615	615	590	590		
600	5	670	670	685	725	720	735	700	700		
700	5	775	775	800	795	820	840	810	810		
800	5	880	880	905	900	930	960	920			
900	5	980	980	1005	1000	1030	1070	1030			
1000	5	1080	1080	1110	1115	1140	1180	1140			
1200	5	1280	1295	1330	1350	1350	1380	1350			
1400	5	1480	1510	1535	1560	1560	1600				
1600	5	1690	1710	1760	1750	1780	1815				
2000	5	2090	2125	2170	2210	2210					

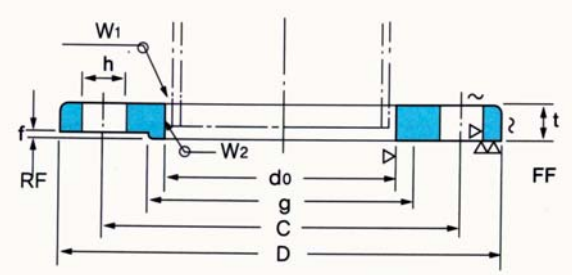
UNI 6100 —67



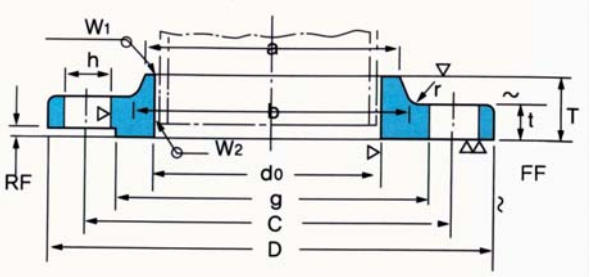
RIFERIMENTI	DIMENSIONI	TOLLERANZE	RIFERIMENTI	DIMENSIONI	TOLLERNZE
D Diametro esterno	Fine a DN 200	±1.0	h Altezza	Fine a DN 80	±1.5
	oftre DN 200 fine a DN 300	±1.5		oftre DN 80 fine a DN 250	±2.0
	oftre DN 300 fine a DN 400	±2.0		oftre DN 250	±3.0
	oftre DN 400	±2.0	s Spessor collare	Fine a DN 100	+1.0–0
d Diametro interno per flange da saldare id testa e collarj d´ appaggio	Fine a DN 100	+0.5–0		oftre DN 100fine a DN 400	+1.5–0
	oftre DN 100 fine a DN 400	+1.0–0.5		oftre DN 400	+2.0–0
	oftre DN 400	+1.5–1.0	c Diametro gradino	Fine a DN 80	+0–1.0
d1 Diametro Per flange de anelli de saldare asovrapposizione	Fine a DN 80	+0.5–0		oftre DN 80 fine a DN 300	+0–2.0
	oftre DN 80 fine a DN 350	+1.0–0		oftre DN 300	+0–3.0
	oftre DN 350 fine a DN 400	+1.5–0	a Diametro cerchiofoel	Fine a DN 250	±0.5
	oftre DN 400	+1.0–0		oftre DN250fine a DN 600	±0.8
d2 Diametro	Fine a DN 400	+1.5–0		oftre DN 600	±1.2
	oftre DN 400	+0.5	Distanze tre i centri dei torl (misurate sulle corda)		±0.4
b–b1 Spessori	Fine a DN 10	+1.0–0			
	oftre DN 10 fine a DN 20	+1.5–0	Concentricite del cerchio forl e delle superflcle di tenuta rlspertto af foro cantrale		+0.8–0
	oftre DN 20 fine a DN 50	±0.5			
	oftre DN 50	±0.8	Parallelismo superficie		1°
m Diametro collare alla base		±1.0	f Diametro fori	Fine a DN 30	+2–0
		±1.5			
		+1–0		oftre DN 30	+3–0

5K KS B1503 JIS B2220

NOMINAL SIZE 10–400mm



NOMINAL SIZE 450–1000mm



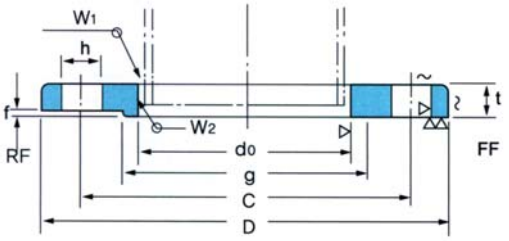
Nominal Bore of Flange	Outside Dia. of Steel pipe	Inside Dia. of Flange do	Outside Dia. of Flange D	Sectional Dimensions of Flange							Bolt Hole			Nominal Bolt Size	Weld Length (Reference)		Approx. Weight (kg)
				t	T	Dia. of Hub a	Dia. of Hub b	Radius r	Raised Face f	Dia. of Raised Face g	Dia. of Bolt Circle C	Number of Bolt Holes	Hole Dia. h		W1	W2	
10	17.3	17.8	75	9	–	–	–	–	1	39	55	4	12	M10	5	2.5	0.27
15	21.7	22.2	80	9	–	–	–	–	1	44	60	4	12	M10	5	3	0.30
20	27.2	27.7	85	10	–	–	–	–	1	49	65	4	12	M10	5	3	0.37
25	34.0	34.5	95	10	–	–	–	–	1	59	75	4	12	M10	5	3	0.45
32	42.7	43.2	115	12	–	–	–	–	2	70	90	4	15	M12	6	3	0.78
40	48.6	49.1	120	12	–	–	–	–	2	75	95	4	15	M12	6	3	0.83
50	60.5	61.1	130	14	–	–	–	–	2	85	105	4	15	M12	6	3	1.07
65	76.3	77.1	155	14	–	–	–	–	2	110	130	4	15	M12	6	4	1.49
80	89.1	90.0	180	14	–	–	–	–	2	121	145	4	19	M16	6	4	1.99
(90)	101.6	102.6	190	14	–	–	–	–	2	131	155	4	19	M16	6	4	2.09
100	114.3	115.4	200	16	–	–	–	–	2	141	165	8	19	M16	7	4	2.39
125	139.8	141.2	235	16	–	–	–	–	2	176	200	8	19	M16	7	4	3.23
150	165.2	166.6	265	18	–	–	–	–	2	206	230	8	19	M16	7	5	4.41
(175)	190.7	192.1	300	18	–	–	–	–	2	232	260	8	23	M20	7.5	5	5.51
200	216.3	218.0	320	20	–	–	–	–	2	252	280	8	23	M20	8.5	6	6.33
(225)	241.8	243.7	345	20	–	–	–	–	2	277	305	12	23	M20	9	6	6.64
250	267.4	269.5	385	22	–	–	–	–	2	317	345	12	23	M20	10	6	9.45
300	318.5	321.0	430	22	–	–	–	–	3	360	390	12	23	M20	10	6	10.30
350	355.6	358.1	480	24	–	–	–	–	3	403	435	12	25	M22	12	7	14.00
400	406.4	409.0	540	24	–	–	–	–	3	463	495	16	25	M22	12	7	16.90
450	457.2	460.0	605	24	40	495	500	5	3	523	555	16	25	M22	12	7	24.80
500	508.0	511.0	655	24	40	546	552	5	3	573	605	20	25	M22	12	7	26.90
(550)	558.8	562.0	720	26	42	597	603	5	3	630	665	20	27	M24	12	7	34.10
600	609.6	613.0	770	26	44	648	654	5	3	680	715	20	27	M24	12	7	37.50
(650)	660.4	664.0	825	26	48	702	708	5	3	735	770	24	27	M24	12	7	42.80
700	711.2	715.0	875	26	48	751	758	5	3	785	820	24	27	M24	12	7	45.40
(750)	762.0	766.0	945	28	52	802	810	5	3	840	880	24	33	M30	12	7	57.40
800	812.8	817.0	995	28	52	854	862	5	3	890	930	24	33	M30	13	8	60.80
(850)	863.6	868.0	1045	28	54	904	912	5	3	940	980	24	33	M30	13	8	63.50
900	914.4	919.0	1095	30	56	956	964	5	3	990	1030	24	33	M30	13	8	75.30
1000	1016.0	1021.0	1195	32	60	1058	1066	5	3	1090	1130	28	33	M30	14	9	88.50
*(1100)	1117.6	1123	1305	32	–	–	–	–	3	1200	1240	28	33	M30			
*1200	1219.2	1225	1420	34	–	–	–	–	3	1305	1350	32	33	M30			
*1350	1371.6	–	1575	34	–	–	–	–	3	1460	1505	32	33	M30			
*1500	1524.0	–	1730	36	–	–	–	–	3	1615	1660	36	33	M30			

(1) Flanges of parenthesized nominal diameter had better not be used.
(2) The facing of flanges shall conform to KS B1519(JIS B2202–1984).
(3) Nominal diameter over 1000 is manufacturer's standard(*).

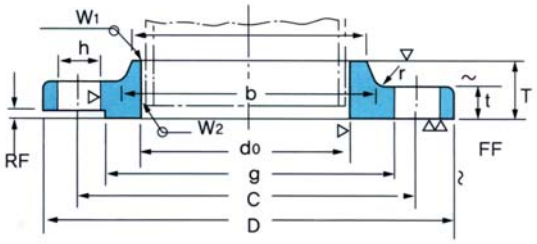
C&N
C&N Pipeline Limited

10K KS B1503 JIS B2220

NOMINAL SIZE 10–225mm



NOMINAL SIZE 250–1000mm

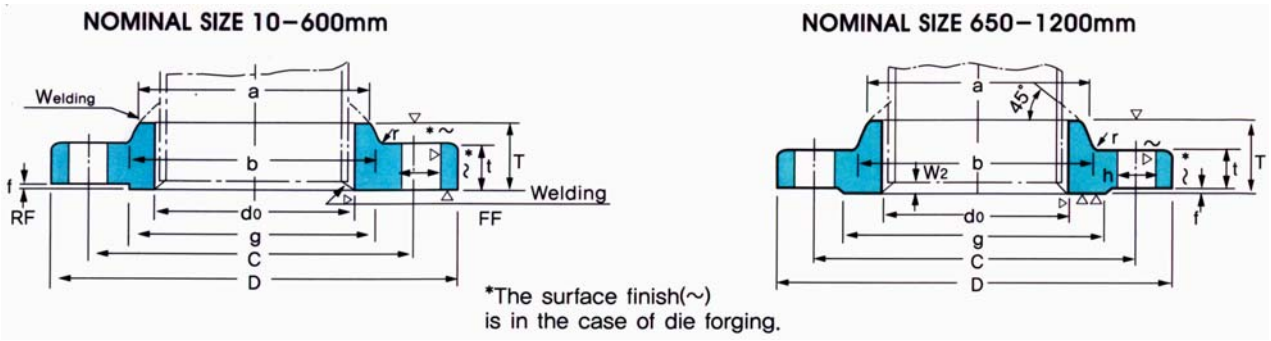


Unit:mm

Nominal Dia. of Flange	Outside Dia. of Steel pipe	Inside Dia. of Flange do	Outside Dia. of Flange D	Sectional Dimensions of Flange							Bolt Hole			Nominal Bolt Size	Weld Length (Reference)		Approx. Weight (kg)
				t	T	Dia. of Hub		Radius r	Raised Face f	Dia. of Raised Face g	Dia. of Bolt Circle C	Number of Bolt Holes	Hole Dia. h		W_1	W_2	
						a	b										
10	17.3	17.8	90	12	–	–	–	–	1	46	65	4	15	M12	5	2.5	0.52
15	21.7	22.2	95	12	–	–	–	–	1	51	70	4	15	M12	5	3	0.57
20	27.2	27.7	100	14	–	–	–	–	1	56	75	4	15	M12	5	3	0.73
25	34	34.5	125	14	–	–	–	–	1	67	90	4	19	M16	5	3	1.13
32	42.7	43.2	135	16	–	–	–	–	2	76	100	4	19	M16	6	3	1.48
40	48.6	49.1	140	16	–	–	–	–	2	81	105	4	19	M16	6	3	1.56
50	60.5	61.1	155	16	–	–	–	–	2	96	120	4	19	M16	6	3	1.88
65	76.3	77.1	175	18	–	–	–	–	2	116	140	4	19	M16	6.5	4	2.6
80	89.1	90	185	18	–	–	–	–	2	126	150	8	19	M16	6.5	4	2.61
(90)	101.6	102.6	195	18	–	–	–	–	2	136	160	8	19	M16	6.5	4	2.76
100	114.3	115.4	210	18	–	–	–	–	2	151	175	8	19	M16	7	4	3.14
125	139.8	141.2	250	20	–	–	–	–	2	182	210	8	23	M20	7.5	4	4.77
150	165.2	166.6	280	22	–	–	–	–	2	212	240	8	23	M20	8	5	6.34
(175)	190.7	192.1	305	22	–	–	–	–	2	237	265	12	23	M20	9	5	6.82
200	216.3	218	330	22	–	–	–	–	2	262	290	12	23	M20	9	6	7.53
(225)	241.8	243.7	350	22	–	–	–	–	2	282	310	12	23	M20	9	6	7.74
250	267.4	269.5	400	24	36	288	292	6	2	324	355	12	25	M22	10	6	12.7
300	318.5	321	445	24	38	340	346	6	3	368	400	16	25	M22	10	6	13.8
350	355.6	358.1	490	26	42	380	386	6	3	413	445	16	25	M22	12	7	18.2
400	406.4	409	560	28	44	436	442	6	3	475	510	16	27	M24	12	7	25.2
450	457.2	460	620	30	48	496	502	6	3	530	565	20	27	M24	14	8	33
500	508	511	675	30	48	548	554	6	3	585	620	20	27	M24	14	8	37.6
550	558.8	562	745	32	52	604	610	6	3	640	680	20	33	M30	15	9	49.7
600	609.6	613	795	32	52	656	662	6	3	690	730	24	33	M30	16	10	52.6
650	660.4	664	845	34	56	706	712	6	3	740	780	24	33	M30	16	10	60.6
700	711.2	715	905	34	58	762	770	6	3	800	840	24	33	M30	17	10	70.6
750	762	766	970	36	62	816	824	6	3	855	900	24	33	M30	18	11	85.8
800	812.8	817	1020	36	64	868	876	6	3	905	950	28	33	M30	19	12	91.2
(850)	863.6	868	1070	36	66	920	928	6	3	955	1000	28	33	M30	19	12	98.6
900	914.4	919	1120	38	70	971	979	6	3	1005	1050	28	33	M30	22	14	109
1000	1016	1021	1235	40	74	1073	1081	6	3	1110	1160	28	39	M36	22	14	133
*(1100)	1117.6	1123	1345	42	76	–	–	–	3	1220	1270	28	39	M36			
*1200	1219.2	1225	1465	44	78	–	–	–	3	1325	1380	32	39	M36			
*1350	1371.6	–	1630	48	82	–	–	–	3	1480	1540	36	45	M42			
*1500	1524.0	–	1795	50	90	–	–	–	3	1635	1700	40	45	M42			

(1)Flanges of parenthesized nominal diameter had better not be used.
(2)The facing of flanges shall conform to KS B1519(JIS B2202–1984).
(3)Nominal diameter over 1000 is manufacturer's standard(*).

16K KS B1503 JIS B2220



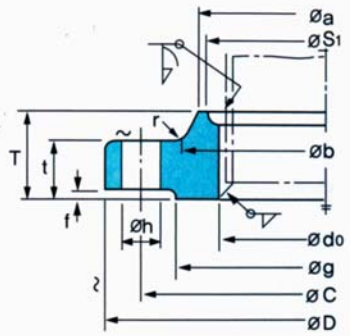
Unit:mm

Nominal Dia. of Flange	Outside Dia. of Steel pipe	Inside Dia. of Flange do	Outside Dia. of Flange D	Sectional Dimensions of Flange							Bolt Hole			Nominal Bolt Size	Approx. Weight (kg)
				t	T	Dia. of Hub		Radius r	f	g	Dia. of Bolt Circle C	Number of Bolt Holes	Hole Dia. h		
						a	b								
10	17.3	17.8	90	12	16	26	28	4	1	46	65	4	15	M12	0.52
15	21.7	22.2	95	12	16	30	32	4	1	51	70	4	15	M12	0.58
20	27.2	27.7	100	14	20	38	42	4	1	56	75	4	15	M12	0.75
25	34.0	34.5	125	14	20	46	50	4	1	67	90	4	19	M16	1.16
32	42.7	43.2	135	16	22	56	60	5	2	76	100	4	19	M16	1.53
40	48.6	49.1	140	16	24	62	66	5	2	81	105	4	19	M16	1.64
50	60.5	61.1	155	16	24	76	80	5	2	96	120	8	19	M16	1.83
65	76.3	77.1	175	18	26	94	98	5	2	116	140	8	19	M16	2.58
80	89.1	90.0	200	20	28	108	112	6	2	132	160	8	23	M20	3.66
(90)	101.6	102.6	210	20	30	120	124	6	2	145	170	8	23	M20	3.95
100	114.3	115.4	225	22	34	134	138	6	2	160	185	8	23	M20	4.94
125	139.8	141.2	270	22	34	164	170	6	2	195	225	8	25	M22	7.00
150	165.2	166.6	305	24	38	196	202	6	2	230	260	12	25	M22	9.62
200	216.3	218.0	350	26	40	244	252	6	2	275	305	12	25	M22	12.1
250	267.4	269.5	430	28	44	304	312	6	2	345	380	12	27	M24	20.0
300	318.5	321.0	480	30	48	354	364	8	3	395	430	16	27	M24	24.4
350	355.6	358.1	540	34	52	398	408	8	3	440	480	16	33	M30×3	35.0
400	406.4	409.0	605	38	60	446	456	10	3	495	540	16	33	M30×3	46.2
450	457.2	460.0	675	40	64	504	514	10	3	560	605	20	33	M30×3	61.9
500	508.0	511.0	730	42	68	558	568	10	3	615	660	20	33	M30×3	73.25
(550)	558.8	562.0	795	44	70	612	622	10	3	670	720	20	39	M36×3	88.1
600	609.6	613.0	845	46	74	666	676	10	3	720	770	24	39	M36×3	98.8
(650)	660.4	664	895	48	77	704	726	10	5	770	820	24	39	M36×3	101
700	711.2	715	960	50	80	754	776	10	5	820	875	24	42	M39×3	120
(750)	762.0	766	1020	52	83	806	832	10	5	880	935	24	42	M39×3	141
800	812.8	817	1085	54	86	865	885	10	5	930	990	24	48	M45×3	161
(850)	863.6	868	1135	56	89	916	936	10	5	980	1040	28	48	M45×3	177
900	914.4	919	1185	58	93	968	986	10	5	1030	1090	28	48	M45×3	191
1000	1016.0	1021	1320	62	99	1070	1098	12	5	1140	1210	28	56	M52×3	230
(1100)	1117.6	1123	1420	66	105	1180	1200	12	5	1240	1310	32	56	M52×3	289
1200	1219.2	1225	1530	70	112	1282	1302	12	5	1350	1420	32	56	M52×3	348

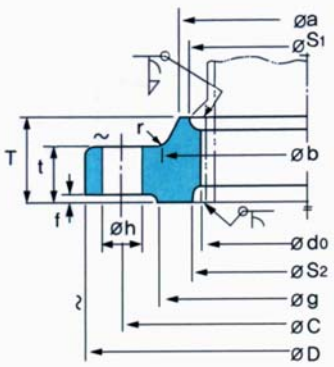
(1) Flanges of parenthesized nominal diameter had better not be used.
(2) The facing of flanges shall conform to KS B1519(JIS B2202–1984).
(3) The dimension of flange of 650A and larger in nominal sizes excluding 850A, are in accordance with the nominal pressure 25 BAR specified in ISO2084–1974.

20K KS B1503 JIS B2220

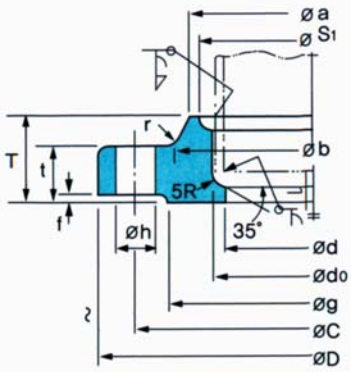
TYPE A
NOMINAL SIZE 10–50mm



TYPE B
NOMINAL SIZE 10–50mm



TYPE C
NOMINAL SIZE 65–600mm



*The surface finish(~) is in the case of die forging

Unit:mm

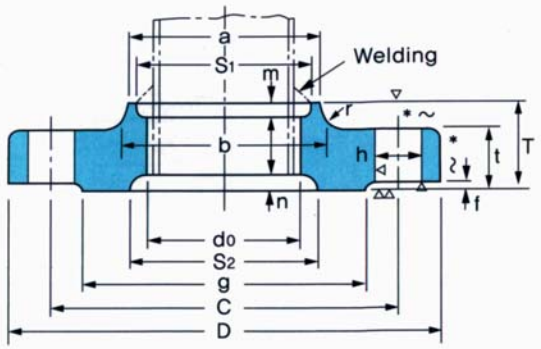
Nominal Dia. of Flange	Outside Dia. of Steel pipe	Inside Dia. of Flange do	Outside Dia. of Flange D	Sectional Dimensions of Flange								Bolt Hole			Nominal Bolt Size	Reference					Approx. Weight (kg)
				t	T	Dia. of Hub		Radius r	f	g	d	Dia. of Bolt Circle C	Number of Bolt Holes	Hole Dia. h		S1	m	S2	n	l	
						a	b														
10	17.3	17.8	90	14	20	30	32	4	1	46	–	65	4	15	M12	27	4	27	4	–	0.59
15	21.7	22.2	95	14	20	34	36	4	1	51	–	70	4	15	M12	31	4	31	4	–	0.65
20	27.2	27.7	100	16	22	40	42	4	1	56	–	75	4	15	M12	37	4	37	4	–	0.81
25	34.0	34.5	125	16	24	48	50	4	1	67	–	90	4	19	M16	44	4	44	4.5	–	1.29
32	42.7	43.2	135	18	26	56	60	5	2	76	–	100	4	19	M16	52	4	53	5	–	1.60
40	48.6	49.1	140	18	26	62	66	5	2	81	–	105	4	19	M16	58	4	59	5.5	–	1.69
50	60.5	61.1	155	18	26	76	80	5	2	96	–	120	8	19	M16	70	4	72	5.5	–	1.89
65	76.3	77.1	175	20	30	100	104	5	2	116	65.9	140	8	19	M16	94	6	–	–	6	2.60
80	89.1	90.0	200	22	34	113	117	6	2	132	78.1	160	8	23	M20	107	6	–	–	6	3.93
(90)	101.6	102.6	210	24	36	126	130	6	2	145	90.2	170	8	23	M20	120	6	–	–	6	4.56
100	114.3	115.4	225	24	36	138	142	6	2	160	102.3	185	8	23	M20	132	6	–	–	6	5.13
125	139.8	141.2	270	26	40	166	172	6	2	195	126.6	225	8	25	M22	160	7	–	–	6	8.30
150	165.2	166.6	305	28	42	196	202	6	2	230	151.0	260	12	25	M22	186	8	–	–	6	10.6
200	216.3	218.0	350	30	46	244	252	6	2	275	199.9	305	12	25	M22	237	9	–	–	6	13.3
250	267.4	269.5	430	34	52	304	312	6	2	345	248.8	380	12	27	M24	290	10	–	–	6	23.4
300	318.5	321.0	480	36	56	354	364	8	3	395	297.9	430	16	27	M24	345	11	–	–	6	27.7
350	355.6	358.1	540	40	62	398	408	8	3	440	333.4	480	16	33	M30×3	384	12	–	–	6	39.2
400	406.4	409.0	605	46	70	446	456	10	3	495	381.0	540	16	33	M30×3	437	13	–	–	7	54.2
450	457.2	460.0	675	48	78	504	514	10	3	560	431.8	605	20	33	M30×3	490	15	–	–	7	71.7
500	508.0	511.0	730	50	84	558	568	10	3	615	482.6	660	20	33	M30×3	544	15	–	–	7	86.2
(550)	558.8	562.0	795	52	90	612	622	10	3	670	533.4	720	20	39	M36×3	595	16	–	–	7	105
600	609.6	613.0	845	54	96	666	676	10	3	720	584.2	770	24	39	M36×3	646	18	–	–	7	119
*650	660.4	664	945	60					5	790		850	24	48	M45×3						
*700	711.2	715	995	64					5	840		900	24	48	M45×3						
*750	762.0	766	1080	68					5	900		970	24	56	M52×3						
*800	812.8	817	1140	72					5	960		1030	24	56	M52×3						
*850	863.6	868	1200	74					5	1020		1090	24	56	M52×3						
*900	914.4	919	1250	76					5	1070		1140	28	56	M52×3						

(1) Flanges of parenthesized nominal diameter had better not be used.
(2) "**d**" is an examle of pipe thickness for schedule 40 for nominal diameter 400 and under, and for schedule 12.7 mm for 450 through 600 of KS B3562 and KS D3507(JIS G3454, JIS G3456).
(3) The dimension of the notch(m,n,S1,S2) for welding can be decided between concerned parties.
(4) Nominal diameter over 600 is manufacturer's standard(*).

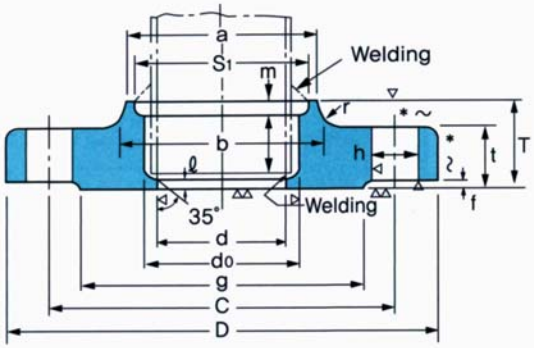
C&N Pipeline Limited

30K KS B1503 JIS B2220 Slip–On

TYPE B
NOMINAL SIZE 10–50mm



TYPE C
NOMINAL SIZE 65–400mm



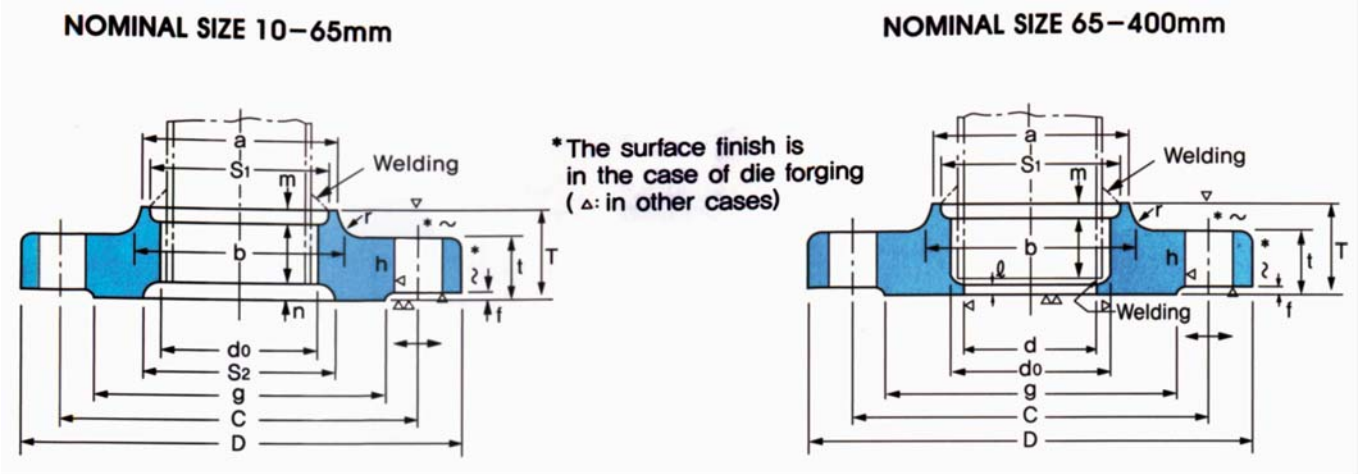
*The surface finish(~) is in the case of die forging.

Unit:mm

Nominal Dia. of Flange	Outside Dia. of Steel pipe	Inside Dia. of Flange do	Outside Dia. of Flange D	Sectional Dimensions of Flange								Bolt Hole			Nominal Bolt Size	Reference					Approx. Weight (kg)
				t	T	Dia. of Hub		Radius r	f	g	d	Dia. of Bolt Circle C	Number of Bolt Holes	Hole Dia. h		S_1	m	S_2	n	l	
						a	b														
10	17.3	17.8	110	16	24	30	34	4	1	52	–	75	4	19	M16	–	–	–	–	–	0.99
15	21.7	22.2	115	18	26	36	40	5	1	55	–	80	4	19	M16	31	4	40	5	–	1.23
20	27.2	27.7	120	18	28	42	46	5	1	60	–	85	4	19	M16	37	5	44	5	–	1.34
25	34.0	34.5	130	20	30	50	54	5	1	70	–	95	4	19	M16	55	6	52	5	–	1.76
32	42.7	43.2	140	22	32	60	64	6	2	80	–	105	4	19	M16	52	6	60	5	–	2.15
40	48.6	49.1	160	22	34	66	70	6	2	90	–	120	4	23	M20	58	6	66	5	–	2.82
50	60.5	61.1	165	22	36	82	86	6	2	105	–	130	8	19	M16	70	6.5	78	5	–	2.89
65	76.3	77.1	200	26	40	102	106	8	2	130	65.9	160	8	23	M20	96	9.5	94	5	6	4.70
80	89.1	90.0	210	28	44	115	121	8	2	140	78.1	170	8	23	M20	109	9.5	–	–	6	5.36
(90)	101.6	102.6	230	30	46	128	134	8	2	150	90.2	185	8	25	M22	122	9.5	–	–	6	6.85
100	114.3	115.4	240	32	48	141	147	8	2	160	102.3	195	8	25	M22	135	9.5	–	–	6	7.89
125	139.8	141.2	275	36	54	166	172	8	2	195	126.6	230	8	25	M22	160	9.5	–	–	6	11.4
150	165.2	166.6	325	38	58	196	204	8	2	235	151.0	275	12	27	M24	186	9.5	–	–	6	16.7
200	216.3	218.0	370	42	64	248	256	8	2	280	199.9	320	12	27	M24	237	9.5	–	–	6	20.6
250	267.4	269.5	450	48	72	306	314	10	2	345	248.8	390	12	33	M30	290	10	–	–	6	36.1
300	318.5	321.0	515	52	78	360	370	10	3	405	297.9	450	16	33	M30	345	12	–	–	6	49.9
350	355.6	358.1	560	54	84	402	412	12	3	450	333.4	495	16	33	M30	383	13	–	–	6	61.2
400	406.4	409.0	630	60	92	456	468	15	3	510	381.0	560	16	39	M36	435	14	–	–	7	85.2

(1) Flanges of parenthesized nominal diameter had better not be used.
(2) "**d**" is an example of pipe thickness for schedule 40 of KS B3562 and KS D3507(JIS G3454, JIS G3456).
if required, purchaser can specify for other pipe wall thickness.
(3) This diameters of bolt holes(h) shall be in accordance with Class 3 of KS B1007(Grade 3 of JIS B1001) where the nominal designation of screw thread of bolt is not more than M16, and in accordance with Class 2 of KS B1007(Grade 2 of JIS B1001) where the nominal designation of screw thread of bolt is not less than M30×3.
(4) The dimension of the notch(m,n,S1,S2) for welding can be decided from agreement between parties concerned .

40kg/cm² JIS B2216
40kg/cm2 SLIP–ON WELDING PIPE FLANGES

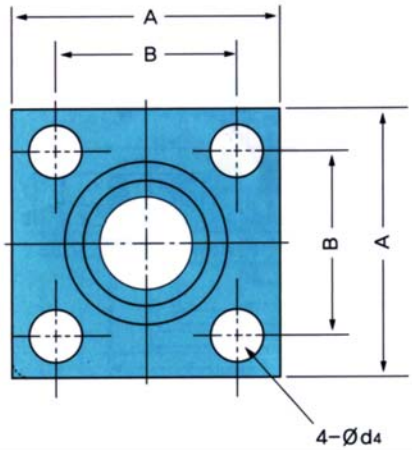


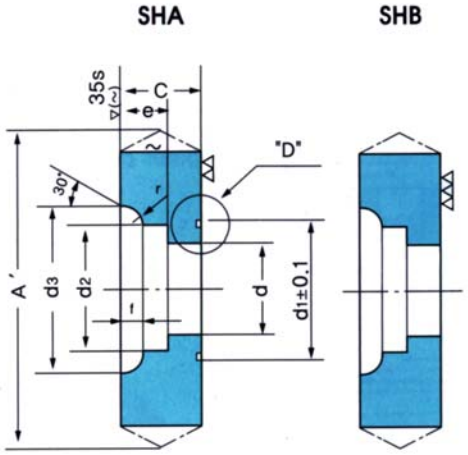
Unit:mm

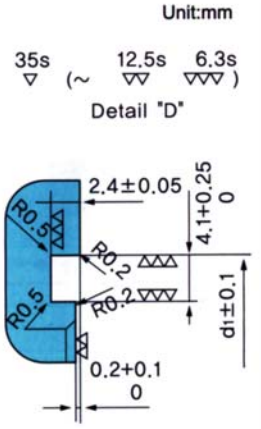
Nominal Diameter of Flange	Outside Diameter of Steel pipe	Inside Diameter of Flange do	Outside Diameter of Flange D	Sectional Dimensions of Flange								Bolt Hole			Nominal Bolt Size	Reference					Approx. Weight (kg)
				t	T	Diameter of Hub		Radius r	f	g	d	Dia. of Bolt Circle C	Number of Bolt Holes	Hole Dia. h		S1	m	S2	n	l	
						a	b														
10	17.3	17.8	110	18	26	34	38	5	1	52	–	75	4	19	M16	28.0	6	28	5		1.11
15	21.7	22.2	115	20	30	39	43	5	1	55	–	80	4	19	M16	32.5	6	32.5	5		1.39
20	27.2	27.7	120	20	30	45	49	5	1	60	–	85	4	19	M16	38.0	6	38.0	5		1.51
25	34.0	34.5	130	22	32	55	59	5	1	70	–	95	4	19	M16	47.8	6	47.8	5		1.97
32	42.7	43.2	140	24	35	64	68	6	2	80	–	105	4	19	M16	56.5	6	56.5	5		2.50
40	48.6	49.1	160	24	35	70	74	6	2	90	–	120	4	23	M20	62.5	6	62.5	5		3.26
50	60.5	61.1	165	26	38	86	90	6	2	105	–	130	8	19	M16	74.5	6	74.5	5.5		3.47
65	76.3	77.1	200	30	44	106	110	8	2	130	62.3	160	8	23	M20	91.5	7	91.5	7		5.97
80	89.1	90.3	210	32	46	118	124	8	2	140	73.9	170	8	23	M20	105.5	7.5	105.5	7		6.76
100	114.3	115.5	250	36	52	145	151	8	2	165	97.1	205	8	25	M22	133.0	8.5	133.0	7		10.48
125	139.8	141.4	300	40	58	182	188	8	2	200	120.8	250	8	27	M24	160.5	9.5	160.5	7		16.97
150	165.2	167.0	355	44	64	200	208	8	2	240	143.2	295	12	33	M30	188.0	11	188.0	7		22.6
200	216.3	218.2	405	50	72	255	263	8	2	290	190.9	345	12	33	M30	243.0	13	243.0	7		34.9
250	267.4	269.5	475	56	80	310	318	10	2	355	237.2	410	12	33	M30	298.0	15	298.0	7		41.1

(1)Flanges of parenthesized nominal diameter had better not be used.
(2)The dimensional tolerance shall confirm to JIS B2203.
(3)The flange gasket surface is based on large raised facing specified in JIS B2202.But, if necessary,facings other than the large raised facing specified in JIS B2201 can be designated by customers.
(4)Size "**d**" is an example of pipe thickness for schedule 40 of JIS G3454 and JIS B3456. When other size is necessary, customer can order it at will.
(5)Refer to JIS B2216.

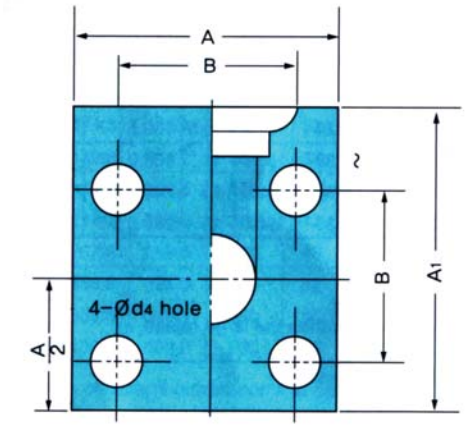
210kgf/cm² FLANGE FOR OIL PRESSURE

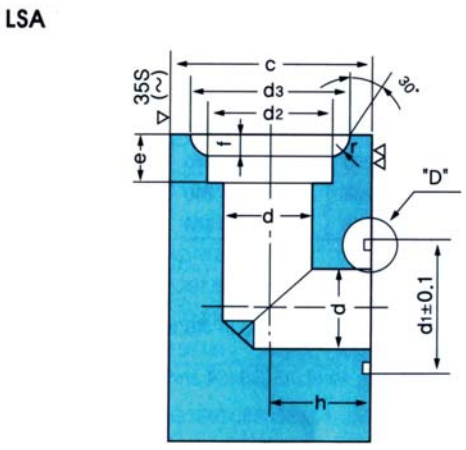


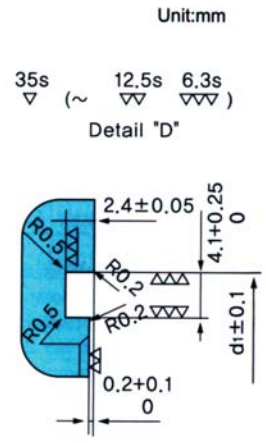




Nominal Bore	A		A´ (MAX)	B		C		d	d_1		d_2		e	d_3	d_4	f	r	Weight (kg)	G O
15	63	±1	67	40	±0.2	22	0	16	30	±0.1	22.2	+0.2	11	32	11	3.5	5	0.6	G25
20	68		72	45		22	−1	20	35		27.7	0	12	38	11	4.0	5	0.7	G30
25	80	±1.2	85	53		28	0	25	40		34.5		14	45	13	4.0	5	1.2	G35
32	90		95	63		28	−1.5	31.5	45		43.2	+0.3	16	56	13	6.0	5	1.5	G40
40	100	±1.5	106	70	±0.4	36		37.5	55		49.1	0	18	63	18	7.0	5	2.4	G50
50	112		118	80		36	0	47.5	65		61.1		20	75	18	7.0	5	2.8	G60
65	140	±2	148	100		45	−2	60	80		77.1	+0.4	22	95	22	9.5	6	5.3	G75
80	155		163	112		45		71	90		90.0	0	25	108	24	11.0	6	6.2	G85

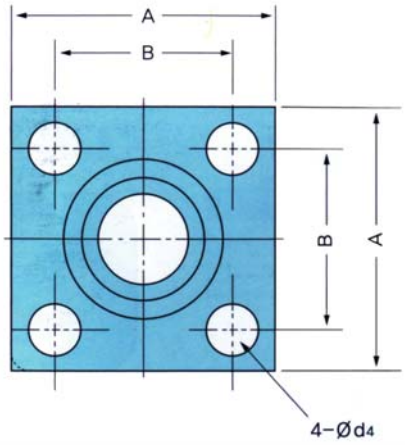




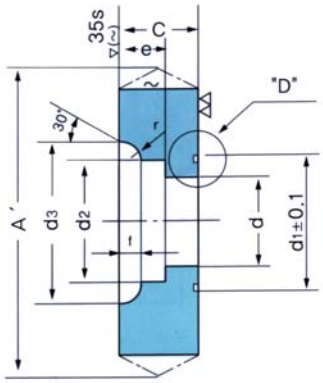


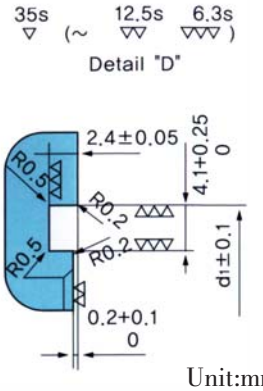
Nominal Bore	A		A_1		B		C		h	d	d_1	d_2		e	d_3	d_4	f	r	Weight (kg)
15	54	±1	63		36		40		20	16	30	22.2	+0.2	11	32	11	3.5	5	1.0
20	58		70	±1	40	±0.2	45		22.5	20	35	27.7	0	12	38	11	4.0	5	1.3
25	68	±1.2	82		48		50		25	25	40	34.5		14	45	13	4.0	5	1.9
32	76		92	±1.2	56		63	0	31.5	31.5	45	43.2	+0.3	16	56	13	6.0	5	2.9
40	92	±1.5	110		65	±0.4	71	−2	35.5	37.5	55	49.1	0	18	63	18	7.0	5	4.7
50	100		125	±1.5	73		85		42.5	47.5	65	61.1		20	75	18	7.0	5	6.8
65	128	±2	150		92		106		53	60	80	77.1	+0.4	22	95	22	9.5	6	12.8
80	140		170	±2	103		118		59	71	90	90.0	0	25	108	24	11.0	6	17.0

210kgf/cm² FLANGE FOR OIL PRESSURE



SSA

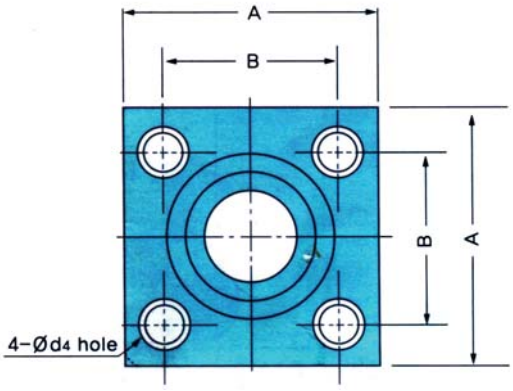


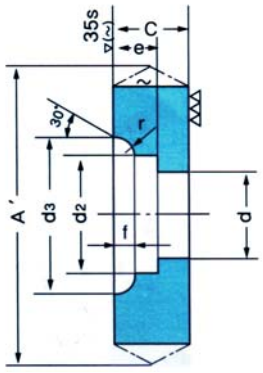


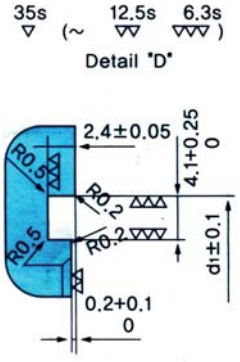
Unit:mm

Nominal Bore	A		A´ (MAX)	B		C		d	d_1		d_2		e	d_3	d_4	f	r	Weight (kg)
15	54	±1	58	36	±0.2	22	0	16	30	±0.1	22.2	+0.2	11	32	11	3.5	5	0.5
20	58		62	40		22	−1	20	35		27.7	0	12	38	11	4.0	5	0.6
25	68		73	48		28	0	25	40		34.5	+0.3	14	45	13	4.0	5	0.8
32	76	±1.2	81	56		28	−1.5	31.5	45		43.2		16	56	13	6.0	5	1.0
40	92		98	65	±0.4	36		37.5	55		49.1	0	18	63	18	7.0	5	1.9
50	100	±1.5	106	73		36	0	47.5	65		61.1		20	75	18	7.0	5	2.0
65	128		136	92		45	−2	60	80		77.1	+0.4	22	95	22	9.5	6	4.1
80	140	±2	148	103		45		71	90		90.0	0	25	108	24	11.0	6	4.7

SSB



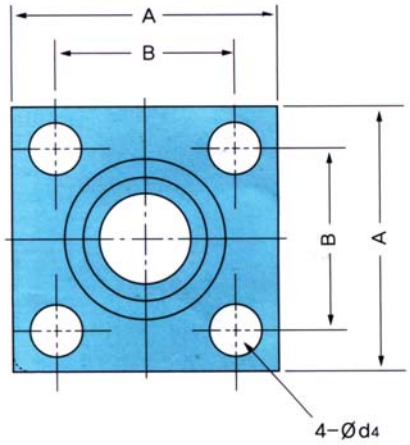


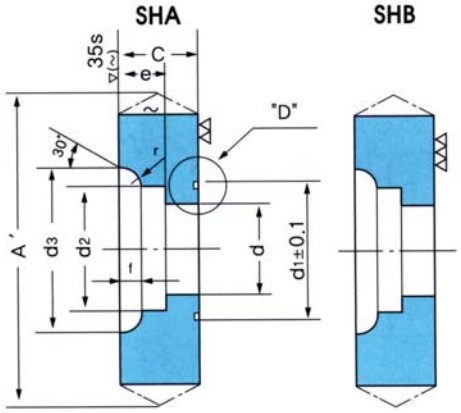


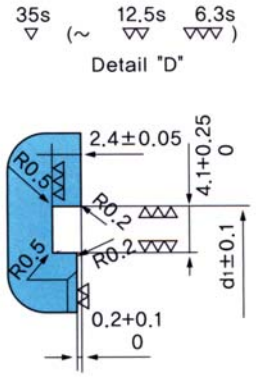
Unit:mm

Nominal Bore	A		A´ (MAX)	B		C		d	d_2		e	d_3	d_4	f	r	Weight (kg)
15	54	±1	58	36	±0.2	22	0	16	22.2	+0.2	11	32	M10	3.5	5	0.5
20	58		62	40		22	−1	20	27.7	0	12	38	M10	4.0	5	0.6
25	68		73	48		28	0	25	34.5		14	45	M12	4.0	5	0.8
32	76	±1.2	81	56		28	−1.5	31.5	43.2	+0.3	16	56	M12	6.0	5	1.0
40	92		98	65	±0.4	36		37.5	49.1	0	18	63	M16	7.0	5	1.9
50	100	±1.5	106	73		36	0	47.5	61.1		20	75	M16	7.0	5	2.0
65	128		136	92		45	−2	60	77.1	+0.4	22	95	M10	9.5	6	4.1
80	140	±2	148	103		45		71	90.0	0	25	108	M22	11.0	6	4.7

280kgf/cm² FLANGE FOR OIL PRESSURE



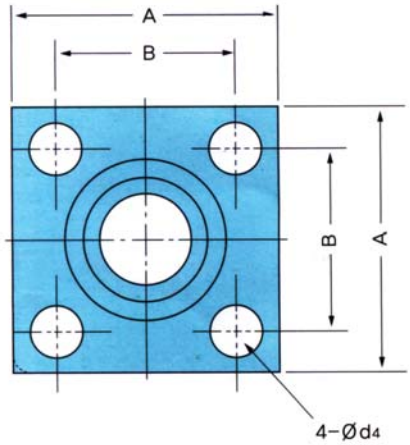


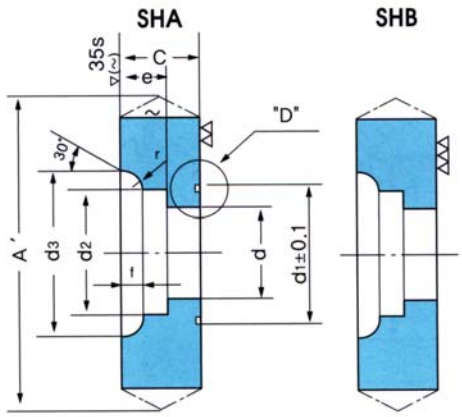


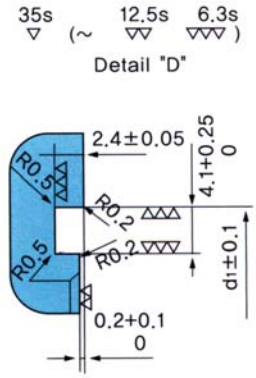
Unit:mm

Nominal Bore	A		A´ (MAX)	B		C		d	d_1		d_2		e	d_3	d_4	f	r	Weight (kg)
15	66	±1	70	43	±0.2	22	0 −1	12.3	24	±0.1	22.2	+0.2 0	12	34	11	4.0	5	0.63
20	72		76	48		25		16.2	30		27.7		12	40	11	4.5	5	0.85
25	85	±1.2	91	58		35	0 −1.5	21.2	35		34.5	+0.3 0	14	48	13.5	5.0	5	1.64
32	98		104	68		35		29.9	45		43.2		18	60	17.5	6.5	5	2.03
40	105	±1.5	112	74	±0.4	40	0 −2	34.4	50		49.1		20	66	17.5	7.5	5	2.66
50	130		139	90		50		43.1	60		61.1		20	79	22	8.0	5	5.14
65	150	±2	161	108		60		57.3	75		77.1	+0.4 0	25	100	24	10.0	6	7.95
80	170		181	120		65		66.9	85		90.0		25	114	26	12.0	6	11.0

350kgf/cm² FLANGE FOR OIL PRESSURE







Unit:mm

Nominal Bore	A		A´ (MAX)	B		C		d	d_1		d_2		e	d_3	d_4	f	r	Weight (kg)
15	68	±1.2	73	45	±0.2	28	0 −1.5	12.3	24	±0.1	22.2	+0.2 0	12	37.5	11	4	5	0.88
20	82		87	55		30		16.2	30		27.7		12	43.5	13.5	5	5	1.34
25	95	±1.5	101	65		35		21.2	35		34.5	+0.3 0	14	53	17.5	5.5	6	2.02
32	100		106	70		35		23.3	40		43.2		18	63	17.5	7	6	2.16
40	105		112	75	±0.4	42	0 −2	28.2	45		49.1		20	70	17.5	8	6	2.84
50	132	±2	140	92		50		38.3	55		61.1		25	84	22	9	6	5.30
65	160		170	112		60		48.3	65		77.1	+0.4 0	30	105	26	12	7	9.92
80	190		202	130		68		58.7	75		90.0		30	120	33	13.5	7	14.8

TOLERANCE FOR PIPE FLANGES

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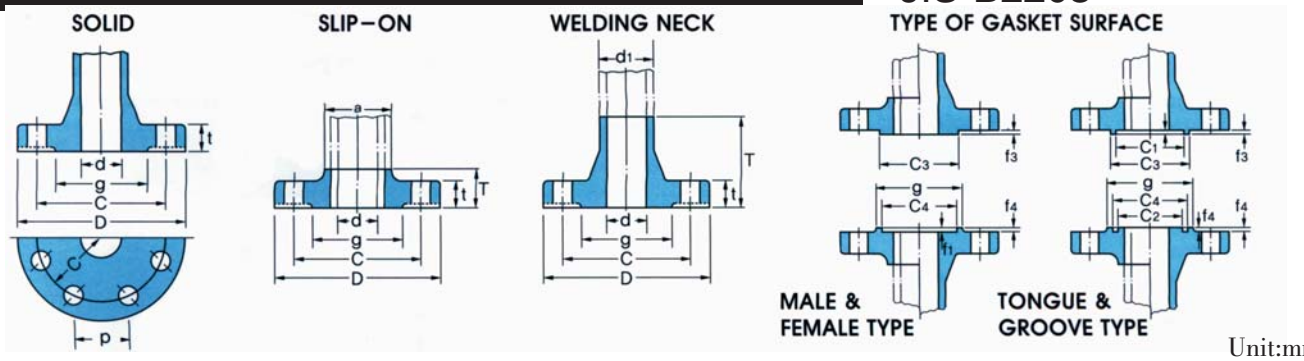

Unit:mm

Flange Section		Surface Condition	Basic Size	Dimensional Tolerance
Outside Dia D		As Forged (1)	300 & below	+Not Specified −2.0
			over 300 thru 600	
			over 600 thru 1000	
			over 1000 thru 1500	+Not Specified −3.0
			over 1500	
		Finish	300 & below	±1
			over 300 thru 600	±1.5
			over 600 thru 1000	±2
			over 1000 thru 1500	±2.5
			over 1500	±3
Inside Dia	Solid Flange d(2)	As Forged (1)	16 & below	±1
			over 16 thru 63	±1.5
			over 63 thru 125	±2
			over 125 thru 250	±2.5
			over 250 thru 500	±3
			over 500 thru 1000	±4
			over 1000	±5
	Slip–on Flange do	Finish	100 & below	$^{+0.5}_{0}$
			over 100 thru 400	$^{+1}_{0}$
			over 400 thru 600	$^{+1.5}_{0}$
			over 600 thru 800	$^{+2}_{0}$
			over 800 thru 1000	$^{+2.5}_{0}$
			over 1000	$^{+3}_{0}$
	Welding Neck Flange d		100 & below	$^{0}_{-0.5}$
			over 100 thru 400	$^{0}_{-1}$
			over 400 thru 600	$^{0}_{-1.5}$
			over 600 thru 800	$^{0}_{-2}$
			over 800 thru 1000	$^{0}_{-2.5}$
			over 1000	$^{0}_{-3}$
Bolt Hole	Bolt Circle Dia. c	–	250 & below	±0.5
			over 250 thru 550	±0.6
			over 550 thru 950	±0.8
			over 950 thru 1350	±1
			over 1350	±1.5

Flange Section		Surface Condition	Basic Size	Dimensional Tolerance
Bolt Hole	Pitch of Hole P	Drilling Hole	–	±0.5
Dia. of Hub	Slip –on Flange(a) and Welding Neck Flange (d_1)	As Forged	220 & below	$^{+2}_{0}$
			over 220 thru 450	$^{+3}_{0}$
			over 450 thru 650	$^{+4}_{0}$
			over 650 thru 850	$^{+6}_{0}$
			over 850 thru 1000	$^{+7}_{0}$
			over 1000	$^{+8}_{0}$
		Finish	220 & below	$^{+1}_{0}$
			over 220 thru 450	$^{+1.5}_{0}$
			over 450 thru 650	$^{+2}_{0}$
			over 650 thru 850	$^{+2.5}_{0}$
			over 850 thru 1000	$^{+3}_{0}$
			over 1000	$^{+3.5}_{0}$
Gasket Seat	C1,C2 C3,C4	Finish	500 & below	±0.3
			over 500 thru 1000	±0.35
			over 1000 thru 1500	±0.4
			over 1500	±0.5
	f3,f4	Finish	8 & below	±0.2
			over 8	±0.25
	g	Finish	220 & below	±0.8
			over 220 thru 650	±0.9
			over 650 thru 1000	±1
			over 1000	±1.2
Thickness t		One–side Finish	20 & below	$^{+1.5}_{0}$
			over 20 thru 50	$^{+2}_{0}$
			over 50 thru 100	$^{+3}_{0}$
		Both–side Finish	20 & below	$^{+1}_{0}$
			over 20 thru 50	$^{+1.5}_{0}$
			over 50 thru 100	$^{+2}_{0}$
Hub Height T	Flange with Pipe Inserted	Finish	50 & below	±1
			over 50 thru 100	±1.5
			over 100 thru 200	±2
	Flange with Butt–welded Pipe	Finish	over 200 & below	$^{+2}_{0}$
			over 200 thru 300	$^{+3}_{0}$

Notes

(1) This dimensional tolerance applies to the machined surface ,as required.
(2) This dimension d has been specified only for the flange, of which the bore part is cylindrical in shape.

Remarks

(1) This dimensional d of bore part of the solid flanges with surface, as forged of valves, pumps, etc. are allowed up to plus 100% of the above dimensional tolerance, provided that the required thickness shall be free from its influence.
(2) The thickness of flange of valve and the like, of which the dimension between flange faces is limited to a fixed value, are allowed up to plus 100% of the above dimensional tolerance in the column of thickness.
(3) In the case of spot facing of the single surface finishing, the thickness of spot facing is allowed up to 70% of the dimensional tolerance in the above column of thickness in negative side.
(4) The chain double–dashed lines in the figures of solid flange and slip–on type flange illustrate the cases of large raised face flange.

C&N INDUSTRIAL GROUP LIMITED
JINQIAO INDUSTRIAL ZONE
PUDONG DISTRICT
SHANGHAI

Tel:+ 86 21 31267504
Fax: + 86 21 31267504
Email: saels@cnpipefitting.com

Visit us on the Web

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