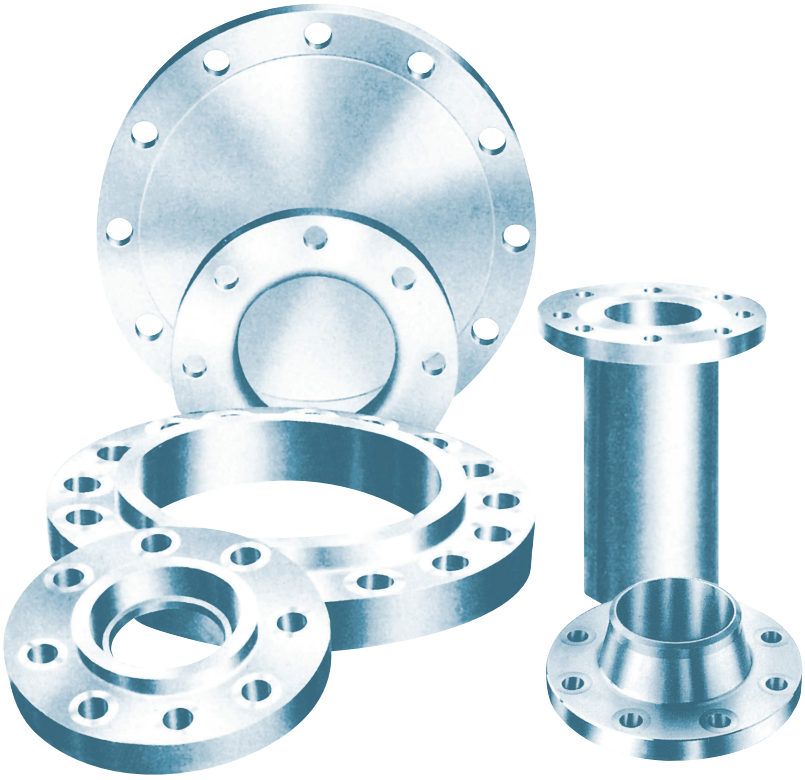


ANSI/ASME FLANGES

Class 150 Flanges

Class 300 Flanges

Class 400 Flanges

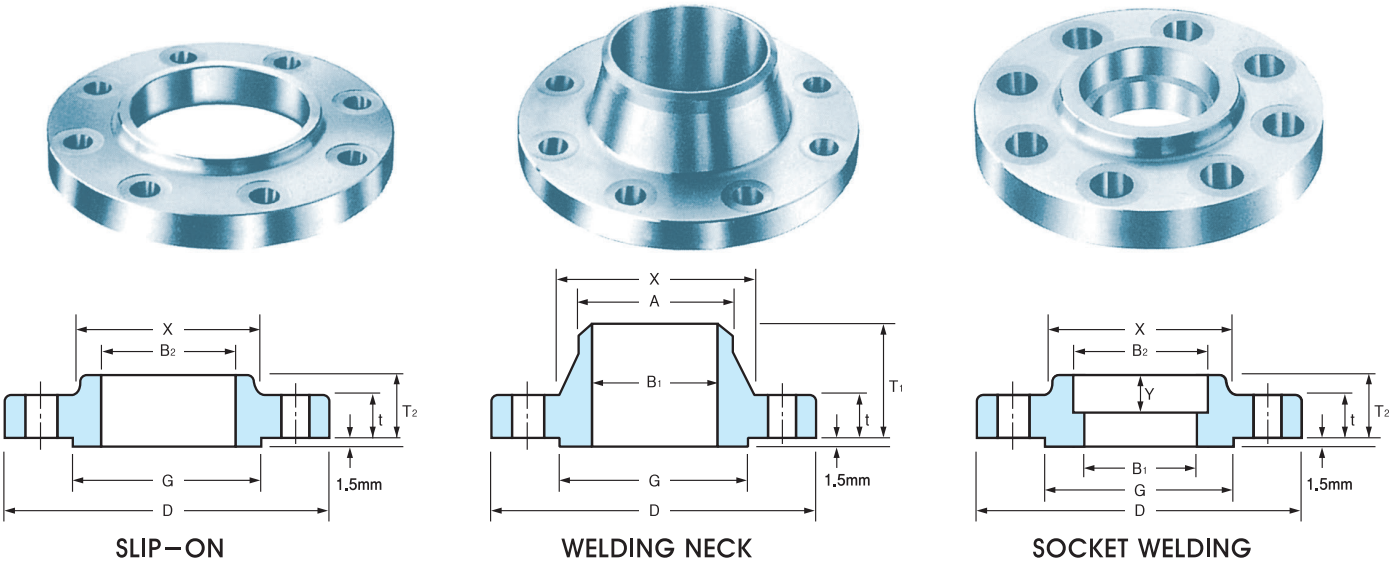
Class 600 Flanges

Class 900 Flanges

Class 1500 Flanges

Class 2500 Flanges

CLASS 150 FLANGES



ASME B16.5 FORGED FLANGES

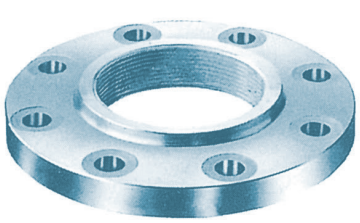
Unit : mm

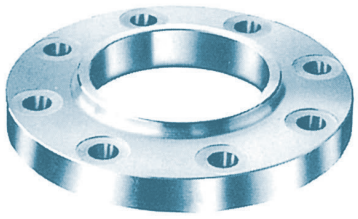
Nominal Pipe Size	Outside Diam.	Diam. at Base of Hub	O. D. of Raised Face	Thick-ness (Min.)	Thick-ness LJ (Min.)	BORE						LENGTH THRU HUB		
						Welding Neck Socket Welding				Slip-on Socket Welding (Min.)	Lap Joint (Min.)	Welding Neck	Slip-on Threaded Socket Welding	Lap Joint
						S/10S	S/40S	S/40	S/80					
	D	X	G	t	t1	B_1				B_2	B_3	T_1	T_2	T_3
1/2	89	30	35.1	9.7	11.2	17.08	15.76	15.76	13.84	22.4	22.9	46	14	16
3/4	99	38	42.9	11.2	12.7	22.48	20.96	20.96	18.88	27.7	28.2	51	14	16
1	108	49	50.8	12.7	14.2	27.96	26.74	26.74	24.40	34.5	35.1	54	16	18
1 1/4	117	59	63.5	14.2	15.7	36.66	35.08	35.08	32.50	43.2	43.7	56	19	21
1 1/2	127	65	73.0	15.9	17.5	42.76	40.94	40.94	38.14	49.5	50.0	60	21	22
2	152	78	91.9	17.5	19.0	54.96	52.68	52.68	49.42	61.9	62.5	62	24	25
2 1/2	178	90	104.6	20.6	22.4	67.10	62.88	62.88	59.18	74.7	75.4	68	27	28
3	190	108	127.0	22.4	23.9	82.80	77.92	77.92	73.66	90.7	91.4	68	28	30
3 1/2	216	122	139.7	22.4	23.9	95.50	90.12	90.12	85.44	103.4	104.1	70	30	32
4	229	135	157.2	22.4	23.9	108.20	102.26	102.26	97.18	116.1	116.8	75	32	33
5	254	164	185.7	22.4	23.9	134.40	128.10	128.10	122.16	143.8	144.5	87	35	37
6	279	192	215.9	23.9	25.4	161.60	154.18	154.18	146.46	170.7	171.4	87	38	40
8	343	246	269.7	26.9	28.4	211.68	202.84	202.84	193.80	221.5	222.2	100	43	44
10	406	305	323.8	28.4	30.2	264.62	254.46	254.46	242.82	276.4	277.4	100	48	49
12	483	365	381.0	30.2	31.8	314.66	304.76	304.76	288.84	327.2	328.2	113	54	56
14	533	400	412.8	33.3	35.1	346.04	336.56	336.56	317.50	359.2	360.2	125	56	79
16	597	457	469.9	35.1	36.6	396.84	387.60	387.60	363.52	410.5	411.2	125	62	87
18	635	505	533.4	38.1	39.6	447.64	438.16	438.16	409.54	461.8	462.3	138	67	97
20	698	559	584.2	41.1	42.9	496.92	488.96	488.96	455.62	513.1	514.4	143	71	103
22	749	610	641.4	44.4	46.0	547.72	–	–	501.64	564.4	565.2	148	78	108
24	813	663	692.2	46.0	47.8	596.90	590.56	590.56	547.68	616.0	616.0	151	81	111

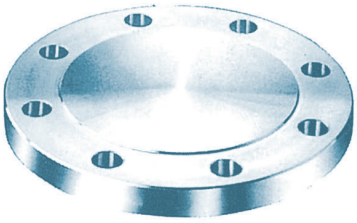
Notes:

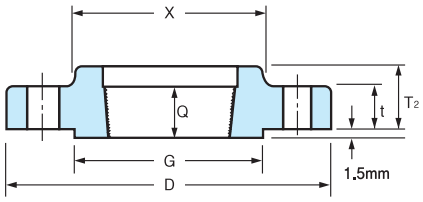
(1) For the inside diameter of pipes(corresponding to 'Bore' (B1) of Welding Neck Flanges), refer to page 59-60.

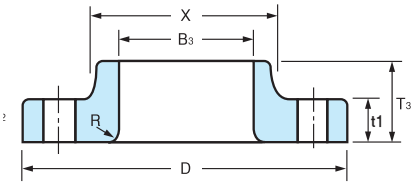
(2) For Slip-on, Threaded, Socket Welding and Lap Joint Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees.

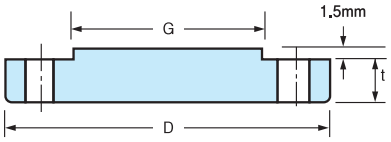












THREADED LAP JOINT BLIND

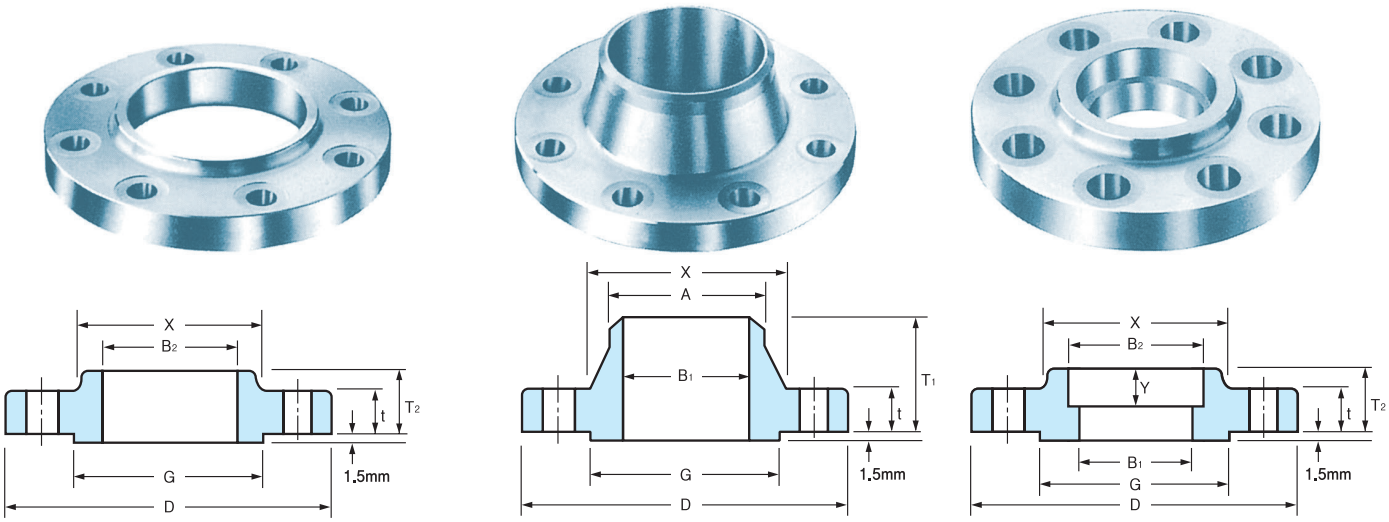
(Class 150 flanges made without counterbore)

Unit : mm

Nominal Pipe Size	Diam. of Hub at Bevel	Radius of Lap Joint	Thread Length	Depth of Socke	DRILLING			BOLTING				APPROXIMATE WEIGHT				
					Bolt Circle Diam	Number of Holes	Diam of Holes	Diam of Bolts (inch)	Machine Bolt Length	Stud Bolt Length		Welding Neck	Slip-on and Threaded	Lap Joint	Blind	Socket Welding
	A	R	Q	Y					Raised Face	Raised Face	Ring Joint	kg	kg	kg	kg	kg
1/2	21.3	3	16	10	60.5	4	15.9	1/2	50	55	–	0.51	0.47	0.51	0.47	0.47
3/4	26.7	3	16	10	69.8	4	15.9	1/2	50	65	–	0.73	0.58	0.64	0.63	0.59
1	33.5	3	18	10	79.2	4	15.9	1/2	55	65	75	1.07	0.86	0.93	0.94	0.87
1 1/4	42.2	5	21	14	88.9	4	15.9	1/2	55	70	85	1.40	1.08	1.16	1.23	1.11
1 1/2	48.3	6	22	16	98.6	4	15.9	1/2	65	70	85	1.81	1.41	1.51	1.62	1.45
2	60.5	8	25	18	120.6	4	19.1	5/8	70	85	95	2.59	2.26	2.38	2.64	2.33
2 1/2	73.2	8	28	19	139.7	4	19.1	5/8	75	90	100	4.28	3.43	3.60	4.06	3.55
3	88.9	10	30	21	152.4	4	19.1	5/8	75	90	100	5.18	3.87	4.04	4.90	4.02
3 1/2	101.6	10	32	–	177.8	8	19.1	5/8	75	90	100	5.45	4.99	4.99	5.90	4.99
4	114.3	11	33	–	190.5	8	19.1	5/8	75	90	100	7.32	5.75	5.96	7.41	5.99
5	141.2	11	37	–	215.9	8	22.2	3/4	85	95	110	8.91	6.22	6.44	8.76	6.68
6	168.4	13	40	–	241.3	8	22.2	3/4	85	100	115	11.26	7.38	7.59	11.31	7.99
8	219.2	13	44	–	298.4	8	22.2	3/4	90	110	120	17.68	12.36	12.66	19.92	13.29
10	273.0	13	49	–	362.0	12	25.4	7/8	100	115	125	24.79	17.10	16.78	29.39	19.50
12	323.8	13	56	–	431.8	12	25.4	7/8	100	120	135	38.98	27.68	28.30	43.70	29.03
14	355.6	13	57	–	476.2	12	28.6	1	115	135	145	51.71	35.20	41.50	59.42	38.56
16	406.4	13	64	–	539.8	16	28.6	1	115	135	145	64.41	42.18	52.98	77.11	44.49
18	457.2	13	68	–	577.8	16	31.8	1 1/8	125	145	160	74.84	49.71	59.00	94.80	54.43
20	508.0	13	73	–	635.0	20	31.8	1 1/8	140	160	170	89.36	65.50	72.12	123.38	70.31
22	558.8	13	–	–	692.2	20	34.9	1 1/4	150	170	185	99.80	80.30	82.20	148.50	–
24	609.6	13	83	–	749.3	20	34.9	1 1/4	150	170	185	119.66	90.50	99.02	188.24	95.25

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

CLASS 300 FLANGES



SLIP-ON　　WELDING NECK　　SOCKET WELDING

ASME B16.5 FORGED FLANGES

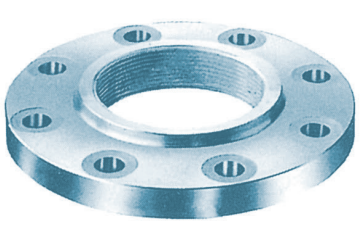
Unit : mm

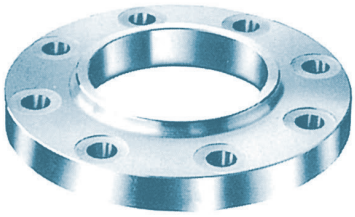
Nominal Pipe Size	Outside Diam.	Diam. at Base of Hub	O. D. of Raised Face	Thick-ness (Min.)	Thick-ness LJ (Min.)	BORE							LENGTH THRU HUB		
						Welding Neck Socket Welding				Slip-on Socket Welding (Min.)	Lap Joint (Min.)	THDF Cont. Bore (Min.)	Welding Neck	Slip-on Threaded Socket Welding	Lap Joint
						S/10S	S/40S	S/40	S/80						
	D	X	G	t	t1	B_1				B_2	B_3	B	T_1	T_2	T_3
1/2	95	38	35.1	12.7	14.2	17.08	15.76	15.76	13.84	22.4	22.9	23.6	51	21	22
3/4	117	48	42.9	14.2	15.7	22.48	20.96	20.96	18.88	27.7	28.2	29.0	56	24	25
1	124	54	50.8	15.7	17.5	27.96	26.74	26.74	24.40	34.5	35.1	35.8	60	25	27
1 1/4	133	64	63.5	17.5	19.0	36.66	35.08	35.08	32.50	43.2	43.7	44.4	64	25	27
1 1/2	155	70	73.0	19.0	20.6	42.76	40.94	40.94	38.14	49.5	50.0	50.3	67	29	30
2	165	84	91.9	20.6	22.4	54.96	52.68	52.68	49.42	62.0	62.5	63.5	68	32	33
2 1/2	190	100	104.6	23.9	25.4	67.10	62.88	62.88	59.18	74.7	75.4	76.2	75	37	38
3	210	117	127.0	26.9	28.4	82.80	77.92	77.92	73.66	90.7	91.4	92.2	78	41	43
3 1/2	229	133	139.7	28.4	30.2	95.50	90.12	90.12	85.44	103.4	104.1	104.9	80	43	44
4	254	146	157.2	30.2	31.8	108.20	102.26	102.26	97.18	116.1	116.8	117.6	84	46	48
5	279	178	185.7	33.3	35.1	134.40	128.10	128.10	122.16	143.8	144.5	144.5	97	49	51
6	318	206	215.9	35.1	36.6	161.60	154.18	154.18	146.46	170.7	171.4	171.4	97	51	52
8	381	260	269.7	39.6	41.1	211.68	202.84	202.84	193.80	221.5	222.2	222.2	110	60	62
10	444	321	323.8	46.0	47.8	264.62	254.46	254.46	242.82	276.4	277.4	276.4	116	65	95
12	521	375	381.0	49.3	50.8	314.66	304.76	304.76	288.84	327.2	328.2	328.7	129	72	102
14	584	425	412.8	52.3	53.8	346.04	336.56	336.56	317.50	359.2	360.2	360.4	141	75	111
16	648	483	469.9	55.6	57.2	396.84	387.60	387.60	363.52	410.5	411.2	411.2	145	81	121
18	711	533	533.4	58.7	60.5	447.64	438.16	438.16	409.54	461.8	462.3	462.0	157	87	130
20	775	587	584.2	62.0	63.5	496.92	488.96	488.96	455.62	513.1	514.4	512.8	161	94	140
22	838	641	641.4	65.0	66.5	547.72	–	–	501.64	564.4	565.2	–	164	100	145
24	914	702	692.2	68.3	68.8	596.90	590.56	590.56	547.68	616.0	616.0	614.4	167	105	152

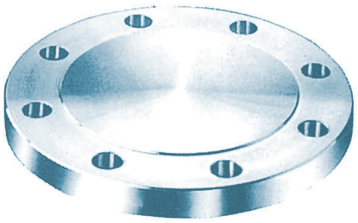
Notes:

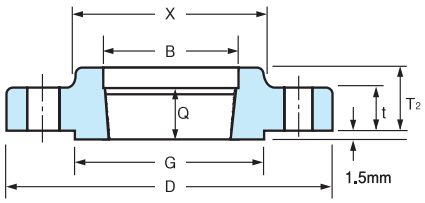
(1) For the inside diameter of pipes (corresponding to 'Bore'(B1) of Welding Neck Flanges), refer to page 59-60.

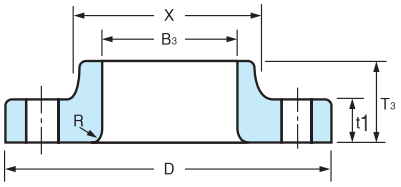
(2) For Slip-on, Threaded, Socket Welding and Lap Joint Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees.

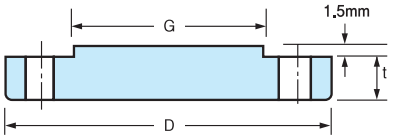












THREADED

LAP JOINT

BLIND

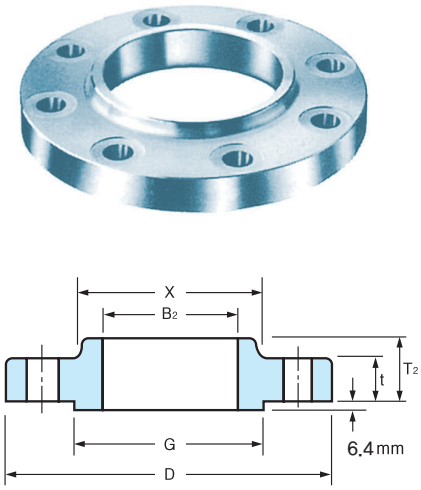
Depth of counterbore
- For NPS 2″ : 7.0
- NPS 2½ and large : 9.5
- ½≤NPS≤3, ±0.25mm(±0.010″)

Unit : mm

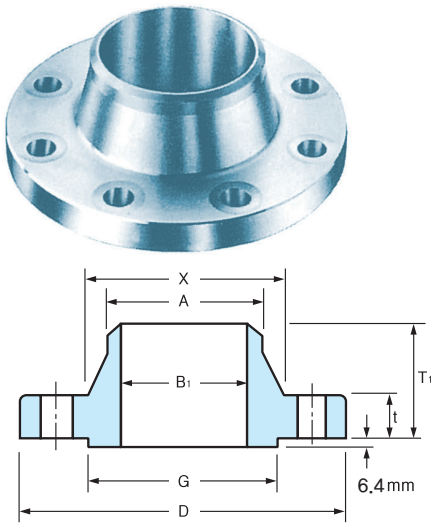
Nominal Pipe Size	Diam. of Hub at Bevel	Radius of Lap Joint	Thread Length	Depth of Socke	DRILLING			BOLTING				APPROXIMATE WEIGHT				
					Bolt Circle Diam	Number of Holes	Diam of Holes	Diam of Bolts (inch)	Machine Bolt Length	Stud Bolt Length		Welding Neck	Slip-on and Threaded	Lap Joint	Blind	Socket Welding
	A	R	Q	Y					Raised Face	Raised Face	Ring Joint	kg	kg	kg	kg	kg
1/2	21.3	3	16	10	66.5	4	15.9	1/2	55	65	75	0.78	0.62	0.61	0.62	0.62
3/4	26.7	3	16	11	82.6	4	19.1	5/8	65	75	90	1.34	1.15	1.15	1.16	1.19
1	33.5	3	18	13	88.9	4	19.1	5/8	65	75	90	1.64	1.39	1.38	1.42	1.44
1 1/4	42.2	5	21	14	98.6	4	19.1	5/8	70	85	95	2.06	1.67	1.66	1.79	1.73
1 1/2	48.3	6	22	16	114.3	4	22.2	3/4	75	90	100	3.06	2.53	2.52	2.68	2.62
2	60.5	8	25	17	127.0	8	19.1	5/8	75	90	100	3.40	2.80	2.79	3.09	2.94
2 1/2	73.2	8	28	19	149.4	8	22.2	3/4	85	100	115	5.31	4.25	4.22	4.75	4.49
3	88.9	10	32	21	168.1	8	22.2	3/4	90	110	120	7.32	5.81	5.78	6.79	6.20
3 1/2	101.6	10	37	–	184.2	8	22.2	3/4	95	110	125	8.17	7.72	7.72	9.53	–
4	114.3	11	37	–	200.2	8	22.2	3/4	95	115	125	11.30	10.13	10.07	12.00	–
5	141.2	11	43	–	235.0	8	22.2	3/4	110	120	135	15.12	12.58	12.52	15.96	–
6	168.4	13	46	–	269.7	12	22.2	3/4	110	120	140	19.68	16.04	15.95	21.20	–
8	219.2	13	51	–	330.2	12	25.4	7/8	120	140	150	30.48	24.50	24.37	34.60	–
10	273.0	13	56	–	387.4	16	28.6	1	140	160	170	43.74	34.16	39.92	55.34	–
12	323.8	13	60	–	450.8	16	31.8	1 1/8	145	170	185	64.41	51.26	58.70	78.90	–
14	355.6	13	64	–	514.4	20	31.8	1 1/8	160	180	190	88.30	72.12	83.46	107.05	–
16	406.4	13	68	–	571.5	20	34.9	1 1/4	165	190	205	112.94	90.40	106.14	139.25	–
18	457.2	13	70	–	628.6	24	34.9	1 1/4	170	195	210	138.34	109.00	133.95	176.90	–
20	508.0	13	73	–	685.8	24	34.9	1 1/4	185	205	220	167.37	136.00	157.65	223.17	–
22	558.8	13	–	–	743.0	24	41.3	1 1/2	205	230	255	192.40	162.00	185.50	274.40	–
24	609.6	13	83	–	812.8	24	41.3	1 1/2	205	230	255	235.41	204.00	240.40	342.00	–

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

CLASS 400 FLANGES



SLIP-ON



WELDING NECK

ASME B16.5 FORGED FLANGES

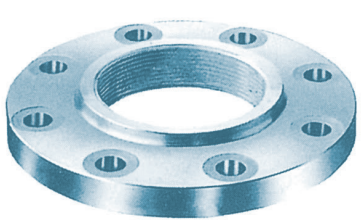
Unit : mm

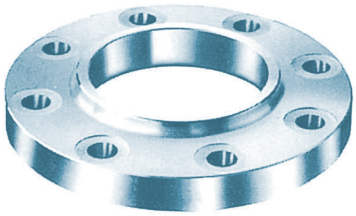
Nominal Pipe Size	Outside Diam.	Diam. at Base of Hub	O. D. of Raised Face	Thick-ness (Min.)	BORE							LENGTH THRU HUB		
					Welding Neck Socket Welding				Slip-on Socket Welding (Min.)	Lap Joint (Min.)	THDF Cont. Bore (Min.)	Welding Neck	Slip-on Threaded Socket Welding	Lap Joint
					S/10S	S/40S	S/40	S/80						
	D	X	G	t	B_1				B_2	B_3	B	T_1	T_2	T_3
1/2	95	38	35.1	14.2	17.08	15.76	15.76	13.84	22.4	22.9	23.6	52	22	22
3/4	117	48	42.9	15.7	22.48	20.96	20.96	18.88	27.7	28.2	29.0	57	25	25
1	124	54	50.8	17.5	27.96	26.74	26.74	24.40	34.5	35.1	35.8	62	27	27
1 1/4	133	64	63.5	20.6	36.66	35.08	35.08	32.50	43.2	43.7	44.4	67	28	28
1 1/2	155	70	73.0	22.4	42.76	40.94	40.94	38.14	49.5	50.0	50.5	70	32	32
2	165	84	91.9	25.4	54.96	52.68	52.68	49.42	62.0	62.5	63.5	73	37	37
2 1/2	190	100	104.6	28.4	67.10	62.88	62.88	59.18	74.7	75.4	76.2	79	41	41
3	210	117	127.0	31.8	82.80	77.92	77.92	73.66	90.7	91.4	92.2	83	46	46
3 1/2	229	133	139.7	35.1	95.50	90.12	90.12	85.44	103.4	104.1	104.9	86	49	49
4	254	146	157.2	35.1	108.20	102.26	102.26	97.18	116.1	116.8	117.6	89	51	51
5	279	178	185.7	38.1	134.40	128.10	128.10	122.16	143.8	144.5	144.5	102	54	54
6	318	206	215.9	41.1	161.60	154.18	154.18	146.46	170.7	171.4	171.4	103	57	57
8	381	260	269.7	47.8	211.68	202.84	202.84	193.80	221.5	222.2	222.2	117	68	68
10	444	321	323.8	53.8	264.62	254.46	254.46	242.82	276.4	277.4	276.4	124	73	102
12	521	375	381.0	57.2	314.66	304.76	304.76	288.84	327.2	328.2	328.7	137	79	108
14	584	425	412.8	60.5	346.04	336.56	336.56	317.50	359.2	360.2	360.4	149	84	117
16	648	483	469.9	63.5	396.84	387.60	387.60	363.52	410.5	411.2	411.2	152	94	127
18	711	533	533.4	66.5	447.64	438.16	428.16	409.54	461.8	462.3	462.0	165	99	137
20	775	587	584.2	69.8	496.92	488.96	488.96	455.62	513.1	514.4	512.8	168	102	146
22	838	641	641.4	73.2	547.72	–	–	501.64	564.4	565.2	–	171	108	152
24	914	702	692.2	76.2	596.90	590.56	590.56	547.68	616.0	616.0	614.4	175	114	159

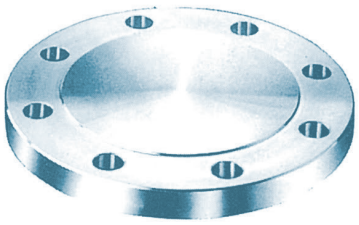
Notes:

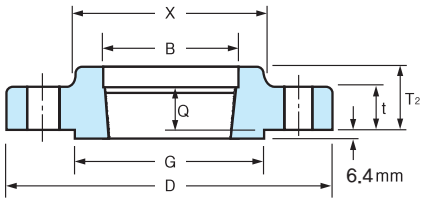
(1) For the inside diameter of pipes (corresponding to 'Bore' (B1) of Welding Neck Flanges), refer to page 59-60

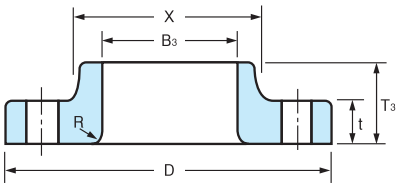
(2) For Slip-on, Threaded and Lap Joint Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees.

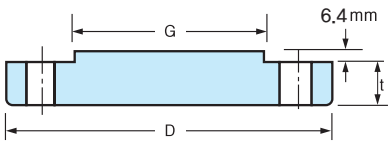












THREADED　　LAP JOINT　　BLIND

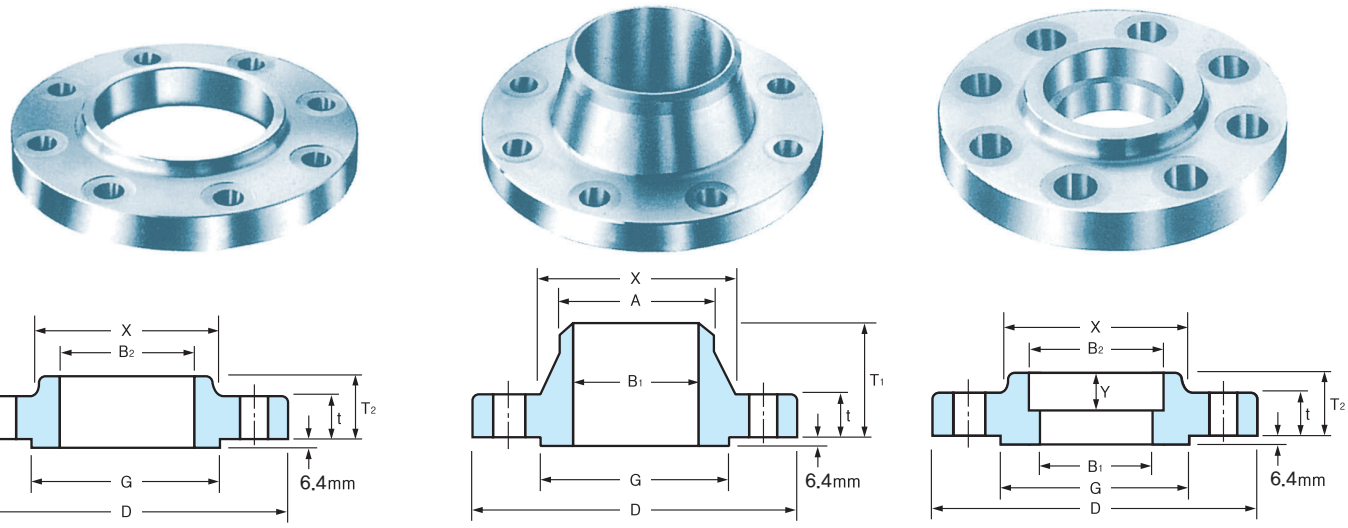
Depth of counterbore
- For NPS 2″ : 7.0
- NPS $2\frac{1}{2}$ and large : 9.5
- $\frac{1}{2} \leq$ NPS ≤ 3, ±0.25mm(±0.010″)

Unit : mm

Nominal Pipe Size	Diam. of Hub at Bevel	Radius of Lap Joint	Thread Length	DRILLING			BOLTING				APPROXIMATE WEIGHT			
				Bolt Circle Diam	Number of Holes	Diam of Holes	Diam of Bolts (inch)	Machine Bolt Length	Stud Bolt Length		Welding Neck	Slip-on and Threaded	Lap Joint	Blind
	A	R	Q					Raised Face	Tongue Groove	Ring Joint	kg	kg	kg	kg
1/2	21.3	3	16	66.5	4	15.9	1/2	75	70	75	1.36	0.91	0.80	0.91
3/4	26.7	3	16	82.6	4	19.1	5/8	90	85	90	1.59	1.36	1.36	1.40
1	33.5	3	18	88.9	4	19.1	5/8	90	85	90	1.81	1.59	1.59	1.70
1 1/4	42.2	5	21	98.6	4	19.1	5/8	95	90	95	2.50	2.10	2.04	2.27
1 1/2	48.3	6	22	114.3	4	22.2	3/4	110	100	110	3.63	3.10	2.95	3.40
2	60.5	8	28	127.0	8	19.1	5/8	110	100	110	4.54	3.63	3.63	4.40
2 1/2	73.2	8	32	149.4	8	22.2	3/4	120	115	120	6.35	5.44	4.99	6.80
3	88.9	10	35	168.1	8	22.2	3/4	125	120	125	8.17	7.26	6.35	8.90
3 1/2	101.6	10	40	184.2	8	25.4	7/8	140	135	140	11.80	9.53	9.08	13.17
4	114.3	11	37	200.2	8	25.4	7/8	140	135	140	13.61	10.89	9.98	14.40
5	141.2	11	43	235.0	8	25.4	7/8	145	135	145	17.69	14.07	13.15	19.50
6	168.4	13	46	269.7	12	25.4	7/8	150	145	150	22.23	19.98	16.78	27.67
8	219.2	13	51	330.2	12	28.6	1	170	165	170	35.38	30.40	26.16	45.36
10	273.0	13	56	387.4	16	31.8	1 1/8	190	185	190	49.89	41.28	43.09	68.00
12	323.8	13	60	450.8	16	34.9	1 1/4	205	195	205	72.57	59.02	68.95	98.00
14	355.6	13	64	514.4	20	34.9	1 1/4	210	205	210	105.69	81.72	95.25	131.66
16	406.4	13	68	571.5	20	38.1	1 3/8	220	215	220	133.30	106.69	127.00	167.00
18	457.2	13	70	628.6	24	38.1	1 3/8	230	220	230	158.90	129.39	156.49	206.57
20	508.0	13	73	685.8	24	41.3	1 1/2	240	235	250	193.00	152.00	190.51	261.00
22	558.8	13	–	743.0	24	44.5	1 5/8	255	250	260	211.60	176.60	196.50	296.60
24	609.6	13	83	812.8	24	47.6	1 3/4	265	260	280	281.48	231.54	278.96	395.00

(3) Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub.
(4) The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree.
To accomplish parallelism, spot facing is carried out according to MSS SP-9, without reducing thickness (t).
(5) Dimensions of sizes 1/2″ through 3 1/2″ are the same as for Class 600 Flanges

CLASS 600 FLANGES



SLIP–ON | WELDING NECK | SOCKET WELDING

(NPS 1/2 to 3 Only)

ASME B16.5 FORGED FLANGES

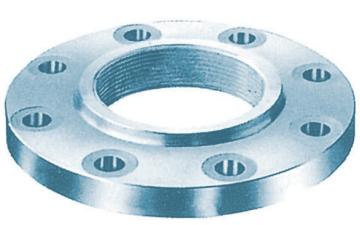
Unit : mm

Nominal Pipe Size	Outside Diam.	Diam. at Base of Hub	O. D. of Raised Face	Thick–ness (Min.)	BORE							LENGTH THRU HUB		
					Welding Neck Socket Welding				Slip–on Socket Welding (Min.)	Lap Joint (Min.)	THDF Cont. Bore (Min.)	Welding Neck	Slip–on Threaded Socket Welding	Lap Joint
					S/10S	S/40S	S/40	S/80						
	D	X	G	t	B_1				B_2	B_3	B	T_1	T_2	T_3
1/2	95	38	35.1	14.2	17.08	15.76	15.76	13.84	22.4	22.9	23.6	52	22	22
3/4	117	48	42.9	15.7	22.48	20.96	20.96	18.88	27.7	28.2	29.0	57	25	25
1	124	54	50.8	17.5	27.96	26.74	26.74	24.40	34.5	35.1	35.8	62	27	27
1 1/4	133	64	63.5	20.6	36.66	35.08	35.08	32.50	43.2	43.7	44.4	67	28	28
1 1/2	155	70	73.0	22.4	42.76	40.94	40.94	38.14	49.5	50.0	50.5	70	32	32
2	165	84	91.9	25.4	54.96	52.68	52.68	49.42	62.0	62.5	63.5	73	37	37
2 1/2	190	100	104.6	28.4	67.10	62.88	62.88	59.18	74.7	75.4	76.2	79	41	41
3	210	117	127.0	31.8	82.80	77.92	77.92	73.66	90.7	91.4	92.2	83	46	46
3 1/2	229	133	139.7	35.1	95.50	90.12	90.12	85.44	103.4	104.1	104.9	86	49	49
4	273	152	157.2	38.1	108.20	102.26	102.26	97.18	116.1	116.8	117.6	102	54	54
5	330	189	185.7	44.4	134.40	128.10	128.10	122.16	143.8	144.5	144.5	114	60	60
6	356	222	215.9	47.8	161.60	154.18	154.18	146.46	170.7	171.4	171.4	117	67	67
8	419	273	269.7	55.6	211.68	202.84	202.84	193.80	221.5	222.2	222.2	133	76	76
10	508	343	323.8	63.5	264.62	254.46	254.46	242.82	276.2	277.4	276.4	152	86	111
12	559	400	381.0	66.5	314.66	304.76	304.76	288.84	327.0	328.2	328.7	155	92	117
14	603	432	412.8	69.8	346.04	336.56	336.56	317.50	359.2	360.2	360.4	165	94	127
16	686	495	469.9	76.2	396.84	387.60	387.60	363.52	410.5	411.2	411.2	178	106	140
18	743	546	533.4	82.6	447.64	438.16	438.16	409.54	461.8	462.3	462.0	184	117	152
20	813	610	584.2	88.9	496.92	488.96	488.96	455.62	513.1	514.4	512.8	190	127	165
22	870	663	641.4	95.2	547.72	–	–	501.64	564.4	565.2	–	197	133	175
24	940	718	692.2	101.6	596.90	590.56	590.56	547.68	616.0	616.0	614.4	203	140	184

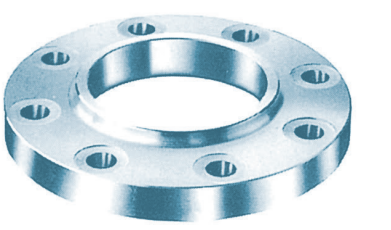
Notes:

(1) For the inside diameter of pipes (corresponding to 'Bore' (B1) of Welding Neck Flanges), refer to page 59–60.

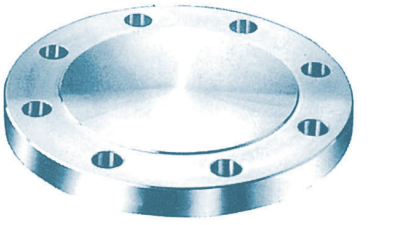
(2) For Slip–on, Threaded, Lap Joint and Socket Welding Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees.



THREADED



LAP JOINT



BLIND

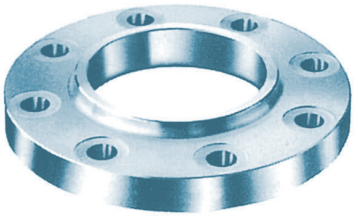
Depth of counterbore
- For NPS 2″ : 7.0
- NPS 2½ and large : 9.5
- ½≤NPS≤3, ±0.25mm(±0.010″)

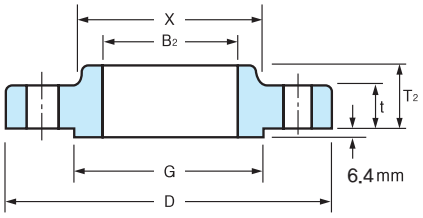
Unit : mm

Nominal Pipe Size	Diam. of Hub at Bevel	Radius of Lap Joint	Thread Length	Depth of Socket	DRILLING			BOLTING				APPROXIMATE WEIGHT				
					Bolt Circle Diam	Number of Holes	Diam of Holes	Diam of Bolts (inch)	Machine Bolt Length	Stud Bolt Length		Welding Neck	Slip-on and Threaded	Lap Joint	Blind	Socket Welding
									Raised Face	Tongue Groove	Ring Joint					
	A	R	Q	Y								kg	kg	kg	kg	kg
1/2	21.3	3	16	10.0	66.5	4	15.9	1/2	75	70	75	1.36	0.91	0.80	0.91	0.91
3/4	26.7	3	16	11.0	82.6	4	19.1	5/8	90	85	90	1.59	1.40	1.36	1.40	1.36
1	33.5	3	18	13.0	88.9	4	19.1	5/8	90	85	90	1.90	1.70	1.59	1.81	1.81
1 1/4	42.2	5	21	14.0	98.6	4	19.1	5/8	95	90	95	2.50	2.27	2.04	2.40	2.60
1 1/2	48.3	6	22	16.0	114.3	4	22.2	3/4	110	100	110	3.63	3.10	2.95	3.40	3.18
2	60.5	8	28	18.0	127.0	8	19.1	5/8	110	100	110	4.54	3.63	3.63	4.40	3.90
2 1/2	73.2	8	32	19.0	149.4	8	22.2	3/4	120	115	120	6.35	5.44	4.99	6.80	5.90
3	88.9	10	35	21.0	168.1	8	22.2	3/4	125	120	125	8.17	7.26	6.35	8.90	7.40
3 1/2	101.6	10	40	–	184.2	8	25.4	7/8	140	135	140	11.80	9.53	9.08	13.17	–
4	114.3	11	41	–	215.9	8	25.4	7/8	145	140	145	16.78	14.97	14.06	18.60	–
5	141.2	11	48	–	266.7	8	28.6	1	165	160	165	30.87	28.50	27.50	30.84	–
6	168.4	13	51	–	292.1	12	28.6	1	170	165	170	36.77	36.32	35.38	38.00	–
8	219.2	13	57	–	349.2	12	31.8	1 1/8	190	185	195	50.80	44.00	50.80	62.20	–
10	273.0	13	65	–	431.8	16	34.9	1 1/4	215	210	215	86.26	76.20	74.00	102.00	–
12	323.8	13	70	–	489.0	20	34.9	1 1/4	220	215	220	102.51	97.52	108.86	132.00	–
14	355.6	13	73	–	527.0	20	38.1	1 3/8	235	230	235	121.56	102.00	111.00	158.00	–
16	406.4	13	78	–	603.2	20	41.3	1 1/2	255	250	255	177.06	147.82	165.71	224.73	–
18	457.2	13	79	–	654.0	20	44.5	1 5/8	275	265	275	215.65	180.10	194.00	285.00	–
20	508.0	13	83	–	723.9	24	44.5	1 5/8	285	280	290	267.86	231.54	258.78	365.00	–
22	558.8	13	–	–	777.7	24	47.6	1 3/4	305	–	310	298.30	257.60	283.90	412.30	–
24	609.6	13	92	–	838.2	24	50.8	1 7/8	330	325	335	372.00	330.00	392.00	533.45	–

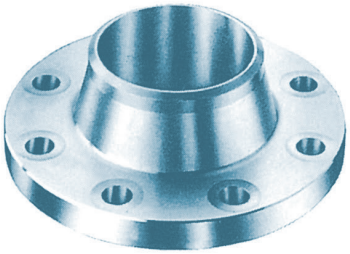
(3) Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub.
(4) The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree.
To accomplish parallelism, spot facing is carried out according to MSS SP-9, without reducing thickness (t).
(5) Dimensions of sizes 1/2″ through 3 1/2″ are the same as for Class 400 Flanges
(6) Depth of Socket (Y) is covered by ASME B16.5 only in sizes through 3 inch, over 3 inch is at the manufacturer's option.s

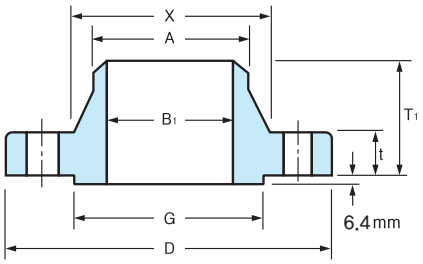
CLASS 900 FLANGES





SLIP–ON





WELDING NECK

ASME B16.5 FORGED FLANGES

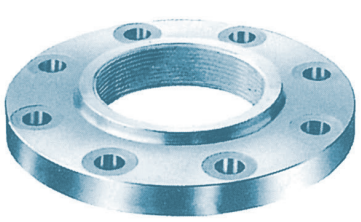
Unit : mm

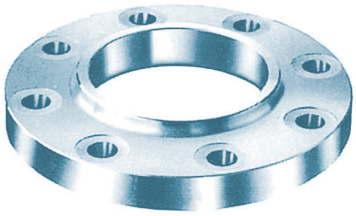
Nominal Pipe Size	Outside Diam.	Diam. at Base of Hub	O. D. of Raised Face	Thick-ness (Min.)	BORE							LENGTH THRU HUB		
					Welding Neck Socket Welding				Slip-on Socket Welding (Min.)	Lap Joint (Min.)	THDF Cont. Bore (Min.)	Welding Neck	Slip-on Threaded Socket Welding	Lap Joint
					S/10S	S/40S	S/40	S/80						
	D	X	G	t	B_1				B_2	B_3	B	T_1	T_2	T_3
1/2	121	38	35.1	22.4	17.08	15.76	15.76	13.84	22.4	22.9	23.6	60	32	32
3/4	130	44	42.9	25.4	22.48	20.96	20.96	18.88	27.7	28.2	29.0	70	35	35
1	149	52	50.8	28.4	27.96	26.74	26.74	24.40	34.5	35.4	35.8	73	41	41
1 1/4	159	64	63.5	28.4	36.66	35.08	35.08	32.50	43.2	43.7	44.4	73	41	41
1 1/2	178	70	73.0	31.8	42.76	40.94	40.94	38.14	49.5	50.0	50.5	83	44	44
2	216	105	91.9	38.1	54.96	52.68	52.68	49.42	62.0	62.5	63.5	102	57	57
2 1/2	244	124	104.6	41.1	67.10	62.88	62.88	59.18	74.7	75.4	76.2	105	64	64
3	241	127	127.0	38.1	82.80	77.92	77.92	73.66	90.7	91.4	92.2	102	54	54
4	292	159	157.2	44.5	108.20	102.26	102.26	97.18	116.1	116.8	117.6	114	70	70
5	349	190	185.7	50.8	134.40	128.10	128.10	122.16	143.8	144.5	144.5	127	79	79
6	381	235	215.9	55.6	161.60	154.18	154.18	146.46	170.7	171.4	171.4	140	86	86
8	470	298	269.7	63.5	211.68	202.84	202.84	193.80	221.5	222.2	222.2	162	102	114
10	546	368	323.8	69.8	264.62	254.46	254.46	242.82	276.4	277.4	276.4	184	108	127
12	610	419	381.0	79.2	314.66	304.76	304.76	288.84	327.2	328.2	328.7	200	117	143
14	641	451	412.8	85.9	346.04	336.56	336.56	317.50	359.2	360.2	360.4	213	130	155
16	705	508	469.9	88.9	396.84	387.60	387.60	363.52	410.5	411.2	411.2	216	133	165
18	787	565	533.4	101.6	447.64	438.16	438.16	409.54	461.8	462.3	462.0	229	152	190
20	857	622	584.2	108.0	496.92	488.96	488.96	455.62	513.1	514.4	512.8	248	159	210
24	1041	749	692.2	139.7	596.90	590.56	590.56	547.68	616.0	616.0	614.4	292	203	267

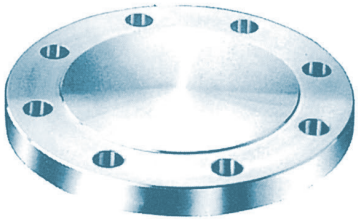
Notes:

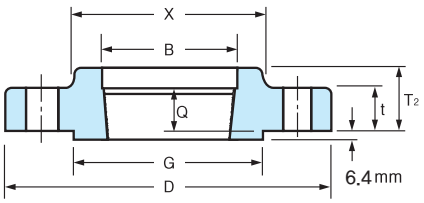
(1) For the inside diameter of pipes (corresponding to 'Bore' (B1) of Welding Neck Flanges), refer to page 59–60.

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

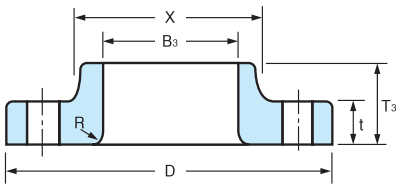




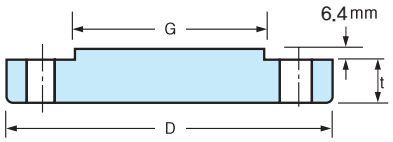




THREADED



LAP JOINT



BLIND

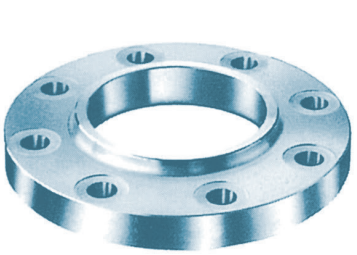
Depth of counterbore
- For NPS 2″ : 7.0
- NPS 2 1/2 and large : 9.5
- 1/2 ≤NPS≤3, ±0.25mm(±0.010″)

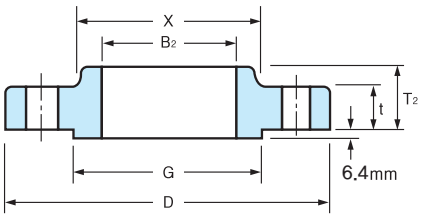
Unit : mm

Nominal Pipe Size	Diam. of Hub at Bevel	Radius of Lap Joint	Thread Length	DRILLING			BOLTING				APPROXIMATE WEIGHT			
				Bolt Circle Diam	Number of Holes	Diam of Holes	Diam of Bolts (inch)	Machine Bolt Length	Stud Bolt Length		Welding Neck	Slip-on and Threaded	Lap Joint	Blind
	A	R	Q					Raised Face	Tongue Groove	Ring Joint	kg	kg	kg	kg
1/2	21.3	3	22	82.6	4	22.2	3/4	110	100	110	2.10	1.81	1.81	1.90
3/4	26.7	3	25	88.9	4	22.2	3/4	115	110	115	2.72	2.40	2.30	2.72
1	33.5	3	28	101.6	4	25.4	7/8	125	120	125	3.86	3.41	3.40	4.09
1 1/4	42.2	5	30	111.1	4	25.4	7/8	125	120	125	4.54	4.10	4.09	4.54
1 1/2	48.3	6	32	124.0	4	28.6	1	140	135	140	5.90	5.45	5.40	5.90
2	60.5	8	38	165.1	8	25.4	7/8	145	140	145	10.89	10.50	9.53	11.34
2 1/2	73.2	8	48	190.5	8	28.6	1	160	150	160	16.34	15.80	13.15	16.00
3	88.9	10	41	190.5	8	25.4	7/8	145	140	145	15.00	11.80	11.34	13.17
4	114.3	11	48	235.0	8	31.8	1 1/8	170	165	170	23.13	23.20	22.60	24.50
5	141.2	11	54	279.4	8	34.9	1 1/4	190	185	190	38.50	37.65	36.74	39.46
6	168.4	13	57	317.5	12	31.8	1 1/8	190	185	195	49.89	48.30	47.50	51.50
8	219.2	13	64	393.7	12	38.1	1 3/8	220	215	220	79.45	75.00	86.00	89.00
10	273.0	13	71	469.9	16	38.1	1 3/8	235	230	235	118.04	111.13	125.64	131.54
12	323.8	13	76	533.4	20	38.1	1 3/8	255	250	255	157.00	146.00	167.00	187.00
14	355.6	13	83	558.8	20	41.3	1 1/2	275	265	280	171.60	172.36	180.07	224.07
16	406.4	13	86	616.0	20	44.5	1 5/8	285	280	290	224.73	192.95	211.11	272.40
18	457.2	13	89	685.8	20	50.8	1 7/8	325	320	335	308.72	272.40	295.10	385.90
20	508.0	13	92	749.3	20	54.0	2	350	345	360	376.82	331.42	367.74	488.00
24	609.6	13	102	901.7	20	66.7	2 1/2	440	430	455	685.00	632.00	700.00	905.00

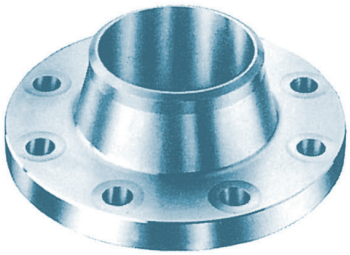
(3) Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub.
(4) The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree.
To accomplish parallelism, spot facing is carried out according to MSS SP-9, without reducing thickness (t).
(5) Dimensions of sizes 1/2″ through 2 1/2″ are the same as for Class 1500 Flanges

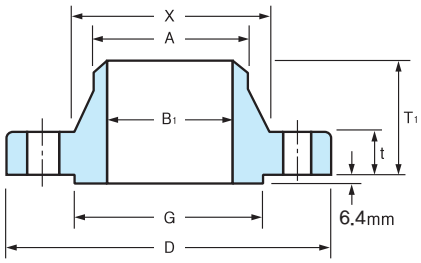
CLASS 1500 FLANGES



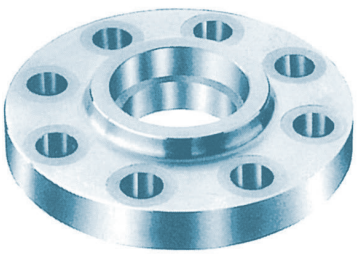


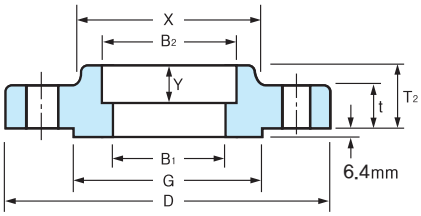
SLIP–ON





WELDING NECK





SOCKET WELDING

ASME B16.5 FORGED FLANGES

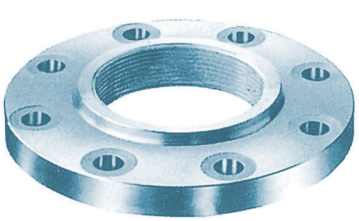
Unit : mm

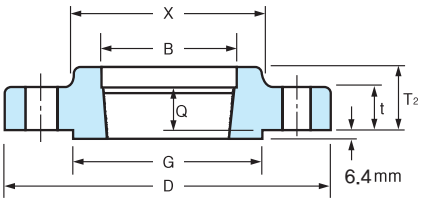
Nominal Pipe Size	Outside Diam.	Diam. at Base of Hub	O. D. of Raised Face	Thick–ness (Min.)	BORE							LENGTH THRU HUB		
					Welding Neck Socket Welding				Slip–on Socket Welding (Min.)	Lap Joint (Min.)	THDF Cont. Bore (Min.)	Welding Neck	Slip–on Threaded Socket Welding	Lap Joint
					S/10S	S/40S	S/40	S/80						
	D	X	G	t	B_1				B_2	B_3	B	T_1	T_2	T_3
1/2	121	38	35.1	22.4	17.08	15.76	15.76	13.84	22.4	22.9	23.6	60	32	32
3/4	130	44	42.9	25.4	22.48	20.96	20.96	18.88	27.7	28.2	29.0	70	35	35
1	149	52	50.8	28.4	27.96	26.74	26.74	24.40	34.5	35.4	35.8	73	41	41
1 1/4	159	64	63.5	28.4	36.66	35.08	35.08	32.50	43.2	43.7	44.4	73	41	41
1 1/2	178	70	73.0	31.8	42.76	40.94	40.94	38.14	49.5	50.0	50.5	83	44	44
2	216	105	91.9	38.1	54.96	52.68	52.68	49.42	62.0	62.5	63.5	102	57	57
2 1/2	244	124	104.6	41.1	67.10	62.88	62.88	59.18	74.7	75.4	76.2	105	64	64
3	267	133	127.0	47.8	82.80	77.92	77.92	73.66	–	91.4	–	117	–	73
4	311	162	157.2	53.8	108.20	102.26	102.26	97.18	–	116.8	–	124	–	90
5	375	197	185.7	73.2	134.40	128.10	128.10	122.16	–	144.5	–	155	–	105
6	394	229	215.9	82.6	161.60	154.18	154.18	146.46	–	171.4	–	171	–	119
8	483	292	269.7	91.9	211.68	202.84	202.84	193.80	–	222.2	–	213	–	143
10	584	368	323.8	108.0	264.62	254.46	254.46	242.82	–	277.4	–	254	–	178
12	673	451	381.0	124.0	314.66	304.76	304.76	288.84	–	328.2	–	282	–	219
14	749	495	412.8	133.4	346.04	336.56	336.56	317.50	–	360.2	–	298	–	241
16	826	552	469.9	146.0	396.84	387.60	387.60	363.52	–	411.2	–	311	–	260
18	914	597	533.4	162.1	447.64	438.16	438.16	409.54	–	462.3	–	327	–	276
20	984	641	584.2	177.8	496.92	488.96	488.96	455.62	–	514.4	–	356	–	292
24	1168	762	692.2	203.2	596.90	590.56	590.56	547.68	–	616.0	–	406	–	330

Notes:

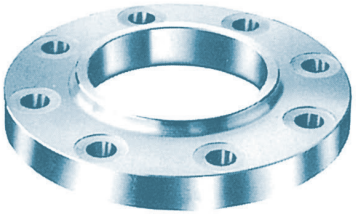
(1) For the inside diameter of pipes (corresponding to 'Bore' (B1) of Welding Neck Flanges), refer to page 59–60.

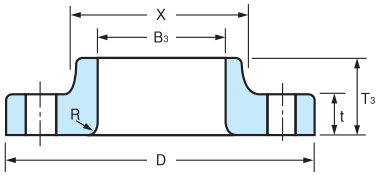
(2) For Slip–on, Threaded, Lap Joint and Socket Welding Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees.



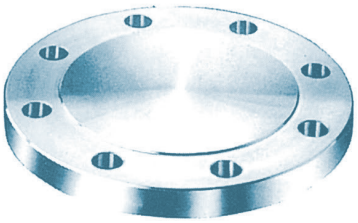


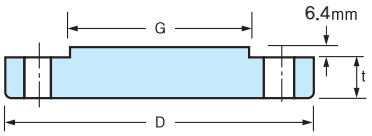
THREADED





LAP JOINT





BLIND

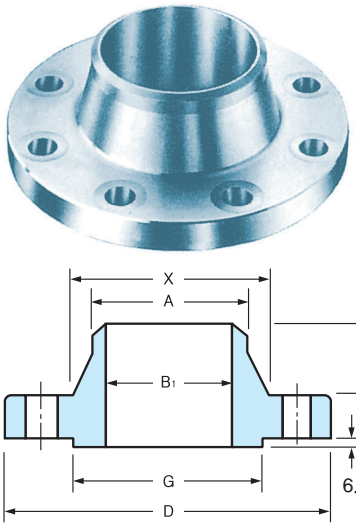
Depth of counterbore
- For NPS 2″ : 7.0
- NPS 2½ and large : 9.5
- ½≤NPS≤3, ±0.25mm(±0.010″)

Unit : mm

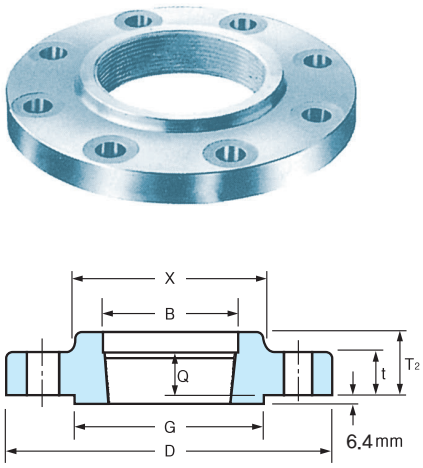
Nominal Pipe Size	Diam. of Hub at Bevel	Radius of Lap Joint	Thread Length	Depth of Socket	DRILLING			BOLTING				APPROXIMATE WEIGHT				
					Bolt Circle Diam	Number of Holes	Diam of Holes	Diam of Bolts (inch)	Machine Bolt Length	Stud Bolt Length		Welding Neck	Slip-on and Threaded	Lap Joint	Blind	Socket Welding
	A	R	Q	Y					Raised Face	Tongue Groove	Ring Joint	kg	kg	kg	kg	kg
1/2	21.3	3	22.0	10.0	82.6	4	22.2	3/4	110	100	110	2.10	1.81	1.81	1.90	1.86
3/4	26.7	3	25.0	11.0	88.9	4	22.2	3/4	115	110	115	2.72	2.40	2.30	2.72	2.45
1	33.5	3	28.0	13.0	101.6	4	25.4	7/8	125	120	125	3.86	3.41	3.40	4.09	3.46
11/4	42.2	5	30.0	14.0	111.1	4	25.4	7/8	125	120	125	4.54	4.10	4.09	4.54	4.15
11/2	48.3	6	32.0	16.0	124.0	4	28.6	1	140	135	140	5.90	5.45	5.40	5.90	5.50
2	60.5	8	38.0	18.0	165.1	8	25.4	7/8	145	140	145	10.89	10.50	9.53	11.34	10.55
21/2	73.2	8	48.0	19.0	190.5	8	28.6	1	160	150	160	16.34	15.80	13.15	16.00	15.85
3	88.9	10	–	–	203.2	8	31.8	11/8	180	170	180	21.79	21.77	17.24	21.79	–
4	114.3	11	–	–	241.3	8	34.9	11/4	195	190	195	31.30	31.00	29.00	22.11	–
5	141.2	11	–	–	292.1	8	41.3	11/2	250	240	250	59.02	58.80	54.00	60.00	–
6	168.4	13	–	–	317.5	12	38.1	13/8	260	255	265	74.91	74.00	62.00	75.00	–
8	219.2	13	–	–	393.7	12	44.5	15/8	290	285	300	123.83	117.73	129.73	136.98	–
10	273.0	13	–	–	482.6	12	50.8	17/8	335	330	345	205.93	197.49	220.19	229.97	–
12	323.8	13	–	–	571.5	16	54.0	2	375	370	385	306.00	264.00	286.02	316.00	–
14	355.6	13	–	–	635.0	16	60.3	21/4	405	400	425	416.00	–	404.06	421.00	–
16	406.4	13	–	–	704.8	16	66.7	21/2	445	440	470	567.50	–	522.10	559.00	–
18	457.2	13	–	–	774.7	16	73.0	23/4	495	490	525	736.00	–	669.65	731.00	–
20	508.0	13	–	–	831.8	16	79.4	3	540	535	565	929.00	–	805.85	967.00	–
24	609.6	13	–	–	990.6	16	92.1	31/2	615	610	650	1504.00	–	1285.55	1568.00	–

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

CLASS 2500 FLANGES



WELDING NECK



THREADED

(NPS 1/2 to 21/2 Only)

ASME B16.5 FORGED FLANGES

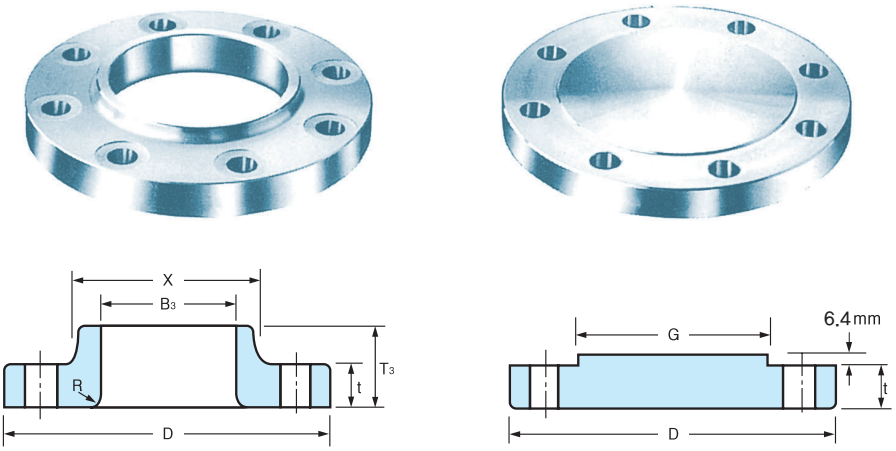
Unit : mm

Nominal Pipe Size	Outside Diam.	Diam. at Base of Hub	O. D. of Raised Face	Thick-ness (Min.)	BORE						LENGTH THRU HUB		
					Welding Neck Socket Welding				Lap Joint (Min.)	THDF Cont. Bore (Min.)	Welding Neck	Slip-on Threaded Socket Welding	Lap Joint
					S/10S	S/40S	S/40	S/80					
	D	X	G	t	B_1				B_3	B	T_1	T_2	T_3
1/2	133	43	35.1	30.2	17.08	15.76	15.76	13.84	22.9	23.6	73	40	40
3/4	140	51	42.9	31.8	22.48	20.96	20.96	18.88	28.2	29.0	79	43	43
1	159	57	50.8	35.1	27.96	26.74	26.74	24.40	35.1	35.8	89	48	48
11/4	184	73	63.5	38.1	36.66	35.08	35.08	32.50	43.7	44.4	95	52	52
11/2	203	79	73.0	44.4	42.76	40.94	40.94	38.14	50.0	50.5	111	60	60
2	235	95	91.9	50.8	54.96	52.68	52.68	49.42	62.5	63.5	127	70	70
21/2	267	114	104.6	57.2	67.10	62.88	62.88	59.18	75.4	76.2	143	79	79
3	305	133	127.0	66.5	82.80	77.92	77.92	73.66	91.4	–	168	–	92
4	356	165	157.2	76.2	108.20	102.26	102.26	97.18	116.8	–	190	–	108
5	419	203	185.7	91.9	134.40	128.10	128.10	122.16	144.5	–	229	–	130
6	483	235	215.9	108.0	161.60	154.18	154.18	146.46	171.4	–	273	–	152
8	552	305	269.7	127.0	211.68	202.84	202.84	193.80	222.2	–	318	–	178
10	673	375	323.8	165.1	264.62	254.46	254.46	242.82	277.4	–	419	–	229
12	762	441	381.0	184.2	314.66	304.76	304.76	288.84	328.2	–	464	–	254

Notes:

(1) For the inside diameter of pipes (corresponding to 'Bore' (B1) of Welding Neck Flanges), refer to page 59–60.

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

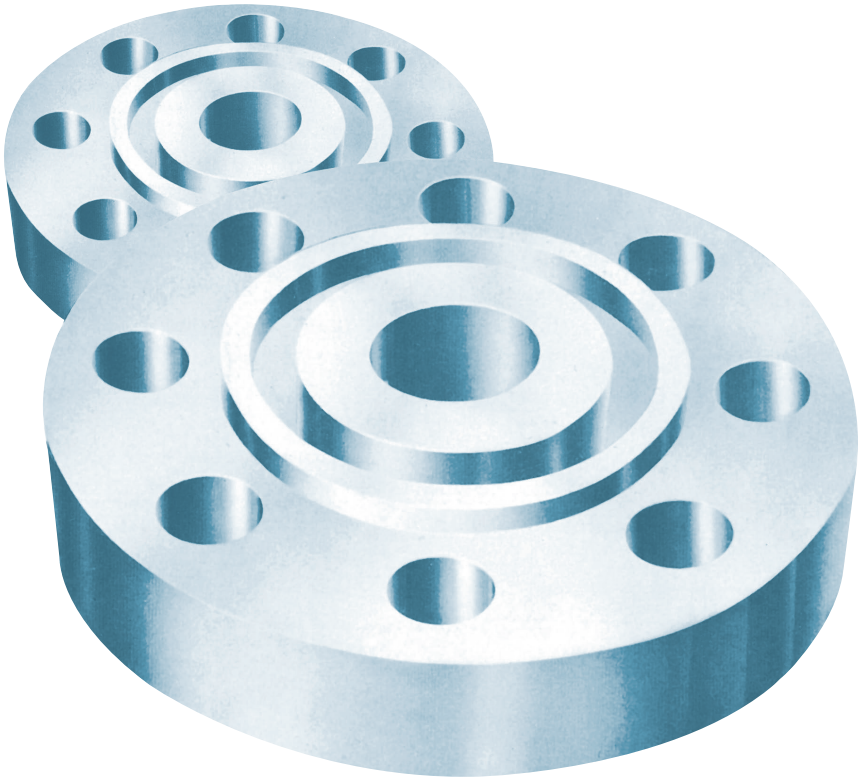


LAP JOINT BLIND

Unit : mm

Nominal Pipe Size	Diam. of Hub at Bevel	Radius of Lap Joint	Thread Length	DRILLING			BOLTING				APPROXIMATE WEIGHT			
				Bolt Circle Diam	Number of Holes	Diam of Holes	Diam of Bolts (inch)	Machine Bolt Length	Stud Bolt Length		Welding Neck	Slip-on and Threaded	Lap Joint	Blind
	A	R	Q					Raised Face	Tongue Groove	Ring Joint	kg	kg	kg	kg
1/2	21.3	3	28	88.9	4	22.2	3/4	120	115	120	3.18	3.18	3.00	3.18
3/4	26.7	3	32	95.2	4	22.2	3/4	115	120	125	4.08	4.08	3.63	4.54
1	33.5	3	35	108.0	4	25.4	7/8	140	135	140	5.45	5.44	4.99	5.44
1 1/4	42.2	5	38	130.0	4	28.6	1	150	145	150	9.07	8.16	7.26	8.16
1 1/2	48.3	6	44	146.0	4	31.8	1 1/8	170	165	170	11.35	11.00	9.99	10.44
2	60.5	8	51	171.4	8	28.6	1	180	170	180	19.07	17.25	16.80	17.71
2 1/2	73.2	8	57	196.8	8	31.8	1 1/8	195	190	205	23.61	24.97	24.06	25.42
3	88.9	10	–	228.6	8	34.9	1 1/4	220	215	230	42.68	37.68	36.32	39.04
4	114.3	11	–	273.0	8	41.3	1 1/2	255	250	260	64.00	58.00	54.48	60.38
5	141.2	11	–	323.8	8	47.6	1 3/4	300	290	310	110.68	95.25	92.53	101.15
6	168.4	13	–	368.3	8	54.0	2	345	335	355	176.46	146.51	143.01	156.63
8	219.2	13	–	438.2	12	54.0	2	380	375	395	261.27	219.99	213.38	240.62
10	273.0	13	–	539.8	12	66.7	2 1/2	490	485	510	484.43	419.57	408.60	465.36
12	323.8	13	–	619.3	12	73.0	2 3/4	540	535	560	692.35	590.20	572.95	604.06

(3) Blind Flanges may be made with the same hub as that used for Slip–on Flanges or without hub.
(4) The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree.
To accomplish parallelism, spot facing is carried out according to MSS SP–9, without reducing thickness (t).
(5) Class 2500 Slip–on Flanges are not covered by ASME B16.5, slip–on flanges are at the manufacturer's option.



RING JOINT FLANGES

Class 150 Flanges

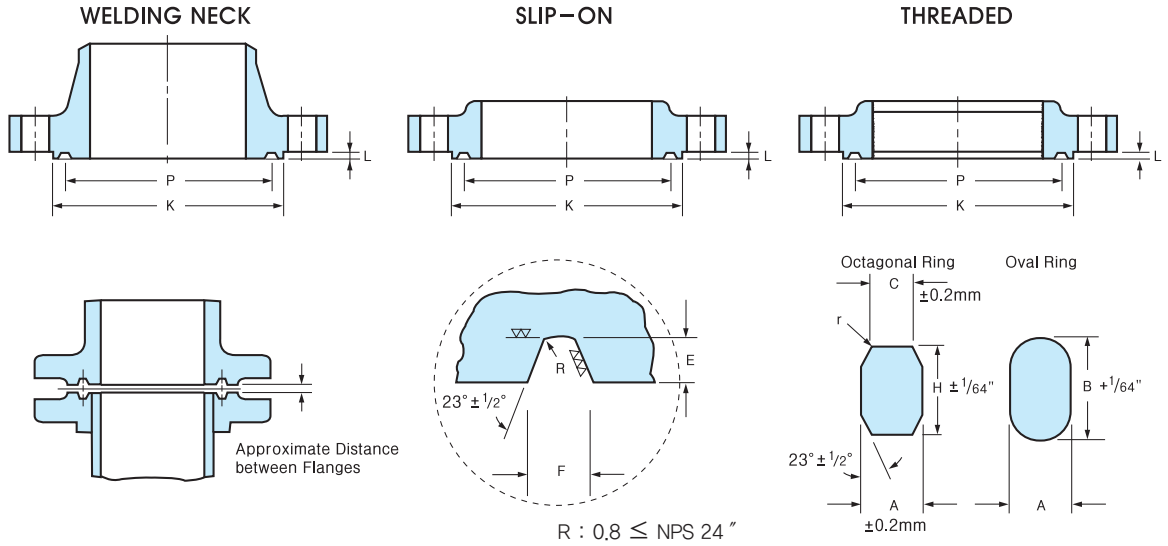
Class 300, 400, 600 Flanges

Class 900 Flanges

Class 1500 Flanges

Class 2500 Flanges

CLASS 150 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 Rings	Width of Groove	Depth of Groove	Diameter of Raised Face for Ring Joint or Lapped	Ring Number	Approximate Distance Between Flanges of Ring Joints When Ring is Compressed
			Oval	Octagonal						
	P	A	B	H	C	F	E (L*)	K (Min)		
1	47.62	7.95	14.2	12.7	5.23	8.74	6.35	63.5	R 15	4
1 1/4	57.15	7.95	14.2	12.7	5.23	8.74	6.35	73.2	R 17	4
1 1/2	65.07	7.95	14.2	12.7	5.23	8.74	6.35	82.6	R 19	4
2	82.55	7.95	14.2	12.7	5.23	8.74	6.35	102	R 22	4
2 1/2	101.60	7.95	14.2	12.7	5.23	8.74	6.35	121	R 25	4
3	114.30	7.95	14.2	12.7	5.23	8.74	6.35	133	R 29	4
3 1/2	131.78	7.95	14.2	12.7	5.23	8.74	6.35	154	R 33	4
4	149.22	7.95	14.2	12.7	5.23	8.74	6.35	171	R 36	4
5	171.45	7.95	14.2	12.7	5.23	8.74	6.35	194	R 40	4
6	193.68	7.95	14.2	12.7	5.23	8.74	6.35	219	R 43	4
8	247.65	7.95	14.2	12.7	5.23	8.74	6.35	273	R 48	4
10	304.80	7.95	14.2	12.7	5.23	8.74	6.35	330	R 52	4
12	381.00	7.95	14.2	12.7	5.23	8.74	6.35	406	R 56	4
14	396.88	7.95	14.2	12.7	5.23	8.74	6.35	425	R 59	3
16	454.02	7.95	14.2	12.7	5.23	8.74	6.35	483	R 64	3
18	517.52	7.95	14.2	12.7	5.23	8.74	6.35	546	R 68	3
20	558.80	7.95	14.2	12.7	5.23	8.74	6.35	597	R 72	3
22	615.95	7.95	–	12.7	5.23	8.74	6.35	648	R 80	3
24	673.10	7.95	14.2	12.7	5.23	8.74	6.35	711	R 76	3

Notes:

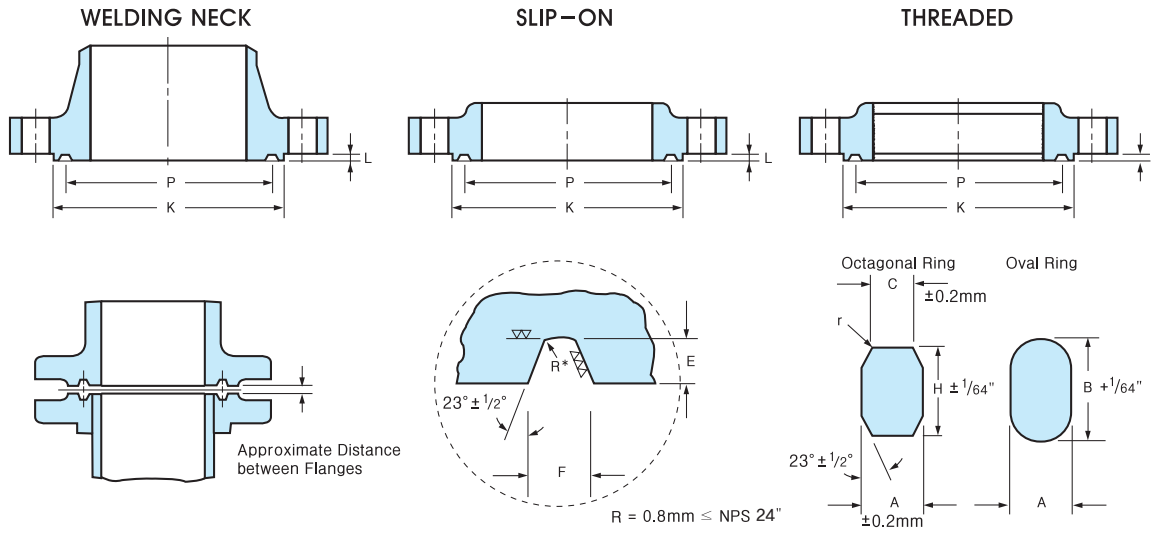
Unless otherwise specified by the customer, Ring Type Joint Flanges will be furnished in accordance with these details.
The depth of groove is added to the minimum flange thickness.

* 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 heights B and H is permitted providing the variation in the height of any given ring does not exceed 1/64 in, throughout its entire circumference.
Radius "r" is 1/16″ (1.6mm)for ring widths 7/8″ (22.2mm)″ and less and 3/32″ (2.4mm) for ring widths 1″ (25.4mm) and over.

* Tolerance – K : min – P : ±0.13
– E : +0.40, –0 – R : R≤1.5 : +0.8, –0
– F : ±0.20 R>1.5 : ±0.8

CLASS 300/400/600 FLANGES RING JOINT FLANGES FACING DIMENSIONS



ASME B16.5 FORGED FLANGES

Unit : mm

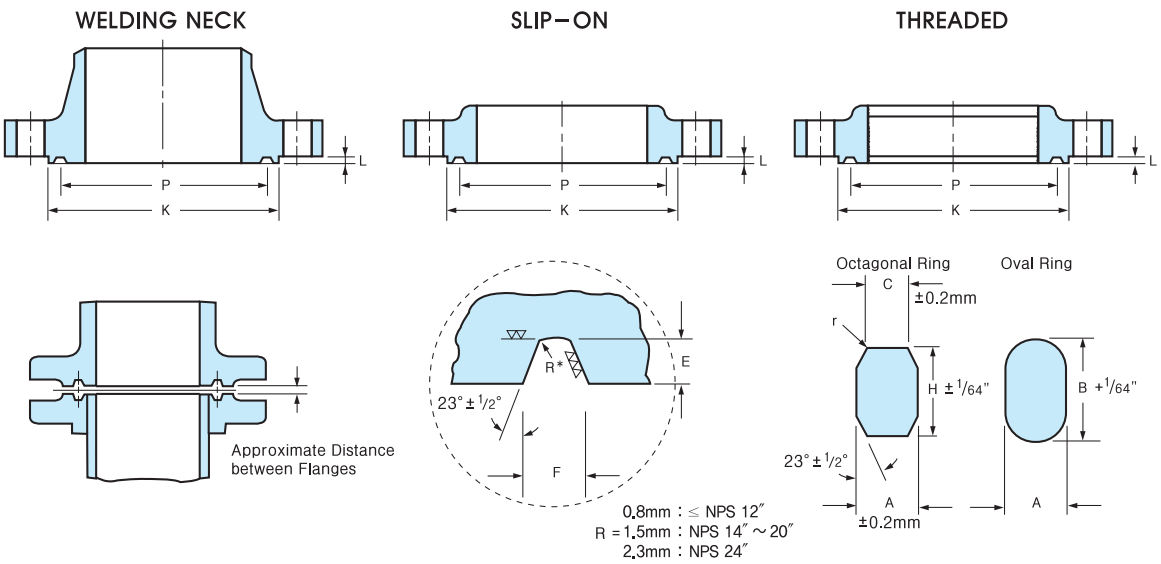
Nominal Pipe Size	Pitch Diam. of Ring and Groove	Width of Ring	HEIGHT OF RING		Width of Flat on Octagonal Rings	Width of Groove	Depth of Groove	Diameter of Raised Face for Ring Joint or Lapped	Ring Number	Approximate Distance Between Flanges of Ring Joints When Ring is Compressed		
			Oval	Octagonal								
	P	A	B	H	C	F	E (L*)	K (Min)		CLASS 300	CLASS 400	CLASS 600
1/2	34.14	6.35	11.2	9.7	4.32	7.14	5.56	51.0	R 11	3	3	3
3/4	42.88	7.95	14.2	12.7	5.23	8.74	6.35	63.5	R 13	4	4	4
1	50.80	7.95	14.2	12.7	5.23	8.74	6.35	69.8	R 16	4	4	4
1 1/4	60.33	7.95	14.2	12.7	5.23	8.74	6.35	79.2	R 18	4	4	4
1 1/2	68.28	7.95	14.2	12.7	5.23	8.74	6.35	90.4	R 20	4	4	4
2	82.55	11.13	17.5	16.0	7.75	11.91	7.92	108	R 23	6	5	5
2 1/2	101.60	11.13	17.5	16.0	7.75	11.91	7.92	127	R 26	6	5	5
3	123.82	11.13	17.5	16.0	7.75	11.91	7.92	146	R 31(*)	6	5	5
3 1/2	131.78	11.13	17.5	16.0	7.75	11.91	7.92	159	R 34	6	5	5
4	149.22	11.13	17.5	16.0	7.75	11.91	7.92	175	R 37	6	6	5
5	180.98	11.13	17.5	16.0	7.75	11.91	7.92	210	R 41	6	6	5
6	211.12	11.13	17.5	16.0	7.75	11.91	7.92	241	R 45	6	6	5
8	269.88	11.13	17.5	16.0	7.75	11.91	7.92	302	R 49	6	6	5
10	323.85	11.13	17.5	16.0	7.75	11.91	7.92	356	R 53	6	6	5
12	381.00	11.13	17.5	16.0	7.75	11.91	7.92	413	R 57	6	6	5
14	419.10	11.13	17.5	16.0	7.75	11.91	7.92	457	R 61	6	6	5
16	469.90	11.13	17.5	16.0	7.75	11.91	7.92	508	R 65	6	6	5
18	533.40	11.13	17.5	16.0	7.75	11.91	7.92	575	R 69	6	6	5
20	584.20	12.70	19.1	17.5	8.66	13.49	9.52	635	R 73	6	6	5
22	635.00	14.30	–	19.1	9.58	15.09	11.13	686	R 81	6	6	6
24	692.15	15.88	22.4	20.6	10.49	16.66	11.13	749	R 77	6	6	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 heights B and H is permitted providing the variation in the height of any given ring does not exceed 1/64 in. throughout its entire circumference.
* Radius "r" is 1/16″ (1.6mm) for ring widths 7/8″ (22.2mm) and less and 3/32″ (2.4mm) for ring widths 1″ (25.4mm) and over.
  Lapped flanges 300#,600# 3" : Ring Number R30
* Tolerance – K : min – P : ±0.13
  – E : +0.40, –0 – R : R≤1.5 : +0.8, –0
  – F : ±0.20 R>1.5 : ±0.8
* NPS 22" only applied to CLASS 300.
* (*)For ring joints with lapped flanges in classes 300 and 600, ring and groove number R30 is used instead of R31

CLASS 900 FLANGES RING JOINT FLANGES FACING DIMENSIONS



Unit : mm

Nominal Pipe Size	Pitch Diam. of Ring and Groove	Width of Ring	HEIGHT OF RING		Width of Flat on Octagonal Rings	Width of Groove	Depth of Groove	Diameter of Raised Face for Ring Joint or Lapped	Ring Number	Approximate Distance Between Flanges of Ring Joints When Ring is Compressed
			Oval	Octagonal						
	P	A	B	H	C	F	E (L*)	K (Min)		
1/2	39.67	7.95	14.2	12.7	5.23	8.74	6.35	60.5	R 12	4
3/4	44.45	7.95	14.2	12.7	5.23	8.74	6.35	66.5	R 14	4
1	50.80	7.95	14.2	12.7	5.23	8.74	6.35	71.4	R 16	4
1 1/4	60.33	7.95	14.2	12.7	5.23	8.74	6.35	81.0	R 18	4
1 1/2	68.28	7.95	14.2	12.7	5.23	8.74	6.35	91.9	R 20	4
2	95.25	11.13	17.5	16.0	7.75	11.91	7.92	124	R 24	3
2 1/2	107.95	11.13	17.5	16.0	7.75	11.91	7.92	137	R 27	3
3	123.82	11.13	17.5	16.0	7.75	11.91	7.92	155	R 31	4
4	149.22	11.13	17.5	16.0	7.75	11.91	7.92	181	R 37	4
5	180.98	11.13	17.5	16.0	7.75	11.91	7.92	216	R 41	4
6	211.12	11.13	17.5	16.0	7.75	11.91	7.92	241	R 45	4
8	269.88	11.13	17.5	16.0	7.75	11.91	7.92	308	R 49	4
10	323.85	11.13	17.5	16.0	7.75	11.91	7.92	362	R 53	4
12	381.00	11.13	17.5	16.0	7.75	11.91	7.92	419	R 57	4
14	419.10	15.88	22.4	20.6	10.49	16.66	11.13	467	R 62	4
16	469.90	15.88	22.4	20.6	10.49	16.66	11.13	524	R 66	4
18	533.40	19.05	25.4	23.9	12.32	19.84	12.70	594	R 70	5
20	584.20	19.05	25.4	23.9	12.32	19.84	12.70	648	R 74	5
24	692.15	25.40	33.3	31.8	17.30	26.97	15.88	772	R 78	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.

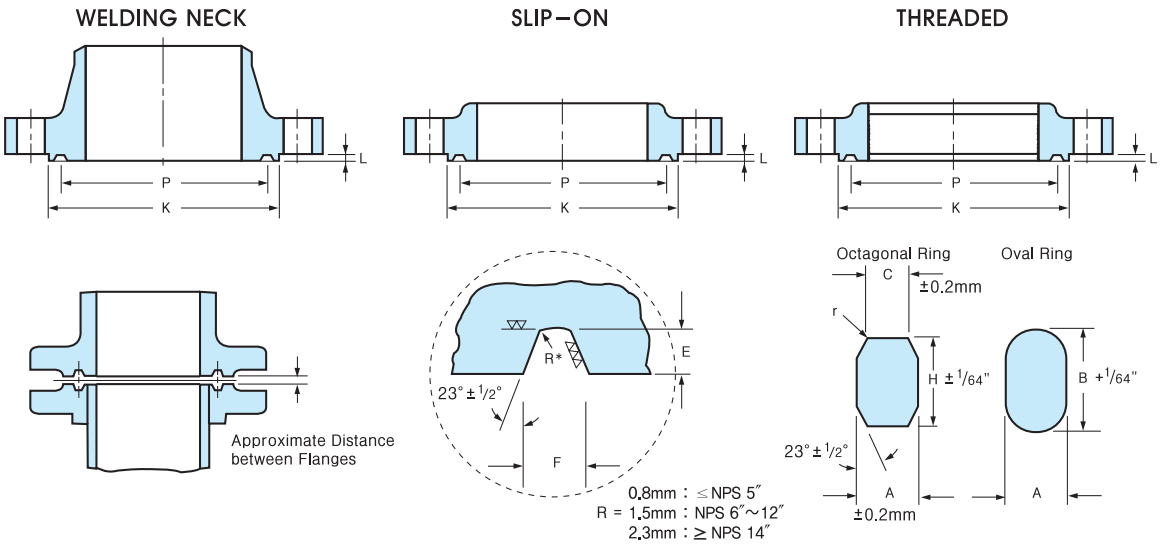
* Raised face "L" is equal to groove dimension "E" but is not subject to tolerances for "E".

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

* Radius "r" is 1/16″ (1.6mm) for ring widths 7/8″ (22.2mm) and less and 3/32″ (2.4mm)for ring widths 1″ (25.4mm) and over.

* Tolerance – K : min – P : ±0.13
– E : +0.40, –0 – R : R≤1.5 : +0.8, –0
– F : ±0.20 R>1.5 : ±0.8

CLASS 1500 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 Rings	Width of Groove	Depth of Groove	Diameter of Raised Face for Ring Joint or Lapped	Ring Number	Approximate Distance Between Flanges of Ring Joints When Ring is Compressed
			Oval	Octagonal						
	P	A	B	H	C	F	E (L*)	K (Min)		
1/2	39.67	7.95	14.2	12.7	5.23	8.74	6.35	60.5	R 12	4
3/4	44.45	7.95	14.2	12.7	5.23	8.74	6.35	66.5	R 14	4
1	50.80	7.95	14.2	12.7	5.23	8.74	6.35	71.4	R 16	4
1 1/4	60.33	7.95	14.2	12.7	5.23	8.74	6.35	81.0	R 18	4
1 1/2	68.28	7.95	14.2	12.7	5.23	8.74	6.35	91.9	R 20	4
2	95.25	11.13	17.5	16.0	7.75	11.91	7.92	124	R 24	3
2 1/2	107.95	11.13	17.5	16.0	7.75	11.91	7.92	137	R 27	3
3	136.52	11.13	17.5	16.0	7.75	11.91	7.92	168	R 35	3
4	161.92	11.13	17.5	16.0	7.75	11.91	7.92	194	R 39	3
5	193.68	11.13	17.5	16.0	7.75	11.91	7.92	229	R 44	3
6	211.14	12.70	19.1	17.5	8.66	13.49	9.52	248	R 46	3
8	269.88	15.88	22.4	20.6	10.49	16.66	11.13	318	R 50	4
10	323.85	15.88	22.4	20.6	10.49	16.66	11.13	371	R 54	4
12	381.00	22.23	28.7	26.9	14.81	23.01	14.27	438	R 58	5
14	419.10	25.40	33.3	31.8	17.30	26.97	15.88	489	R 63	6
16	469.90	28.58	36.6	35.1	19.81	30.18	17.48	546	R 67	8
18	533.40	28.58	36.6	35.1	19.81	30.18	17.48	613	R 71	8
20	584.20	31.75	39.6	38.1	22.33	33.32	17.48	673	R 75	10
24	692.15	34.93	44.5	41.4	24.82	36.53	20.62	794	R 79	11

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.

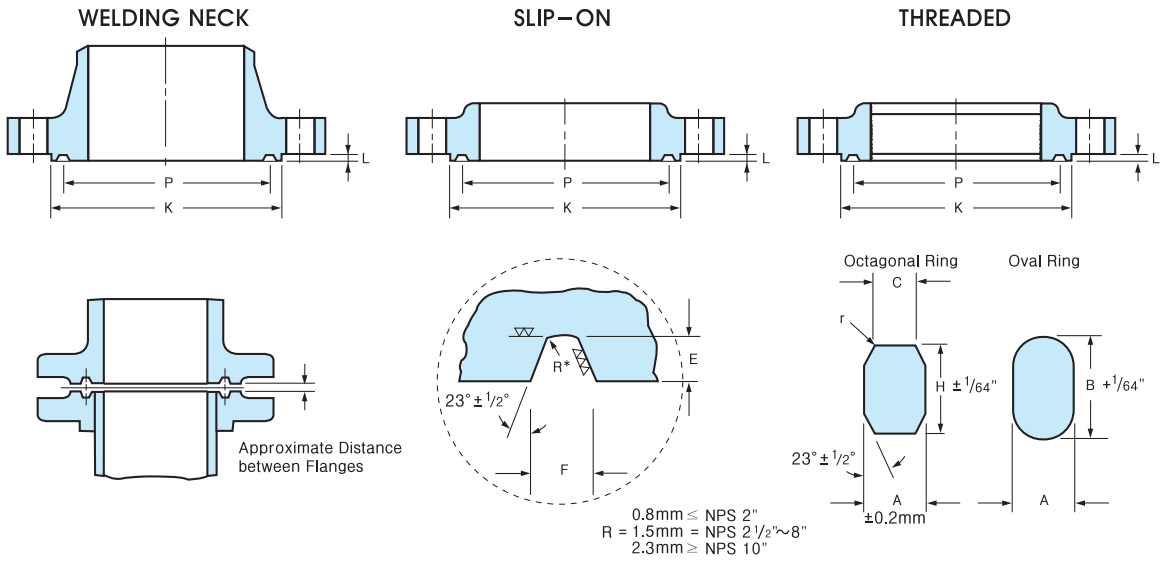
* Raised face "L" is equal to groove dimension "E" but is not subject to tolerances for "E".

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

* Radius "r" is 1/16″ (1.6mm) for ring widths 7/8″ (22.2mm) and less and 3/32″ (2.4mm) for ring widths 1″ (25.4mm) and over.

* Tolerance – K : min – P : ±0.13
– E : +0.40, –0 – R : R≤1.5 : +0.8, –0
– F : ±0.20 R>1.5 : ±0.8

CLASS 2500 FLANGES RING JOINT FLANGES FACING DIMENSIONS



Unit : mm

Nominal Pipe Size	Pitch Diam. of Ring and Groove	Width of Ring	HEIGHT OF RING		Width of Flat on Octagonal Rings	Width of Groove	Depth of Groove	Diameter of Raised Face for Ring Joint or Lapped	Ring Number	Approximate Distance Between Flanges of Ring Joints When Ring is Compressed
			Oval	Octagonal						
	P	A	B	H	C	F	E (L*)	K (Min)		
1/2	42.88	7.95	14.2	12.7	5.23	8.74	6.35	65.0	R 13	4
3/4	50.80	7.95	14.2	12.7	5.23	8.74	6.35	73.2	R 16	4
1	60.33	7.95	14.2	12.7	5.23	8.74	6.35	82.6	R 18	4
1 1/4	72.24	11.13	17.5	16.0	7.75	11.91	7.92	102	R 21	3
1 1/2	82.55	11.13	17.5	16.0	7.75	11.91	7.92	114	R 23	3
2	101.60	11.13	17.5	16.0	7.75	11.91	7.92	133	R 26	3
2 1/2	111.12	12.70	19.1	17.5	8.66	13.49	9.53	149	R 28	3
3	127.00	12.70	19.1	17.5	8.66	13.49	9.53	168	R 32	3
4	157.18	15.88	22.4	20.6	10.49	16.66	11.13	203	R 38	4
5	190.50	19.05	25.4	23.9	12.32	19.84	12.70	241	R 42	4
6	228.60	19.05	25.4	23.9	12.32	19.84	12.70	279	R 47	4
8	279.40	22.23	28.7	26.9	14.81	23.01	14.27	340	R 51	5
10	342.90	28.58	36.6	35.1	19.81	30.18	17.48	425	R 55	6
12	406.40	31.75	39.6	38.1	22.33	33.32	17.48	495	R 60	8

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" s equal to groove dimension "E" but is not subject to tolerances for "E".

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

* Radius "r" is 1/16″ (1.6mm) for ring widths 7/8″ (22.2mm) and less and 3/32″ (2.4mm) for ring widths 1″ (25.4mm) and over.

* Tolerance – K : min – P : ±0.13
– E : +0.40, –0 – R : R≤1.5 : +0.8, –0
– F : ±0.20 R>1.5 : ±0.8

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 TEMPLATE AND THICKNESS – Outside diameter, drilling template and flange thickness Q(see note on FACINGS) agree with the dimensions of a standard flange of the nominal pipe size from which the reduction is being made.

FACING – Facing dimensions also agree with the dimensions of a standard flange of the nominal pipe size from which the reduction is being made.
Class 150, Class 300 forged steel Threaded, Slip-On, Welding Neck and Blind flanges are furnished with American Standard 1/16" raised face, Class 400, Class 600, Class 900, Class 1500 and Class 2500 flanges are supplied with American Standard 1/4" raised face.

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.

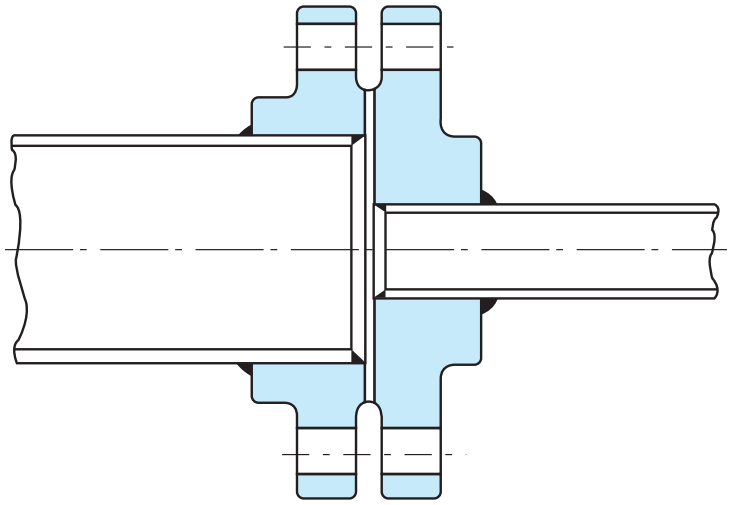
EXAMPLE :

(1) The size designation is NPS 6 x 2 1/2 Class 300 reducing threaded flange.
This flange has the following dimensions:
NPS 2 1/2" = taper pipe thread tapping (ASME B1.20.1)
320 mm = diameter of regular NPS 6 Class 300 threaded flange
35 mm = thickness of regular NPS 6 Class 300 threaded flange
178 mm = diameter of hub for regular NPS 5 Class 300 threaded flange.
Hub diameter may be one size small to reduce machining.
In this example, a hub diameter of NPS 21/2 would be the smallest acceptable.
15.5 mm = height of hub for regular NPS 5 Class 300 threaded flange
(2) The size designation is NPS 6 x 2 Class 300 reducing threaded flange. Use regular
NPS 6 Class 300 blind flange tapped with NPS 2 taper pipe thread (ASME B1.20.1)

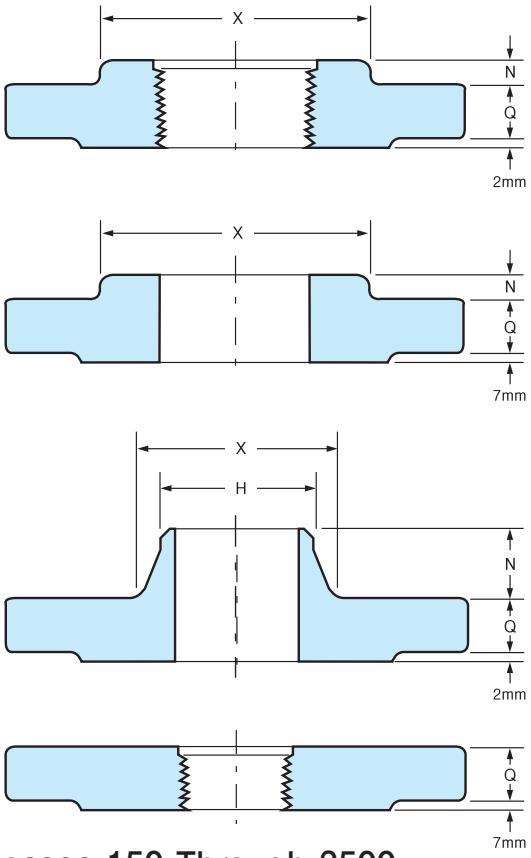
WELDING NECK TYPES

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.

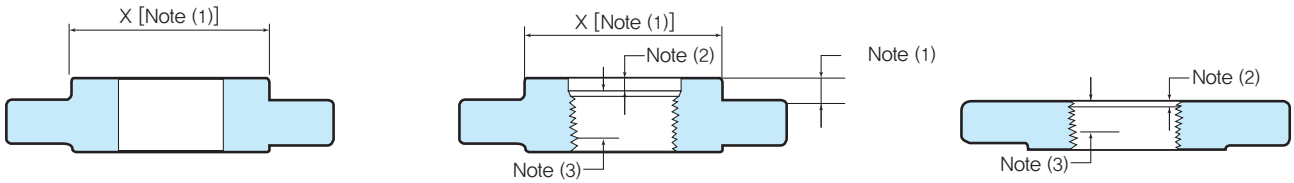
REDUCING FLANGES THREADED – SLIP–ON – WELDING NECK



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.



Reducing Threaded and Slip–On Pipe Flanges for Classes 150 Through 2500



SLIP–ON WELDING THREADED BLIND FLANGE

1	2	3	4	5	6
NPS [Note (4)]	Smallest Size of Reducing Outlet Requiring Hub Flanges [Note (1)]	NPS [Note (4)]	Smallest Size of Reducing Outlet Requiring Hub Flanges [Note (1)]	NPS [Note (4)]	Smallest Size of Reducing Outlet Requiring Hub Flanges [Note (1)]
1 1 1/4 1 1/2 2 2 1/2 3	1/2 1/2 1/2 1 1 1/4 1 1/4	3 1/2 4 5 6 8 10	1 1/2 1 1/2 1 1/2 2 1/2 3 3 1/2	12 14 16 18 20 24	3 1/2 3 1/2 4 4 4 4

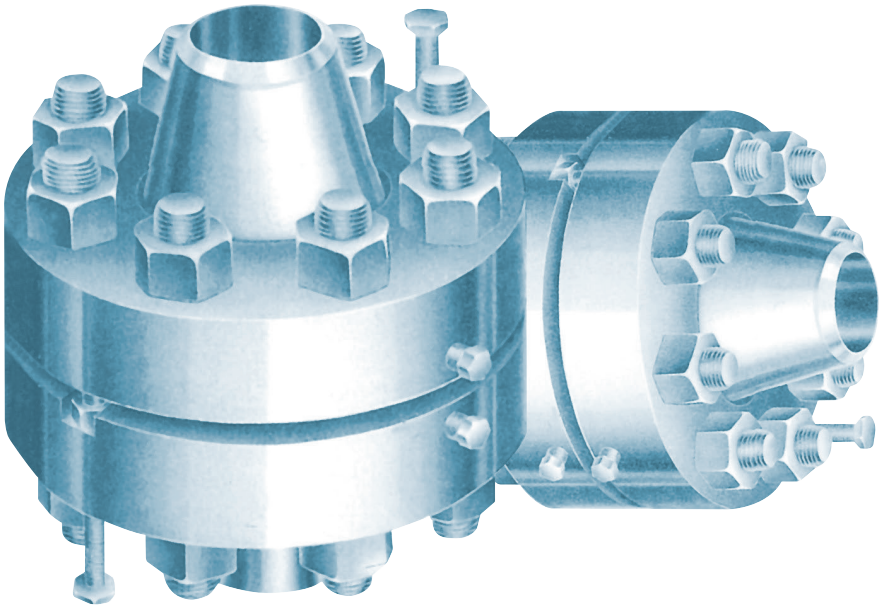
Notes:

(1) The hub dimensions shall be at least as large as those of the standard flanges of the size to which the reduction is being machined, except flanges reducing to a size smaller than those of Columns 2, 4 and 6 may be made from blind flanges.

(2) Class 150 flanges do not have a counterbore. Class 300 and higher pressure flanges will have depth of counterbore Q of 7mm for NPS 2 and smaller tapping and 9.50mm for NPS 2 1/2 and larger. The diameter Q of counterbore is the same as that given in the tables of threaded flanges for the corresponding tapping.

(3) Minimum length of effective threads shall be at least equal dimension T of the corresponding pressure class threaded flange as shown in tables but does not necessarily extend for the face of the flange.

(4) For method of designating reducing threaded and reducing Slip–On Flange (SOF), reducing flanges shall be designated by the NPS for each opening.



ORIFICE FLANGES

ANSI ORIFICE FLANGES

Class 300 Orifice Flanges

Class 600 Orifice Flanges

Class 900,1500 Orifice Flanges

Class 2500 Orifice Flanges

Depth of Jack Screw Slot & Jack Screw Size

ORIFICE FLANGES (ASME B16.36) FORGED

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. (2mm) 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. Each pressure tap hole shall be equipped with a pipe plug.

(2) The 0.94 in (24mm) locating dimension for raised face and 0.75 in. (19mm) 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 5mm / m (0.06in / ft)

(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 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 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) Tolerance on location of center of pressure tap hole from flange face shall be:

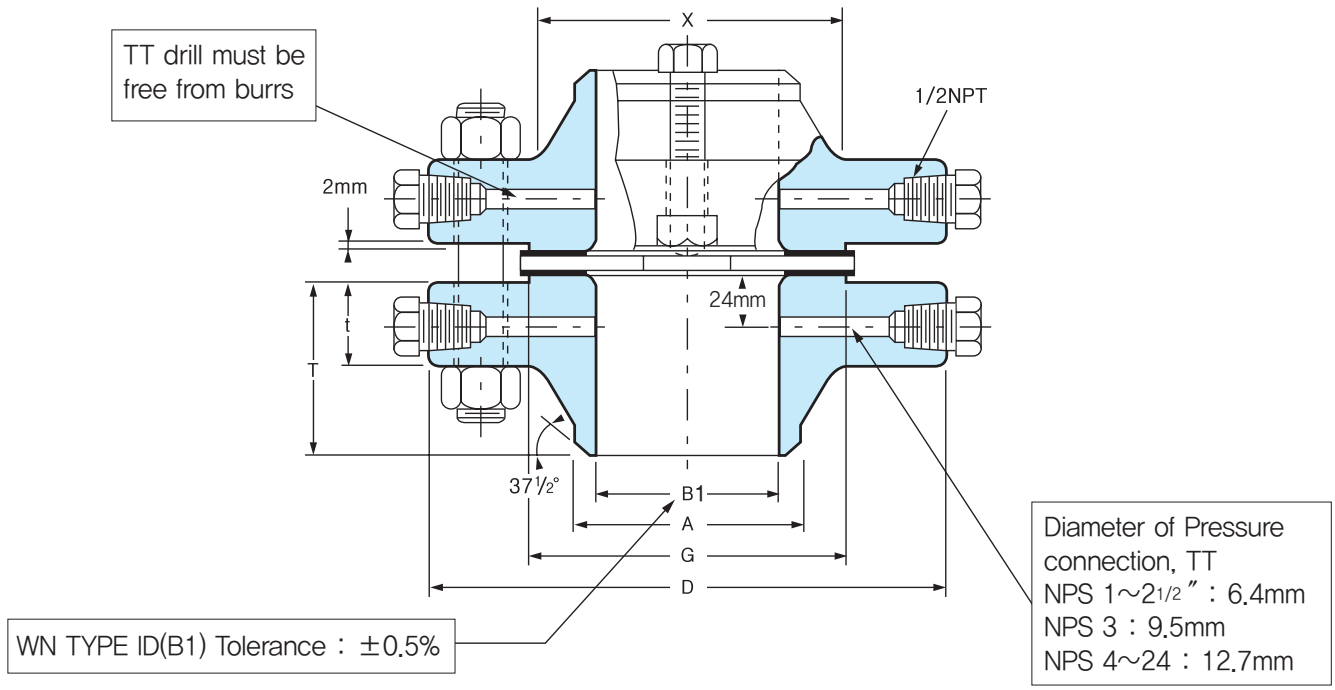
a. Flanges smaller than norminal pipe size 4±0.02 in (0.5mm)

b. Flanges norminal pipe size 4 and larger ±0.03 in. (0.8mm)

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

CLASS 300 ORIFICE FLANGES

WELDING NECK(RAISED FACE)



ASME B16.36 FORGED FLANGES

Unit : mm

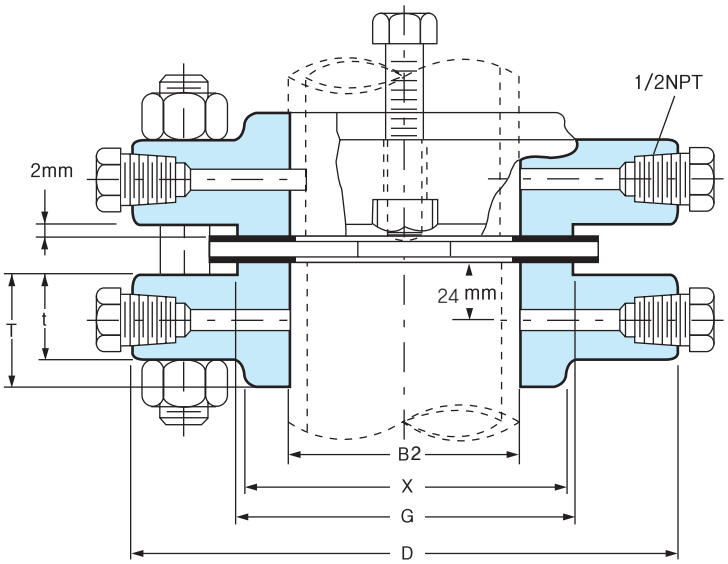
Nominal Pipe Size	Outside Diam. of flange	Thickness of Flange	Diam. of Hub at Base	Diam. of Raised Face	Diam. of Hub at Bevel	Length Thru Hub (T)		Bore				
								Welding Neck				Slip-on
								S/10S	S/40S	S/40	S/80	
	D	t	X	G	A	Welding Neck	Slip-on & Threaded	B1				B2
1	125	36.6	54	50.8	33.4	81	46	27.96	26.74	26.74	24.40	34.5
1½	155	36.6	70	73.0	48.3	84	46	42.76	40.94	40.94	38.14	49.5
2	165	36.6	84	92.1	60.3	84	48	54.96	52.68	52.68	49.42	61.9
2½	190	36.6	100	104.8	73.0	87	49	67.10	62.88	62.88	59.18	74.6
3	210	36.6	117	127.0	88.9	87	51	82.80	77.92	77.92	73.66	90.7
4	255	36.6	146	157.2	114.3	90	52	108.20	102.26	102.26	97.18	116.1
6	320	36.6	206	215.9	168.3	98	52	161.60	154.18	154.18	146.46	170.7
8	380	39.7	260	269.9	219.1	110	60	211.68	202.84	202.84	193.80	221.5
10	445	46.1	321	323.8	273.0	116	65	264.62	254.46	254.46	242.82	276.2
12	520	49.3	375	381.0	323.8	129	71	314.66	304.76	304.76	288.84	327.0
14	585	52.4	425	412.8	355.6	141	75	346.04	336.56	336.56	317.50	359.2
16	650	55.6	483	469.9	406.4	144	81	396.84	387.60	387.60	363.52	410.5
18	710	58.8	533	533.4	457.0	157	87	447.64	438.16	438.16	409.54	461.8
20	775	62.0	587	584.2	508.0	160	94	496.92	488.96	488.96	455.62	513.1
24	915	68.3	702	692.2	610.0	167	105	596.90	590.56	590.56	547.68	616.0

Notes:

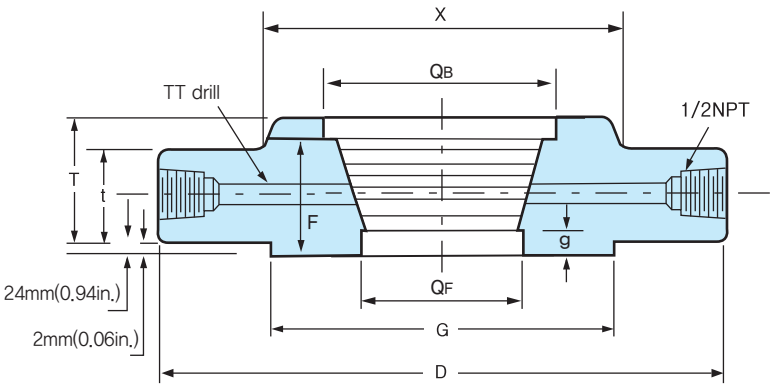
(1) For the inside diameter of pipes (corresponding) to 'Bore'(B1) of Welding Neck Flanges), refer to page 59-60.

(2) Class 300 Welding Neck Flanges of sizes 24" (609.6mm) and smaller will be bored to match Standard Wall Pipe unless otherwise specified.

SLIP-ON



THREADED



Unit : mm

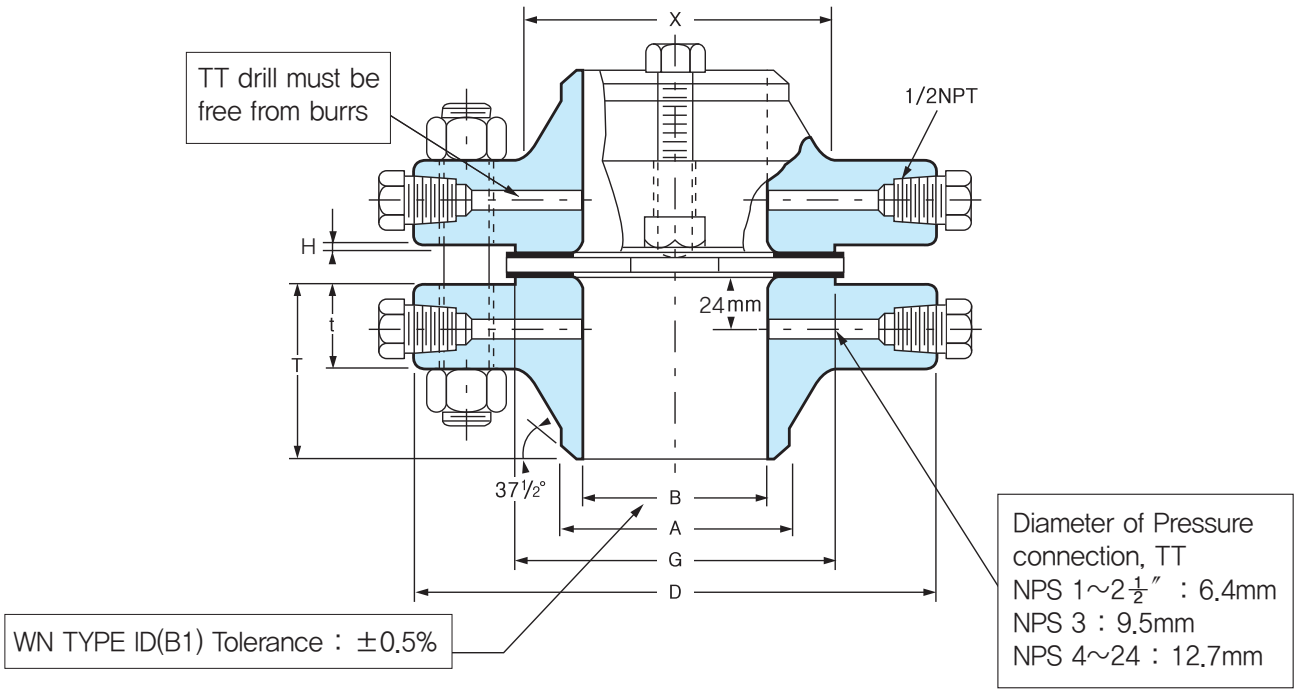
Nominal Pipe Size	THDF				Diam.of Pressure Connection	Drilling Template		
	Diam. of Counterbore		Counterbore Depth (From Face)			Diam. of Bolt Circle	Number of Bolts	Diam. of Bolt Holes
	Back	Face						
	QB	QF	F	g	TT			
1	35.8	33.0	36.5	19.0	6.4	88.9	4	17.5
1 1/2	50.5	48.0	37.3	18.3	6.4	114.3	4	20.6
2	63.5	59.9	38.1	17.5	6.4	127.0	8	17.5
2 1/2	76.2	72.1	44.4	14.3	6.4	149.2	8	20.6
3	92.2	87.9	46.0	14.3	9.5	168.3	8	20.6
4	117.6	113.0	47.6	14.3	12.7	200.0	8	20.6
6	171.4	166.9	47.6	7.9	12.7	269.9	12	22.2
8	222.2	217.2	55.6	11.1	12.7	330.2	12	25.4
10	–	–	–	–	12.7	387.4	16	28.6
12	–	–	–	–	12.7	450.8	16	31.8
14	–	–	–	–	12.7	514.4	20	31.8
16	–	–	–	–	12.7	571.5	20	34.9
18	–	–	–	–	12.7	628.6	24	34.9
20	–	–	–	–	12.7	685.8	24	34.9
24	–	–	–	–	12.7	812.8	24	41.3

(3) Bolt lengths for raised face flanges include allowance for orifice and gasket thickness of 0.25″ (6mm) for NPS 1~12 and 0.38″ (10mm) for sizes 14~24.

(4) 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 600 ORIFICE FLANGES

WELDING NECK(RAISED FACE)



ASME B16.36 FORGED FLANGES

Unit : mm

Nominal Pipe Size	Outside Diam. of flange	Thickness of Flange	Height of RF	Diam. of Hub at Base	Diam. of Raised Face	Diam. of Hub at Bevel	Length Thru Hub	Bore			
								Welding Neck			
								S/10S	S/40S	S/40	S/80
	D	t	H	X	G	A	T	B1			
1	125	36.6	2	54	50.8	33.5	81	27.96	26.74	26.74	24.40
1 1/2	155	36.6	2	70	73.0	48.3	84	42.76	40.94	40.94	38.14
2	165	36.6	2	84	92.1	60.3	84	54.96	52.68	52.68	49.42
2 1/2	190	36.6	2	100	104.8	73.0	87	67.10	62.88	62.88	59.18
3	210	36.6	2	117	127.0	88.9	87	82.80	77.92	77.92	73.66
4	275	38.1	7	152	157.2	114.3	102	108.20	102.26	102.26	97.18
6	355	47.7	7	222	215.9	168.3	117	161.60	154.18	154.18	146.46
8	420	55.6	7	273	269.9	219.1	133	211.68	202.84	202.84	193.80
10	510	63.5	7	343	323.8	273.0	152	264.62	254.46	254.46	242.82
12	560	66.7	7	400	381.0	323.8	156	314.66	304.76	304.76	288.84
14	605	69.9	7	432	412.8	355.6	165	346.04	336.56	336.56	317.50
16	685	76.2	7	495	469.9	406.4	178	396.84	387.60	387.60	363.52
18	745	82.6	7	546	533.4	457.2	184	447.64	438.16	438.16	409.54
20	815	88.9	7	610	584.2	508.0	190	496.92	488.96	488.96	455.62
24	940	101.6	7	718	692.2	609.6	203	596.90	590.56	590.56	547.68

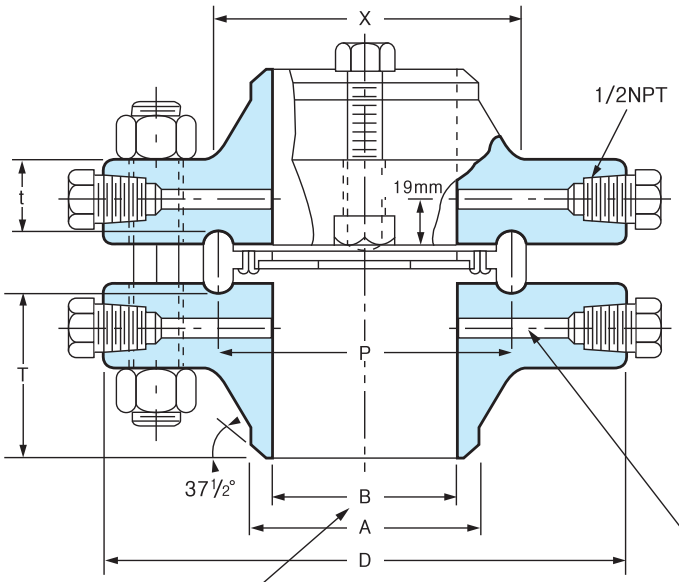
Notes:

(1) For the inside diameter of pipes (corresponding to 'Bore' (B) of Welding Neck Flanges), refer to page 59–60.

(2) Class 600 flanges of size 3" and smaller will be furnished with 0.06" (2mm) raised face.

(3) Each union includes two carbon steel jack screw bolts with hex nuts.

WELDING NECK(RING-TYPE JOINT)





Special One-or Two-Piece Ring and Orifice Plate Assembly

WN TYPE ID(B1) Tolerance : ±0.5%

Diameter of Pressure connection, TT
NPS 1~2½″ : 6.4mm
NPS 3 : 9.5mm
NPS 4~24 : 12.7mm

Unit : mm

Nominal Pipe Size	Ring Number	Pitch Diam. of Ring and Groove	Groove Depth	Groove Width	Radius at Bottom	Special Oval Ring Height	Dia. of Pressure Connection	DRILLING TEMPLATE			
								Diam. of Bolt Circle	Num. of Bolts	Diam. of Bolt Holes	
		P	E	F	r	w	TT			RF	RFJ
1	R 16	50.80	6.35	8.74	0.8	25.4	6.4	88.9	4	17.5	19.1
1½	R 20	68.27	6.35	8.74	0.8	25.4	6.4	114.3	4	20.6	22.2
2	R 23	82.55	7.92	11.91	0.8	27.0	6.4	127.0	8	17.5	19.1
2½	R 26	101.60	7.92	11.91	0.8	27.0	6.4	149.2	8	20.6	22.2
3	R 31	123.83	7.92	11.91	0.8	27.0	9.5	168.3	8	20.6	22.2
4	R 37	149.23	7.92	11.91	0.8	27.0	12.7	215.9	8	25.4	25.4
6	R 45	211.12	7.92	11.91	0.8	27.0	12.7	292.1	12	28.6	28.6
8	R 49	269.88	7.92	11.91	0.8	27.0	12.7	349.2	12	31.8	31.8
10	R 53	323.85	7.92	11.91	0.8	27.0	12.7	431.8	16	34.9	34.9
12	R 57	381.00	7.92	11.91	0.8	27.0	12.7	489.0	20	34.9	34.9
14	R 61	419.10	7.92	11.91	0.8	27.0	12.7	527.0	20	38.1	38.1
16	R 65	469.90	7.92	11.91	0.8	30.2	12.7	603.2	20	41.3	41.3
18	R 69	533.40	7.92	11.91	0.8	30.2	12.7	654.0	20	44.5	44.5
20	R 73	584.20	9.53	13.49	1.5	31.8	12.7	723.9	24	44.5	44.5
24	R 77	692.15	11.13	16.66	1.5	36.5	12.7	838.2	24	50.8	50.8

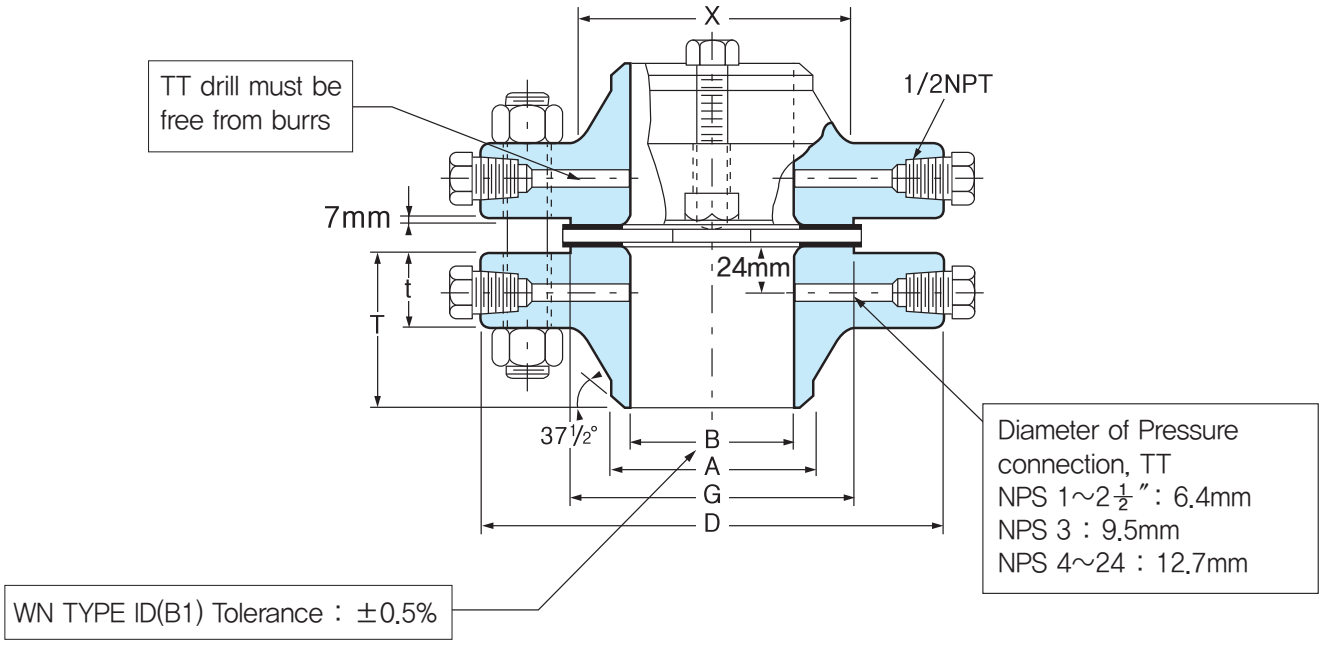
(4) Bolt lengths for raised face flanges include allowance for orifice and gasket thickness of 0.25″ (6mm) for NPS 1~12 and 0.38″ (10mm) for NPS 14~24 Bolt lengths for ring type joint flanges include allowance of 0.62″ (15mm) for sizes 1-10, 0.75″ (19mm) for sizes 12-18 and 0.88″ (22mm) for NPS 20.

(5) Unless otherwise specified, raised face unions are furnished with alloy bolt studs per ASTM A193 Grade B7 with American 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 0.750″ (19mm) When the depth of groove is 0.438″ (11.1mm) or greater, changes in drill size or method of drilling are necessary.

CLASS 900 ORIFICE FLANGES

WELDING NECK(RAISED FACE)



ASME B16.36 FORGED FLANGES

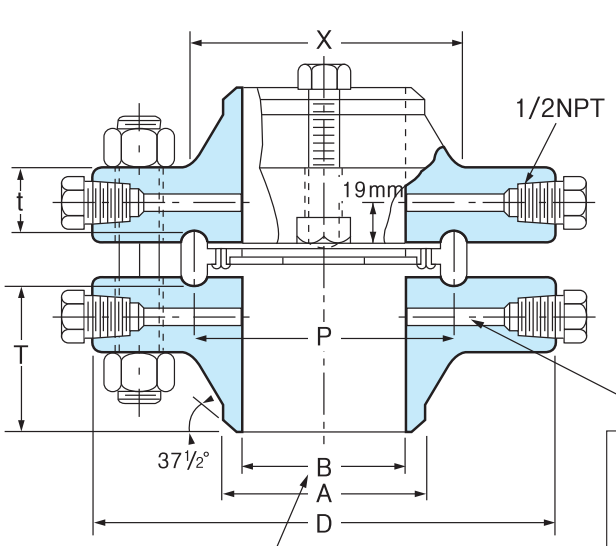
Unit : mm

Nominal Pipe Size	Outside Diam. of flange	Thickness of Flange	Diam. of Hub at Base	Diam. of Raised Face	Diam. of Hub at Bevel	Length Thru Hub	Bore			
							Welding Neck			
							S/10S	S/40S	S/40	S/80
	D	t	X	G	A	T	B1			
1	150	38.1	52	50.8	33.5	83	27.96	26.74	26.74	24.40
1 1/2	180	38.1	70	73.0	48.3	89	42.76	40.94	40.94	38.14
2	215	38.1	105	92.1	60.3	102	54.96	52.68	52.68	49.42
2 1/2	245	41.3	124	104.8	73.0	105	67.10	62.88	62.88	59.18
3	240	38.1	127	127.0	88.9	102	82.80	77.92	77.92	73.66
4	290	44.5	159	157.2	114.3	114	108.20	102.26	102.26	97.18
6	380	55.6	235	215.9	168.3	140	161.60	154.18	154.18	146.46
8	470	63.5	298	269.9	219.1	162	211.68	202.84	202.84	193.80
10	545	69.9	368	323.8	273.0	184	264.62	254.46	254.46	242.82
12	610	79.4	419	381.0	323.8	200	314.66	304.76	304.76	288.84
14	640	85.8	451	412.8	355.6	213	346.04	336.56	336.56	317.50
16	705	88.9	508	469.9	406.4	216	396.84	387.60	387.60	363.52
18	785	101.6	565	533.4	457.2	229	447.64	438.16	438.16	409.54
20	855	108.0	622	584.2	508.0	248	496.92	488.96	488.96	455.62
24	1040	139.7	749	692.2	609.6	292	596.90	590.56	590.56	547.68

Notes:

(1) For the inside diameter of pipes (corresponding to 'Bore' (B) of Welding Neck Flanges), refer to page 59–60.
(2) Class 900 dimensions of sizes 1″ (25.4mm) through 21/2″ are the same as for Class 1500.
(3) Each union includes two carbon steel jack screw bolts with hex nuts.
(4) Unless otherwise specified, raised face unions are furnished with alloy bolt studs per ASTM A193 Grade B7 with American Standard heavy series hex nuts ASTM A194 Class 2H.

WELDING NECK(RING-TYPE JOINT)





Special One-or Two-Piece Ring and Orifice Plate Assembly

Diameter of Pressure connection, TT
NPS 1~2½″ : 6.4mm
NPS 3 : 9.5mm
NPS 4~24 : 12.7mm

WN TYPE ID(B1) Tolerance : ±0.5%

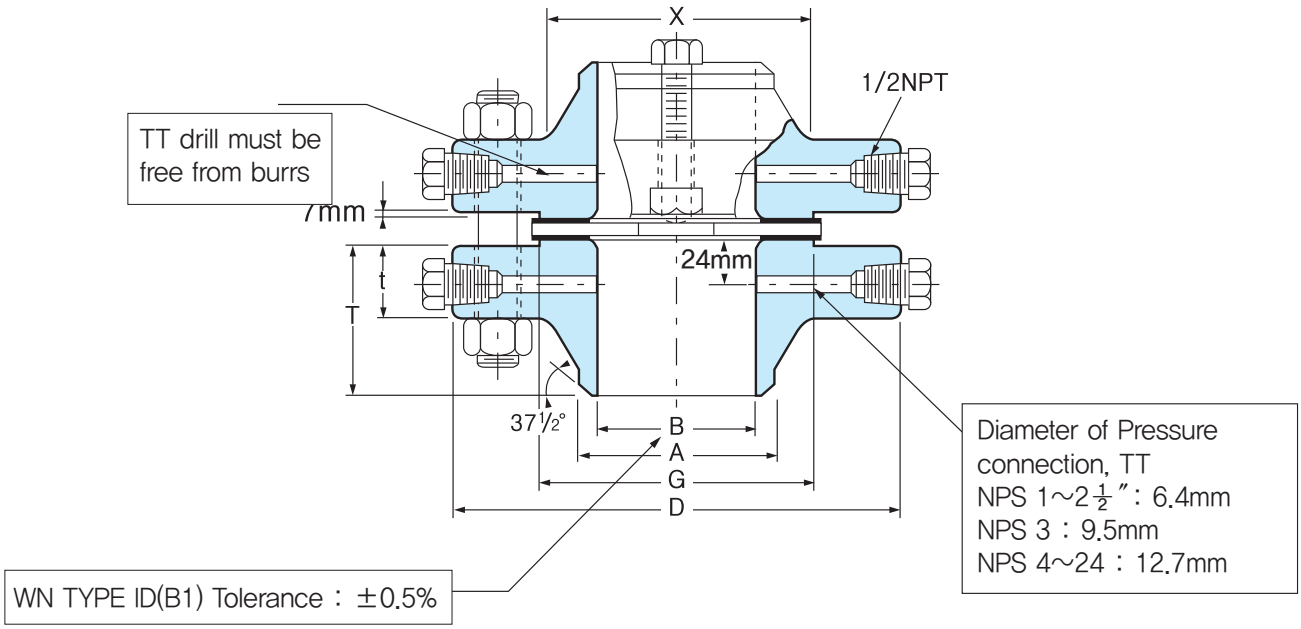
Unit : mm

Nominal Pipe Size	Ring Number	Pitch Diam. of Ring and Groove	Groove Depth	Groove Width	Radius at Bottom	Special Oval Ring Height	Dia. of Pressure Connection	DRILLING TEMPLATE		
								Diam. of Bolt Circle	Num. of Bolts	Diam. of Bolt Holes
		P	E	F	r	W	TT			H
1	R 16	50.80	6.35	8.74	0.8	25.4	6.4	101.6	4	25.4
1 1/2	R 20	68.27	6.35	8.74	0.8	25.4	6.4	123.8	4	28.6
2	R 24	95.25	7.92	11.91	0.8	27.0	6.4	165.1	8	25.4
2 1/2	R 27	107.95	7.92	11.91	0.8	27.0	6.4	190.5	8	28.6
3	R 31	123.83	7.92	11.91	0.8	27.0	9.5	190.5	8	25.4
4	R 37	149.23	7.92	11.91	0.8	27.0	12.7	235.0	8	31.8
6	R 45	211.12	7.92	11.91	0.8	27.0	12.7	317.5	12	31.8
8	R 49	269.88	7.92	11.91	0.8	27.0	12.7	393.7	12	38.1
10	R 53	323.85	7.92	11.91	0.8	27.0	12.7	469.9	16	38.1
12	R 57	381.00	7.92	11.91	0.8	27.0	12.7	533.4	20	38.1
14	R 62	419.10	11.13	16.66	1.5	33.3	12.7	558.8	20	41.3
16	R 66	469.90	11.13	16.66	1.5	36.5	12.7	616.0	20	44.5
18	R 70	533.40	12.70	19.84	1.5	39.7	12.7	685.8	20	50.8
20	R 74	584.20	12.70	19.84	1.5	39.7	12.7	749.3	20	54.0
24	R 78	692.15	15.88	26.97	2.4	47.6	12.7	901.7	20	66.7

(5) Bolt lengths for raised face flanges include allowance for orifice and gasket thickness of 0.25″ (6mm) for NPS 3-12 and 0.38″ (10mm) for NPS 14-24. Bolt lengths for ring type joint flanges include allowance of 0.62″ (15mm) for NPS 3-10. And 0.75″ (19mm) for NPS 12. (CLASS 900)

CLASS 1500 ORIFICE FLANGES

WELDING NECK(RAISED FACE)



ASME B16.36 FORGED FLANGES

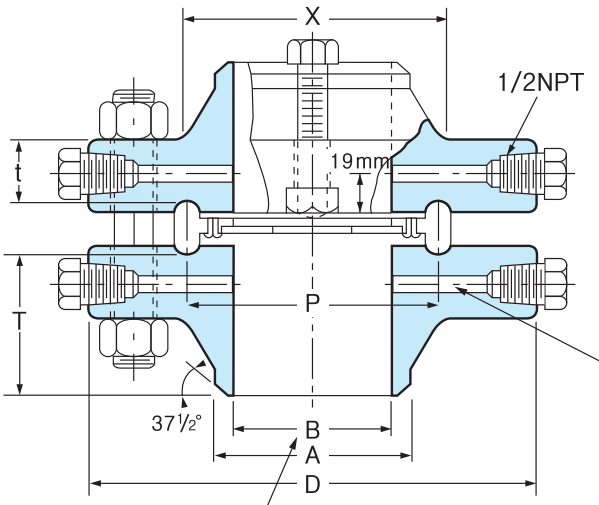
Unit : mm

Nominal Pipe Size	Outside Diam. of flange	Thickness of Flange	Diam. of Hub at Base	Diam. of Raised Face	Diam. of Hub at Bevel	Length Thru Hub	Bore			
							Welding Neck			
							S/10S	S/40S	S/40	S/80
	D	t	X	G	A	T	B1			
1	150	38.1	52	50.8	33.5	83	27.96	26.74	26.74	24.40
1 1/2	180	38.1	70	73.0	48.3	89	42.76	40.94	40.94	38.14
2	215	38.1	105	92.1	60.3	102	54.96	52.68	52.68	49.42
2 1/2	245	41.3	124	104.8	73.0	105	67.10	62.88	62.88	59.18
3	265	47.7	133	127.0	88.9	117	82.80	77.92	77.92	73.66
4	310	54.0	162	157.2	114.3	124	108.20	102.26	102.26	97.18
6	395	82.6	229	215.9	168.3	171	161.60	154.18	154.18	146.46
8	485	92.1	292	269.9	219.1	213	211.68	202.84	202.84	193.80
10	585	108.0	368	323.8	273.0	254	264.62	254.46	254.46	242.82
12	675	123.9	451	381.0	323.8	283	314.66	304.76	304.76	288.84
14	750	133.4	495	412.8	355.6	298	346.04	336.56	336.56	317.50
16	825	146.1	552	469.9	406.4	311	396.84	387.60	387.60	363.52
18	915	162.0	597	533.4	457.2	327	447.64	438.16	438.16	409.54
20	985	177.8	641	584.2	508.0	356	496.92	488.96	488.96	455.62
24	1170	203.2	762	692.2	609.6	406	596.90	590.56	590.56	547.68

Notes:

(1) For the inside diameter of pipes (corresponding to 'Bore' (B) of Welding Neck Flanges), refer to page 59–60.
(2) Class 900 dimensions of sizes 1″ (25.4mm) through 21/2″ are the same as for Class 1500.
(3) Each union includes two carbon steel jack screw bolts with hex nuts.
(4) Unless otherwise specified, raised face unions are furnished with alloy bolt studs per ASTM A193 Grade B7 with American Standard heavy series hex nuts ASTM A194 Class 2H.

WELDING NECK(RING-TYPE JOINT)





Special One-or Two-Piece Ring and Orifice Plate Assembly

Diameter of Pressure connection, TT
NPS 1~2 1/2 ″ : 6.4mm
NPS 3 : 9.5mm
NPS 4~24 : 12.7mm

WN TYPE ID(B1) Tolerance : ±0.5%

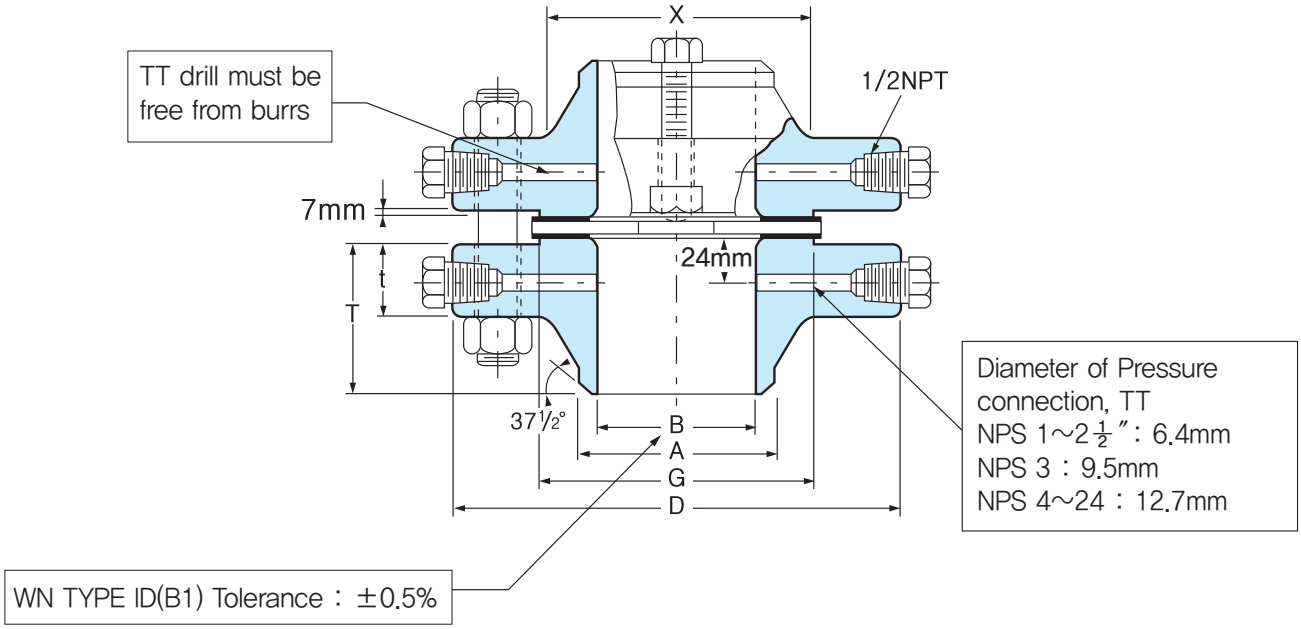
Unit : mm

Nominal Pipe Size	Ring Number	Pitch Diam. of Ring and Groove	Groove Depth	Groove Width	Radius at Bottom	Special Oval Ring Height	Dia. of Pressure Connection	DRILLING TEMPLATE		
								Diam. of Bolt Circle	Num. of Bolts	Diam. of Bolt Holes
		P	E	F	r	w	TT			H
1	R 16	50.80	6.35	8.74	0.8	25.4	6.4	101.6	4	25.4
1 1/2	R 20	68.27	6.35	8.74	0.8	25.4	6.4	123.8	4	28.6
2	R 24	95.25	7.92	11.91	0.8	27.0	6.4	165.1	8	25.4
2 1/2	R 27	107.95	7.92	11.91	0.8	27.0	6.4	190.5	8	28.6
3	R 35	136.53	7.92	11.91	0.8	27.0	9.5	203.2	8	31.8
4	R 39	161.93	7.92	11.91	0.8	27.0	12.7	241.3	8	34.9
6	R 46	211.14	9.52	13.49	1.5	28.6	12.7	317.5	12	38.1
8	R 50	269.88	11.13	16.55	1.5	33.3	12.7	393.7	12	44.5
10	R 54	323.85	11.13	16.66	1.5	33.3	12.7	482.6	12	50.8
12	R 58	381.00	14.27	23.01	1.5	39.7	12.7	571.6	16	54.0
14	R 63	419.10	15.88	26.97	2.4	44.4	12.7	635.0	16	60.3
16	R 67	469.90	17.48	30.18	2.4	50.8	12.7	704.8	16	66.7
18	R 71	533.40	17.48	30.18	2.4	50.8	12.7	774.7	16	73.0
20	R 75	584.20	17.48	33.32	2.4	54.0	12.7	831.8	16	79.4
24	R 79	692.15	20.62	36.53	2.4	58.7	12.7	990.6	16	92.1

(5) Bolt lengths for raised face flanges include allowance for orifice and gasket thickness of 0.25″ (6mm) for NPS 1-12 and 0.38″ (10mm) for NPS 14-24. Bolt lengths for ring type joint flanges include allowance of 0.62″ (15mm) for NPS 1-6 .(CLASS 1500)

CLASS 2500 ORIFICE FLANGES

WELDING NECK(RAISED FACE)



ASME B16.36 FORGED FLANGES

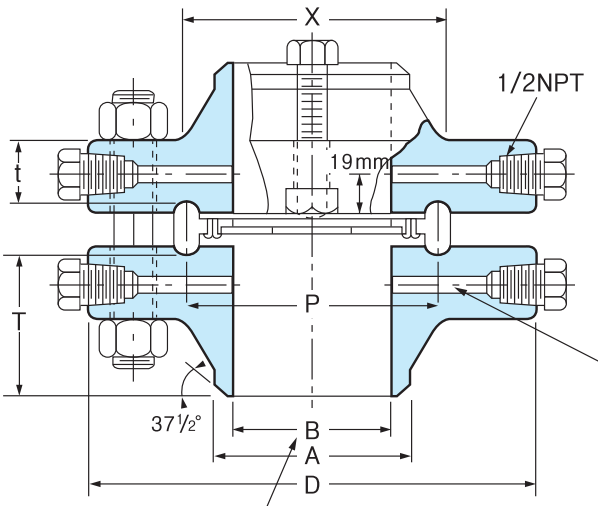
Unit : mm

Nominal Pipe Size	Outside Diam. of flange	Thickness of Flange	Diam. of Hub at Base	Diam. of Raised Face	Diam. of Hub at Bevel	Length Thru Hub	Bore			
							Welding Neck			
							S/10S	S/40S	S/40	S/80
	D	t	X	G	A	T	B1			
1	160	38.1	57	50.8	33.5	92	27.96	26.74	26.74	24.40
1 1/2	205	44.5	79	73.0	48.3	111	42.76	40.94	40.94	38.14
2	235	50.8	95	92.1	60.3	127	54.96	52.68	52.68	49.42
2 1/2	265	57.2	114	104.8	73.0	143	67.10	62.88	62.88	59.18
3	305	66.7	133	127.0	88.9	168	82.80	77.92	77.92	73.66
4	355	76.2	165	157.2	114.3	190	108.20	102.26	102.26	97.18
6	485	108.0	235	215.9	168.3	273	161.60	154.18	154.18	146.46
8	550	127.0	305	269.9	219.1	318	211.68	202.84	202.84	193.80
10	675	165.1	375	323.8	273.0	419	264.62	254.46	254.46	242.82
12	760	184.2	441	381.0	323.8	464	314.66	304.76	304.76	288.84

Notes:

(1) For the inside diameter of pipes (corresponding to 'Bore' (B) of Welding Neck Flanges), refer to page 59–60.
(2) Each union includes two carbon steel jack screw bolts with hex nuts.
(3) Unless otherwise specified, raised face unions are furnished with alloy bolt studs per ASTM A193 Grade B7 with American Standard heavy series hex nuts ASTM A194 Class 2H.
(4) Bolt lengths for raised face flanges include allowance for orifice and gasket thickness of 0.25″ (6mm) for NPS 1~12. Bolt lengths for ring type joint flanges include allowance of 0.62″ (15mm) for NPS 1~3.

WELDING NECK(RING-TYPE JOINT)





Special One-or Two-Piece Ring and Orifice Plate Assembly

Diameter of Pressure connection, TT
NPS 1~2½″ : 6.4mm
NPS 3 : 9.5mm
NPS 4~24 : 12.7mm

WN TYPE ID(B1) Tolerance : ±0.5%

Unit : mm

Nominal Pipe Size	Ring Number	Pitch Diam. of Ring and Groove	Groove Depth	Groove Width	Radius at Bottom	Special Oval Ring Height	Dia. of Pressure Connection	DRILLING TEMPLATE		
								Diam. of Bolt Circle	Num. of Bolts	Diam. of Bolt Holes
		P	E	F	r	w	TT			H
1	R 18	60.33	6.35	8.74	0.8	25.4	6.4	108.0	4	25.4
1 1/2	R 23	82.55	7.92	11.91	0.8	27.0	6.4	146.0	4	31.8
2	R 26	101.60	7.92	11.91	0.8	27.0	6.4	171.4	8	28.6
2 1/2	R 28	111.13	9.53	13.49	1.5	30.2	6.4	196.8	8	31.8
3	R 32	127.00	9.53	13.49	1.5	30.2	9.5	228.6	8	35.0
4	R 38	157.18	11.13	16.66	1.5	33.3	12.7	273.0	8	41.3
6	R 47	228.60	12.70	19.84	1.5	36.5	12.7	368.3	8	54.0
8	R 51	279.40	14.27	23.01	1.5	39.7	12.7	438.2	12	54.0
10	R 55	342.90	17.48	30.18	2.4	47.6	12.7	539.8	12	66.7
12	R 60	406.40	17.48	33.32	2.4	50.8	12.7	619.1	12	73.0

DEPTH OF JACK SCREW SLOT & JACK SCREW SIZE

ASME B16.36 FORGED FLANGES

Unit : mm

Nominal Pipe Size	CLASS 300		CLASS 400				CLASS 600				CLASS 900				CLASS 1500			
	Depth of JS SLOT (mm)	JS Bolt Size (inch)	Depth of JS SLOT (mm)		JS Bolt Size (inch)		Depth of JS SLOT (mm)		JS Bolt Size (inch)		Depth of JS SLOT (mm)		JS Bolt Size (inch)		Depth of JS SLOT (mm)		JS Bolt Size (inch)	
	RF	RF	RF	RTJ	RF	RTJ	RF	RTJ	RF	RTJ	RF	RTJ	RF	RTJ	RF	RTJ	RF	RTJ
1	9.7	5/8x3	9.7	6.4	5/8x4	5/8x4.75	9.7	6.4	5/8x4	5/8x4.75	For NPS 2 1/2 and smaller, use Class 1500				6.4	12.7	5/8x3	5/8x3.5
1 1/4	9.7	5/8x3	9.7	6.4	5/8x4	5/8x4.75	9.7	6.4	5/8x4	5/8x4.75					6.4	12.7	5/8x3	5/8x3.5
1 1/2	12.7	5/8x3	12.7	6.4	3/4x4.25	3/4x5	12.7	6.4	3/4x4.25	3/4x5					6.4	12.7	5/8x3	5/8x3.5
2	9.7	5/8x3	9.7	6.4	5/8x4	5/8x4.75	9.7	6.4	5/8x4	5/8x4.75					6.4	12.7	5/8x3	5/8x4
2 1/2	12.7	5/8x3	12.7	6.4	3/4x4.25	3/4x5	12.7	6.4	3/4x4.25	3/4x5					6.4	12.7	5/8x3	5/8x4
3	12.7	3/4x3	12.7	6.4	3/4x4.25	3/4x5	12.7	6.4	3/4x4.25	3/4x5	9.7	15.7	3/4x3.5	3/4x4	9.7	15.7	5/8x3.5	3/4x4.5
4	12.7	3/4x3.25	6.4	15.7	3/4x3	3/4x4	6.4	15.7	3/4x3	3/4x4	9.7	15.7	3/4x3.5	3/4x4.5	9.7	15.7	3/4x3.5	3/4x4.5
5	12.7	3/4x3.25	6.4	15.7	3/4x3	3/4x4	6.4	15.7	3/4x3.5	3/4x4.5	9.7	15.7	3/4x3.5	3/4x4.5	9.7	15.7	3/4x3.5	3/4x4.5
6	12.7	3/4x3.5	12.7	22.4	1x3.5	1x4	12.7	22.4	1x3.5	1x4.5	15.7	22.4	1x4.5	1x4.75	15.7	22.7	1x6	1x6.5
8	15.7	3/4x3.5	12.7	22.4	1x3.5	1x4.5	12.7	22.4	1x4	1x4.75	15.7	22.4	1x4.5	1x5	15.7	22.7	1x6.5	1x6.5
10	19.1	1x4	12.7	22.4	1x4	1x4.5	12.7	22.4	1x4	1x5	15.7	22.4	1x4.5	1x5.25	15.7	22.7	1x6.5	1x7
12	22.4	1x4	12.7	22.4	1x4	1x5	12.7	22.4	1x4.5	1x5	15.7	22.4	1x4.5	1x5.5	15.7	22.7	1x6.5	1x8
14	22.4	1x4.25	12.7	22.4	1x4.25	1x5	12.7	22.4	1x5	1x5.5	–	–	–	–	–	–	–	–
16	25.4	1x4.25	12.7	22.4	1x4.25	1x5	12.7	22.4	1x5	1x5.5	–	–	–	–	–	–	–	–
18	25.4	1x4.5	12.7	22.4	1x4.5	1x5	12.7	22.4	1x5	1x5.75	–	–	–	–	–	–	–	–
20	25.4	1x4.75	12.7	22.4	1x4.75	1x5.5	12.7	22.4	1x6	1x6.25	–	–	–	–	–	–	–	–
24	31.8	1x5	12.7	22.4	1x5	1x6	12.7	22.4	1x6	1x7	–	–	–	–	–	–	–	–

ANGULAR METER TAP FOR RTJ FLANGES (ASME B16.36)

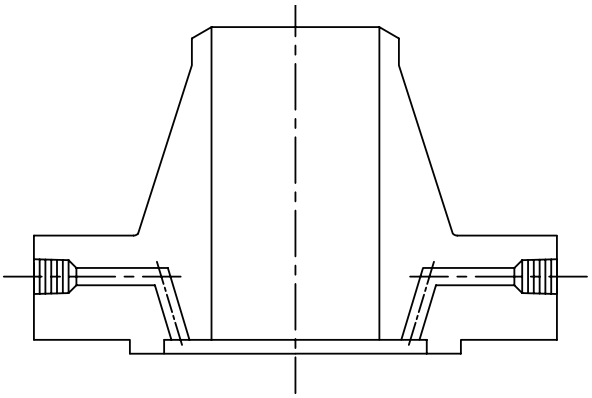


Fig. 1 Corner Taps

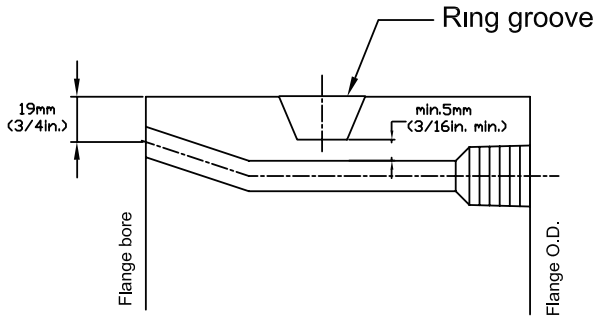
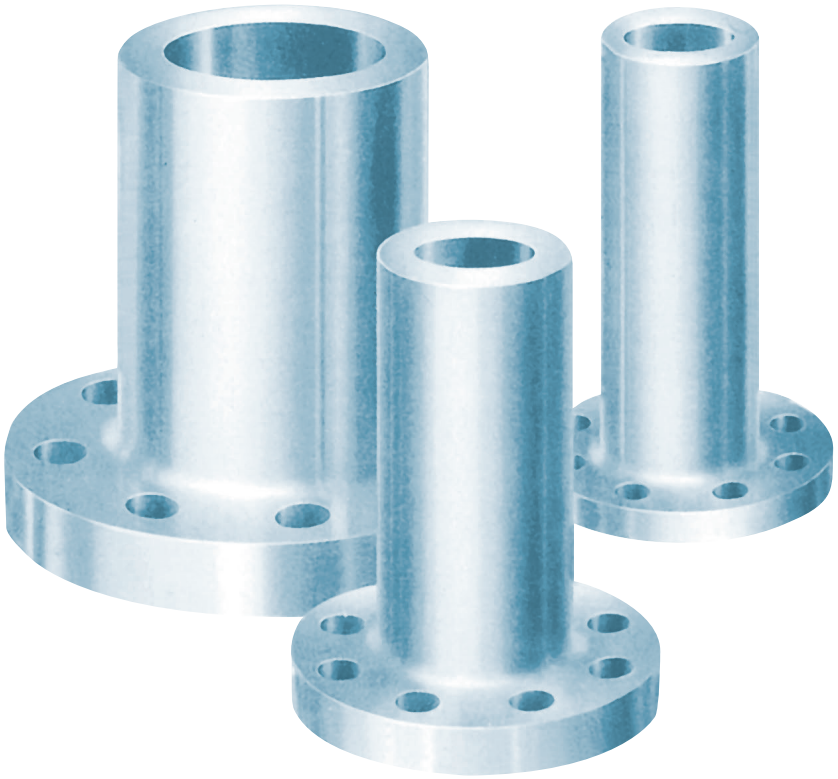


Fig. 2 Angular Meter Tap for RTJ Flanges

Applicable Angular Meter Tap	
Rating	NPS
900#	〉12
1500#	〉6
2500#	〉3



LONG WELDING NECKS FLANGES

Class 150 Flanges

Class 300 Flanges

Class 400 Flanges

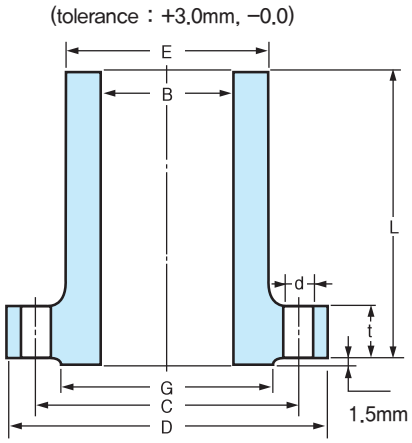
Class 600 Flanges

Class 900 Flanges

Class 1500 Flanges

Class 2500 Flanges

CLASS 150 FLANGES LONG WELDING NECK



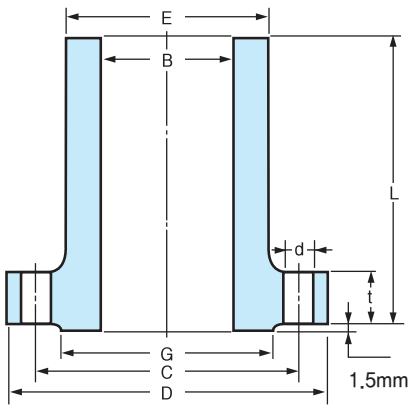
Unit : mm

Nominal Pipe Size	Out side Diameter	Hub Diameter at Bevel	O. D. of Raised Face	Diameter of Bore	Thickness of Flange Min.	Length Through Hub	DRILLING			Diameter of Bore Fitting
							Diameter of Bolt Circle	Number of Holes	Diameter of Holes	
	D	E	G	B	t	L	C		d	
1/2	89	30	35.1	15.7	9.7	229	60.5	4	15.9	13
3/4	99	38	42.9	20.8	11.2	229	69.8	4	15.9	19
1	108	49	50.8	26.7	12.7	229	79.2	4	15.9	25
1 1/4	117	59	63.5	35.1	14.2	229	88.9	4	15.9	32
1 1/2	127	65	73.0	40.9	15.9	229	98.6	4	15.9	38
2	152	78	91.9	52.6	17.5	229	120.6	4	19.1	51
2 1/2	178	90	104.6	62.7	20.6	229	139.7	4	19.1	64
3	190	108	127.0	78.0	22.4	229	152.4	4	19.1	76
3 1/2	216	122	139.7	90.2	22.4	229	177.8	8	19.1	89
4	229	135	157.2	102.4	22.4	229	190.5	8	19.1	102
5	254	164	185.7	128.3	22.4	305	215.9	8	22.2	127
6	279	192	215.9	154.2	23.9	305	241.3	8	22.2	152
8	343	246	269.7	202.7	26.9	305	298.4	8	22.2	203
10	406	305	323.8	254.5	28.4	305	362.0	12	25.4	254
12	483	365	381.0	304.8	30.2	305	431.8	12	25.4	305
14	533	400	412.8	To be specified by the Purchaser	33.3	305	476.2	12	28.6	337
16	597	457	469.9		35.1	305	539.8	16	28.6	387
18	635	505	533.4		38.1	305	577.8	16	31.8	–
20	698	559	584.2		41.1	305	635.0	20	31.8	–
24	813	663	692.2		46.0	305	749.3	20	34.9	–

Notes:
(1) The bore diameter shall be equal to B dimension of the welding neck flange. Other bores may be furnished by agreement between the end user and manufacturer. In no case shall the bore diameter exceed the bore of the same size and class lapped flange.
(2) Welding necks longer than listed are available in all sizes on special order.

CLASS 300 FLANGES LONG WELDING NECK

(tolerance : +3.0mm, −0.0)



Unit : mm

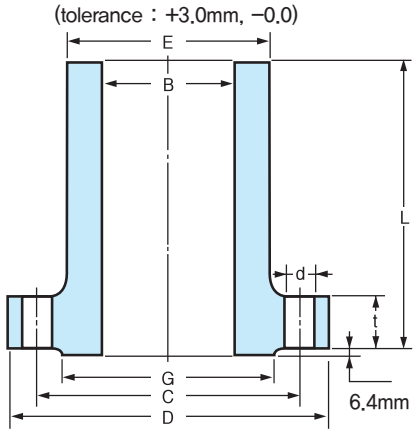
Nominal Pipe Size	Out side Diameter	Hub Diameter at Bevel	O. D. of Raised Face	Diameter of Bore	Thickness of Flange Min.	Length Through Hub	DRILLING			Diameter of Bore Fitting
							Diameter of Bolt Circle	Number of Holes	Diameter of Holes	
	D	E	G	B	t	L	C		d	
1/2	95	38	35.1	15.7	12.7	229	66.5	4	15.9	–
3/4	117	48	42.9	20.8	14.2	229	82.6	4	19.1	–
1	124	54	50.8	26.7	15.7	229	88.9	4	19.1	25
1 1/4	133	64	63.5	35.1	17.5	229	98.6	4	19.1	32
1 1/2	155	70	73.0	40.9	19.0	229	114.3	4	22.2	38
2	165	84	91.9	52.6	20.6	229	127.0	8	19.1	51
2 1/2	190	100	104.6	62.7	23.9	229	149.4	8	22.2	64
3	210	117	127.0	78.0	26.9	229	168.1	8	22.2	76
3 1/2	229	133	139.7	90.2	28.4	229	184.2	8	22.2	89
4	254	146	157.2	102.4	30.2	229	200.2	8	22.2	102
5	279	178	185.7	128.3	33.3	305	235.0	8	22.2	127
6	318	206	215.9	154.2	35.1	305	269.7	12	22.2	152
8	381	260	269.7	202.7	39.6	305	330.2	12	25.4	203
10	444	321	323.8	254.5	46.0	305	387.4	16	28.6	254
12	521	375	381.0	304.8	49.3	305	450.8	16	31.8	305
14	584	425	412.8	To be specified by the Purchaser	52.3	305	514.4	20	31.8	337
16	648	483	469.9		55.6	305	571.5	20	34.9	387
18	711	533	533.4		58.7	305	628.6	24	34.9	432
20	775	587	584.2		62.0	305	685.8	24	34.9	483
24	914	702	692.2		68.3	305	812.8	24	41.3	584

Notes:

(1) The bore diameter shall be equal to B dimension of the welding neck flange. Other bores may be furnished by agreement between the end user and manufacturer. In no case shall the bore diameter exceed the bore of the same size and class lapped flange.

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

CLASS 400 FLANGES LONG WELDING NECK

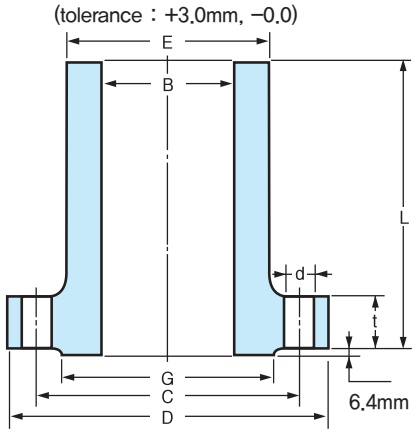


Unit : mm

Nominal Pipe Size	Out side Diameter	Hub Diameter at Bevel	O. D. of Raised Face	Diameter of Bore	Thickness of Flange Min.	Length Through Hub	DRILLING		
							Diameter of Bolt Circle	Number of Holes	Diameter of Holes
	D	E	G	B	t	L	C		d
1	124	54	50.8	Use Class 600 dimensions in this size	17.5	229	88.9	4	19.1
1 1/4	133	64	63.5		20.6	229	98.4	4	19.1
1 1/2	155	70	73.0		22.4	229	114.3	4	22.2
2	165	84	91.9		25.4	229	127.0	8	19.1
2 1/2	190	100	104.6		28.4	229	149.2	8	22.2
3	210	117	127.0		31.8	229	168.1	8	22.2
3 1/2	229	133	139.7		35.1	229	184.2	8	25.4
4	254	146	157.2		35.1	229	200.2	8	25.4
5	279	178	185.7		38.1	305	235.0	8	25.4
6	318	206	215.9		41.1	305	269.7	12	25.4
8	381	260	269.7		47.8	305	330.2	12	28.6
10	444	321	323.8		53.8	305	387.4	16	31.8
12	521	375	381.0		57.2	305	450.8	16	34.9
14	584	425	412.8		60.5	305	514.4	20	34.9
16	648	483	469.9		63.5	305	571.5	20	38.1
18	711	533	533.4		66.5	305	628.6	24	38.1
20	775	587	584.2		69.8	305	685.8	24	41.3
24	914	702	692.2		76.2	305	812.8	24	47.6

Notes:
(1) The bore diameter shall be equal to B dimension of the welding neck flange. Other bores may be furnished by agreement between the end user and manufacturer. In no case shall the bore diameter exceed the bore of the same size and class lapped flange.
(2) Welding necks longer than listed are available in all sizes on special order.

CLASS 600 FLANGES LONG WELDING NECK



Unit : mm

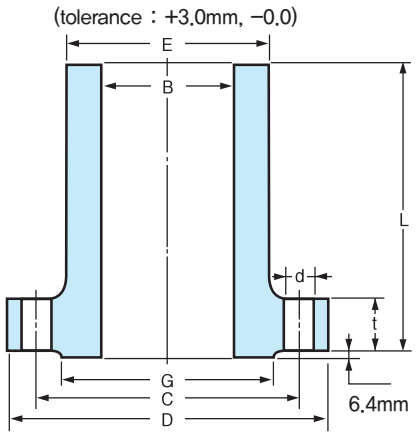
Nominal Pipe Size	Out side Diameter	Hub Diameter at Bevel	O. D. of Raised Face	Diameter of Bore	Thickness of Flange Min.	Length Through Hub	DRILLING		
							Diameter of Bolt Circle	Number of Holes	Diameter of Holes
	D	E	G	B	t	L	C		d
1	124	54	50.8	To be specified by purchaser	17.5	229	88.9	4	19.1
1 1/4	133	64	63.5		20.6	229	98.6	4	19.1
1 1/2	155	70	73.0		22.4	229	114.3	4	22.2
2	165	84	91.9		25.4	229	127.0	8	19.1
2 1/2	190	100	104.6		28.4	229	149.4	8	22.2
3	210	117	127.0		31.8	229	168.1	8	22.2
3 1/2	229	133	139.7		35.1	229	184.2	8	25.4
4	273	152	157.2		38.1	229	215.9	8	25.4
5	330	189	185.7		44.4	305	266.7	8	28.6
6	356	222	215.9		47.8	305	292.1	12	28.6
8	419	273	269.7		55.6	305	349.2	12	31.8
10	508	343	323.8		63.5	305	431.8	16	34.9
12	559	400	381.0		66.5	305	489.0	20	34.9
14	603	432	412.8		69.8	305	527.0	20	38.1
16	686	495	469.9		76.2	305	603.2	20	41.3
18	743	546	533.4		82.6	305	654.0	20	44.5
20	813	610	584.2		88.9	305	723.9	24	44.5
24	940	718	692.2		101.6	305	838.2	24	50.8

Notes:

(1) The bore diameter shall be equal to B dimension of the welding neck flange. Other bores may be furnished by agreement between the end user and manufacturer. In no case shall the bore diameter exceed the bore of the same size and class lapped flange.

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

CLASS 900 FLANGES LONG WELDING NECK



Unit : mm

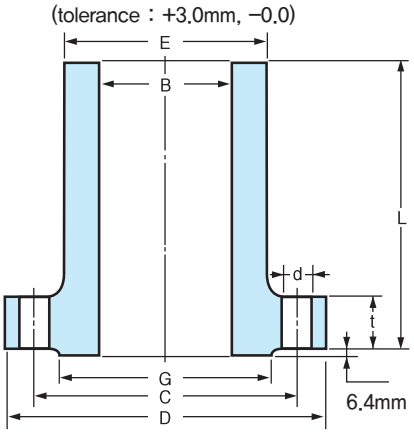
Nominal Pipe Size	Out side Diameter	Hub Diameter at Bevel	O. D. of Raised Face	Diameter of Bore	Thickness of Flange Min.	Length Through Hub	DRILLING		
							Diameter of Bolt Circle	Number of Holes	Diameter of Holes
	D	E	G	B	t	L	C		d
1	149	52	50.8	Use Class 1500 dimensions in this size	28.4	229	101.6	4	25.4
1 1/4	159	64	63.5		28.4	229	111.1	4	25.4
1 1/2	178	70	73.0		31.8	229	124.0	4	28.6
2	216	105	91.9		38.1	229	165.1	8	25.4
2 1/2	244	124	104.6		41.1	229	190.5	8	28.6
3	241	127	127.0	To be specified by purchaser	38.1	229	190.5	8	25.4
4	292	159	157.2		44.5	229	235.0	8	31.8
5	349	190	185.7		50.8	305	279.4	8	34.9
6	381	235	215.9		55.6	305	317.5	12	31.8
8	470	298	269.7		63.5	305	393.7	12	38.1
10	546	368	323.8		69.8	305	469.9	16	38.1
12	610	419	381.0		79.2	305	533.4	20	38.1
14	641	451	412.8		85.9	305	558.8	20	41.3
16	705	508	469.9		88.9	305	616.0	20	44.5
18	787	565	533.4		101.6	305	685.8	20	50.8
20	857	622	584.2		108.0	305	749.3	20	54.0
24	1041	749	692.2		139.7	305	901.7	20	66.7

Notes:

(1) The bore diameter shall be equal to B dimension of the welding neck flange. Other bores may be furnished by agreement between the end user and manufacturer. In no case shall the bore diameter exceed the bore of the same size and class lapped flange.

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

CLASS 1500 FLANGES LONG WELDING NECK



Unit : mm

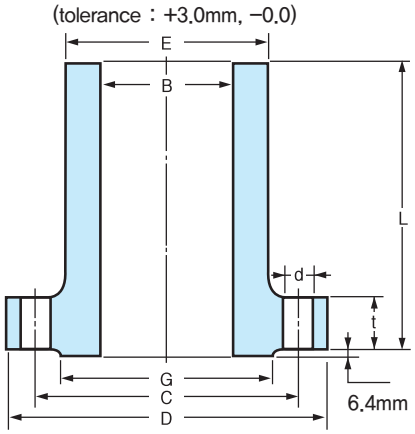
Nominal Pipe Size	Out side Diameter	Hub Diameter at Bevel	O. D. of Raised Face	Diameter of Bore	Thickness of Flange Min.	Length Through Hub	DRILLING		
							Diameter of Bolt Circle	Number of Holes	Diameter of Holes
	D	E	G	B	t	L	C		d
1	149	52	50.8	To be specified by purchaser	28.4	229	101.6	4	25.4
11/4	159	64	63.5		28.4	229	111.1	4	25.4
11/2	178	70	73.0		31.8	229	124.0	4	28.6
2	216	105	91.9		38.1	229	165.1	8	25.4
21/2	244	124	104.6		41.1	229	190.5	8	28.6
3	267	133	127.0		47.8	229	203.2	8	31.8
4	311	162	157.2		53.8	229	241.3	8	34.9
5	375	197	185.7		73.2	305	292.1	8	41.3
6	394	229	215.9		82.6	305	317.5	12	38.1
8	483	292	269.7		91.9	305	393.7	12	44.5
10	584	368	323.8		108.0	305	482.6	12	50.8
12	673	451	381.0		124.0	305	571.5	16	54.0
14	749	495	412.8		133.4	305	635.0	16	60.3
16	826	552	469.9		146.0	305	704.8	16	66.7
18	914	597	533.4		162.1	305	774.7	16	73.0
20	984	641	584.2		177.8	305	831.8	16	79.4
24	1168	762	692.2		203.2	305	990.6	16	92.1

Notes:

(1) The bore diameter shall be equal to B dimension of the welding neck flange. Other bores may be furnished by agreement between the end user and manufacturer. In no case shall the bore diameter exceed the bore of the same size and class lapped flange.

(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	Out side Diameter	Hub Diameter at Bevel	O. D. of Raised Face	Diameter of Bore	Thickness of Flange Min.	Length Through Hub	DRILLING		
							Diameter of Bolt Circle	Number of Holes	Diameter of Holes
	D	E	G	B	t	L	C		d
1	159	57	50.8	To be specified by purchaser	35.1	229	108.0	4	25.4
1 1/4	184	73	63.5		38.1	229	130.0	4	28.6
1 1/2	203	79	73.0		44.4	229	146.0	4	31.8
2	235	95	91.9		50.8	229	171.4	8	28.6
2 1/2	267	114	104.6		57.2	229	196.8	8	31.8
3	305	133	127.0		66.5	229	228.6	8	34.9
4	356	165	157.2		76.2	229	273.0	8	41.3
5	419	203	185.7		91.9	305	323.8	8	47.6
6	483	235	215.9		108.0	305	368.3	8	54.0
8	552	305	269.7		127.0	305	438.2	12	54.0
10	673	375	323.8		165.1	305	539.8	12	66.7
12	762	441	381.0		184.2	305	619.3	12	73.0

GUIDE TO MATERIAL LAYOUT & SPECIFICATIONS

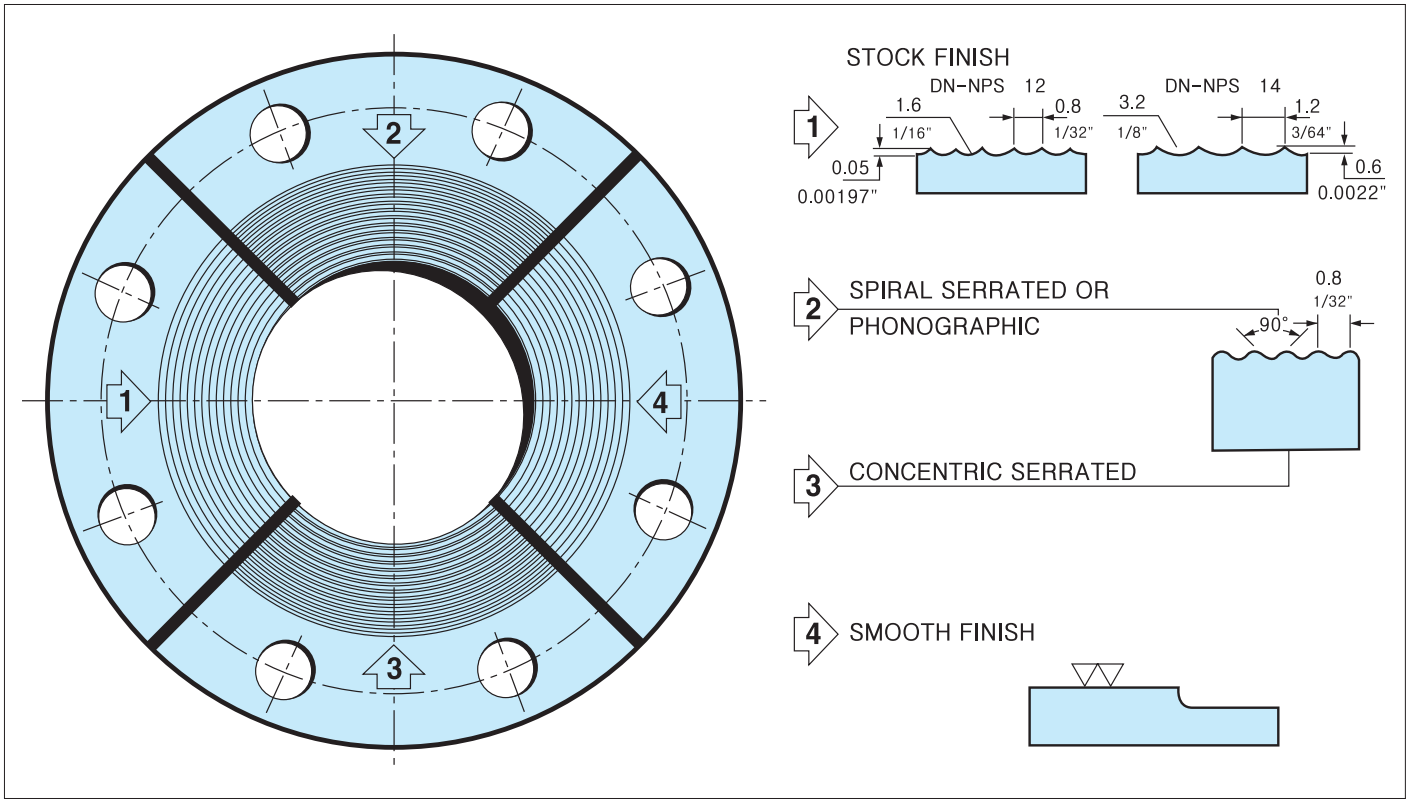
Pipe	Weld Fittings	Screwed & Socket Fittings	Flanges	Valves
A 53	A 234 WPB	A 105, A 181 Gr. 60 or 70	A 105, A 181 Gr. 60 or 70	A 105, A 216 WCB
A 106B	A 234 WPB	A 105, A 181 Gr. 60 or 70	A 105, A 181 Gr. 60 or 70	A 105, A 216 WCB
A 312 T304	A 403 WP–304	A 182 F 304	A 182 F 304	A 182 F 304 CMO
A 312 T316	A 403 WP–316	A 182 F 316	A 182 F 316	A 182 F 316 CM 8MO
A 333 Gr.1or6	A 420 WPL1&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 333 Gr.6	A 420 WP6L6	A 350 LF 2	A 350 LF 2	A 352 LCB
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

Notes:

(1) The bore diameter shall be equal to B dimension of the welding neck flange. Other bores may be furnished by agreement between the end user and manufacturer. In no case shall the bore diameter exceed the bore of the same size and class lapped flange.

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

STANDARD FINISH 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 continuous spiral groove. Flanges sizes 12″ (304.8mm) and smaller are produced with a 1/16″ (1.6mm) round-nosed tool at a feed of 1/32″ (0.8mm) per revolution. For sizes 14″ (355.6mm) and larger, the finish is made with 1/8″ (3.2mm) round-nosed tool at a feed of 3/64″ (1.2mm) 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" (1.5mm) radius. The resultant surface finish shall have a 125μ inch to 250μ 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 from 45 to 55 grooves per inch is used. The cutting tool employed has an approximate 0.06 in radius. The resultant surface finish shall have a 125μ inch (3.2μ m) to 250μ inch (6.4μ m) approximate roughness.

2. TONGUE AND GROOVE, AND SMALL MALE AND FEMALE

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

3. RING JOINT

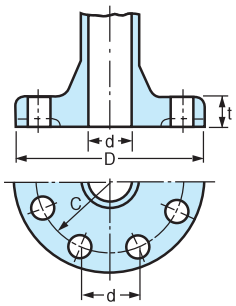
The inside wall surface of gasket groove does not exceed 63μ in, (1.6μ m) roughness.

4. BLIND

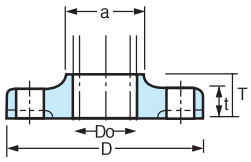
Blind flanges need not be faced in the center if when this center part is raised its diameter is at least 1 in. smaller than the inside diameter of fittings of the corresponding pressure class. When the center part is depressed, its diameter is not greater than the inside diameter of the corresponding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

TOLERANCE ASME B16.5 FORGED FLANGES

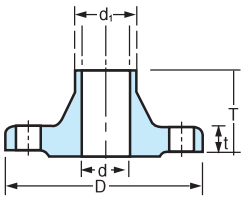
SOLID FLANGE



SLIP-ON FLANGE

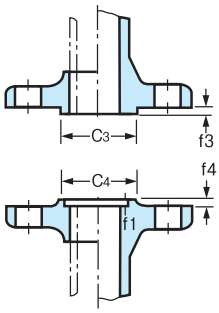


WELDING NECK FLANGE

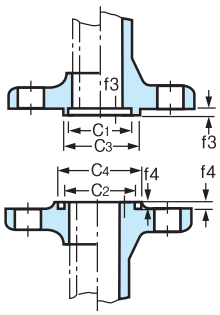


TYPE OF GASKET SURFACE

MALE & FEMALE TYPE



TONGUE & GROOVE TYPE



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

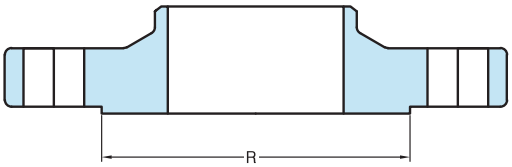
Outside Diameter	When O.D. is 24″ or less	±1/16″ 0.08" (2.0mm)★
	When O.D. is Over 24″	±1/8″ 0.12" (3.0mm)★
Inside Diameter	Threaded	Within limits on boring gauge
	Socket-Welding, Slip-on and Lap joint (2″ below)	10″ & Smaller +0.03″ (1.0mm), −0″ 12″ & Larger +0.06″ (1.5mm), −0″
Outside Diameter of Hub	5″ and Smaller	+0.09″ (2.0mm)★ −0.03″ (1.0mm)
	6″ and Larger	+0.16″ (4.0mm) −0.03″ (1.0mm)
Diameter of Contact Face	1/16″ Raised Face	±0.03″ (1.0mm)
	1/4″ Raised Face Tongue & Groove Male, Female	±0.02″ (0.5mm)
Diameter of Counterbore	Same as for Inside Diameter 1/2≤NPS≤3 ±0.25mm(0.01″)Socket Welding	
Drilling	Bolt Circle	±0.06″ (1.5mm)
	Bolt Hole Spacing	±0.03″ (0.8mm)★
	Bolt Circle Concentricity	2 1/2″ Smaller 0.03″ (0.8mm) Max. 3″ & Larger 0.06″ (1.5mm) Max.
	Bolt hole to bolt hole	±0.03″ (0.8mm)
	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	+0.12″ (3mm), −0″
	20″ and Larger	+0.19″ (5mm), −0″
Length Thru Hub	10″ and Smaller	±1/16″ (1.5mm)
	12″ and Larger	±1/8″ (3.0mm)

Note: ★This tolerance is not covered in ASME B16.5, but maker's option.

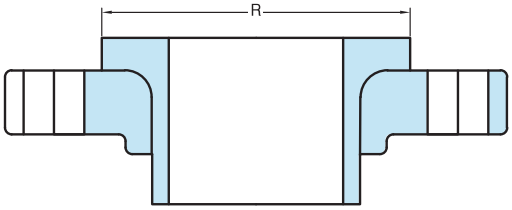
WELDING NECK

Outside Diameter	When O.D. is 24″ or less	±1/16″ 0.08" (2.0mm)★
	When O.D. is Over 24″	±1/8″ 0.12" (3.0mm)★
Inside Diameter	10″ and Smaller	±0.03″(1.0mm)
	12″ thru 18″	±0.06″(1.5mm)
	20″ and Larger	+0.12″(3mm) −0.06″(1.5mm)
Diameter of Contact Face	1/16″ Raised Face	±0.03″(1.0mm)
	1/4″ Raised Face Tongue & Groove Male, Female	±0.02″(0.5mm)
		±1/16″(1.5mm)★
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	+0.09″(2.0mm) −0.03″(1.0mm)
	6″ and Larger	+0.16″(4.0mm) −0.03″(1.0mm)
Drilling	Bolt Circle	±0.06″(1.5mm)
	Bolt Hole Spacing	±0.03″(0.8mm)*
	Eccentricity of Bolt Circle with Respect to Facing	2 1/2″ & Smaller 0.03″(0.8mm) Max. 3″ & Larger 0.06″(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	+0.12″ (3mm), −0″
	20″ and Larger	+0.19″ (5mm), −0″
Length Thru Hub	NPS≤4 5≤NPS≤10″	±1.5mm(±0.06″) +1.5−3.0mm(+0.06−0.12″)
	12″ and Larger	+3.0−5.0mm (+0.12−0.18″)
Hub Thickness	87.5% under tolerance	
Raised Face height	CL 150 ~ CL 300	±0.03″(±0.8mm)★
	CL 400 ~ CL 2500	±0.04″(±1.0mm)★

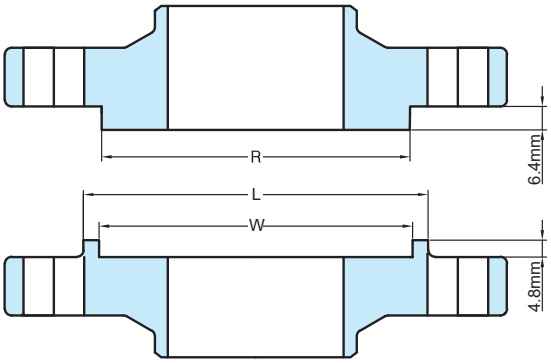
FLANGES FACINGS DIMENSIONS OF FLANGE FACINGS



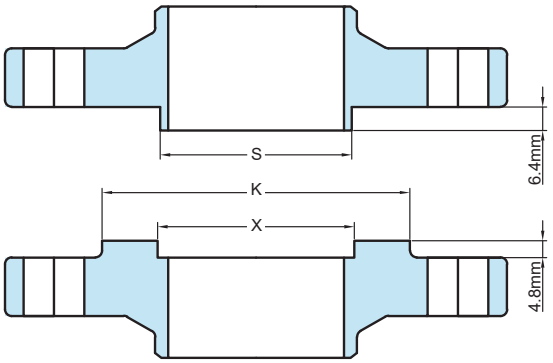
RAISED FACE



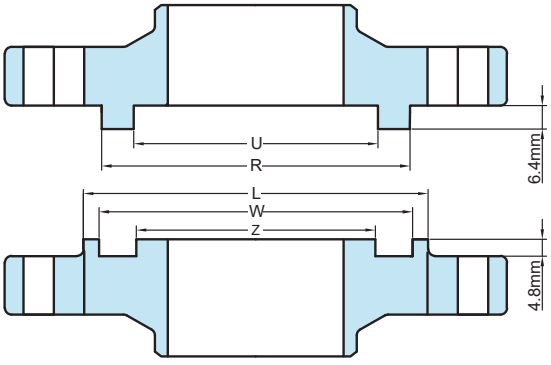
LAP JOINT



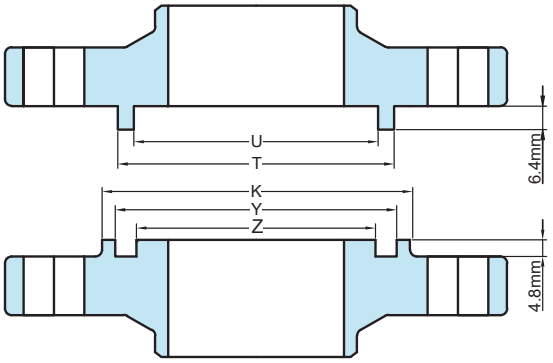
LARGE MALE–FEMALE



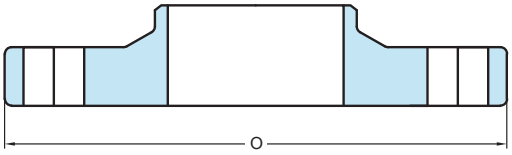
SMALL MALE AND FEMALE



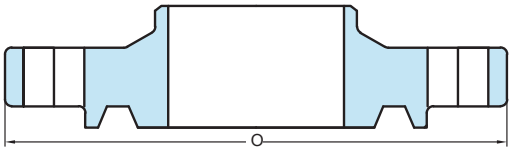
LARGE TONGUE AND GROOVE



SMALL TONGUE AND GROOVE

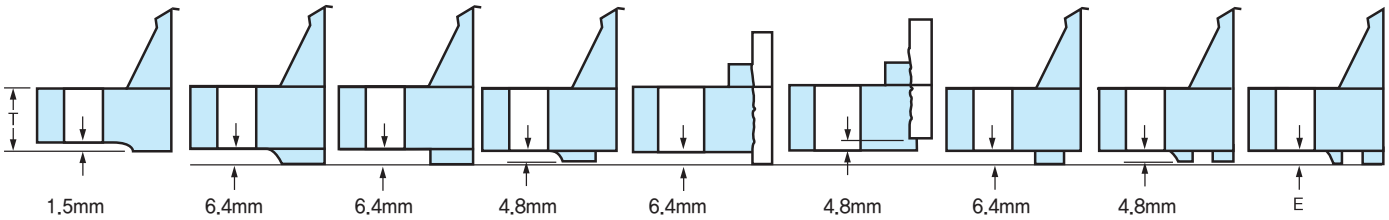


FLAT FACE



RING JOINT

CLASS 150 & 300RF | CLASS 400 & UPWARD RF | MALE | FEMALE | THREADED MALE | THREADED FEMALE | TONGUE | GROOVE | RING JOINT



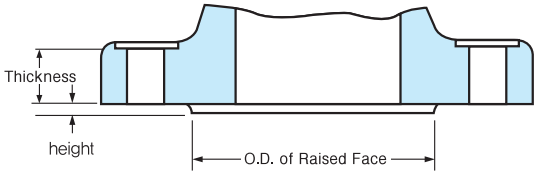
ASME B16.5 FORGED FLANGES

Unit : mm

Nominal Pipe Size	OUTSIDE DIAMETER			I.D. of Large and Small Tongue	OUTSIDE DIAMETER			I.D. of Large and Small Groove	Minimum Outside Diameter of Raised Portion	
	Raised Face, Lapped Large Male and Large Tongue	Small Male	Small Tongue		Large Female and Large Groove	Small Female	Small Groove		Small Female and Groove	Large Female and Groove
	R	S	T	U	W	X	Y	Z	K	L
1/2	34.9	18.3	35.1	25.4	36.5	19.9	36.5	23.8	44	46
3/4	42.9	23.8	42.9	33.3	44.4	25.4	44.4	31.8	52	54
1	50.8	30.2	47.8	38.1	52.4	31.8	49.2	36.5	57	62
1 1/4	63.5	38.1	57.2	47.6	65.1	39.7	58.7	46.0	67	75
1 1/2	73.0	44.4	63.5	54.0	74.6	46.0	65.1	52.4	73	84
2	92.1	57.2	82.6	73.0	93.7	58.8	84.1	71.4	92	103
2 1/2	104.8	68.3	95.2	85.7	106.4	69.8	96.8	84.1	105	116
3	127.0	84.1	117.5	108.0	128.6	85.7	119.1	106.4	127	138
3 1/2	139.7	96.8	130.2	120.6	141.3	98.4	131.8	119.1	140	151
4	157.2	109.5	144.5	131.8	158.8	111.1	146.0	130.2	157	168
5	185.7	136.5	173.0	160.3	187.3	138.1	174.6	158.8	186	197
6	215.9	161.9	203.2	190.5	217.5	163.5	204.8	188.9	216	227
8	269.9	212.7	254.0	238.1	271.5	214.3	255.6	236.5	270	281
10	323.8	266.7	304.8	285.8	325.4	268.3	306.4	284.2	324	335
12	381.0	317.5	362.0	342.9	382.6	319.1	363.5	341.3	381	392
14	412.8	349.2	393.7	374.6	414.3	350.8	395.3	373.1	413	424
16	469.9	400.0	447.5	425.4	471.5	401.6	449.3	423.9	470	481
18	533.4	450.8	511.2	489.0	535.0	452.4	512.8	487.4	533	544
20	584.2	501.6	558.8	533.4	585.8	503.2	560.4	531.8	584	595
22	641.4	–	–	–	–	–	–	–	–	–
24	692.2	603.2	666.8	641.4	693.7	604.8	668.3	639.8	692	703

Notes:

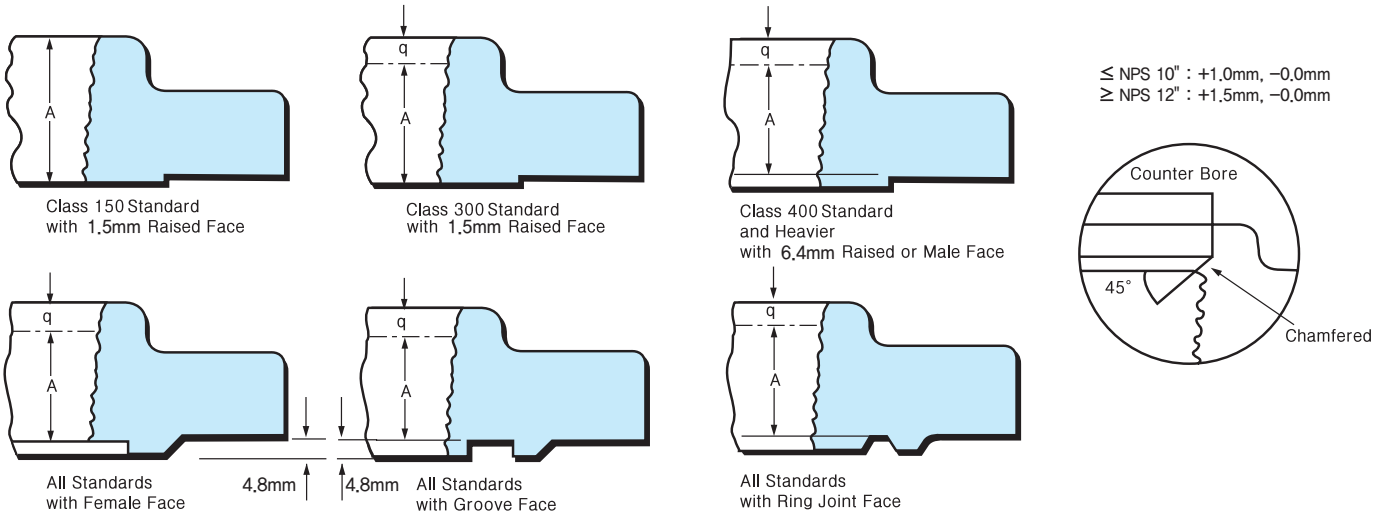
(1) Small male and female faces are not applicable to Slip-on Flange.
(2) Large male and female faces are not applicable to Class 150 Flanges.
(3) For flanges of Class 150 and 300 where they are to be bolted to ASME Class 125 and 250 Cast-Iron Flanges or required with flat face, flat face can be made by removing raised face.
(4) Tongue and groove and small male and female.
The gasket contact surface finish shall not exceed 3.2㎛.



• Tolerances are ±0.03″ (0.8mm) for 0.06″ (1.5mm) RF and ±0.02″ (0.5mm) for 0.25″ (6.4mm) RF Large Male and Large Tongue.

THREAD

THREAD AND STANDARDS FOR ANSI FLANGES (ASME B1.20.1)



ASME B16.5 FORGED FLANGES

Unit : mm

Nominal Pipe Size	A–THREAD LENGTHS						
	Class 150	Class 300	Class 400	Class 600	Class 900	Class 1500	Class 2500
1/2	16	16	16	16	23	23	29
3/4	16	16	16	16	26	26	32
1	17	18	18	18	29	29	35
11/4	21	21	21	21	31	31	39
11/2	22	23	23	23	32	32	45
2	25	29	29	29	39	39	51
21/2	29	32	32	32	48	48	58
3	30	32	35	35	42	–	–
31/2	32	37	40	40	–	–	–
4	33	37	37	42	48	–	–
5	36	43	43	48	54	–	–
6	40	47	46	51	58	–	–
8	44	51	51	58	64	–	–
10	49	56	56	66	72	–	–
12	56	61	61	70	77	–	–
14	57	64	64	74	83	–	–
16	64	69	69	78	86	–	–
18	68	70	70	80	89	–	–
20	73	74	74	83	93	–	–
24	83	83	83	93	102	–	–

Notes:

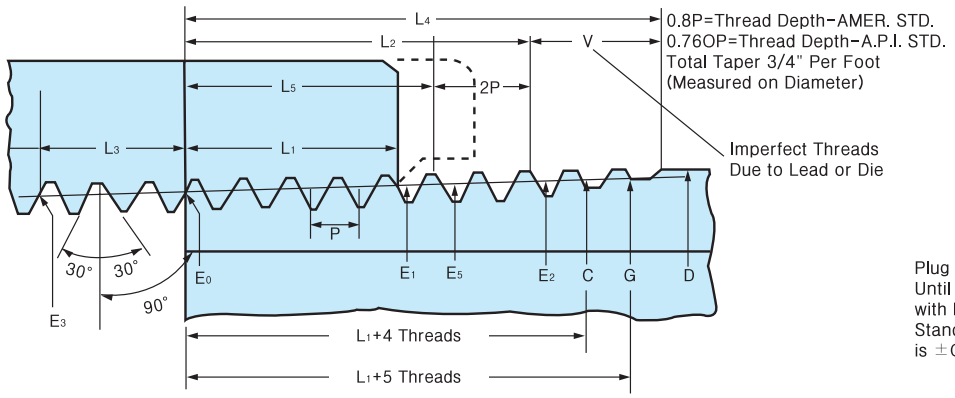
(1) Except flanges with Small Male/Female Face (on pipe end), threaded flanges, have an American National Standard taper pipe thread conforming to ASME B1.20.1

(2) The thread is concentric with the axis of the flange and variations in alignment do not exceed 5.0mm / m (0.06in. / ft)

(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 thread. The chamfer is concentric with the thread and included in the measurement of the thread length.

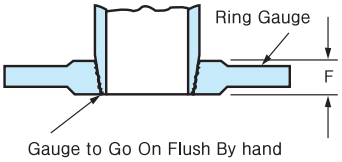
(4) Class 300 and higher pressure flanges are made with a counterbore at the back of the flange. The threads are chamfered to the diameter of the counterbore at an angle of approximately 45 degrees with the axis of the thread. The counterbore and chamfer are concentric with the thread.

(5) The minimum length of effective thread in reducing flanges is at least equal 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.

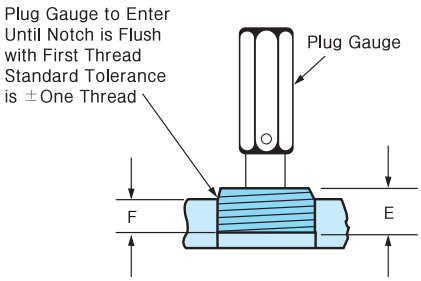


C=Straight Pipe Thread Pitch Dia. for Looknut Connections

G=Minimum Pitch Dia. Straight Female Looknut Thread



F=Thickness of Working Ring Gauge



ASME B16.5 FORGED FLANGES

Unit : mm

Nominal Pipe Size	Outside Diameter of Pipe	Threads Per inch	Pitch of Thread	Pitch Diameter Beginning of Extemal Threads	Handtight Engagement		Effective Thread Extemal		Wrench Make-up Length for Intemal Threaded		Over all Length Extemal Thread
					Length	Diameter	Length	Diameter	Length	Diameter	
	D	N	P	E0	L1	E1	L2	E2	L3	E3	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
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 STEELS

ASME B36.10

Unit : mm

Nominal Pipe		Outside Diam	I.D 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	–	7.82	–	7.40	6.84	6.84	–	5.48	5.48	–	–	–	–	–
			Wall	–	1.24	–	1.45	1.73	1.73	–	2.41	2.41	–	–	–	–	–
1/4	8	13.7	I.D	–	10.40	–	10.00	9.22	9.22	–	7.66	7.66	–	–	–	–	–
			Wall	–	1.65	–	1.85	2.24	2.24	–	3.02	3.02	–	–	–	–	–
3/8	10	17.1	I.D	–	13.80	–	13.40	12.48	12.48	–	10.70	10.70	–	–	–	–	–
			Wall	–	1.65	–	1.85	2.31	2.31	–	3.20	3.20	–	–	–	–	–
1/2	15	21.3	I.D	18.00	17.08	–	16.48	15.76	15.76	–	13.84	13.84	–	–	–	11.74	6.36
			Wall	1.65	2.11	–	2.41	2.77	2.77	–	3.73	3.73	–	–	–	4.78	7.47
3/4	20	26.7	I.D	23.40	22.48	–	21.88	20.96	20.96	–	18.88	18.88	–	–	–	15.58	11.06
			Wall	1.65	2.11	–	2.41	2.87	2.87	–	3.91	3.91	–	–	–	5.56	7.82
1	25	33.4	I.D	30.10	27.86	–	27.60	26.64	26.64	–	24.30	24.30	–	–	–	20.70	15.22
			Wall	1.65	2.77	–	2.90	3.38	3.38	–	4.55	4.55	–	–	–	6.35	9.09
1 1/4	32	42.2	I.D	38.90	36.66	–	36.26	35.08	35.08	–	32.50	32.50	–	–	–	29.50	22.80
			Wall	1.65	2.77	–	2.97	3.56	3.56	–	4.85	4.85	–	–	–	6.35	9.70
1 1/2	40	48.3	I.D	45.00	42.76	–	41.94	40.94	40.94	–	38.14	38.14	–	–	–	34.02	28.00
			Wall	1.65	2.77	–	3.18	3.68	3.68	–	5.08	5.08	–	–	–	7.14	10.15
2	50	60.3	I.D	57.00	54.76	–	53.94	52.48	52.48	–	49.22	49.22	–	–	–	42.82	38.16
			Wall	1.65	2.77	–	3.18	3.91	3.91	–	5.54	5.54	–	–	–	8.74	11.07
2 1/2	65	73.0	I.D	68.78	66.90	–	63.44	62.68	62.68	–	58.98	58.98	–	–	–	53.96	44.96
			Wall	2.11	3.05	–	4.78	5.16	5.16	–	7.01	7.01	–	–	–	9.52	14.02
3	80	88.9	I.D	84.68	82.80	–	79.34	77.92	77.92	–	73.66	73.66	–	–	–	66.64	58.42
			Wall	2.11	3.05	–	4.78	5.49	5.49	–	7.62	7.62	–	–	–	11.13	15.24
3 1/2	90	101.6	I.D	97.38	95.50	–	92.04	90.12	90.12	–	85.44	85.44	–	–	–	–	–
			Wall	2.11	3.05	–	4.78	5.74	5.74	–	8.08	8.08	–	–	–	–	–
4	100	114.3	I.D	110.08	108.20	–	104.74	102.26	102.26	–	97.18	97.18	–	92.04	–	87.32	80.06
			Wall	2.11	3.05	–	4.78	6.02	6.02	–	8.56	8.56	–	11.13	–	13.49	17.12
5	125	141.3	I.D	135.76	134.50	–	–	128.20	128.20	–	122.26	122.26	–	115.90	–	109.54	103.20
			Wall	2.77	3.40	–	–	6.55	6.55	–	9.52	9.52	–	12.70	–	15.88	19.05
6	150	168.3	I.D	162.76	161.50	–	–	154.08	154.08	–	146.36	146.36	–	139.76	–	131.78	124.40
			Wall	2.77	3.40	–	–	7.11	7.11	–	10.97	10.97	–	14.27	–	18.26	21.95
8	200	219.1	I.D	213.56	211.58	206.40	205.02	202.74	202.74	198.48	193.70	193.70	188.92	182.58	177.86	173.08	174.66
			Wall	2.77	3.76	6.35	7.04	8.18	8.18	10.31	12.70	12.70	15.09	18.26	20.62	23.01	22.22
10	250	273.0	I.D	266.20	264.62	260.30	257.40	254.46	254.46	247.60	247.60	242.82	236.48	230.12	222.20	215.84	222.20
			Wall	3.40	4.19	6.35	7.80	9.27	9.27	12.70	12.70	15.09	18.26	21.44	25.40	28.58	25.40
12	300	323.8	I.D	315.88	314.66	311.10	307.04	304.76	303.18	295.26	298.40	288.84	280.92	273.10	266.64	257.16	273.00
			Wall	3.96	4.57	6.35	8.38	9.52	10.31	14.27	12.70	17.48	21.44	25.40	28.58	33.32	25.40
14	350	355.6	I.D	347.68	342.90	339.76	336.56	336.56	333.34	325.42	330.20	317.50	307.94	300.02	292.10	284.18	–
			Wall	3.96	6.35	7.92	9.52	9.52	11.13	15.09	12.70	19.05	23.83	27.79	31.75	35.71	–
16	400	406.4	I.D	398.02	393.70	390.56	387.36	387.36	381.00	373.08	381.00	363.52	354.02	344.48	333.34	325.42	–
			Wall	4.19	6.35	7.92	9.52	9.52	12.70	16.66	12.70	21.44	26.19	30.96	36.53	40.49	–
18	450	457.2	I.D	448.82	444.50	441.36	434.94	438.16	428.66	419.10	431.80	409.54	398.48	387.36	377.86	366.72	–
			Wall	4.19	6.35	7.92	11.31	9.52	14.27	19.05	12.70	23.83	29.36	34.92	39.67	45.24	–
20	500	508.0	I.D	498.44	495.30	488.96	482.60	488.96	477.82	466.76	482.60	455.62	442.92	431.80	419.10	407.98	–
			Wall	4.78	6.35	9.52	12.70	9.52	15.09	20.62	12.70	26.19	32.54	38.10	44.45	50.01	–
22	550	558.8	I.D	549.24	546.10	539.76	533.40	539.76	–	514.36	533.40	501.64	488.96	476.24	463.54	450.84	–
			Wall	4.78	6.35	9.52	12.70	9.52	–	22.20	12.70	28.58	34.92	41.28	47.63	53.98	–
24	600	609.6	I.D	598.52	596.90	590.56	581.06	590.56	574.64	560.38	584.20	547.68	531.82	517.56	504.86	490.52	–
			Wall	5.54	6.35	9.52	14.27	9.52	17.48	24.61	12.70	30.96	38.89	46.02	52.37	59.54	–

▶ Not included B36.10

The wall thickness shown represent nominal wall dimensions which are subject to a–12.5% mill tolerance.
Note that schedule 40 in, size 12″ (304.8mm) and larger and that schedule 80 in, size 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 CARBON AND ALLOY STEELS

ASME B36.19

Unit : mm

Nominal Pipe Size		Outside Diam	I.D 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	–	7.82	6.84	5.48
			Wall	–	1.24	1.73	2.41
1/4	8	13.7	I.D	–	10.40	9.22	7.66
			Wall	–	1.65	2.24	3.02
3/8	10	17.1	I.D	–	13.80	12.48	10.70
			Wall	–	1.65	2.31	3.20
1/2	15	21.3	I.D	18.00	17.08	15.76	13.84
			Wall	1.65	2.11	2.77	3.73
3/4	20	26.7	I.D	23.40	22.48	20.96	18.88
			Wall	1.65	2.11	2.87	3.91
1	25	33.4	I.D	30.10	27.86	26.64	24.30
			Wall	1.65	2.77	3.38	4.55
1 1/4	32	42.2	I.D	38.90	36.66	35.08	32.50
			Wall	1.65	2.77	3.56	4.85
1 1/2	40	48.3	I.D	45.00	42.76	40.94	38.14
			Wall	1.65	2.77	3.68	5.08
2	50	60.3	I.D	57.00	54.76	52.48	49.22
			Wall	1.65	2.77	3.91	5.54
2 1/2	65	73.0	I.D	68.78	66.90	62.68	58.98
			Wall	2.11	3.05	5.16	7.01
3	80	88.9	I.D	84.68	82.80	77.92	73.66
			Wall	2.11	3.05	5.49	7.62
3 1/2	90	101.6	I.D	97.38	95.50	90.12	85.44
			Wall	2.11	3.05	5.74	8.08
4	100	114.3	I.D	110.08	108.20	102.26	97.18
			Wall	2.11	3.05	6.02	8.56
5	125	141.3	I.D	135.76	134.50	128.20	122.26
			Wall	2.77	3.40	6.55	9.52
6	150	168.3	I.D–	162.76	161.50	154.08	146.36
			Wall	2.77	3.40	7.11	10.97
8	200	219.1	I.D	213.56	211.58	202.74	193.70
			Wall	2.77	3.76	8.18	12.70
10	250	273.0	I.D	266.20	264.62	254.46	247.60
			Wall	3.40	4.19	9.27	12.70
12	300	323.8	I.D	315.88	314.66	304.76	298.40
			Wall	3.96	4.57	9.52	12.70
14	350	355.6	I.D	347.68	346.04	336.56	330.20
			Wall	3.96	4.78	9.52	12.70
16	400	406.4	I.D	398.02	396.84	387.36	381.00
			Wall	4.19	4.78	9.52	12.70
18	450	457.2	I.D	448.82	447.64	438.16	431.80
			Wall	4.19	4.78	9.52	12.70
20	500	508.0	I.D	498.44	496.92	488.96	482.60
			Wall	4.78	5.54	9.52	12.70
22	550	558.8	I.D	549.24	547.72	–	–
			Wall	4.78	5.54	–	–
24	600	609.6	I.D	598.52	596.90	590.56	584.20
			Wall	5.54	6.35	9.52	12.70

The wall thickness shown represent nominal or average wall dimensions which are subject to a–12.5% mill tolerance.
Sizes 14″ (355.6mm) through 30″ (762.0mm) are not at publication date covered in B36.19, and dimensions listed are those commonly used in the industry.
*Schedules 5S and 10S wall thicknesses do not permit threading in accordance with ANSI B1.20.1
*Note 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.

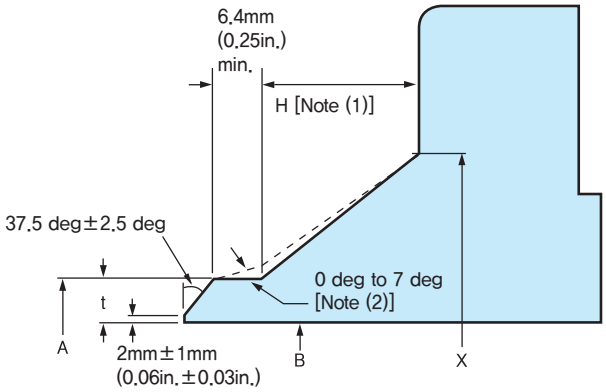
MATERIAL GRADE

GRADE	COMPOSITION										UNS NO.	DIN	Tensile Strength	Yield Strength	Brinell
	C	Mn	P	S	Si	Ni	Cr	Mo	N	V			Min, ksi(MPa)	Min, ksi(MPa)	Hardness
LOW ALLOY STEELS															
F1	0.28	0.60–0.90	0.045	0.045	0.15–0.35	–	–	0.44–0.65	–	–	K12822	15Mo3	70(485)	40(275)	143–192
F5	0.15	0.30–0.60	0.03	0.03	0.5	0.5	4.0–6.0	0.44–0.65	–	–	K41545	12CrMo19–5	70(485)	40(275)	143–217
F9	0.15	0.30–0.60	0.03	0.03	0.50–1.00	–	8.0–10.0	0.90–1.10	–	–	K90941	12–CrMo9–1	85(585)	55(380)	179–217
F91 Type 1	0.08–0.12	0.30–0.60	0.02	0.01	0.20–0.50	0.4	8.0–9.5	0.85–1.05	0.03–0.07	0.18–0.25	K90901	X10CrMoN69–1	90(620)	60(415)	190–248
F91 Type 2	0.08–0.12	0.30–0.50	0.02	0.005	0.20–0.40	0.2	8.0–9.5	0.85–1.05	0.035–0.070	0.18–0.25	K90901	X10CrMoN69–1	90(620)	60(415)	190–248
F92	0.07–0.13	0.30–0.60	0.02	0.01	0.5	0.4	8.50–9.50	0.30–0.60	0.03–0.07	0.15–0.25	K92460	–	90(620)	64(440)	269max
F11 CL.1	0.05–0.15	0.30–0.60	0.03	0.03	0.50–1.00	–	1.00–1.50	0.44–0.65	–	–	K11597	13CrMo44	60(415)	30(205)	121–174
F11 CL.2	0.1–0.2	0.3–0.8	0.04	0.04	0.5–1.0	–	1.0–1.5	0.44–0.65	–	–	K11572	–	40(275)	70(485)	143–207
F12 CL.1	0.05–0.15	0.30–0.60	0.045	0.045	0.5	–	0.80–1.25	0.44–0.65	–	–	K11562	16CrMo44	60(415)	32(220)	121–174
F22 CL.1	0.05–0.15	0.30–0.60	0.04	0.04	0.5	–	2.00–2.50	0.87–1.13	–	–	K21590	10CrMo9–10	60(415)	30(205)	170max
F22 CL.3	0.05–0.15	0.3–0.6	0.04	0.04	0.5	–	2.0–2.5	0.87–1.13	–	–	K21590	–	45(310)	75(515)	156–207
F23	0.04–0.10	0.10–0.60	0.03	0.01	0.5	0.4	1.90–2.60	0.05–0.30	0.03	0.20–0.30	K41650	–	74(510)	58(400)	220max
SCM440	0.38–0.43	0.60–0.90	0.03	0.03	0.15–0.35	0.25	0.90–1.20	0.15–0.30	–	–	–	42CrMo4	–	–	–
SNCM439	0.36–0.43	0.60–0.90	0.03	0.03	0.15–0.35	1.60–2.00	0.60–1.00	0.15–0.30	–	–	–	36CrNiMo4	–	–	–
STAINLESS STEELS (MARTENSITIC)															
F6a CL.1	0.15	1	0.04	0.03	1	0.5	11.5–13.5	–	–	–	S41000	X12Cr13	70(485)	40(275)	143–207
STAINLESS STEELS (FERRITIC)															
F429	0.12	1	0.04	0.03	0.75	0.5	14.0–16.0	–	–	–	S42900	–	60(415)	35(240)	190max
F430	0.12	1	0.04	0.03	0.75	0.5	16.0–18.0	–	–	–	S43000	–	60(415)	35(240)	190max
STAINLESS STEELS(AUSTENITIC)															
F304L	0.03	2	0.045	0.03	1	8.0–13.0	18.0–20.0	–	0.1	–	S30403	X2CrNi19–11	70(485)	25(170)	–
F310	0.25	2	0.045	0.03	1	19.0–22.0	24.0–26.0	–	–	–	S31000	X12CrNi25–20	75(515)	30(205)	–
F316L	0.03	2	0.045	0.03	1	10.0–15.0	16.0–18.0	2.0–3.0	0.1	–	S31603	X2CrNiMo18–14–3	70(485)	25(170)	–
F317L	0.03	2	0.045	0.03	1	11.0–15.0	18.0–20.0	3.0–4.0	–	–	S31703	–	70(485)	25(170)	–
F321	0.08	2	0.045	0.03	1	9.0–12.0	17.0–19.0	–	–	–	S32100	X6CrNiTi18–10	75(515)	30(205)	–
F347	0.08	2	0.045	0.03	1	9.0–13.0	17.0–20.0	–	–	–	S34700	X6CrNiNb18–10	75(515)	30(205)	–
F44	0.02	1	0.03	0.01	0.8	17.5–18.5	19.5–20.5	6.0–6.5	0.18–0.25	–	S31254	–	94(650)	44(300)	–
F904L	0.02	2	0.04	0.03	1	23.0–28.0	19.0–23.0	4.0–5.0	0.1	–	NO8904	–	71(490)	31(215)	–
STAINLESS STEELS (DUPLEX)															
F51	0.03	2	0.03	0.02	1	4.5–6.5	21.0–23.0	2.5–3.5	0.08–0.20	–	S31803	X2CrNiMoN22–5–3	90(620)	65(450)	–
F53	0.03	1.2	0.035	0.02	0.8	6.0–8.0	24.0–26.0	3.0–5.0	0.24–0.32	–	S32750	X2CrNiMoCuWN25–7–4	116(800)	80(550)	310max
F55	0.03	1.0	0.03	0.01	1.0	6.0–8.0	24.0–26.0	3.0–4.0	0.20–0.30	–	S32760	–	80(550)	109–130 (750–985)	
SUS F329J3L	0.03	2	0.04	0.03	1	4.50–6.50	21.0–24.0	2.50–3.50	0.08–0.20	–	–	–	–	–	–
F60	0.03	2	0.03	0.02	1	4.5–6.5	22.0–23.0	3.0–3.5	0.14–0.20	–	S32205	–	95(655)	65(450)	–
CARBON STEELS															
A105	0.35	0.60–1.05	0.035	0.04	0.10–0.35	0.4	0.3	0.12	Cu 0.4	0.08	–	CK25	70(485)	36(250)	197
A350LF2	0.3	0.60–1.35	0.035	0.04	0.15–0.30	0.4	0.3	0.12	Cu 0.4 Nb 0.02	0.08	–	–	70(485) 95(655)	36(250)	197
A350LF3	0.2	0.9	0.035	0.04	0.20–0.35	3.3–3.7	0.3	0.12	Cu 0.4 Nb 0.02	0.03	–	–	70(485) 95(655)	37.5(260)	197
A694/F65	0.30	1.6	0.025	0.025	0.15–0.35	–	–	–	–	–	–	–	77(530)	65(450)	–
S45C	0.42–0.48	0.60–0.90	0.03	0.035	0.15–0.35	–	–	–	–	–	–	–	–	–	–
ALLOY STEELS															
ALLOY20	0.07	2	0.45	0.35	1	32–38	19–21	2.0–3.0	–	–	N 08020	–	–	–	–
ALLOY625	0.1	0.5	0.015	0.015	0.5	58	20–23	8.0–10.0	–	–	N 06625	–	–	–	–
ALLOY800	0.1	1.5	–	0.015	1	30–35	19–23	–	–	–	N 08800	–	–	–	–
A800H/HT	0.05–0.10	1.5	–	0.015	1	30–35	19–23	–	–	–	N 08810/11	–	–	–	–
ALLOY825	0.05	1	–	0.03	0.5	38–46	19.5–23.5	2.50–3.50	–	–	N 08825	–	–	–	–
MOLD STEELS															
SKT4	0.50–0.60	0.60–0.90	0.03	0.02	0.10–0.40	1.50–1.80	0.80–1.20	0.35–0.55	–	0.05–0.15	–	–	–	–	–
STD61	0.32–0.42	0.5	0.03	0.03	–	–	4.50–5.50	1.00–1.50	–	0.80–1.20	–	–	–	–	–

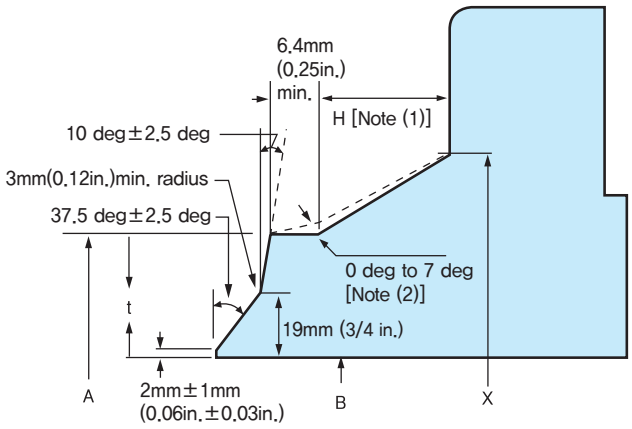
▶ All values are maximum unless otherwise stated.

WELDING ENDS ASME B16.5 FORGED FLANGES

BEVEL FOR WALL THICKNESSES (t)
0.19 IN.(5.0 mm)TO 0.88 IN.(22.0mm) INCLUSIVE



BEVEL FOR WALL THICKNESS (t)
GREATER THAN 0.88 IN.(22.0mm)



Welding Ends (Welding Neck Flanges, No Backing Rings)

A = nominal out side diameter of pipe B = nominal Inside diameter of pipe H = Hub height

t = nominal wall thickness of pipe x = diameter of hub (see dimensional tables)

[Note] (1) the minimum hub height, *H*, shall be $2(Y - t_f)/3$

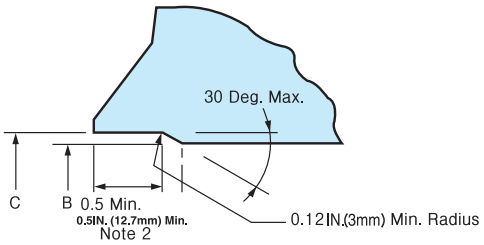
(2) For manufacturing purposes, the straight turn form the bevel is permitted to have a taper with the angle not exceeding 7 deg.

Notes:

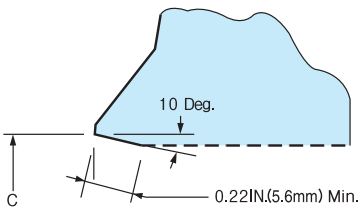
When the thickness of the hub at the bevel is greater than that of the pipe to which the flange is joined and the additional
thickness is provided on the outside diameter, a taper weld having a slop not exceeding 1 to 3 may be employed or, alternatively, the greater outside diameter may be tapered, at the same maximum slope or less, from a point on the welding bevel equal to the OD at the mating pipe. Similarly, 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 the 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.

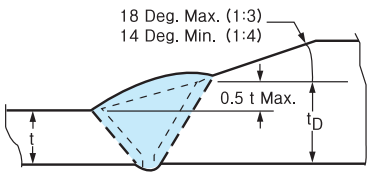
The additional thickness may be provided on either inside or outside or partially on each side, but the total additional thickness shall not exceed one–half times the nominal wall thickness of intened mating pipe.



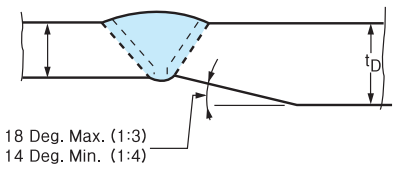
INSIDE CONTOUR FOR USE WITH RECTANGULAR BACKING RING



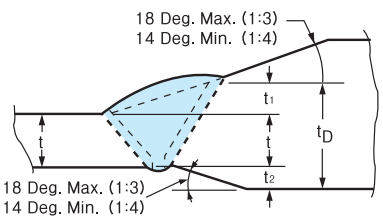
INSIDE CONTOUR FOR USE WITH TAPER BACKING RING



BEVEL FOR OUTSIDE THICKNESS



BEVEL FOR INSIDE THICKNESS



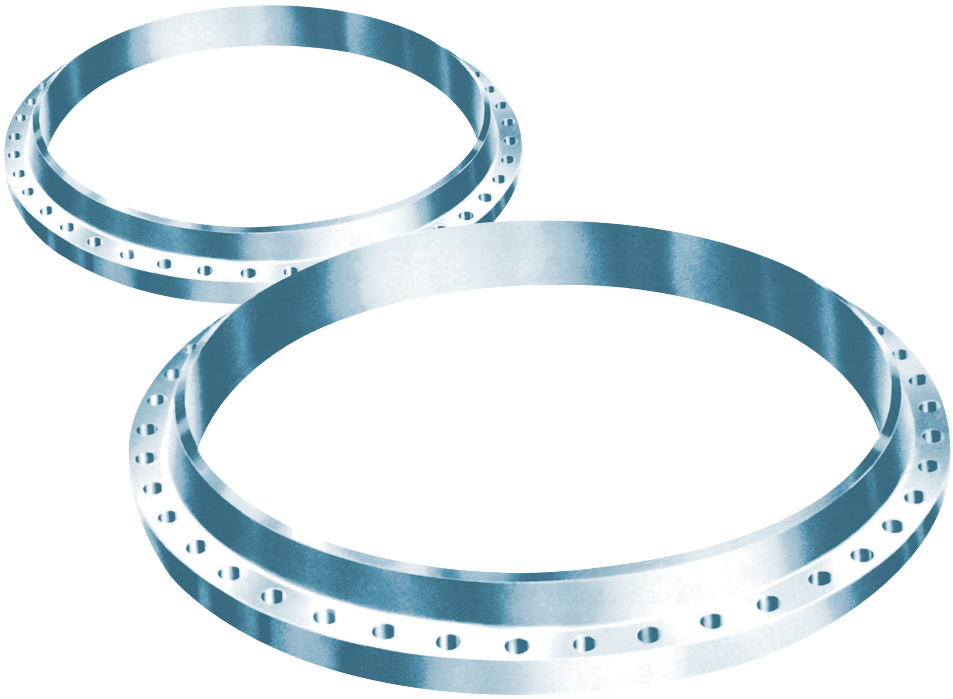
BEVEL FOR COMBINED THICKNESS

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 specified yield strength of the sections to be joined are unequal, the valus of t_D shall at least equal t time the ratio of minimum specified yield strength of the pipe to minimum specified yield strength of the flange.



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

Class 75 Flanges

Class 150 Flanges

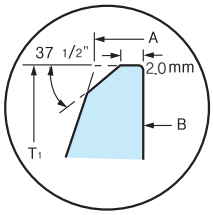
Class 300 Flanges

Class 400 Flanges

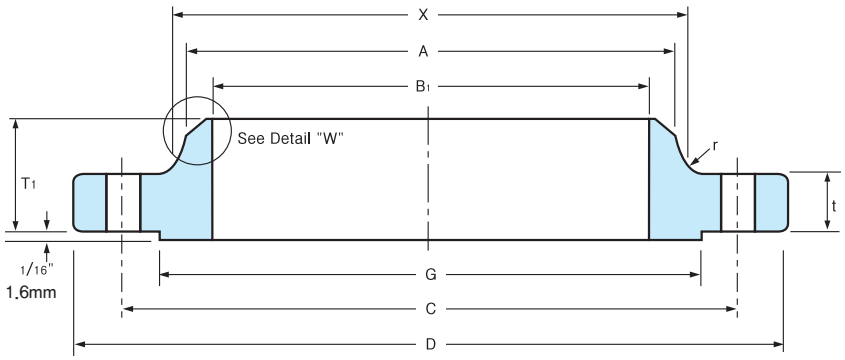
Class 600 Flanges

Class 900 Flanges

CLASS 75 FLANGES ASME B16. 47 SER, B(API 605)



Detail "W"
Typical Welding
end Preparation



Unit : mm

Nominal Pipe Size	Pipe OD	Outside Diam	O.D. of Raised Face	Diam. at Base of Hub	Thick-ness		BORE Wall Thickness			Length Thru Hub	Diam of Hub at Bevel	Minimum Filet Radius	DRILLING			Nominal Weight	
					WNF	BL	6.35mm	9.5mm	12.7mm				Bolt Circle Diam	Number of Holes	Diam. of Holes	WNF	BLF
		D	G	X	t		B1			T1	A	r	C			kg	kg
26	660	760	705	676	31.8	31.8	647.3	641.0	634.6	57	661.9	8	723.9	36	19.1	40	116
28	711	813	756	727	31.8	31.8	698.3	692.0	685.6	60	712.7	8	774.7	40	19.1	44	132
30	762	864	806	778	31.8	31.8	749.3	743.0	736.6	64	763.5	8	825.5	44	19.1	48	150
32	813	914	857	829	33.5	35.1	800.3	794.0	787.6	68	814.3	8	876.3	48	19.1	54	177
34	864	965	908	879	33.5	36.6	851.3	845.0	838.6	72	865.1	8	927.1	52	19.1	59	196
36	914	1034	965	935	35.1	40.9	901.3	895.0	888.6	84	915.9	10	992.1	40	22.2	78	236
38	965	1084	1016	986	36.6	42.9	952.3	946.0	939.6	87	966.7	10	1042.9	40	22.2	85	271
40	1016	1135	1067	1037	36.6	42.9	1003.3	997.0	990.6	91	1017.5	10	1093.7	44	22.2	93	346
42	1067	1186	1118	1087	38.1	46.2	1054.3	1048.0	1041.6	94	1068.3	10	1144.5	48	22.2	100	407
44	1118	1251	1175	1140	41.4	47.3	1105.3	1099.0	1092.6	103	1119.1	10	1203.5	36	25.4	113	484
46	1168	1302	1226	1191	42.9	49.3	1155.3	1149.0	1142.6	106	1169.9	10	1254.3	40	25.4	127	539
48	1219	1353	1276	1242	44.6	52.6	1206.3	1200.0	1193.6	110	1220.7	10	1305.1	44	25.4	141	598
50	1270	1403	1327	1294	46.2	54.1	1257.3	1251.0	1244.6	114	1271.5	10	1355.9	44	25.4	153	684
52	1321	1457	1378	1345	46.2	55.6	1308.3	1302.0	1295.6	119	1322.3	10	1409.7	48	25.4	160	758
54	1372	1508	1429	1397	47.8	58.9	1359.3	1353.0	1346.6	124	1373.1	10	1460.5	48	25.4	177	837
56	1422	1575	1486	1451	49.3	60.5	1409.3	1403.0	1396.6	133	1423.9	11	1521.0	40	28.6	198	959
58	1473	1626	1537	1502	50.8	62.0	1460.5	1454.2	1447.8	137	1474.7	11	1571.8	44	28.6	218	1046
60	1524	1676	1588	1553	54.1	65.3	1511.3	1505.0	1498.6	143	1525.5	11	1622.6	44	28.6	245	1137

CLASS 150 FLANGES

Unit : mm

Nominal Pipe Size	Pipe OD	Outside Diam	O.D. of Raised Face	Diam. at Base of Hub	Thick-ness		BORE Wall Thickness			Length Thru Hub	Diam of Hub at Bevel	Minimum Filet Radius	DRILLING			Nominal Weight	
					WNF	BL	6.35mm	9.5mm	12.7mm				Bolt Circle Diam	Number of Holes	Diam of Holes	WNF	BLF
		D	G	X	t		B1			T1	A	r	C			kg	kg
26	660	786	711	684	39.9	42.9	647.3	641.0	634.6	87	661.9	10	744.5	36	22.2	63	165
28	711	837	762	735	42.9	46.2	698.3	692.0	685.6	94	712.7	10	795.3	40	22.2	74	200
30	762	887	813	787	42.9	49.3	749.3	743.0	736.6	98	763.5	10	846.1	44	22.2	80	226
32	813	941	864	840	44.4	52.6	800.3	794.0	787.6	106	814.3	10	900.2	48	22.2	92	263
34	864	1005	921	892	47.8	55.6	851.3	845.0	838.6	109	865.1	10	957.3	40	25.4	113	320
36	914	1057	972	945	50.8	57.2	901.3	895.0	888.6	116	915.9	10	1009.6	44	25.4	129	374
38	965	1124	1022	997	52.6	62.0	952.3	946.0	939.6	122	968.2	10	1069.8	40	28.6	150	434
40	1016	1175	1080	1049	54.1	65.3	1003.3	997.0	990.6	127	1019.0	10	1120.6	44	28.6	162	489
42	1067	1226	1130	1102	57.2	66.8	1054.3	1048.0	1041.6	132	1069.8	11	1171.4	48	28.6	184	560
44	1118	1276	1181	1153	58.9	69.8	1105.3	1099.0	1092.6	135	1120.6	11	1222.2	52	28.6	192	626
46	1168	1341	1235	1205	60.5	73.2	1155.3	1149.0	1142.6	143	1171.4	11	1284.2	40	31.8	224	709
48	1219	1392	1289	1257	63.5	76.2	1206.3	1200.0	1193.6	148	1222.2	11	1335.0	44	31.8	231	799
50	1270	1443	1340	1308	66.8	79.5	1257.3	1251.0	1244.6	152	1273.0	11	1385.8	48	31.8	263	899
52	1321	1494	1391	1360	68.3	82.6	1308.3	1302.0	1295.6	156	1323.8	11	1436.6	52	31.8	285	985
54	1372	1549	1441	1413	69.8	85.9	1359.3	1353.0	1346.6	161	1374.6	11	1492.2	56	31.8	287	1081
56	1422	1600	1492	1465	71.6	88.9	1409.3	1403.0	1396.6	165	1425.4	14	1543.0	60	31.8	323	1181
58	1473	1675	1543	1516	73.2	91.9	1460.5	1454.2	1447.8	173	1476.2	14	1611.4	48	34.9	384	1322
60	1524	1726	1600	1570	74.7	95.2	1511.3	1505.0	1498.6	178	1527.0	14	1662.2	52	34.9	388	1430

Notes:

(1) For the inside diameter of pipes (corresponding to 'Bore' (B1) of Welding Neck Flanges), refer to page 158.

CLASS 300 FLANGES ASME B16. 47 SER, B(API 605)

Unit : mm

Nominal Pipe Size	Pipe OD	Outside Diam	O.D. of Raised Face	Diam. at Base of Hub	Thick-ness		BORE			Length Thru Hub	Diam of Hub at Bevel	Minimum Filet Radius	DRILLING			Nominal Weight	
							Wall Thickness						Bolt Circle Diam	Number of Holes	Diam of Holes	WNF	BLF
		D	G	X	WNF	BL	6.35mm	9.5mm	12.7mm	T1	A	r	C			kg	kg
					t		B1										
26	660	867	737	702	87.4	87.4	647.3	641.0	634.6	143	665.2	14	803.1	32	34.9	181	404
28	711	921	787	756	87.4	87.4	698.3	692.0	685.6	148	716.0	14	857.2	36	34.9	203	457
30	762	991	845	813	92.2	92.2	749.3	743.0	736.6	156	768.4	14	920.8	36	38.1	268	555
32	813	1054	902	864	101.6	101.6	800.3	794.0	787.6	167	819.2	16	977.9	32	41.3	330	693
34	864	1108	952	917	101.6	101.6	851.3	845.0	838.6	171	870.0	16	1031.7	36	41.3	357	765
36	914	1171	1010	965	101.6	101.6	901.3	895.0	888.6	179	920.8	16	1089.2	32	44.5	405	858
38	965	1222	1060	1016	109.5	109.5	952.3	946.0	939.6	190	971.6	16	1140.0	36	44.5	416	1005
40	1016	1273	1115	1067	114.3	114.3	1003.3	997.0	990.6	197	1022.4	16	1190.8	40	44.5	450	1132
42	1067	1334	1168	1118	117.6	117.6	1054.3	1048.0	1041.6	203	1074.7	16	1244.6	36	47.6	502	1280
44	1118	1384	1219	1173	125.5	125.5	1105.3	1099.0	1092.6	213	1125.5	16	1295.4	40	47.6	552	1466
46	1168	1460	1270	1229	127.0	128.5	1155.3	1149.0	1142.6	221	1176.3	16	1365.2	36	50.8	650	1657
48	1219	1511	1327	1278	127.0	133.4	1206.3	1200.0	1193.6	222	1227.1	16	1416.0	40	50.8	731	1772
50	1270	1562	1378	1330	136.7	138.2	1257.3	1251.0	1244.6	233	1277.9	16	1466.8	44	50.8	760	2029
52	1321	1613	1429	1383	141.2	142.5	1308.3	1302.0	1295.6	241	1328.7	16	1517.6	48	50.8	800	2230
54	1372	1673	1480	1435	135.1	147.6	1359.3	1353.0	1346.6	238	1379.5	16	1577.8	48	50.8	898	2310
56	1422	1765	1537	1494	152.4	155.4	1409.3	1403.0	1396.6	267	1430.3	17	1651.0	36	60.3	1143	2891
58	1473	1827	1594	1548	152.4	160.3	1460.5	1454.2	1447.8	273	1481.1	17	1713.0	40	60.3	1217	3093
60	1524	1878	1651	1599	149.4	165.1	1511.3	1505.0	1498.6	270	1531.9	17	1763.8	40	60.3	1311	3213

CLASS 400 FLANGES

Unit : mm

Nominal Pipe Size	Pipe OD	Outside Diam	O.D. of Raised Face	Diam. at Base of Hub	Thick-ness		BORE			Length Thru Hub	Diam of Hub at Bevel	Minimum Filet Radius	DRILLING			Nominal Weight	
							Wall Thickness						Bolt Circle Diam	Number of Holes	Diam of Holes	WNF	BLF
		D	G	X	WNF	BL	6.35mm	9.5mm	12.7mm	T1	A	r	C			kg	kg
					t		B1										
26	660	851	711	689	88.9	88.9	647.3	641.0	634.6	149	660.4	11	781.0	28	38.1	176	398
28	711	914	762	740	95.2	95.2	698.3	692.0	685.6	159	711.2	13	838.2	24	41.3	216	492
30	762	972	819	794	101.6	101.6	749.3	743.0	736.6	170	762.0	13	895.4	28	41.3	253	592
32	813	1035	873	845	108.0	108.0	800.3	794.0	787.6	179	812.8	13	952.5	28	44.5	300	714
34	864	1086	927	899	111.3	111.3	851.3	845.0	838.6	187	863.6	14	1003.3	32	44.5	327	810
36	914	1156	981	952	119.1	119.1	901.3	895.0	888.6	200	914.4	14	1066.8	28	47.6	402	982

CLASS 600 FLANGES

Unit : mm

Nominal Pipe Size	Pipe OD	Outside Diam	O.D. of Raised Face	Diam. at Base of Hub	Thick-ness		BORE			Length Thru Hub	Diam of Hub at Bevel	Minimum Filet Radius	DRILLING			Nominal Weight	
							Wall Thickness						Bolt Circle Diam	Number of Holes	Diam of Holes	WNF	BLF
		D	G	X	WNF	BL	6.35mm	9.5mm	12.7mm	T1	A	r	C			kg	kg
					t		B1										
26	660	889	727	698	111.3	111.3	647.3	641.0	634.6	181	660.4	13	806.4	28	44.5	267	534
28	711	952	784	752	115.8	115.8	698.3	692.0	685.6	190	711.2	13	863.6	28	47.6	326	637
30	762	1022	841	806	125.5	127.0	749.3	743.0	736.6	205	762.0	13	927.1	28	50.8	402	793
32	813	1086	895	861	130.0	134.9	800.3	794.0	787.6	216	812.8	13	984.2	28	54.0	462	925
34	864	1162	952	914	141.2	144.3	851.3	845.0	838.6	233	863.6	14	1054.1	24	60.3	582	1150
36	914	1213	1010	968	146.0	150.9	901.3	895.0	888.6	243	914.4	14	1104.9	28	60.3	627	1290

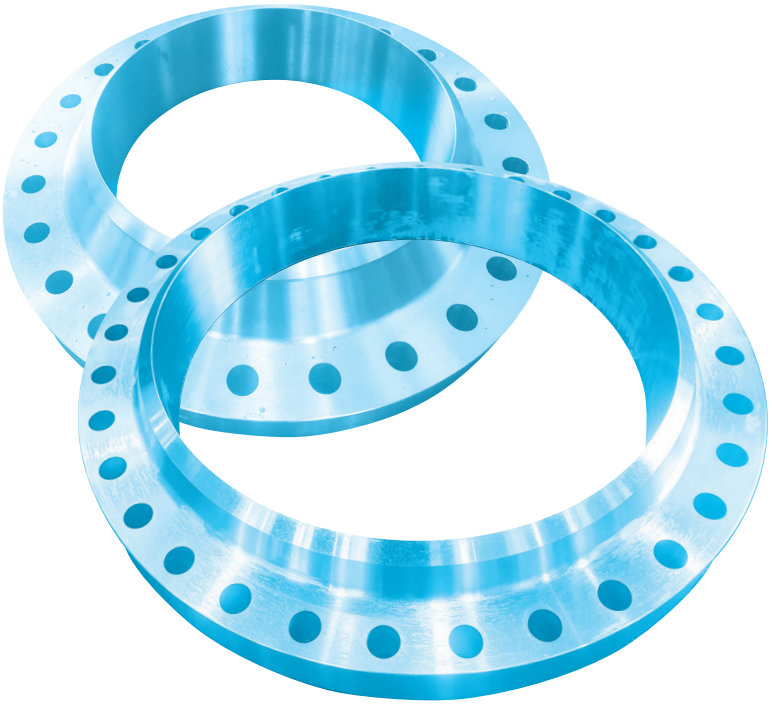
CLASS 900 FLANGES

Unit : mm

Nominal Pipe Size	Pipe OD	Outside Diam	O.D. of Raised Face	Diam. at Base of Hub	Thick-ness		BORE			Length Thru Hub	Diam of Hub at Bevel	Minimum Filet Radius	DRILLING			Nominal Weight	
							Wall Thickness						Bolt Circle Diam	Number of Holes	Diam of Holes	WNF	BLF
		D	G	X	WNF	BL	6.35mm	9.5mm	12.7mm	T1	A	r	C			kg	kg
					t		B1										
26	660	1022	762	743	134.9	153.9	647.3	641.0	634.6	259	660.4	11	901.7	20	66.7	564	993
28	711	1105	819	797	147.6	166.6	698.3	692.0	685.6	276	711.2	13	971.6	20	73.0	706	1256
30	762	1181	876	851	155.4	176.0	749.3	743.0	736.6	289	762.0	13	1035.0	20	79.4	833	1516
32	813	1238	927	908	160.3	185.7	800.3	794.0	787.6	303	812.8	13	1092.2	20	79.4	919	1757
34	864	1314	991	962	171.4	195.0	851.3	845.0	838.6	319	863.6	14	1155.7	20	85.7	1105	2080
36	914	1346	1029	1016	173.0	201.7	901.3	895.0	888.6	325	914.4	14	1200.2	24	79.4	1124	2256

Notes:

(1) For the inside diameter of pipes (corresponding to 'Bore' (B1) of Welding Neck Flanges), refer to page 158.



ANSI/ASME B16.47 SERIES A FLANGES (MSS SP44)

Class 150 Flanges

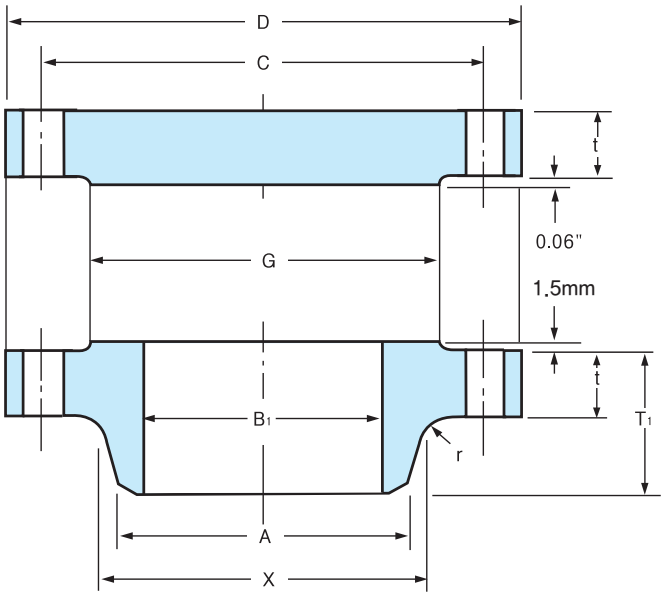
Class 300 Flanges

Class 400 Flanges

Class 600 Flanges

Class 900 Flanges

CLASS 150 FLANGES



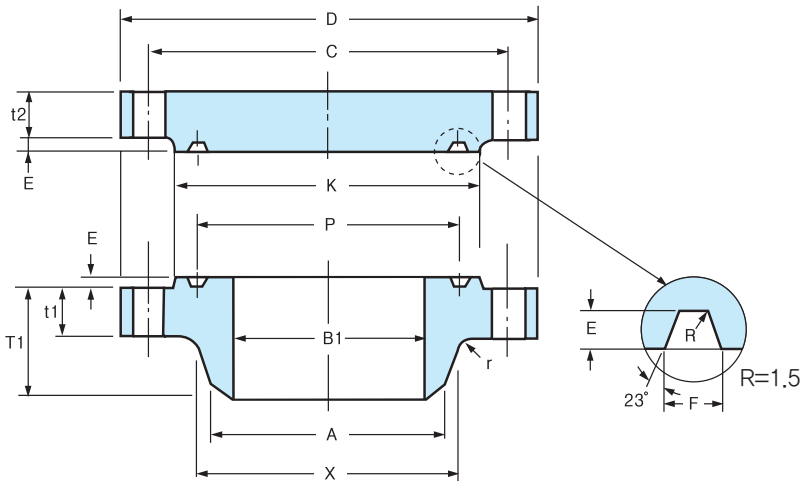
ANSI/ ASME B16.47 SERIES A FLANGES

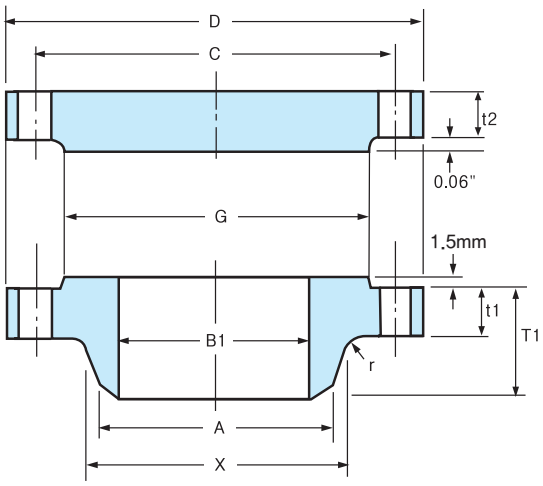
Unit : mm

Nominal Pipe Size	Outside Diam.	O.D. of Raised Face	Diam. at Base of Hub	Thickness (WN, BL)	Diam. of Hub at Bevel (2)	BORE		Length thru Hub	Drilling			Min. Fillet Radius	Nom. Weight	
						Wall Thickness			BCD	Number of Bolt HolesH	Diam. of Bolt Holes(3)		WNF	BLF
						9.5mm	12.7mm							
	D	G	X	t	A	B1		T1	C	N	H	r	kg	kg
26	870	749	676	66.8	660.4	641.4	635.0	119	806.4	24	34.9	10	147	306
28	927	800	727	69.8	711.2	692.2	685.8	124	863.6	28	34.9	11	163	363
30	984	857	781	73.2	762.0	743.0	736.6	135	914.4	28	34.9	11	190	430
32	1060	914	832	79.5	812.8	793.8	787.4	143	977.9	28	41.3	11	238	537
34	1111	965	883	81.0	863.6	844.6	838.2	148	1028.7	32	41.3	13	255	600
36	1168	1022	933	88.9	914.4	895.4	889.0	156	1085.8	32	41.3	13	302	730
38	1238	1073	991	85.9	965.2	946.2	939.8	156	1149.4	32	41.3	13	342	792
40	1289	1124	1041	88.9	1016.0	997.0	990.6	162	1200.2	36	41.3	13	366	893
42	1346	1194	1092	95.2	1066.8	1047.8	1041.4	170	1257.3	36	41.3	13	419	1044
44	1403	1245	1143	100.1	1117.6	1098.6	1092.2	176	1314.4	40	41.3	13	459	1190
46	1454	1295	1197	101.6	1168.4	1149.4	1143.0	184	1365.2	40	41.3	13	500	1299
48	1511	1359	1248	106.4	1219.2	1200.2	1193.8	191	1422.4	44	41.3	13	552	1470
50	1568	1410	1302	109.7	1270.0	1251.0	1244.6	202	1479.6	44	47.6	13	592	1615
52	1626	1461	1353	114.3	1320.8	1301.8	1295.4	208	1536.7	44	47.6	13	660	1817
54	1683	1511	1403	119.1	1371.6	1352.6	1346.2	214	1593.8	44	47.6	13	726	2031
56	1746	1575	1457	122.4	1422.4	1403.4	1397.0	227	1651.0	48	47.6	13	805	2244
58	1803	1626	1508	127.0	1473.2	1454.2	1447.8	233	1708.2	48	47.6	13	884	2491
60	1854	1676	1559	130.3	1524.0	1505.0	1498.6	238	1759.0	52	47.6	13	930	2697

Notes:
(1) For the 'Bore' (B1) other than wall thickness 0.375″ (9.5mm) and 0.500″ (12.7mm), refer to page 158.

CLASS 300 FLANGES





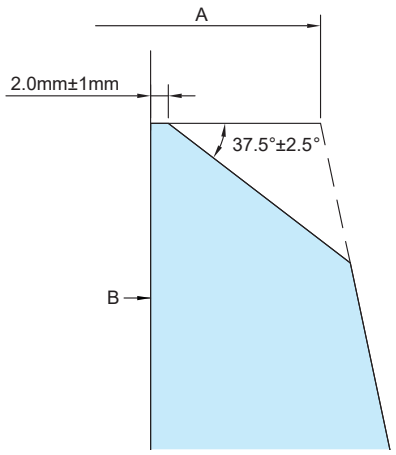
ANSI/ ASME B16.47 SERIES A FLANGES

Unit : mm

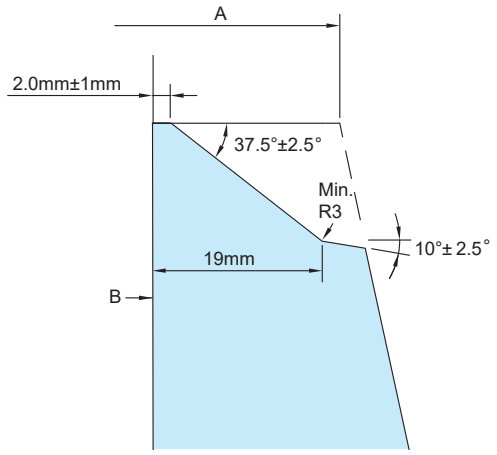
Nominal Pipe Size	Outside Diam.	O.D. of Raised Face	Diam. at Base of Hub	Thickness		BORE		Length Thru Hub	Diam. of Hub at Bevel	Minimum Radius of Fillet
				Welding Neck	Blind	Wall Thickness				
						9.5mm	12.7mm			
	D	G	X	t1	t2	B1		T1	A	r
26	972	749	721	78.0	82.6	641.4	635.0	183	660.4	10
28	1035	800	775	84.3	88.9	692.2	685.8	195	711.2	11
30	1092	857	827	90.7	93.7	743.0	736.6	208	762.0	11
32	1149	914	881	97.0	98.6	793.8	787.4	221	812.8	11
34	1206	965	937	100.1	103.4	844.6	838.2	230	863.6	13
36	1270	1022	991	103.4	109.7	895.4	889.0	240	914.4	13
38	1168	1029	994	106.4	106.4	946.2	939.8	179	965.2	13
40	1238	1086	1048	112.8	112.8	997.0	990.6	192	1016.0	13
42	1289	1137	1099	117.6	117.6	1047.8	1041.4	199	1066.8	13
44	1353	1194	1149	122.4	122.4	1098.6	1092.2	205	1117.6	13
46	1416	1245	1203	127.0	127.0	1149.4	1143.0	214	1168.4	13
48	1467	1302	1254	131.8	131.8	1200.2	1193.8	222	1219.2	13
50	1530	1359	1305	138.2	138.2	1251.0	1244.6	230	1270.0	13
52	1581	1410	1356	143.0	143.0	1301.8	1295.4	237	1320.8	13
54	1657	1467	1410	150.9	150.9	1352.6	1346.2	251	1371.6	13
56	1708	1518	1464	152.4	152.4	1403.4	1397.0	259	1422.4	13
58	1759	1575	1514	157.2	157.2	1454.2	1447.8	265	1473.2	13
60	1810	1626	1565	160.1	160.1	1505.0	1498.6	272	1524.0	13

Notes:
(1) For the 'Bore' (B1) other than wall thickness 0.375″ (9.5mm) and 0.500″ (12.7mm), refer to page 158.

WELDING-ENDS FOR WELDING-NECK FLANGES



BEVEL FOR WALL THICKNESS (t)
0.19 IN.(5.0mm)TO 0.88 IN.(22.0mm)INCLUSIVE



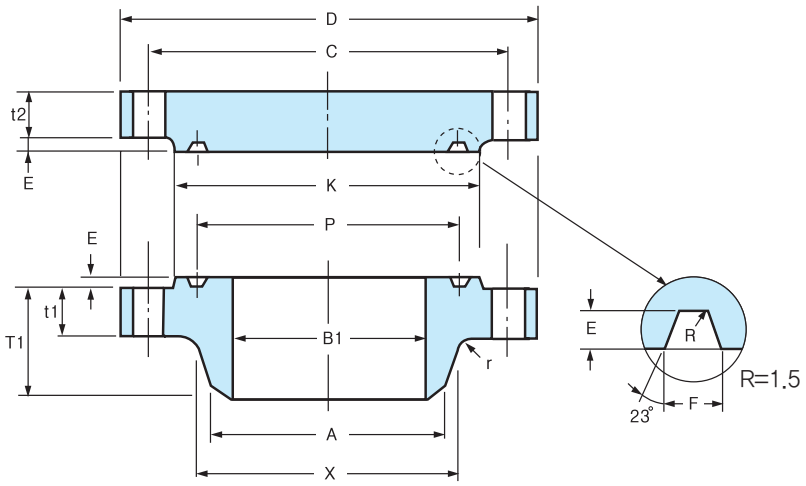
BEVEL FOR WALL THICKNESSES (t)
GREATER THAN O.88 IN.(22.0mm)

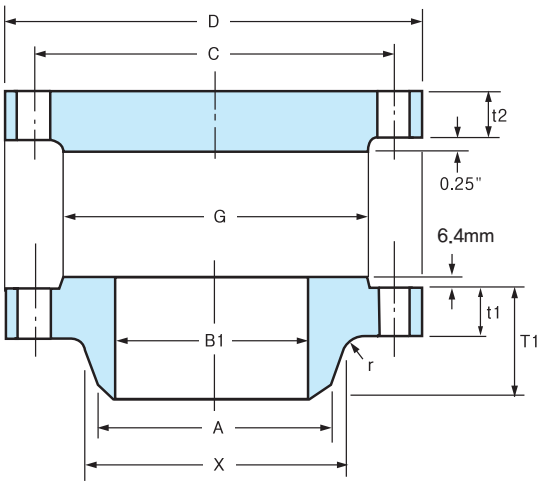
Unit : mm

Nominal Pipe Size	DRILLING			Pitch Diam.	GROOVE DIMENSIONS			Diam. of Raised Face	Ring and Groove Number	Nominial Weight	
	Bolt Circle Diam.	Number of Holes	Diam. of Holes		Width	Depth	Radius			WNF	BLF
	C			P	F	E	R	K		kg	kg
26	876.3	28	44.5	749.30	19.84	12.70	1.5	810	R93	275	460
28	939.8	28	44.5	800.10	19.84	12.70	1.5	861	R94	340	566
30	997.0	28	47.6	857.25	19.84	12.70	1.5	917	R95	389	663
32	1054.1	28	50.8	914.40	23.01	14.27	1.5	984	R96	438	770
34	1104.9	28	50.8	965.20	23.01	14.27	1.5	1035	R97	498	894
36	1168.4	32	54.0	1022.35	23.01	14.27	1.5	1092	R98	563	1040
38	1092.2	32	41.3	–	–	–	–	–	–	307	872
40	1155.7	32	44.5	–	–	–	–	–	–	372	1035
42	1206.5	32	44.5	–	–	–	–	–	–	409	1173
44	1263.6	32	47.6	–	–	–	–	–	–	464	1340
46	1320.8	28	50.8	–	–	–	–	–	–	544	1600
48	1371.6	32	50.8	–	–	–	–	–	–	567	1700
50	1428.8	32	54.0	–	–	–	–	–	–	643	1936
52	1479.6	32	54.0	–	–	–	–	–	–	694	2143
54	1549.4	28	60.3	–	–	–	–	–	–	832	2486
56	1600.2	28	60.3	–	–	–	–	–	–	882	2674
58	1651.0	32	60.3	–	–	–	–	–	–	928	2913
60	1701.8	32	60.3	–	–	–	–	–	–	989	3184

(2) Maximum Pressure Rating for raised face flanges is 740 psi (51 BARS) at atmospheric temperature.

CLASS 400 FLANGES





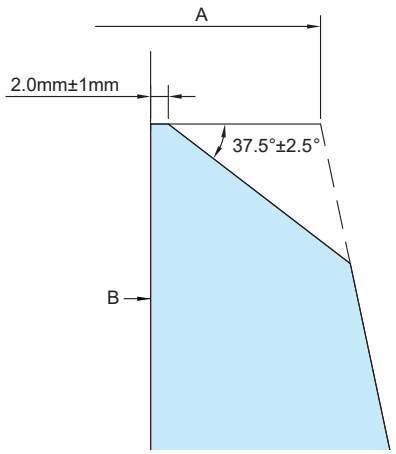
ANSI/ ASME B16.47 SERIES A FLANGES

Unit : mm

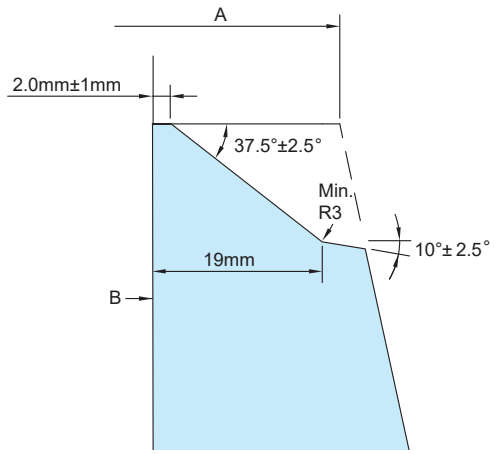
Nominal Pipe Size	Outside Diam.	O.D. of Raised Face	Diam. at Base of Hub	Thickness		BORE		Length Thru Hub	Diam. of Hub at Bevel	Minimum Radius of Fillet
				Welding Neck	Blind	Wall Thickness				
						9.5mm	12.7mm			
	D	G	X	t1	t2	B1		T1	A	r
26	972	749	727	88.9	98.6	641.4	635.0	194	660.4	11
28	1035	800	783	95.2	104.6	692.2	685.8	206	711.2	13
30	1092	857	837	101.6	111.3	743.0	736.6	219	762.0	13
32	1149	914	889	108.0	115.8	793.8	787.4	232	812.8	13
34	1206	965	945	111.3	122.2	844.6	838.2	241	863.6	14
36	1270	1022	1000	114.3	128.5	895.4	889.0	251	914.4	14
38	1206	1035	1003	124.0	124.0	946.2	939.8	206	965.2	14
40	1270	1092	1054	130.0	130.0	997.0	990.6	216	1016.0	14
42	1321	1143	1108	133.4	133.4	1047.8	1041.4	224	1066.8	14
44	1384	1200	1159	139.7	139.7	1098.6	1092.2	233	1117.6	14
46	1441	1257	1213	146.0	146.0	1149.4	1143.0	244	1168.4	14
48	1511	1308	1267	152.4	152.4	1200.2	1193.8	257	1219.2	14
50	1568	1362	1321	157.2	158.8	1251.0	1244.6	268	1270.0	14
52	1619	1413	1372	162.1	163.6	1301.8	1295.4	276	1320.8	14
54	1702	1470	1425	169.9	171.4	1352.6	1346.2	289	1371.6	14
56	1753	1527	1480	174.8	176.3	1403.4	1397.0	298	1422.4	14
58	1803	1578	1530	177.8	180.8	1454.2	1447.8	306	1473.2	14
60	1886	1635	1584	185.7	189.0	1505.0	1498.6	319	1524.0	14

Notes:
(1) For the 'Bore' (B1) other than wall thickness 0.375″ (9.5mm) and 0.500″ (12.7mm), refer to page 158.

WELDING-ENDS FOR WELDING-NECK FLANGES



BEVEL FOR WALL THICKNESS (t)
0.19 IN.(5.0mm)TO 0.88 IN.(22.0mm)INCLUSIVE



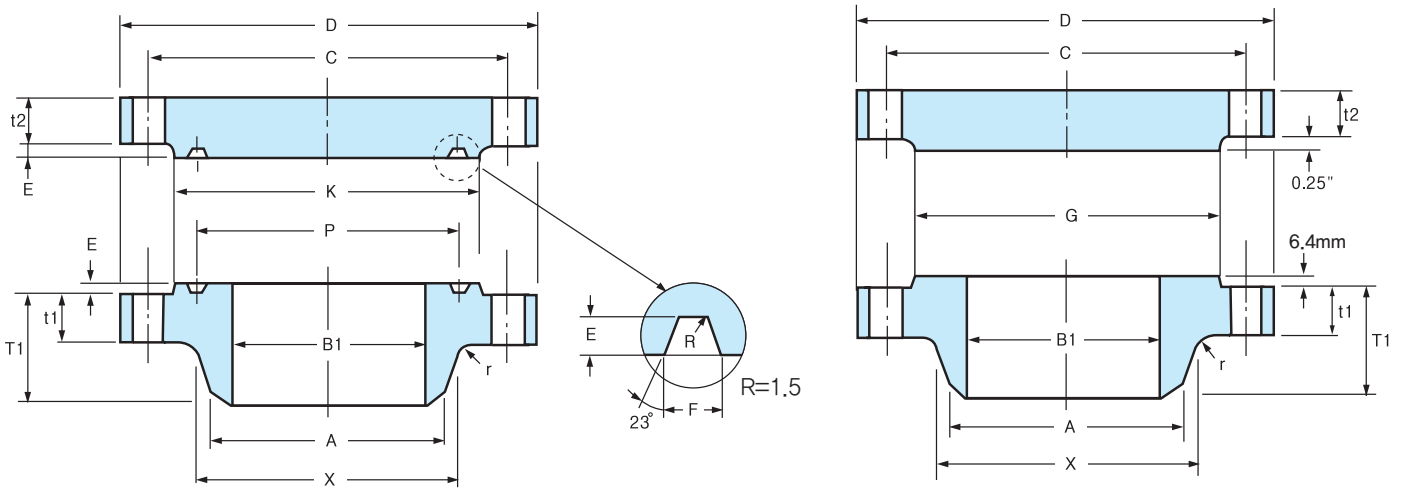
BEVEL FOR WALL THICKNESSES (t)
GREATER THAN O.88 IN.(22.0mm)

Unit : mm

Nominal Pipe Size	DRILLING			Pitch Diam.	GROOVE DIMENSIONS			Diam. of Raised Face	Ring and Groove Number	Nominial Weight	
	Bolt Circle Diam.	Number of Holes	Diam. of Holes		Width	Depth	Radius			WNF	BLF
	C			P	F	E	R	K		kg	kg
26	876.3	28	47.6	749.30	19.84	12.70	1.5	810	R93	304	534
28	939.8	28	50.8	800.10	19.84	12.70	1.5	861	R94	362	645
30	997.0	28	54.0	857.25	19.84	12.70	1.5	917	R95	415	760
32	1054.1	28	54.0	914.40	23.01	14.27	1.5	984	R96	478	885
34	1104.9	28	54.0	965.20	23.01	14.27	1.5	1035	R97	538	1035
36	1168.4	32	54.0	1022.35	23.01	14.27	1.5	1092	R98	604	1205
38	1117.6	32	47.6	–	–	–	–	–	–	406	1055
40	1174.8	32	50.8	–	–	–	–	–	–	473	1229
42	1225.6	32	50.8	–	–	–	–	–	–	513	1366
44	1282.7	32	54.0	–	–	–	–	–	–	586	1569
46	1339.8	36	54.0	–	–	–	–	–	–	648	1776
48	1403.4	28	60.3	–	–	–	–	–	–	768	2043
50	1460.5	32	60.3	–	–	–	–	–	–	832	2294
52	1511.3	32	60.3	–	–	–	–	–	–	897	2500
54	1581.2	28	66.7	–	–	–	–	–	–	1086	2900
56	1632.0	32	66.7	–	–	–	–	–	–	1139	3174
58	1682.8	32	66.7	–	–	–	–	–	–	1208	3462
60	1752.6	32	73.0	–	–	–	–	–	–	1408	3940

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

CLASS 600 FLANGES



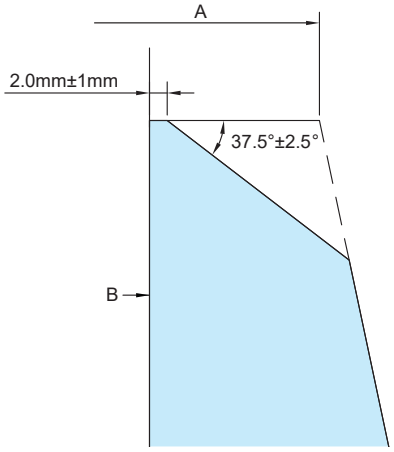
ANSI/ ASME B16.47 SERIES A FLANGES

Unit : mm

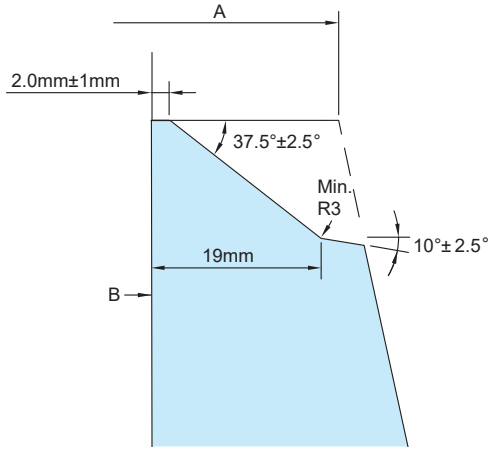
Nominal Pipe Size	Outside Diam.	O.D. of Raised Face	Diam. at Base of Hub	Thickness		BORE		Length Thru Hub	Diam. of Hub at Bevel	Minimum Radius of Fillet
				Welding Neck	Blind	Wall Thickness				
						9.5mm	12.7mm			
	D	G	X	t1	t2	B1		T1	A	r
26	1016	749	748	108.0	125.5	641.4	635.0	222	660.4	13
28	1073	800	803	111.3	131.8	692.2	685.8	235	711.2	13
30	1130	857	862	114.3	139.7	743.0	736.6	248	762.0	13
32	1194	914	917	117.3	147.6	793.8	787.4	260	812.8	13
34	1245	965	973	120.6	153.9	844.6	838.2	270	863.6	14
36	1314	1022	1032	124.0	162.1	895.4	889.0	282	914.4	14
38	1270	1054	1022	152.4	155.4	946.2	939.8	254	965.2	14
40	1321	1111	1073	158.8	162.1	997.0	990.6	264	1016.0	14
42	1403	1168	1127	168.1	171.4	1047.8	1041.4	279	1066.8	14
44	1454	1226	1181	173.0	177.8	1098.6	1092.2	289	1117.6	14
46	1511	1276	1235	179.3	185.7	1149.4	1143.0	300	1168.4	14
48	1594	1334	1289	189.0	195.3	1200.2	1193.8	316	1219.2	14
50	1670	1384	1343	196.8	203.2	1251.0	1244.6	329	1270.0	14
52	1721	1435	1394	203.2	209.6	1301.8	1295.4	337	1320.8	14
54	1778	1492	1448	209.6	217.4	1352.6	1346.2	349	1371.6	14
56	1854	1543	1502	217.4	225.6	1403.4	1397.0	362	1422.4	16
58	1905	1600	1553	222.2	231.6	1454.2	1447.8	370	1473.2	16
60	1994	1657	1610	233.4	242.8	1505.0	1498.6	389	1524.0	17

Notes:
(1) For the 'Bore' (B1) other than wall thickness 0.375″ (9.5mm) and 0.500″ (12.7mm), refer to page 158.

WELDING-ENDS FOR WELDING-NECK FLANGES



BEVEL FOR WALL THICKNESS (t)
0.19 IN.(5.0mm)TO 0.88 IN.(22.0mm)INCLUSIVE



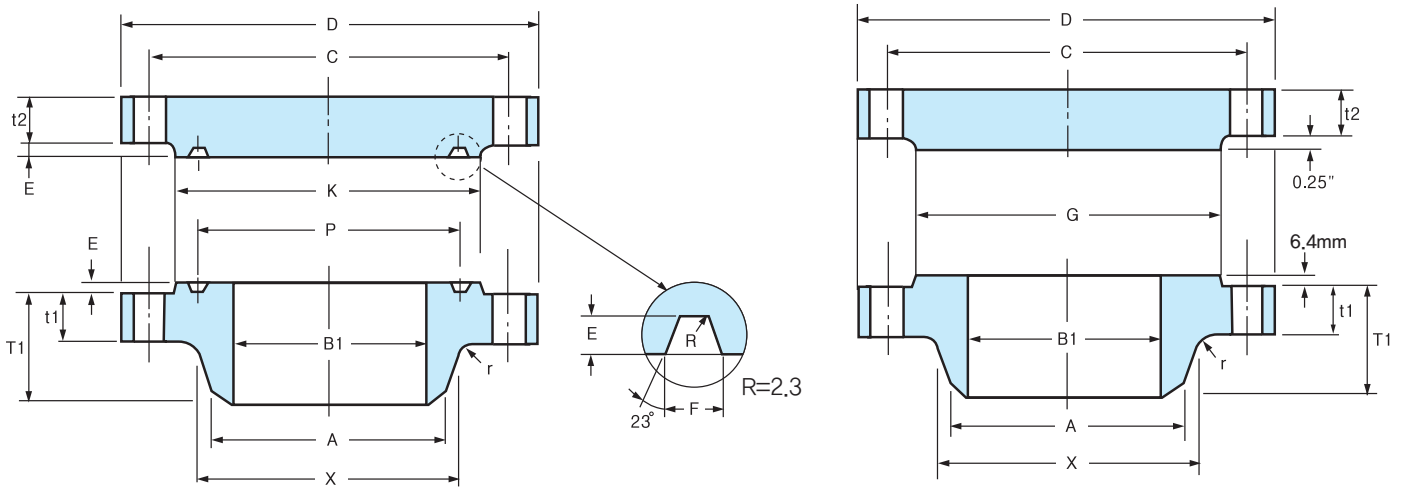
BEVEL FOR WALL THICKNESSES (t)
GREATER THAN O.88 IN.(22.0mm)

Unit : mm

Nominal Pipe Size	DRILLING			Pitch Diam.	GROOVE DIMENSIONS			Diam. of Raised Face	Ring and Groove Number	Nominial Weight	
	Bolt Circle Diam.	Number of Holes	Diam. of Holes		Width	Depth	Radius			WNF	BLF
	C			P	F	E	R	K		kg	kg
26	914.4	28	50.8	749.30	19.84	12.70	1.5	810	R93	427	740
28	965.2	28	54.0	800.10	19.84	12.70	1.5	861	R94	479	869
30	1022.4	28	54.0	857.25	19.84	12.70	1.5	917	R95	545	1030
32	1079.5	28	60.3	914.40	23.01	14.27	1.5	984	R96	610	1204
34	1130.3	28	60.3	965.20	23.01	14.27	1.5	1035	R97	665	1371
36	1193.8	28	66.7	1022.35	23.01	14.27	1.5	1092	R98	755	1600
38	1162.0	28	60.3	–	–	–	–	–	–	640	1447
40	1212.8	32	60.3	–	–	–	–	–	–	683	1620
42	1282.7	28	66.7	–	–	–	–	–	–	754	1948
44	1333.5	32	66.7	–	–	–	–	–	–	903	2100
46	1390.6	32	66.7	–	–	–	–	–	–	1054	2450
48	1460.5	32	73.0	–	–	–	–	–	–	1200	2850
50	1524.0	28	79.4	–	–	–	–	–	–	1363	3233
52	1574.8	32	79.4	–	–	–	–	–	–	1466	3570
54	1632.0	32	79.4	–	–	–	–	–	–	1605	3968
56	1695.4	32	85.7	–	–	–	–	–	–	1709	4450
58	1746.2	32	85.7	–	–	–	–	–	–	1916	4850
60	1822.4	28	92.1	–	–	–	–	–	–	2300	5588

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

CLASS 900 FLANGES



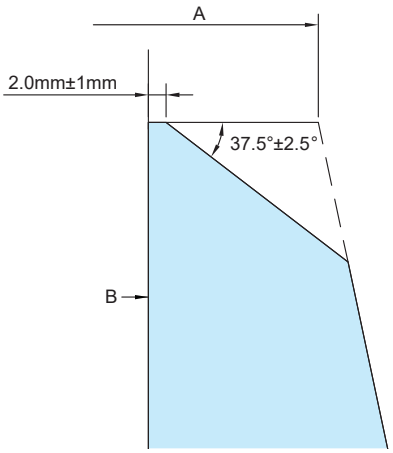
ANSI/ ASME B16.47 SERIES A FLANGES

Unit : mm

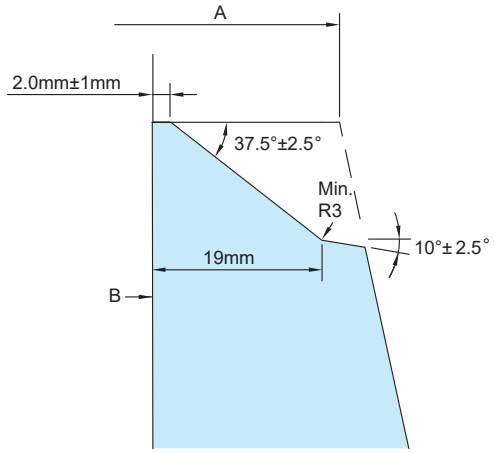
Nominal Pipe Size	Outside Diam.	O.D. of Raised Face	Diam. at Base of Hub	Thickness		BORE		Length Thru Hub	Diam. of Hub at Bevel	Minimum Radius of Fillet
				Welding Neck	Blind	Wall Thickness				
						9.5mm	12.7mm			
	D	G	X	t1	t2	B1		T1	A	r
26	1086	749	775	139.7	160.3	641.4	635.0	286	660.4	11
28	1168	800	832	142.7	171.4	692.2	685.8	298	711.2	13
30	1232	857	889	149.3	182.4	743.0	736.6	311	762.0	13
32	1314	914	946	158.8	193.5	793.8	787.4	330	812.8	13
34	1397	965	1006	165.1	204.7	844.6	838.2	349	863.6	14
36	1460	1022	1064	171.4	214.4	895.4	889.0	362	914.4	14
38	1460	1099	1073	190.5	215.9	946.2	939.8	353	965.2	19
40	1511	1162	1127	196.8	223.8	997.0	990.6	363	1016.0	21
42	1562	1213	1176	206.2	231.6	1047.8	1041.4	371	1066.8	21
44	1648	1270	1235	214.4	242.8	1098.6	1092.2	391	1117.6	22
46	1734	1334	1292	225.6	255.5	1149.4	1143.0	411	1168.4	22
48	1784	1384	1343	233.4	263.7	1200.2	1193.8	419	1219.2	24

Notes:
(1) For the 'Bore' (B1) other than Wall Thickness 0.375″ (9.5mm) and 0.500″ (12.7mm), refer to page 158.
(2) Maximum Pressure Rating for raised face flanges is 2220 psi (153.1 BARS) at atmospheric temperature.

WELDING-ENDS FOR WELDING-NECK FLANGES



BEVEL FOR WALL THICKNESS (t)
0.19 IN.(5.0mm)TO 0.88 IN.(22.0mm)INCLUSIVE

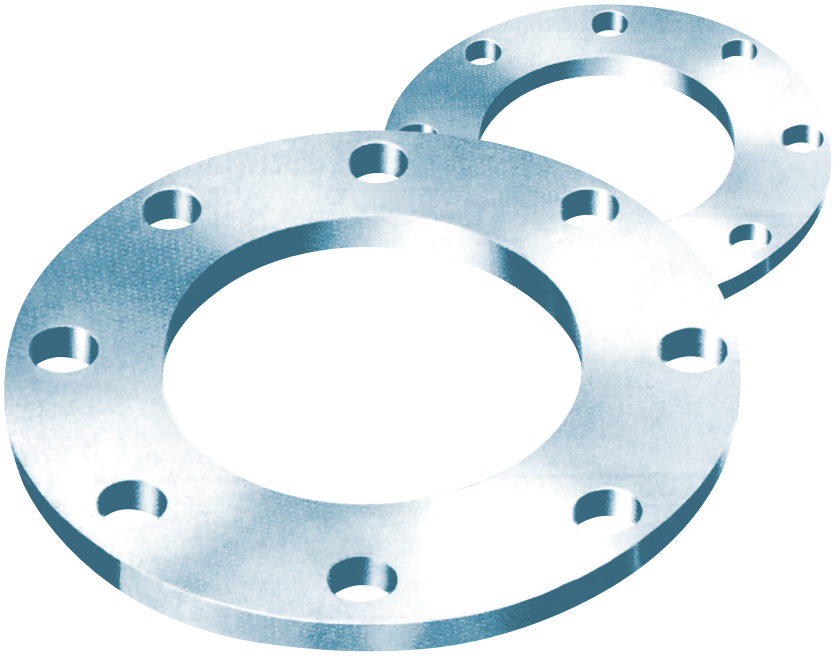


BEVEL FOR WALL THICKNESSES (t)
GREATER THAN O.88 IN.(22.0mm)

Nominal Pipe Size	DRILLING			Pitch Diam.	GROOVE DIMENSIONS			Diam.of Raised Face	Ring and Groove Number	Nominial Weight	
	Bolt Circle Diam.	Number of Holes	Diam. of Holes		Width	Depth	Radius			WNF	BLF
	C			P	F	E	R	K		kg	kg
26	952.5	20	73.0	749.30	30.18	17.48	2.3	832	R100	692	1060
28	1022.4	20	79.4	800.10	33.32	17.48	2.3	889	R101	822	1306
30	1085.8	20	79.4	857.25	33.32	17.48	2.3	946	R102	962	1565
32	1155.7	20	85.7	914.40	33.32	17.48	2.3	1003	R103	1155	1885
34	1225.6	20	92.1	965.20	36.53	20.62	2.3	1067	R104	1348	2250
36	1289.0	20	92.1	1022.35	36.53	20.62	2.3	1124	R105	1541	2595
38	1289.0	20	92.1	–	–	–	–	–	–	1537	2610
40	1339.8	24	92.1	–	–	–	–	–	–	1643	2870
42	1390.6	24	92.1	–	–	–	–	–	–	1798	3195
44	1463.5	24	98.4	–	–	–	–	–	–	1952	3720
46	1536.7	24	104.8	–	–	–	–	–	–	2107	4579
48	1587.5	24	104.8	–	–	–	–	–	–	2260	4730

* ASME B 16.47 Tolerance

Facing	Outside diameter of raised face (G)		±2mm	(±0.08″)
	Height	1.5mm	±0.5mm	(±0.02″)
		6.4mm	±2mm	(±0.08″)
Thickness (t)	t <= 25mm		+3mm 0mm	(+0.12″ (0″)
	25mm < t <= 50mm		+5.0mm 0mm	(+0.20″ (0″)
	50mm < t <= 75mm		+8.0m 0mm	(+0.31″ (0″)
	t > 75mm		+10.0mm 0mm	(+0.39″ (0″)
Welding ends and Hubs	Outside Diameter (A)		+5.0mm −2.0mm	(+0.19″ (−0.06″)
	Inside Diameter (B) — No Backing Ring	B16.47 Figure 1 (See Page 62)	+3mm −2.0mm	(+0.12″ (−0.08″)
	Inside Diameter (B) — Backing Ring	B16.47 Figure 2 (See page 62)	0mm −2mm	(0″) (−0.08″)
Hub Length			+3mm −5.0mm	(+0.12″ (−0.20″)
Drilling and Facing	Bolt Circle Diameter		±1.5mm	(±0.06″)
	Bolt Hole to Bolt Hole		±0.8mm	(±0.03″)
	Bolt Circle Concentricity		1.5mm	(0.06″)



AWWA FLANGES

General Specifications
Class B&D Flanges
Class E Flanges
Class F Flanges
Class D Hub Flanges
Class E Hub Flanges

GENERAL SPECIFICATIONS

AWWA C207 FLANGES

1. Standard Finishes for Contact Face of AWWA Flange

Flanges of all classes and types shall be flat faced–that is, without projection or raised face.
Either a serrated concentric or serrated spiral finish having 24 to 55 grooves/in. (0.94 to 2.17 grooves/mm) shall be used.
The cutting tool employed shall have a radius of 0.06 in. (1.52mm) or larger.
The resultant surface finish shall have a 125– to 500– μ in. (3.2– to 12.7–μ m) roughness.

2. Dimensional Tolerances for AWWA Flanges

Dimension		Tolerance in.
Bore		+1.6mm –0mm
Outside Diameter		±3.2mm
Thickness	18 in. and smaller	+3.2mm –0mm
	20 in. and larger	+4.8mm –0mm
Length through Hub		18in. and smaller +3.2mm – 0.79mm 20in. and larger +4.8mm – 1.6mm
Bolt Circle Diameter		±1.6mm
Bolt – hole spacing		±0.79mm

Note: For other dimensional tolerances, see ANSI B16.5, page 51.

3. Bolting

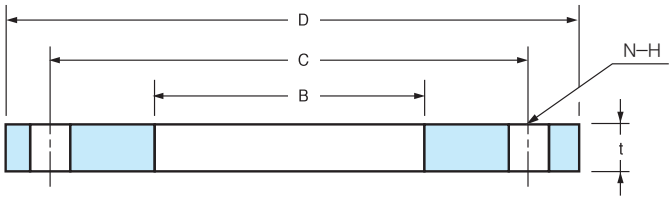
Bolts and nuts shall be carbon steel ASTM A307, Grades A or B, Bolts shall have regular unfinished square or hexagonal heads, and nuts shall have regular square or hexagonal dimensions all in accordance with ANSI B18.21 for wrench head bolts and nuts and wrench openings.
All bolts and nuts shall be threaded in accordance with ANSI B1.1 for screw threads, coarse–thread series, Class 2A and 2B fit.

4. Gaskets

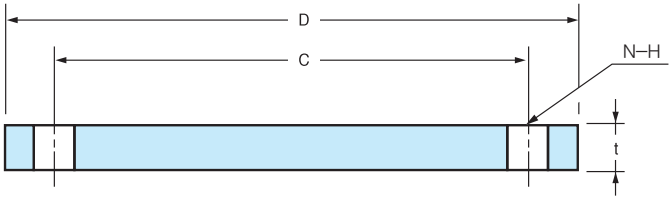
These standards are predicated on the user of either a cloth–inserted rubber gasket 1/16 in. thick or an absestos ring gasket that is either 1/16 in. or 1/8 in. thick, at the purchaser' s option:The gasket shall extend from the inside diameter of the flange to at least the inside edge of the bolt holes,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

CLASS B & D FLANGES

AWWA Standard Steel Ring Flanges, Class B(86psi) and Class D (175–150 psi)



SLIP–ON



BLIND

AWWA C207

Unit : mm

Nominal Pipe Size	Outside Diam.	Bore	Thickness				DRILLING				Nominal Weight(kg)			
			Class B(t)		Class D(t)		Bolt Circle Diam.	Number of Holes	Diam. of Bolt Holes	Diam. of Bolt (inch)	Class B(kg)		Class D(kg)	
	D	B	Slip–on	Blind	Slip–on	Blind	C				Slip–on	Blind	Slip–on	Blind
4	228.60	116.08	15.88	15.88	15.88	15.88	190.50	8	19.1	0.625	3.51	4.83	3.51	4.83
5	254.00	143.76	15.88	15.88	15.88	16.51	215.90	8	22.2	0.750	3.90	5.93	3.90	6.16
6	279.40	170.69	17.48	17.48	17.48	17.60	241.30	8	22.2	0.750	4.85	7.98	4.85	8.04
8	342.90	221.49	17.48	17.48	17.48	20.62	298.45	8	22.2	0.750	6.96	12.24	6.96	14.45
10	406.40	276.35	17.48	17.48	17.48	24.21	361.95	12	25.4	0.875	8.73	16.96	8.73	23.49
12	482.60	327.15	17.48	18.26	20.62	28.37	431.80	12	25.4	0.875	12.73	25.35	15.02	39.38
14	533.40	360.43	17.48	20.09	23.83	28.78	476.25	12	28.6	1.000	15.60	34.03	21.27	48.74
16	596.90	411.23	17.48	22.66	25.40	32.13	539.75	16	28.6	1.000	18.76	47.94	27.26	67.99
18	635.00	462.03	17.48	24.13	26.97	33.81	577.85	16	31.8	1.125	18.70	57.58	28.87	80.58
20	698.50	512.83	17.48	26.42	28.58	36.78	635.00	20	31.8	1.125	22.06	76.17	36.07	106.06
22	749.30	563.63	19.05	28.75	30.18	39.83	692.15	20	34.9	1.250	25.76	95.20	40.81	131.87
24	812.80	614.43	19.05	30.89	31.75	42.19	749.30	20	34.9	1.250	30.38	121.15	50.64	165.49
26	869.95	–	20.62	33.20	33.32	45.36	806.45	24	34.9	1.250	36.24	148.90	58.55	203.47
28	927.10	–	22.23	35.51	33.32	48.41	863.60	28	34.9	1.250	42.84	180.68	64.23	246.34
30	984.25	–	22.23	37.52	34.93	51.00	914.40	28	34.9	1.250	47.48	216.16	74.62	293.87
32	1,060.45	–	23.83	40.16	38.10	54.61	977.90	28	41.3	1.500	59.97	266.60	95.91	362.55
34	1,111.25	–	23.83	42.19	38.10	57.20	1028.70	32	41.3	1.500	62.59	307.01	100.10	416.25
36	1,168.40	–	25.40	44.48	41.28	60.20	1085.85	32	41.3	1.500	72.91	359.37	118.48	486.41
38	1,238.25	–	25.40	47.07	41.28	63.65	1149.35	32	41.3	1.500	84.21	429.08	136.84	580.29
40	1,289.05	–	25.40	49.10	41.28	66.27	1200.15	36	41.3	1.500	87.41	484.41	142.04	653.81
42	1,346.20	–	28.58	51.38	44.45	69.32	1257.30	36	41.3	1.500	106.14	554.67	165.11	748.25
44	1,403.35	–	28.58	53.70	44.45	72.36	1314.45	40	41.3	1.500	112.99	629.39	175.56	848.21
46	1,454.15	–	28.58	55.73	44.45	74.98	1365.25	40	41.3	1.500	118.01	703.08	183.58	945.98
48	1,511.30	–	31.75	58.04	47.63	78.03	1422.40	44	41.3	1.500	139.13	790.44	208.69	1062.69
50	1,568.45	–	31.75	60.38	50.80	81.18	1479.55	44	47.6	1.750	143.87	878.53	230.19	1181.24
52	1,625.60	–	31.75	62.69	50.80	84.20	1536.70	44	47.6	1.750	153.74	982.72	245.98	1319.98
54	1,682.75	–	34.93	65.00	53.98	87.25	1593.85	44	47.6	1.750	180.27	1094.72	278.60	1469.47
60	1,854.20	–	38.10	71.63	57.15	95.99	1758.95	52	47.6	1.750	230.83	1466.15	346.25	1964.75
66	2,032.00	–	41.28	78.54	63.50	105.05	1930.40	52	47.6	1.750	301.41	1942.14	463.71	2597.90
72	2,197.10	–	44.45	85.17	66.68	113.79	2095.50	60	47.6	1.750	364.17	2164.17	546.25	3291.08
78	2,362.20	–	50.80	–	69.85	–	2260.60	64	54.0	2.000	453.85	–	624.04	–
84	2,533.65	–	50.80	–	73.03	–	2425.70	64	54.0	2.000	519.88	–	747.33	–
90	2,705.10	–	57.15	–	76.20	–	2590.80	68	61.9	2.250	637.30	–	849.74	–
96	2,876.55	–	57.15	–	82.55	–	2755.90	68	61.9	2.250	720.28	–	1040.41	–
102	3,048.00	–	63.50	–	82.55	–	2908.30	72	68.3	2.500	868.01	–	1128.42	–
108	3,219.45	–	63.50	–	85.73	–	3067.05	72	68.3	2.500	969.72	–	1309.13	–
114	3,390.90	–	69.85	–	88.90	–	3219.45	76	74.6	2.750	1146.48	–	1459.15	–
120	3,562.35	–	69.85	–	88.90	–	3371.85	76	74.6	2.750	1269.15	–	1615.28	–
126	3,733.80	–	76.20	–	95.25	–	3536.95	80	81.0	3.000	1476.53	–	1845.66	–
132	3,905.25	–	76.20	–	98.43	–	3702.05	80	81.0	3.000	1621.95	–	2095.02	–
144	4,248.15	–	82.55	–	104.78	–	4019.55	84	87.4	3.250	2031.97	–	2579.04	–

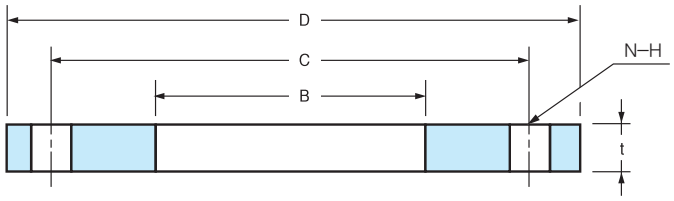
Notes:

(1) The purchaser shall specify the ID of the flange, dimension B, for nominal pipe sizes 26 in. and Larger.

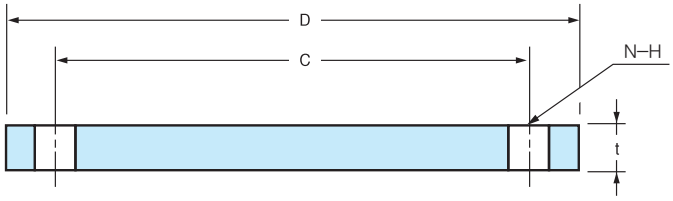
(2) The diameter of the flange bore shall not exceed the pipe OD by more than 0.25 in.

CLASS E FLANGES

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



SLIP–ON



BLIND

AWWA C207

Unit : mm

Nominal Pipe Size	Outside Diam.	Bore	Thickness		DRILLING				Nominal Weight(kg)	
			Class B(t)		Bolt Circle Diam.	Number of Holes	Diam. of Bolt Holes	Diam. of Bolt (inch)	Class E(kg)	
	D	B	Slip–on	Blind	C				Slip–on	Blind
4	228.60	116.08	28.58	28.58	190.50	8	19.1	0.625	6.32	8.69
5	254.00	143.76	30.18	30.18	215.90	8	22.2	0.750	7.42	11.27
6	279.40	170.69	33.35	33.35	241.30	8	22.2	0.750	9.25	15.24
8	342.90	221.49	38.10	38.10	298.45	8	22.2	0.750	15.17	26.69
10	406.40	276.35	39.70	39.70	361.95	12	25.4	0.875	19.83	38.53
12	482.60	327.15	44.45	44.45	431.80	12	25.4	0.875	32.37	61.70
14	533.40	360.43	47.63	47.63	476.25	12	28.6	1.000	42.52	80.66
16	596.90	411.23	50.80	50.80	539.75	16	28.6	1.000	54.53	107.49
18	635.00	462.03	53.98	53.98	577.85	16	31.8	1.125	57.77	128.81
20	698.50	512.83	60.33	60.33	635.00	20	31.8	1.125	76.14	173.95
22	749.30	563.63	63.50	63.50	692.15	20	34.9	1.250	85.87	210.24
24	812.80	614.43	66.68	66.68	749.30	20	34.9	1.250	106.34	261.53
26	869.95	–	69.85	69.85	806.45	24	34.9	1.250	122.72	313.30
28	927.10	–	69.85	69.85	863.60	28	34.9	1.250	134.63	355.42
30	984.25	–	73.03	73.03	914.40	28	34.9	1.250	156.01	420.76
32	1060.45	–	76.20	76.20	977.90	28	41.3	1.500	191.81	505.88
34	1111.25	–	76.20	77.47	1028.70	32	41.3	1.500	200.20	563.75
36	1168.40	–	79.38	81.51	1085.85	32	41.3	1.500	227.85	658.61
38	1238.25	–	79.38	86.21	1149.35	32	41.3	1.500	263.15	785.92
40	1289.05	–	82.55	89.74	1200.15	36	41.3	1.500	284.08	885.37
42	1346.20	–	85.73	93.85	1257.30	36	41.3	1.500	318.42	1013.11
44	1403.35	–	85.73	97.97	1314.45	40	41.3	1.500	338.96	1148.32
46	1454.15	–	87.33	101.52	1365.25	40	41.3	1.500	360.65	1280.86
48	1511.30	–	88.90	105.64	1422.40	44	41.3	1.500	389.56	1438.71
50	1568.45	–	88.90	109.91	1479.55	44	47.6	1.750	402.83	1599.25
52	1625.60	–	92.08	114.02	1536.70	44	47.6	1.750	445.85	1787.45
54	1682.75	–	95.25	118.14	1593.85	44	47.6	1.750	491.65	1989.66
60	1854.20	–	98.43	129.95	1758.95	52	47.6	1.750	596.32	2659.09
66	2032.00	–	107.95	142.27	1930.40	52	47.6	1.750	788.30	3518.09
72	2197.10	–	111.13	154.08	2095.50	60	47.6	1.750	910.42	4456.18
78	2362.20	–	120.65	–	2260.60	64	54.0	2.000	1077.89	–
84	2533.65	–	120.65	–	2425.70	64	54.0	2.000	1234.72	–
90	2705.10	–	130.18	–	2590.80	68	61.9	2.250	1451.63	–
96	2876.55	–	130.18	–	2755.90	68	61.9	2.250	1640.64	–
102	3048.00	–	139.70	–	2908.30	72	68.3	2.500	1909.63	–
108	3219.45	–	139.70	–	3067.05	72	68.3	2.500	2133.39	–
114	3390.90	–	149.23	–	3219.45	76	74.7	2.750	2449.29	–
120	3562.35	–	149.23	–	3371.85	76	74.7	2.750	2711.37	–
126	3733.80	–	158.75	–	3536.95	80	81.0	3.000	3076.11	–
132	3905.25	–	158.75	–	3702.05	80	81.0	3.000	3379.07	–
144	4248.15	–	171.45	–	4019.55	84	87.4	3.250	4220.25	–

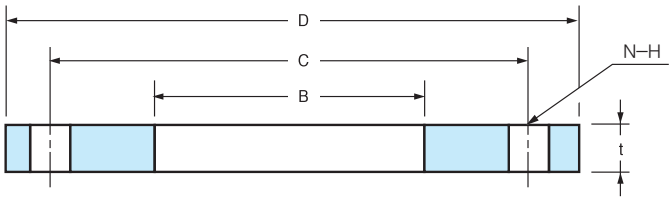
Notes:

(1) The purchaser shall specify the ID of the flange, dimension B, for nominal pipe sizes 26 in. and Larger.

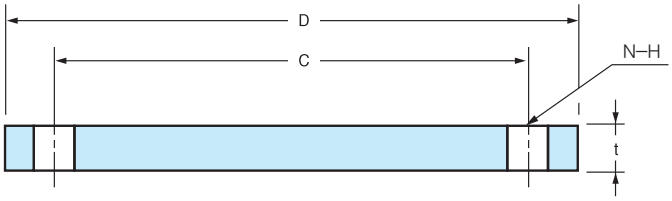
(2) The diameter of the flange bore shall not exceed the pipe OD by more than 0.25 in.

CLASS F FLANGES

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



SLIP–ON



BLIND

AWWA C207

Unit : mm

Nominal Pipe Size	Outside Diam.	Bore	Thickness		DRILLING				Nominal Weight(kg)	
			Class B(t)		Bolt Circle Diam.	Number of Holes	Diam. of Bolt Holes	Diam. of Bolt (inch)	Class F(kg)	
	D	B	Slip–on	Blind	C				Slip–on	Blind
4	254.00	116.08	28.70	28.70	200.15	8	22.2	0.750	8.33	10.72
5	279.40	143.76	30.73	30.73	234.95	8	22.2	0.750	10.13	14.04
6	317.50	170.94	33.27	33.27	269.75	12	22.2	0.750	13.47	19.46
8	381.00	221.74	33.27	33.27	330.20	12	25.4	0.875	18.10	28.19
10	444.50	276.35	38.10	38.10	387.35	16	28.6	1.000	25.40	43.34
12	520.70	327.15	41.40	41.40	450.85	16	31.8	1.125	37.76	65.08
14	584.20	360.43	49.28	49.28	514.35	20	31.8	1.125	58.08	97.55
16	647.70	411.23	54.36	54.36	571.50	20	34.9	1.250	75.73	132.40
18	711.20	462.03	57.15	57.15	628.65	24	34.9	1.250	92.68	167.89
20	774.70	512.83	59.18	59.18	685.80	24	34.9	1.250	112.33	208.29
22	838.70	563.63	63.50	63.50	742.95	24	34.9	1.250	139.21	263.58
24	914.40	614.43	68.33	68.33	812.80	24	41.3	1.500	175.95	335.98
26	971.55	–	76.20	76.20	876.30	28	47.6	1.750	205.68	413.58
28	1035.05	–	79.50	79.50	939.80	28	47.6	1.750	242.66	493.96
30	1092.20	–	80.01	80.42	996.95	28	47.6	1.750	267.02	559.94
32	1149.35	–	82.55	84.63	1054.10	28	47.6	1.750	299.73	656.02
34	1206.50	–	85.85	88.27	1104.90	28	47.6	1.750	337.65	757.42
36	1270.00	–	87.88	93.24	1168.40	32	54.0	2.000	365.53	873.64
38	1327.15	–	88.90	96.90	1219.20	32	54.0	2.000	398.51	996.51
40	1377.95	–	92.20	101.14	1276.35	36	54.0	2.000	427.30	1121.41
42	1447.80	–	96.77	105.94	1339.85	36	54.0	2.000	502.84	1300.29
44	1504.95	–	101.60	110.19	1397.00	36	54.0	2.000	563.80	1467.35
46	1562.10	–	104.90	114.43	1454.15	40	54.0	2.000	612.52	1639.25
48	1651.00	–	114.30	121.44	1543.05	40	54.0	2.000	782.87	1953.54

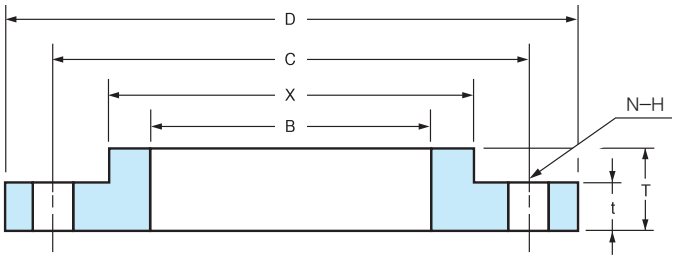
Notes:

(1) The Purchaser shall specify the ID of the flange, dimension B, for nominal pipe sizes 26 in. and larger.

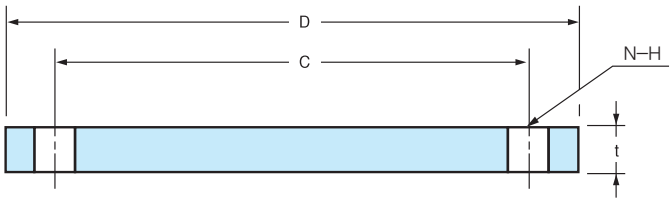
(2) The diameter of the flange fore shall not exceed the pipe OD by more than 0.25 in.

CLASS D FLANGES

AWWA Standard Steel Hub Flanges, Class D (175–150 psi)



SLIP–ON



BLIND

Unit : mm

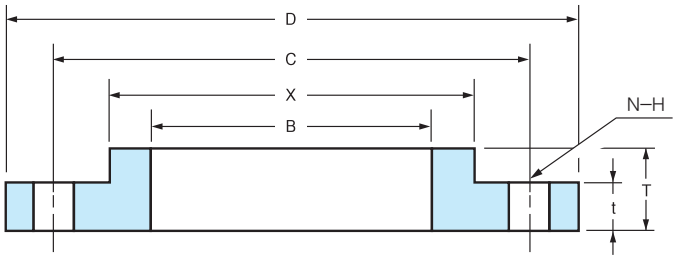
Nominal Pipe Size	Outside Diam.	Bore	Thickness		Length Through Hub	Diameter of Hub	DRILLING				Nominal Weight(kg)	
			Class B(t)				Bolt Circle Diam.	Number of Holes	Diam. of Bolt Holes	Diam. of Bolt (inch)	Class D(kg)	
	D	B	Slip–on	Blind	T	X	C				Slip–on	Blind
4	228.60	116.08	12.70	15.88	22.23	134.92	190.50	8	19.1	0.625	3.09	4.83
5	254.00	143.76	14.27	16.51	31.75	160.32	215.90	8	22.2	0.750	4.05	6.16
6	279.40	170.69	14.27	17.60	31.75	192.07	241.30	8	22.2	0.750	4.79	8.04
8	342.90	221.49	14.27	20.62	31.75	246.08	298.45	8	22.2	0.750	6.92	14.45
10	406.40	276.35	17.48	24.21	31.75	304.80	361.95	12	25.4	0.875	10.19	23.50
12	482.60	327.15	17.48	28.37	31.75	365.13	431.80	12	25.4	0.875	15.04	39.38
14	533.40	360.43	19.05	28.78	31.75	400.05	476.25	12	28.6	1.000	19.37	48.75
16	596.90	411.23	19.05	32.13	31.75	457.20	539.75	16	28.6	1.000	23.58	67.99
18	635.00	462.03	19.05	33.81	31.75	504.83	577.85	16	31.8	1.125	23.63	80.69
20	698.50	512.83	19.05	36.78	31.75	558.80	635.00	20	31.8	1.125	27.91	106.04
22	749.30	563.63	25.40	39.83	44.45	615.95	692.15	20	34.9	1.250	41.60	131.88
24	812.80	614.43	25.40	42.19	44.45	663.58	749.30	20	34.9	1.250	47.89	165.46
26	869.95	665.23	25.40	45.36	44.45	723.90	806.45	24	34.9	1.250	54.20	203.51
28	927.10	716.03	25.40	48.41	44.45	774.70	863.60	28	34.9	1.250	59.24	246.29
30	984.25	766.83	25.40	51.00	44.45	825.50	914.40	28	34.9	1.250	65.25	293.87
32	1060.45	817.63	28.58	54.61	44.45	882.65	977.90	28	41.3	1.500	82.76	362.50
34	1111.25	868.43	28.58	57.20	44.45	933.45	1028.70	32	41.3	1.500	86.55	416.33
36	1168.40	919.23	28.58	60.20	44.45	984.25	1085.85	32	41.3	1.500	94.15	486.45
38	1238.25	970.03	28.58	63.65	44.45	1035.05	1149.35	32	41.3	1.500	107.51	580.39
40	1289.05	1020.83	28.58	66.27	44.45	1092.20	1200.15	36	41.3	1.500	113.11	653.95
42	1346.20	1071.63	31.75	69.32	44.45	1143.00	1257.30	36	41.3	1.500	130.32	748.31
44	1403.35	1122.43	31.75	72.36	57.15	1193.80	1314.45	40	41.3	1.500	151.44	848.19
46	1454.15	1173.23	31.75	74.98	57.15	1244.60	1365.25	40	41.3	1.500	158.16	946.13
48	1511.30	1224.03	34.93	78.03	63.50	1295.40	1422.40	44	41.3	1.500	184.74	1062.74
50	1568.45	1274.83	34.93	81.18	63.50	1346.20	1479.55	44	47.6	1.750	191.23	1181.15
52	1625.60	1325.63	34.93	84.20	63.50	1397.00	1536.70	44	47.6	1.750	203.37	1320.16
54	1682.75	1376.43	34.93	87.25	63.50	1447.80	1593.85	44	47.6	1.750	215.80	1469.53
60	1854.20	1528.83	38.10	95.99	69.85	1600.20	1758.95	52	47.6	1.750	274.57	1964.47
66	2032.00	1681.23	38.10	105.05	69.85	1752.60	1930.40	52	47.6	1.750	326.22	2598.10
72	2197.10	1833.63	38.10	113.79	69.85	1905.00	2095.50	60	47.6	1.750	364.40	3291.39
78	2362.20	1986.03	44.45	–	76.20	2063.75	2260.60	64	54.0	2.000	458.77	–
84	2533.65	2138.43	44.45	–	76.20	2222.50	2425.70	64	54.0	2.000	526.70	–
90	2705.10	2290.83	50.80	–	82.55	2381.25	2590.80	68	61.9	2.250	649.29	–
96	2876.55	2443.23	50.80	–	82.55	2540.00	2755.90	68	61.9	2.250	734.76	–

Notes:

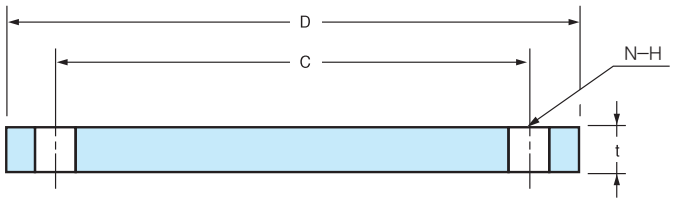
1. For Slip On Flanges (Hub Type Flange), the hub can be shaped either vertical from base to top or tapered within the limits of 7 degrees.
2. Hub type, SO Flange is not avaiable in AWWA C207 (2013 eidition)

CLASS E FLANGES

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



SLIP–ON



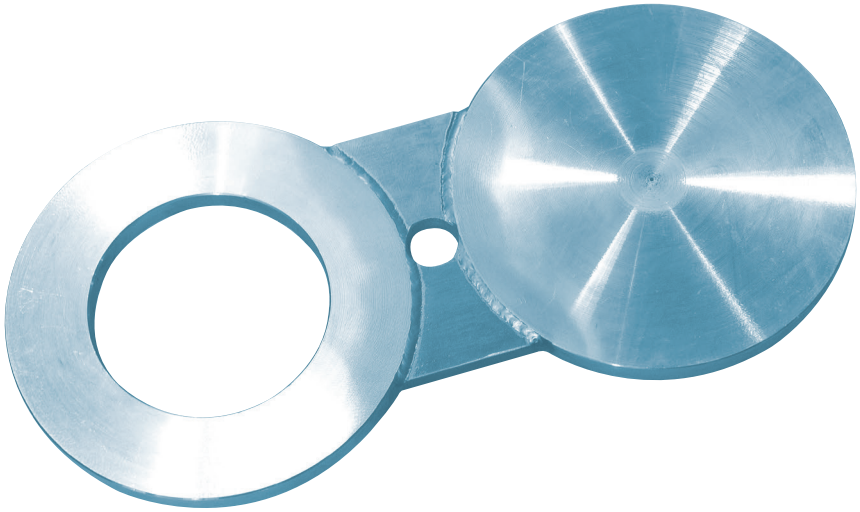
BLIND

Unit : mm

Nominal Pipe Size	Outside Diam.	Bore	Thickness Class B(t)		Length Through Hub	Diameter of Hub	DRILLING				Nominal Weight(kg) Class E (kg)	
							Bolt Circle Diam.	Number of Holes	Diam. of Bolt Holes	Diam. of Bolt (inch)		
	D	B	Slip–on	Blind	T	X	C				Slip–on	Blind
4	228.60	116.08	23.83	28.58	33.32	134.92	190.50	8	19.1	0.625	5.55	8.70
5	254.00	143.76	23.83	30.18	36.53	163.53	215.90	8	22.2	0.750	6.34	11.27
6	279.40	170.69	25.40	33.35	39.67	192.07	241.30	8	22.2	0.750	7.73	15.24
8	342.90	221.49	28.58	38.10	44.45	246.08	298.45	8	22.2	0.750	12.50	26.69
10	406.40	276.35	30.18	39.70	49.23	304.80	361.95	12	25.4	0.875	17.02	38.53
12	482.60	327.15	31.75	44.45	55.58	365.13	431.80	12	25.4	0.875	26.99	61.71
14	533.40	360.43	34.93	47.63	57.15	400.05	476.25	12	28.6	1.000	35.31	80.67
16	596.90	411.23	36.53	50.80	63.50	457.20	539.75	16	28.6	1.000	45.85	107.50
18	635.00	462.03	39.67	53.98	68.28	504.83	577.85	16	31.8	1.125	49.77	128.83
20	698.50	512.83	42.88	60.33	73.03	558.80	635.00	20	31.8	1.125	63.28	173.98
22	749.30	563.63	46.02	63.50	79.38	609.60	692.15	20	34.9	1.250	73.34	210.26
24	812.80	614.43	47.63	66.68	82.55	663.58	749.30	20	34.9	1.250	89.49	261.56
26	869.95	665.23	50.80	69.85	85.73	723.90	806.45	24	34.9	1.250	106.81	313.31
28	927.10	716.03	52.37	69.85	87.33	781.05	863.60	28	34.9	1.250	121.94	355.44
30	984.25	766.83	53.98	73.03	88.90	831.85	914.40	28	34.9	1.250	137.71	420.80
32	1060.45	817.63	57.15	76.20	92.08	889.00	977.90	28	41.3	1.500	170.10	505.90
34	1111.25	868.43	58.72	77.47	93.68	939.80	1028.70	32	41.3	1.500	182.11	563.70
36	1168.40	919.23	60.33	81.51	95.25	996.95	1085.85	32	41.3	1.500	205.26	658.64
38	1238.25	970.03	60.33	86.21	95.25	1060.45	1149.35	32	41.3	1.500	239.55	785.88
40	1289.05	1020.83	63.50	89.74	98.43	1111.25	1200.15	36	41.3	1.500	260.06	885.42
42	1346.20	1071.63	66.68	93.86	101.60	1168.40	1257.30	36	41.3	1.500	294.36	1013.22
44	1403.35	1122.43	66.68	97.97	101.60	1219.20	1314.45	40	41.3	1.500	312.45	1148.38
46	1454.15	1173.23	68.28	101.52	103.17	1270.00	1365.25	40	41.3	1.500	332.88	1280.98
48	1511.30	1224.03	69.85	105.64	104.78	1327.15	1422.40	44	41.3	1.500	362.76	1438.91
50	1568.45	1274.83	69.85	109.90	104.78	1377.95	1479.55	44	47.7	1.750	375.45	1599.22
52	1625.60	1325.63	73.03	114.02	107.95	1435.10	1536.70	44	47.7	1.750	418.72	1787.50
54	1682.75	1376.43	76.20	118.14	111.13	1492.25	1593.85	44	47.7	1.750	464.90	1989.80
60	1854.20	1528.83	79.38	129.95	114.30	1657.35	1758.95	52	47.7	1.750	569.13	2660.02
66	2032.00	1681.23	85.73	142.27	123.83	1816.10	1930.40	52	47.7	1.750	736.86	3518.04
72	2197.10	1833.63	88.90	154.08	127.00	1993.90	2095.50	60	47.7	1.750	872.50	4456.39
78	2362.20	1986.03	98.43	–	136.53	2146.30	2260.60	64	54.0	2.000	1034.99	–
84	2533.65	2138.43	98.43	–	136.53	2298.70	2425.70	64	54.0	2.000	1174.40	–
90	2705.10	2290.83	107.95	–	146.05	2457.45	2590.80	68	62.0	2.250	1389.86	–
96	2876.55	2443.23	107.95	–	146.05	2609.85	2755.90	68	62.0	2.250	1558.53	–

Notes:

1. For Slip On Flanges (Hub Type Flange), the hub can be shaped either vertical from base to top or tapered within the limits of 7 degrees.
2. Hub type, SO Flange is not avaiable in AWWA C207 (2013 eidition)



ANSI/ASME B16.48
STEEL LINE BLANKS
(API STANDARD 590)

Class 150, 300 Figure 8 Blanks

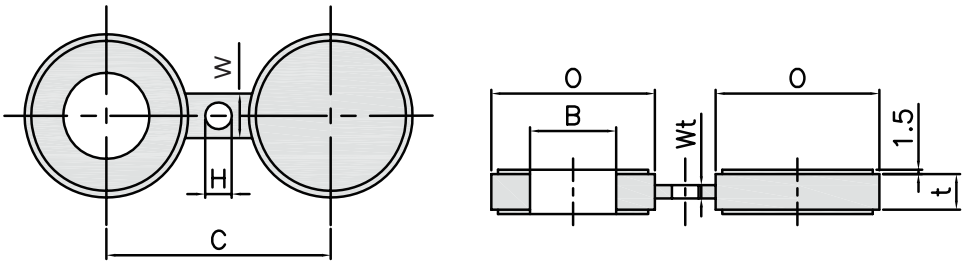
Class 600, 900 Figure 8 Blanks

Class 1500, 2500 Figure 8 Blanks

Class 150, 300, 600 Spacer and Blanks

Class 900, 1500, 2500 Spacer and Blanks

CLASS 150 FIGURE 8 BLANKS



FLAT FACE / RAISED FACE

ASME B16.48(2020ED) SPECTACLE BLINDS

Unit : mm

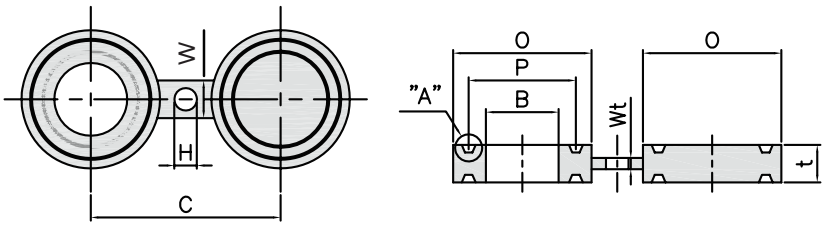
NPS	Common Requirements		FLAT FACE / RAISED FACE					
	Diam. of Bolt Holes	Centerline Dimension	ID	OD	Thickness	Web / Tie Bar		Nominal Weight
						Width	Thickness	
	H	C	B	O	t	W	Wt	kg
1/2	15.9	60	16	45	3.0	38	3	0.08
3/4	15.9	70	21	54	3.0	38	3	0.11
1	15.9	80	27	64	3.0	38	3	0.15
1 1/4	15.9	90	42	73	6.4	38	6.4	0.38
1 1/2	15.9	100	48	83	6.4	38	6.4	0.48
2	19.1	120	61	102	6.4	51	6.4	0.72
2 1/2	19.1	140	73	121	6.4	51	6.4	0.99
3	19.1	150	89	133	6.4	64	6.4	1.14
3 1/2	19.1	175	102	159	9.7	64	6.4	2.48
4	19.1	190	114	171	9.7	64	6.4	2.81
5	22.2	215	141	194	9.7	76	6.4	3.43
6	22.2	240	168	219	12.7	76	6.4	5.45
8	22.2	300	219	276	12.7	76	6.4	8.35
10	25.4	360	273	337	15.7	102	10	15.04
12	25.4	430	324	406	19.1	102	10	26.80
14	28.6	475	356	448	19.1	108	10	32.74
16	28.6	540	406	511	22.4	108	10	49.85
18	31.8	580	457	546	25.4	114	20	61.36
20	31.8	635	508	603	28.4	121	20	82.91
24	34.9	750	610	714	31.8	140	20	128.05

Notes:

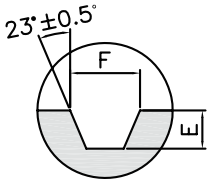
(1) Thickness(dimension *t*) includes a corrosion allowance of 0.05 inch (1.3millimeters) for material groups 1.1, 1.7, 1.9, 1.10, and 1.12 Corrosion allowance is 0.00 inch for material groups 2.1, 2.2, 2.4, and 2.5.

(2) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole.

(3) The thickness of the web(or tie bar) dimension *W*t, shall be 0.25 inch (6.35millimeter) minimum, except when *t* is less than 0.25 inch, *W*t shall equal t.



RING JOINT FACING



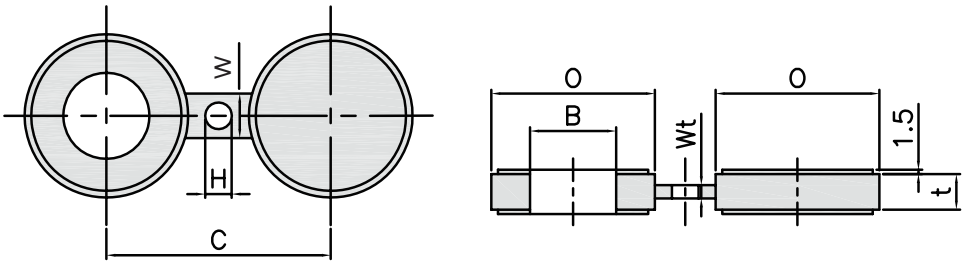
* Tolerances for facings shall be in accordance with ASME B16.5
* Thickness tolerances are
  NPS 18 and smaller : −0, +3.0mm
  NPS 20 and larger : −0, +4.8mm

DETAIL "A"

Unit : mm

NPS	RING JOINT FACING									
	ID	OD	Thickness	Web / Tie Bar		Groove Dimensions			Ring No.	Nominal Weight
				Width	Thickness	Pitch Diameter	Width	Depth		
	B	O	t	W	Wt	P	F	E		kg
1/2	–	–	–	–	–	–	–	–	–	–
3/4	–	–	–	–	–	–	–	–	–	–
1	34	64	19.1	51	10	47.62	8.74	6.35	R15	16.06
1 1/4	42	73	19.1	51	10	57.15	8.74	6.35	R17	17.07
1 1/2	48	83	19.1	57	10	65.07	8.74	6.35	R19	17.08
2	61	102	19.1	57	10	82.55	8.74	6.35	R22	18.08
2 1/2	73	121	22.4	57	10	101.60	8.74	6.35	R25	19.13
3	89	133	22.4	57	10	114.30	8.74	6.35	R29	17.11
3 1/2	102	154	22.4	64	10	131.78	8.74	6.35	R33	21.16
4	114	171	22.4	64	10	149.22	8.74	6.35	R36	19.14
5	141	194	25.4	70	12	171.45	8.74	6.35	R40	21.17
6	168	219	25.4	83	20	193.68	8.74	6.35	R43	21.21
8	219	273	28.4	95	20	247.65	8.74	6.35	R48	27.30
10	273	330	31.8	102	20	304.80	8.74	6.35	R52	30.48
12	324	406	35.1	121	20	381.00	8.74	6.35	R56	24.46
14	356	425	35.1	127	20	396.88	8.74	6.35	R59	51.00
16	406	483	38.1	127	20	454.02	8.74	6.35	R64	58.14
18	457	546	41.1	127	20	517.52	8.74	6.35	R68	34.85
20	508	597	41.1	127	20	558.80	8.74	6.35	R72	38.95
24	610	711	47.8	152	20	673.10	8.74	6.35	R76	40.17

CLASS 300 FIGURE 8 BLANKS



FLAT FACE / RAISED FACE

ASME B16.48(2020ED) SPECTACLE BLINDS

Unit : mm

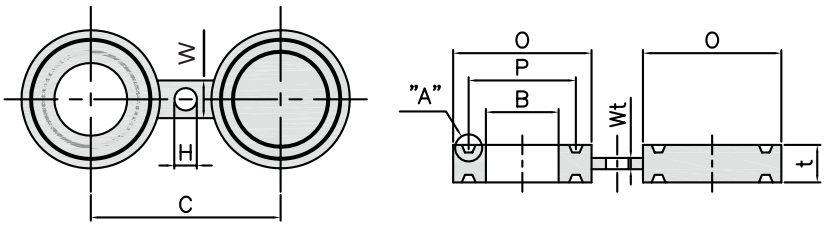
NPS	Common Requirements		FLAT FACE / RAISED FACE					
	Diam. of Bolt Holes	Centerline Dimension	ID	OD	Thickness	Web / Tie Bar		Nominal Weight
						Width	Thickness	
	H	C	B	O	t	W	Wt	kg
1/2	15.9	65	16	51	6.4	38	6.4	0.22
3/4	19.1	80	21	64	6.4	38	6.4	0.34
1	19.1	90	27	70	6.4	38	6.4	0.40
1 1/4	19.1	100	42	79	6.4	38	6.4	0.46
1 1/2	22.2	115	48	92	6.4	38	6.4	0.62
2	19.1	125	61	108	9.7	51	6.4	1.24
2 1/2	22.2	150	73	127	9.7	51	6.4	1.70
3	22.2	170	89	146	9.7	64	6.4	2.19
3 1/2	22.2	185	102	162	12.7	64	6.4	3.44
4	22.2	200	114	178	12.7	64	6.4	4.08
5	22.2	235	141	213	15.7	76	10	7.06
6	22.2	270	168	248	15.7	76	10	9.37
8	25.4	330	219	305	22.4	76	10	19.38
10	28.6	385	273	359	25.4	102	10	29.19
12	31.8	450	324	419	28.4	102	20	43.75
14	31.8	515	356	483	31.8	108	20	67.41
16	34.9	570	406	536	38.1	108	20	97.23
18	34.9	630	457	594	41.1	114	20	127.06
20	34.9	685	508	651	44.5	121	20	162.98
24	41.3	810	610	772	50.8	140	30	258.59

Notes:

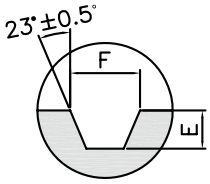
(1) Thickness(dimension *t*) includes a corrosion allowance of 0.05 inch (1.3millimeters) for material groups 1.1, 1.7, 1.9, 1.10, and 1.12 Corrosion allowance is 0.00 inch for material groups 2.1, 2.2, 2.4, and 2.5.

(2) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole.

(3) The thickness of the web(or tie bar) dimension *W*t, shall be 0.25 inch (6.35millimeter) minimum, except when *t* is less than 0.25 inch, *W*t shall equal t.



RING JOINT FACING



* Tolerances for facings shall be in accordance with ASME B16.5
* Thickness tolerances are
  NPS 18 and smaller : −0, +3.0mm
  NPS 20 and larger : −0, +4.8mm

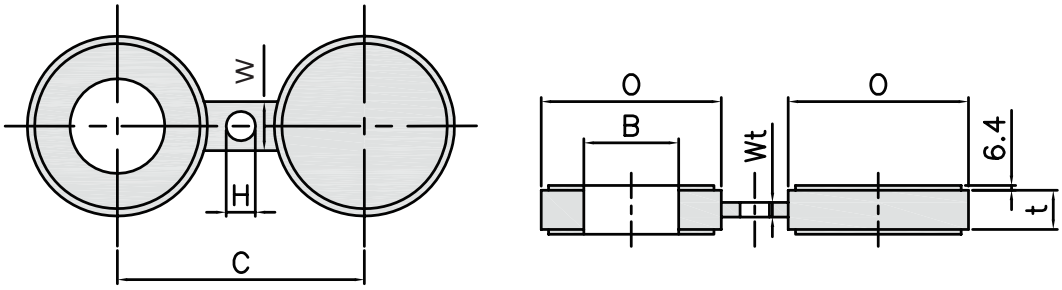
DETAIL "A"

Unit : mm

NPS	RING JOINT FACING									
	ID	OD	Thickness	Web / Tie Bar		Groove Dimensions			Ring No.	Nominal Weight
				Width	Thickness	Pitch Diameter	Width	Depth		
	B	O	t	W	Wt	P	F	E		kg
1/2	21	51	15.7	38	10	34.14	7.14	5.56	R11	0.50
3/4	27	64	19.1	45	10	42.88	8.74	6.35	R13	0.96
1	34	70	19.1	51	10	50.80	8.74	6.35	R16	1.14
1 1/4	42	79	22.4	51	10	60.33	8.74	6.35	R18	1.61
1 1/2	48	90	22.4	57	10	68.28	8.74	6.35	R20	2.09
2	61	108	25.4	57	12	82.55	11.91	7.92	R23	3.18
2 1/2	73	127	28.4	57	12	101.60	11.91	7.92	R26	4.86
3	89	146	28.4	57	12	123.82	11.91	7.92	R31(4)	6.23
3 1/2	102	159	28.4	64	20	131.78	11.91	7.92	R34	7.22
4	114	175	31.8	64	20	149.22	11.91	7.92	R37	9.70
5	141	210	35.1	70	20	180.98	11.91	7.92	R41	15.04
6	168	241	35.1	83	20	211.12	11.91	7.92	R45	19.39
8	219	302	41.1	95	20	269.88	11.91	7.92	R49	34.55
10	273	356	44.5	102	20	323.85	11.91	7.92	R53	49.62
12	324	413	50.8	121	30	381.00	11.91	7.92	R57	74.76
14	356	457	53.8	127	30	419.10	11.91	7.92	R61	98.13
16	406	508	57.2	127	30	469.90	11.91	7.92	R65	125.59
18	457	575	60.5	127	30	533.40	11.91	7.92	R69	170.19
20	508	635	69.9	127	30	584.20	13.49	9.52	R73	237.78
24	610	749	79.2	152	30	692.15	16.66	11.13	R77	368.64

(4) classes 300 and 600, ring groove number R30 is used instead of R31.

CLASS 600 FIGURE 8 BLANKS



FLAT FACE / RAISED FACE

ASME B16.48(2020ED) SPECTACLE BLINDS

Unit : mm

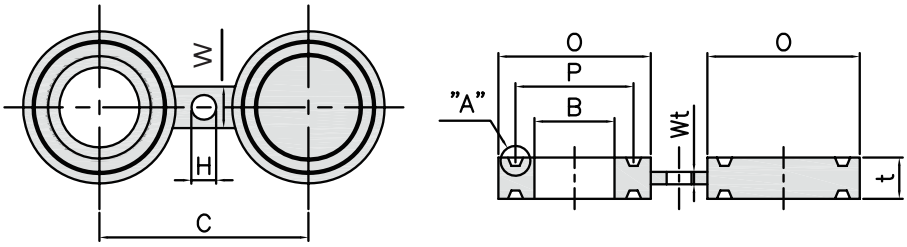
NPS	Common Requirements		FLAT FACE / RAISED FACE					
	Diam. of Bolt Holes	Centerline Dimension	ID	OD	Thickness	Web / Tie Bar		Nominal Weight
						Width	Thickness	
	H	C	B	O	t	W	Wt	kg
1/2	15.9	65	16	51	6.4	38	6.4	0.22
3/4	19.1	80	21	64	6.4	38	6.4	0.34
1	19.1	90	27	70	6.4	57	6.4	0.40
1 1/4	19.1	100	37	79	9.7	57	6.4	0.46
1 1/2	22.2	115	43	92	9.7	67	6.4	0.62
2	19.1	125	55	108	9.7	57	6.4	1.24
2 1/2	22.2	150	67	127	12.7	67	6.4	1.70
3	22.2	170	83	146	12.7	67	6.4	2.19
3 1/2	25.4	185	96	159	15.7	76	10	3.44
4	25.4	215	108	191	15.7	76	10	4.08
5	28.6	265	135	238	19.1	86	10	7.06
6	28.6	290	162	264	22.4	86	10	9.37
8	31.8	350	212	318	28.4	95	20	19.38
10	34.9	430	265	397	35.1	105	20	29.19
12	34.9	490	315	454	41.1	105	20	43.75
14	38.1	525	346	489	44.5	114	20	67.41
16	41.3	605	397	562	50.8	124	30	97.23
18	44.5	655	448	610	53.8	133	30	127.06
20	44.5	725	497	679	63.5	133	30	162.98
24	50.8	840	597	787	73.2	152	30	258.59

Notes:

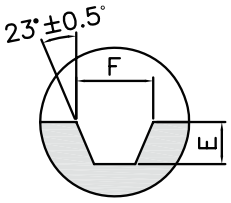
(1) Thickness(dimension *t*) includes a corrosion allowance of 0.05 inch (1.3millimeters) for material groups 1.1, 1.7, 1.9, 1.10, and 1.12 Corrosion allowance is 0.00 inch for material groups 2.1, 2.2, 2.4, and 2.5.

(2) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole.

(3) The thickness of the web(or tie bar) dimension *W*t, shall be 0.25 inch (6.35millimeter) minimum, except when *t* is less than 0.25 inch, *W*t shall equal t.



RING JOINT FACING



* Tolerances for facings shall be in accordance with ASME B16.5
* Thickness tolerances are
  NPS 18 and smaller : −0, +3.0mm
  NPS 20 and larger : −0, +4.8mm

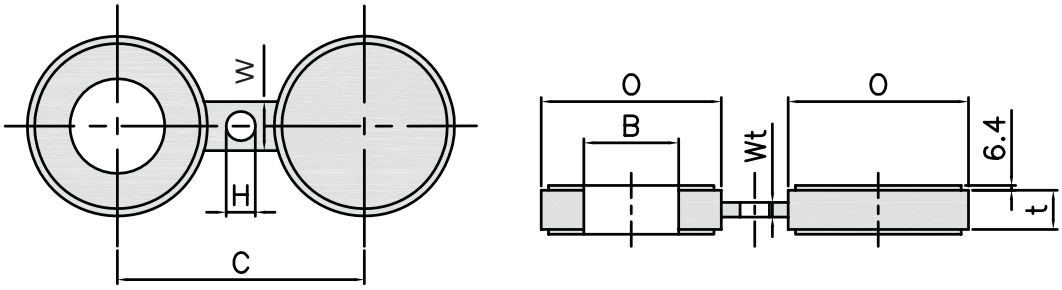
DETAIL "A"

Unit : mm

NPS	RING JOINT FACING									
	ID	OD	Thickness	Web / Tie Bar		Groove Dimensions			Ring No.	Nominal Weight
				Width	Thickness	Pitch Diameter	Width	Depth		
	B	O	t	W	Wt	P	F	E		kg
1/2	21	51	19.1	38	10	34.14	7.14	5.56	R11	0.62
3/4	27	64	22.4	45	10	42.88	8.74	6.35	R13	1.11
1	34	70	22.4	51	10	50.80	8.74	6.35	R16	1.31
1 1/4	42	79	22.4	51	10	60.33	8.74	6.35	R18	1.61
1 1/2	48	90	22.4	57	10	68.28	8.74	6.35	R20	2.09
2	61	108	28.4	57	12	82.55	11.91	7.92	R23	3.54
2 1/2	73	127	31.8	57	20	101.60	11.91	7.92	R26	5.48
3	89	146	31.8	57	20	123.82	11.91	7.92	R31 (4)	7.01
3 1/2	102	159	35.1	64	20	131.78	11.91	7.92	R34	8.94
4	114	175	35.1	64	20	149.72	11.91	7.92	R37	10.83
5	141	210	38.1	70	20	180.98	11.91	7.92	R41	16.64
6	168	241	44.5	83	20	211.12	11.91	7.92	R45	24.90
8	219	302	50.8	95	30	269.88	11.91	7.92	R49	42.95
10	273	356	57.2	102	30	323.85	11.91	7.92	R53	64.81
12	324	413	63.5	121	30	381.00	11.91	7.92	R57	94.91
14	356	457	66.5	127	30	419.10	11.91	7.92	R61	121.53
16	406	508	73.2	127	30	469.90	11.91	7.92	R65	162.23
18	457	575	79.2	127	30	533.40	11.91	7.92	R69	223.83
20	508	635	88.9	127	40	584.20	13.49	9.52	R73	304.25
24	610	749	104.6	152	50	692.15	16.66	11.13	R77	489.00

(4) classes 300 and 600, ring groove number R30 is used instead of R31.

CLASS 900 FIGURE 8 BLANKS



FLAT FACE / RAISED FACE

ASME B16.48(2020ED) SPECTACLE BLINDS

Unit : mm

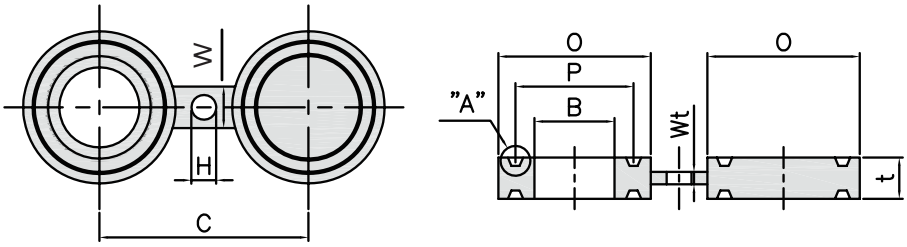
NPS	Common Requirements			FLAT FACE / RAISED FACE					
	Diam. of Bolt Holes	RF / FF	RTJ	ID	OD	Thickness	Web / Tie Bar		Nominal Weight
		Centerline Dimension					Width	Thickness	
	H	C		B	O	t	W	Wt	kg
1/2	22.2	80	80	16	60	6.4	38	6.4	0.31
3/4	22.2	90	90	21	67	6.4	41	6.4	0.38
1	25.4	100	100	27	76	6.4	57	6.4	0.50
1 1/4	25.4	110	110	37	86	9.7	57	6.4	0.91
1 1/2	28.6	125	125	43	95	9.7	67	6.4	1.12
2	25.4	165	165	55	140	12.7	57	6.4	2.97
2 1/2	28.6	190	190	67	162	12.7	67	10	3.94
3	25.4	190	190	83	165	15.7	67	10	4.81
4	31.8	235	235	108	203	19.1	76	10	8.69
5	34.9	280	280	135	244	22.4	86	10	14.46
6	31.8	320	315	162	286	25.4	86	10	22.07
8	38.1	395	395	212	356	35.1	95	20	46.09
10	38.1	470	470	265	432	41.1	105	20	77.98
12	38.1	535	535	315	495	47.8	105	20	116.62
14	41.3	560	560	346	518	53.8	114	30	140.15
16	44.5	615	615	397	572	60.5	124	30	187.60
18	50.8	685	685	448	635	66.5	133	30	251.53
20	54.0	750	750	497	696	73.2	133	30	329.50
24	66.7	900	900	597	835	88.9	152	40	575.16

Notes:

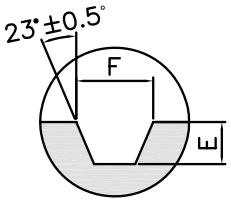
(1) Thickness(dimension *t*) includes a corrosion allowance of 0.05 inch (1.3millimeters) for material groups 1.1, 1.7, 1.9, 1.10, and 1.12 Corrosion allowance is 0.00 inch for material groups 2.1, 2.2, 2.4, and 2.5.

(2) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole.

(3) The thickness of the web(or tie bar) dimension *W*t, shall be 0.25 inch (6.35millimeter) minimum, except when *t* is less than 0.25 inch, *W*t shall equal t.



RING JOINT FACING



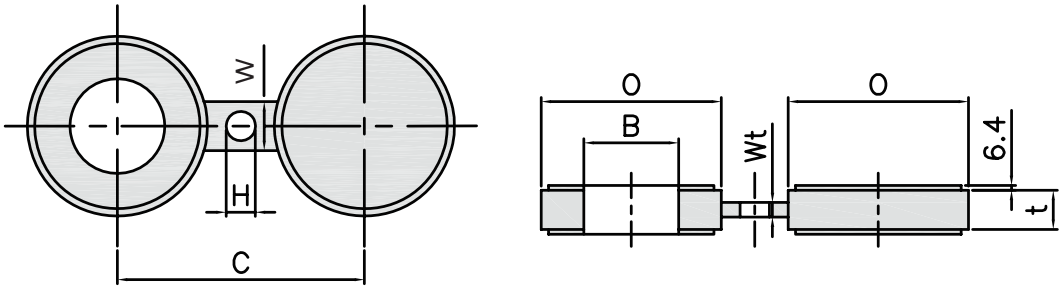
* Tolerances for facings shall be in accordance with ASME B16.5
* Thickness tolerances are
  NPS 18 and smaller : −0, +3.0mm
  NPS 20 and larger : −0, +4.8mm

DETAIL "A"

Unit : mm

NPS	RING JOINT FACING									
	ID	OD	Thickness	Web / Tie Bar		Groove Dimensions			Ring No.	Nominal Weight
				Width	Thickness	Pitch Diameter	Width	Depth		
	B	O	t	W	Wt	P	F	E		kg
1/2	21	61	22.4	38	10	39.67	8.74	6.35	R12	1.05
3/4	27	67	22.4	45	10	44.45	8.74	6.35	R14	1.26
1	34	71	22.4	51	10	50.80	8.74	6.35	R16	1.41
1 1/4	42	81	25.4	51	20	60.33	8.74	6.35	R18	1.95
1 1/2	48	92	25.4	64	20	68.28	8.74	6.35	R20	2.54
2	61	124	31.8	51	20	95.25	11.91	7.92	R24	5.62
2 1/2	73	137	35.1	67	20	107.95	11.91	7.92	R27	7.52
3	89	155	35.1	67	20	123.82	11.91	7.92	R31	9.04
4	114	181	41.1	73	20	149.22	11.91	7.92	R37	14.07
5	141	216	44.5	73	22	180.98	11.91	7.92	R41	21.04
6	168	241	47.8	73	30	211.12	11.91	7.92	R45	26.95
8	219	308	57.2	80	30	269.88	11.91	7.92	R49	51.58
10	273	362	63.5	121	30	323.85	11.91	7.92	R53	76.94
12	324	419	73.2	121	30	381.00	11.91	7.92	R57	115.38
14	356	467	82.6	121	40	419.10	16.66	11.13	R62	161.38
16	406	524	91.9	127	40	469.90	16.66	11.13	R66	221.58
18	457	594	101.6	133	50	533.40	19.84	12.70	R70	315.59
20	508	648	111.3	127	50	584.20	19.84	12.70	R74	404.31
24	610	772	133.4	140	60	692.15	26.97	15.88	R78	682.64

CLASS 1500 FIGURE 8 BLANKS



FLAT FACE / RAISED FACE

ASME B16.48(2020ED) SPECTACLE BLINDS

Unit : mm

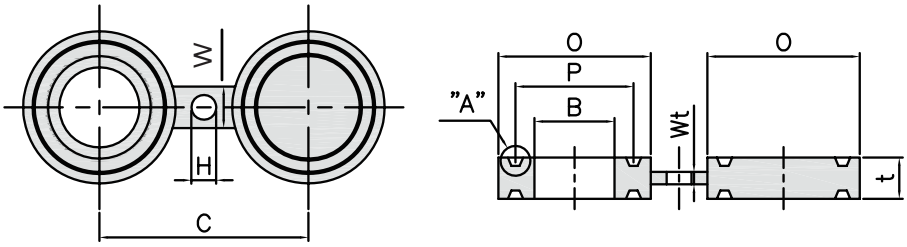
NPS	Common Requirements			FLAT FACE / RAISED FACE					
	Diam. of Bolt Holes	RF / FF	RTJ	ID	OD	Thickness	Web / Tie Bar		Nominal Weight
		Centerline Dimension					Width	Thickness	
	H	C		B	O	t	W	Wt	kg
1/2	22.2	80	80	16	61	6.4	38	6.4	0.32
3/4	22.2	90	90	21	67	9.7	41	6.4	0.58
1	25.4	100	100	27	76	9.7	64	6.4	0.76
1 1/4	25.4	110	110	35	86	9.7	64	6.4	0.93
1 1/2	28.6	125	125	41	95	12.7	70	6.4	1.49
2	25.4	165	165	53	140	12.7	70	6.4	3.02
2 1/2	28.6	190	190	63	162	15.7	76	10	4.95
3	31.8	205	205	78	172	19.1	76	10	6.62
4	34.9	240	240	102	206	22.4	89	10	10.81
5	41.3	290	290	128	251	28.4	89	10	19.95
6	38.1	320	315	154	279	35.1	89	20	29.53
8	44.5	395	395	203	349	41.1	102	20	52.74
10	50.8	480	480	255	432	50.8	114	30	98.61
12	54.0	570	570	303	518	60.5	114	30	168.55
14	60.3	635	635	333	575	66.5	127	30	229.36
16	66.7	705	705	381	638	76.2	133	30	319.22
18	73.0	775	775	429	702	85.9	146	40	431.20
20	79.4	830	830	478	752	95.3	152	40	538.53
24	92.1	990	990	575	899	111.3	178	50	895.41

Notes:

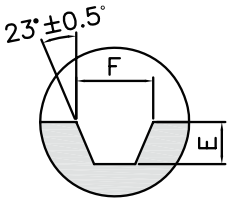
(1) Thickness(dimension *t*) includes a corrosion allowance of 0.05 inch (1.3millimeters) for material groups 1.1, 1.7, 1.9, 1.10, and 1.12 Corrosion allowance is 0.00 inch for material groups 2.1, 2.2, 2.4, and 2.5.

(2) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole.

(3) The thickness of the web(or tie bar) dimension *W*t, shall be 0.25 inch (6.35millimeter) minimum, except when *t* is less than 0.25 inch, *W*t shall equal t.



RING JOINT FACING



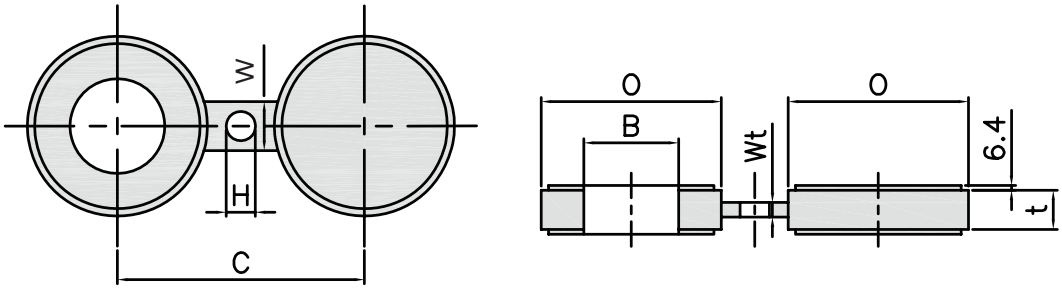
* Tolerances for facings shall be in accordance with ASME B16.5
* Thickness tolerances are
  NPS 18 and smaller : −0, +3.0mm
  NPS 20 and larger : −0, +4.8mm

DETAIL "A"

Unit : mm

NPS	RING JOINT FACING									
	ID	OD	Thickness	Web / Tie Bar		Groove Dimensions			Ring No.	Nominal Weight
				Width	Thickness	Pitch Diameter	Width	Depth		
	B	O	t	W	Wt	P	F	E		kg
1/2	21	61	22.4	38	10	39.67	8.74	6.35	R12	1.05
3/4	27	67	25.4	45	12	44.45	8.74	6.35	R14	1.41
1	34	71	25.4	54	12	50.80	8.74	6.35	R16	1.58
1 1/4	42	81	25.4	54	12	60.33	8.74	6.35	R18	1.96
1 1/2	48	92	28.4	57	12	68.28	8.74	6.35	R20	2.85
2	61	124	35.1	54	20	95.25	11.91	7.92	R24	6.19
2 1/2	73	137	38.1	57	20	107.95	11.91	7.92	R27	8.03
3	89	168	44.5	73	20	136.52	11.91	7.92	R35	13.83
4	114	194	47.8	76	22	161.92	11.91	7.92	R39	19.02
5	141	229	53.8	76	30	193.68	11.91	7.92	R44	29.07
6	168	248	60.5	79	30	211.14	13.49	9.52	R46	36.56
8	219	318	73.2	86	30	269.88	16.66	11.13	R50	71.63
10	273	371	82.5	133	40	323.85	16.66	11.13	R54	107.13
12	324	438	101.6	133	50	381.00	23.01	14.27	R58	181.98
14	356	489	111.3	140	50	419.10	26.97	15.88	R63	249.77
16	406	546	124.0	146	60	469.90	30.18	17.48	R67	341.29
18	457	613	133.0	152	60	533.40	30.18	17.48	R71	457.06
20	508	673	142.7	165	60	584.20	33.32	17.48	R75	583.51
24	610	794	168.1	178	80	692.15	36.53	20.62	R79	943.35

CLASS 2500 FIGURE 8 BLANKS



FLAT FACE / RAISED FACE

ASME B16.48(2020ED) SPECTACLE BLINDS

Unit : mm

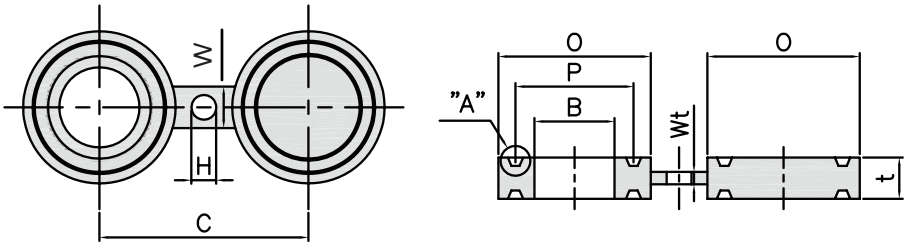
NPS	Common Requirements			FLAT FACE / RAISED FACE					
	Diam. of Bolt Holes	RF / FF	RTJ	ID	OD	Thickness	Web / Tie Bar		Nominal Weight
		Centerline Dimension					Width	Thickness	
	H	C		B	O	t	W	Wt	kg
1/2	22.2	90	90	16	67	9.7	38	6.4	0.59
3/4	22.2	95	95	21	73	9.7	41	6.4	0.68
1	25.4	110	110	27	83	9.7	64	6.4	0.91
1 1/4	28.6	130	130	35	102	12.7	64	10	1.71
1 1/2	31.8	145	145	41	114	15.7	70	10	2.62
2	28.6	170	170	53	143	15.7	70	10	3.92
2 1/2	31.8	195	195	63	165	19.1	76	10	6.28
3	34.9	230	230	78	194	22.4	76	10	10.03
4	41.3	275	270	102	232	28.4	89	20	17.86
5	47.6	325	325	128	276	35.1	89	20	30.59
6	54.0	370	370	154	314	41.1	89	20	45.52
8	54.0	440	440	198	384	53.8	102	30	87.13
10	66.7	540	540	248	473	66.5	114	30	162.05
12	73.0	620	620	289	546	79.2	114	30	255.31

Notes:

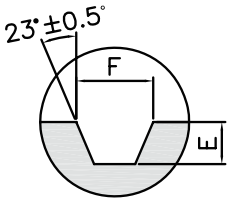
(1) Thickness(dimension *t*) includes a corrosion allowance of 0.05 inch (1.3millimeters) for material groups 1.1, 1.7, 1.9, 1.10, and 1.12 Corrosion allowance is 0.00 inch for material groups 2.1, 2.2, 2.4, and 2.5.

(2) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole.

(3) The thickness of the web(or tie bar) dimension *W*t, shall be 0.25 inch (6.35millimeter) minimum, except when *t* is less than 0.25 inch, *W*t shall equal t.



RING JOINT FACING



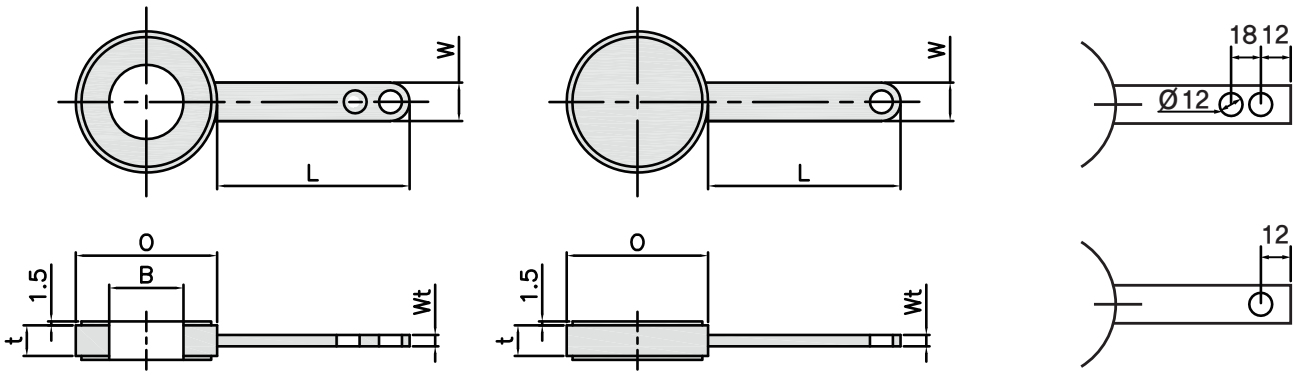
* Tolerances for facings shall be in accordance with ASME B16.5
* Thickness tolerances are
  NPS 18 and smaller : −0, +3.0mm
  NPS 20 and larger : −0, +4.8mm

DETAIL "A"

Unit : mm

NPS	RING JOINT FACING									
	ID	OD	Thickness	Web / Tie Bar		Groove Dimensions			Ring No.	Nominal Weight
				Width	Thickness	Pitch Diameter	Width	Depth		
	B	O	t	W	Wt	P	F	E		kg
1/2	21	65	25.4	38	12	42.88	8.74	6.35	R13	1.37
3/4	27	73	28.4	45	12	50.80	8.74	6.35	R16	1.85
1	34	83	28.4	54	12	60.33	8.74	6.35	R18	2.38
1 1/4	42	102	35.1	54	20	72.24	11.91	7.92	R21	4.35
1 1/2	48	114	38.1	61	20	82.55	11.91	7.92	R23	5.86
2	61	133	41.1	57	20	101.60	11.91	7.92	R26	8.34
2 1/2	73	149	47.8	61	30	111.12	13.49	9.53	R28	12.05
3	89	168	50.8	76	30	127.00	13.49	9.53	R32	16.11
4	114	203	63.5	83	30	157.18	16.66	11.13	R38	28.46
5	141	241	73.2	89	40	190.50	19.84	12.70	R42	45.46
6	168	279	82.6	95	40	228.60	19.84	12.70	R47	67.55
8	219	340	98.6	95	40	279.40	23.01	14.27	R51	115.00
10	273	425	117.3	91	50	342.90	30.18	17.48	R55	212.05
12	324	495	133.4	152	60	406.40	33.32	17.48	R60	326.05

CLASS 150 SPACER AND BLANKS



PADDLE SPACER　　PADDLE BLANK

FLAT FACE / RAISED FACE

ASME B16.48 PADDLE SPACER & BLANK

Unit : mm

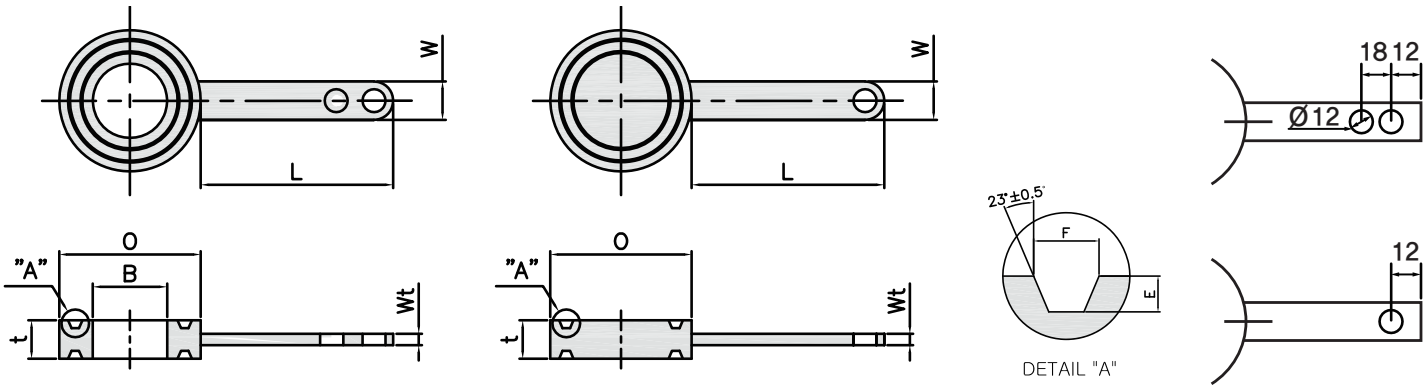
NPS	FLAT FACE / RAISED FACE						Nominal Weight			
	Inside Diameter	Outside Diameter	Thickness	Handle			RF		FF	
				Width	Length	Thickness min.	Spacer	Blank (Spade)	Spacer	Blank (Spade)
	B	O	t	W	L	Wt	kg	kg	kg	kg
1/2	16	45	3.0	25	100	3	0.3	0.3	0.2	0.2
3/4	21	54	3.0	25	100	3	0.3	0.3	0.3	0.3
1	27	64	3.0	25	100	3	0.3	0.4	0.3	0.3
1 1/4	42	73	6.4	25	100	6.4	0.5	0.6	0.4	0.5
1 1/2	48	83	6.4	25	100	6.4	0.6	0.7	0.5	0.6
2	61	102	6.4	25	100	6.4	0.7	0.9	0.6	0.7
2 1/2	73	121	6.4	25	125	6.4	1.1	1.2	0.7	0.9
3	89	133	6.4	25	125	6.4	1.1	1.6	0.9	1.2
3 1/2	102	159	9.7	38	125	6.4	1.7	2.6	1.4	2.1
4	114	171	9.7	38	125	6.4	1.9	2.9	1.5	2.3
5	141	194	9.7	38	125	6.4	2.1	3.6	1.6	2.8
6	168	219	12.7	38	150	6.4	2.6	5.4	2.2	4.4
8	219	276	12.7	38	150	6.4	3.4	8.2	2.8	6.7
10	273	337	15.7	38	150	10	5.3	14.2	4.5	11.9
12	324	405	19.1	38	165	10	9.1	23.8	7.9	20.4
14	356	448	19.1	38	165	10	11.3	29.1	9.8	25.3
16	406	511	22.4	38	170	10	16.7	43.2	14.7	37.9
18	457	546	25.4	38	170	20	17.2	54.7	15.4	48.7
20	508	603	28.4	38	175	20	22.1	73.4	20.0	66.3
24	610	714	31.8	38	175	20	32.5	114.3	29.8	104.1

Notes:

(1) Thickness(dimension *t*) includes a corrosion allowance of 0.05 inch (1.3millimeters) for material groups 1.1, 1.7, 1.9, 1.10, and 1.12 Corrosion allowance is 0.00 inch for material groups 2.1, 2.2, 2.4, and 2.5.

(2) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole.

(3) The thickness of the web(or tie bar) dimension *W*t, shall be 0.25 inch (6.35millimeter) minimum, except when *t* is less than 0.25 inch, *W*t shall equal t.



PADDLE SPACER PADDLE BLANK

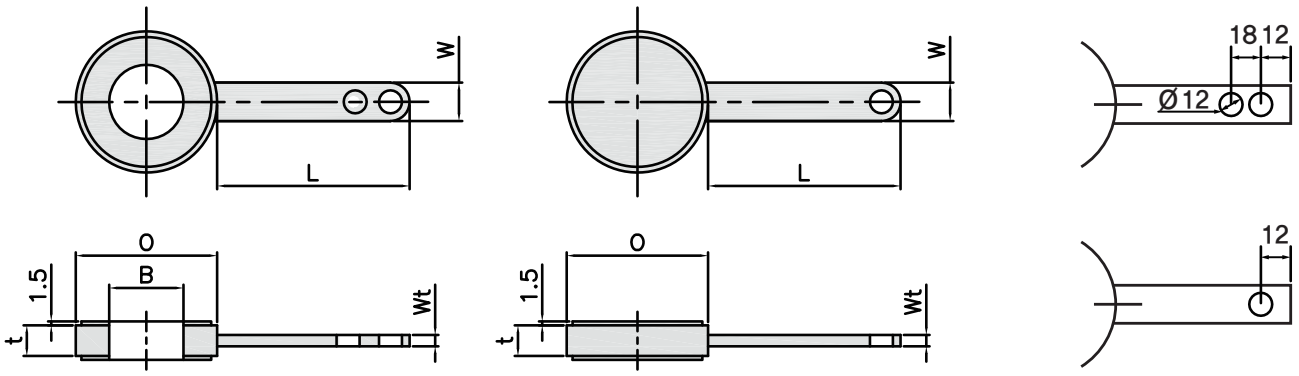
RING JOINT FACING

* Tolerances for facings shall be in accordance with ASME B16.5
* Thickness tolerances are
  NPS 18 and smaller : -0, +3.0mm
  NPS 20 and larger : -0, +4.8mm

Unit : mm

NPS	RING JOINT FACING										Nominal Weight	
	Inside Diameter	Outside Diameter	Thickness	Handle			RTJ			Ring No.	RTJ	
				Width	Length	Thickness min.	Pitch Diameter	Width	Depth		Spacer	Blank (Spade)
	B	O	t	W	L	Wt	P	F	E		kg	kg
1/2	–	–	–	–	–	–	–	–	–	–	–	–
3/4	–	–	–	–	–	–	–	–	–	–	–	–
1	34	64	19.1	25	100	10	47.62	8.74	6.35	R15	0.7	0.9
1 1/4	42	73	19.1	25	100	10	57.15	8.74	6.35	R17	0.8	1.0
1 1/2	48	83	19.1	25	100	10	65.07	8.74	6.35	R19	0.9	1.2
2	61	102	19.1	25	100	10	82.55	8.74	6.35	R22	1.2	1.6
2 1/2	73	121	22.4	25	125	10	101.60	8.74	6.35	R25	1.8	2.6
3	89	133	22.4	25	125	10	114.30	8.74	6.35	R29	2.3	3.4
3 1/2	102	154	22.4	38	125	10	131.78	8.74	6.35	R33	2.8	4.2
4	114	171	22.4	38	125	10	149.22	8.74	6.35	R36	3.2	5.0
5	141	194	25.4	38	125	12	171.45	8.74	6.35	R40	3.7	6.9
6	168	219	25.4	38	150	20	193.68	8.74	6.35	R43	4.1	8.6
8	219	273	28.4	38	150	20	247.65	8.74	6.35	R48	5.6	14.2
10	273	330	31.8	38	150	20	304.80	8.74	6.35	R52	8.0	22.9
12	324	406	35.1	38	165	20	381.00	8.74	6.35	R56	14.3	37.5
14	356	425	35.1	38	165	20	396.88	8.74	6.35	R59	13.6	41.5
16	406	483	38.1	38	170	20	454.02	8.74	6.35	R64	17.9	57.3
18	457	546	41.1	38	170	20	517.52	8.74	6.35	R68	24.5	78.4
20	508	597	41.1	38	175	20	558.80	8.74	6.35	R72	26.9	93.5
24	610	711	47.8	38	175	20	673.10	8.74	6.35	R76	42.8	154.5

CLASS 300 SPACER AND BLANKS



PADDLE SPACER PADDLE BLANK

FLAT FACE / RAISED FACE

ASME B16.48 PADDLE SPACER & BLANK

Unit : mm

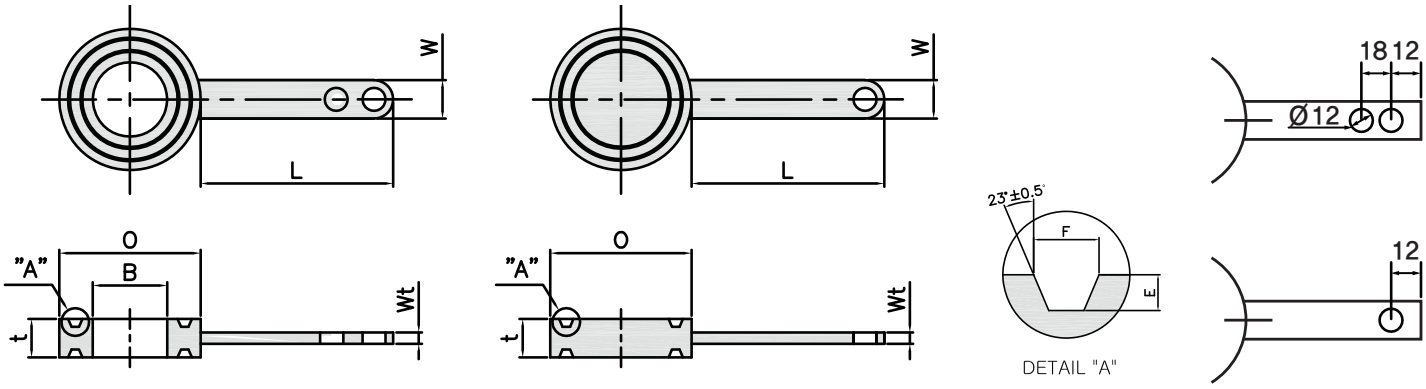
NPS	FLAT FACE / RAISED FACE						Nominal Weight			
	Inside Diameter	Outside Diameter	Thickness	Handle			RF		FF	
				Width	Length	Thickness min.	Spacer	Blank (Spade)	Spacer	Blank (Spade)
	B	O	t	W	L	Wt	kg	kg	kg	kg
1/2	16	51	6.4	25	100	6.4	0.4	0.5	0.4	0.4
3/4	21	64	6.4	25	100	6.4	0.5	0.5	0.4	0.5
1	27	70	6.4	25	100	6.4	0.5	0.6	0.5	0.5
1 1/4	42	79	6.4	25	100	6.4	0.6	0.7	0.5	0.5
1 1/2	48	92	6.4	25	100	6.4	0.7	0.8	0.5	0.6
2	61	108	9.7	25	100	6.4	0.9	1.2	0.8	1.0
2 1/2	73	127	9.7	25	125	6.4	1.4	1.6	0.9	1.3
3	89	146	9.7	25	125	6.4	1.6	2.2	1.3	1.8
3 1/2	102	162	12.7	38	125	6.4	2.2	3.2	1.9	2.7
4	114	178	12.7	38	125	6.4	2.5	3.8	2.1	3.1
5	141	213	15.7	38	150	10	3.7	6.1	3.2	5.2
6	168	248	15.7	38	150	10	4.6	8.0	4.0	6.7
8	219	305	22.4	38	150	10	8.2	16.0	7.3	14.1
10	273	359	25.4	38	165	10	10.8	24.1	9.7	21.6
12	324	419	28.4	38	165	20	15.2	36.1	13.7	32.5
14	356	483	31.8	38	170	20	25.1	52.9	22.9	48.2
16	406	536	38.1	38	170	20	33.4	76.1	30.9	70.4
18	457	594	41.1	38	175	20	41.7	99.8	38.8	92.7
20	508	651	44.5	38	175	20	51.6	128.9	47.9	120.4
24	610	772	50.8	38	180	30	78.9	205.1	74.4	193.1

Notes:

(1) Thickness(dimension *t*) includes a corrosion allowance of 0.05 inch (1.3millimeters) for material groups 1.1, 1.7, 1.9, 1.10, and 1.12 Corrosion allowance is 0.00 inch for material groups 2.1, 2.2, 2.4, and 2.5.

(2) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole.

(3) The thickness of the web(or tie bar) dimension *W*t, shall be 0.25 inch (6.35millimeter) minimum, except when *t* is less than 0.25 inch, *W*t shall equal t.



PADDLE SPACER

PADDLE BLANK

RING JOINT FACING

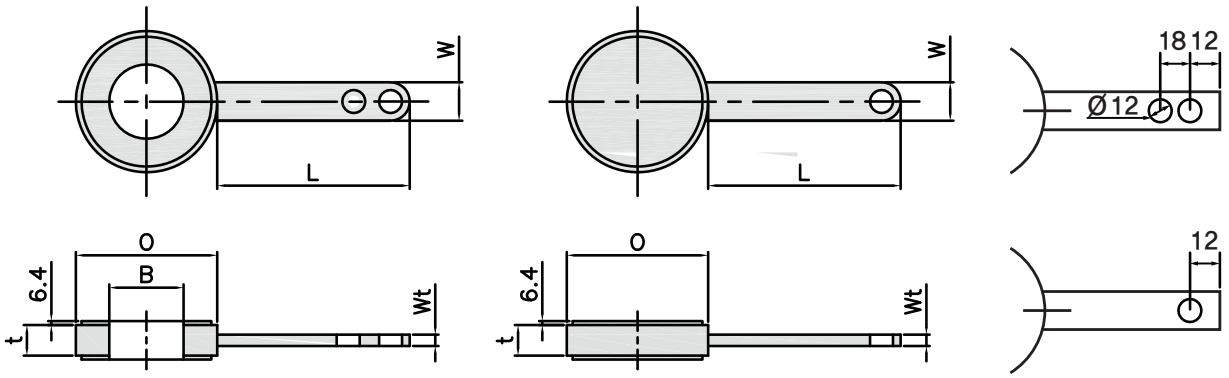
* Tolerances for facings shall be in accordance with ASME B16.5
* Thickness tolerances are
  NPS 18 and smaller : -0, +3.0mm
  NPS 20 and larger : -0, +4.8mm

Unit : mm

NPS	RING JOINT FACING										Nominal Weight	
	Inside Diameter	Outside Diameter	Thickness	Handle			RTJ			Ring No.	RTJ	
				Width	Length	Thickness min.	Pitch Diameter	Width	Depth		Spacer	Blank (Spade)
	B	O	t	W	L	Wt	P	F	E		kg	kg
1/2	21	51	15.7	25	100	10	34.14	7.14	5.56	R11	0.6	0.6
3/4	27	64	19.1	25	100	10	42.88	8.74	6.35	R13	0.8	0.9
1	34	70	19.1	25	100	10	50.80	8.74	6.35	R16	0.8	1.0
1 1/4	42	79	22.4	25	100	10	60.33	8.74	6.35	R18	1.1	1.4
1 1/2	48	90	22.4	25	100	10	68.28	8.74	6.35	R20	1.3	1.7
2	61	108	25.4	25	100	12	82.55	11.91	7.92	R23	1.8	2.4
2 1/2	73	127	28.4	25	125	12	101.60	11.91	7.92	R26	2.4	3.6
3	89	146	28.4	25	125	20	123.82	11.91	7.92	R31(4)	3.3	4.7
3 1/2	102	159	28.4	38	125	20	131.78	11.91	7.92	R34	3.6	5.4
4	114	175	31.8	38	125	20	149.22	11.91	7.92	R37	4.7	7.3
5	141	210	35.1	38	150	20	180.98	11.91	7.92	R41	6.5	10.9
6	168	241	35.1	38	150	20	211.12	11.91	7.92	R45	7.7	13.9
8	219	302	41.1	38	150	20	269.88	11.91	7.92	R49	12.3	24.7
10	273	356	44.5	38	165	20	323.85	11.91	7.92	R53	16.1	36.9
12	324	413	50.8	38	165	20	381.00	11.91	7.92	R57	22.4	55.9
14	356	457	53.8	38	170	30	419.10	11.91	7.92	R61	29.7	72.5
16	406	508	57.2	38	170	30	469.90	11.91	7.92	R65	35.4	94.7
18	457	575	60.5	38	175	30	533.40	11.91	7.92	R69	48.5	127.9
20	508	635	69.9	38	175	30	584.20	13.49	9.52	R73	66.0	179.3
24	610	749	79.2	38	180	30	692.15	16.66	11.13	R77	97.9	283.0

(4) classes 300 and 600, ring groove number R30 is used instead of R31.

CLASS 600 SPACER AND BLANKS



PADDLE SPACER PADDLE BLANK

FLAT FACE / RAISED FACE

ASME B16.48 PADDLE SPACER & BLANK

Unit : mm

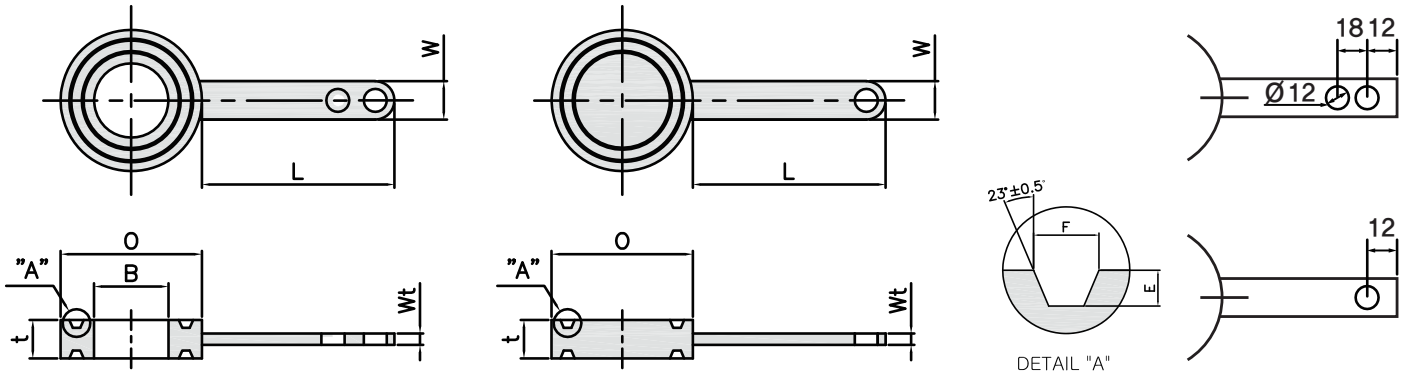
NPS	FLAT FACE / RAISED FACE						Nominal Weight			
	Inside Diameter	Outside Diameter	Thickness	Handle			RF		FF	
				Width	Length	Thickness min.	Spacer	Blank (Spade)	Spacer	Blank (Spade)
	B	O	t	W	L	Wt	kg	kg	kg	kg
1/2	16	51	6.4	25	100	6.4	0.6	0.6	0.4	0.4
3/4	21	64	6.4	25	100	6.4	0.7	0.8	0.4	0.5
1	27	70	6.4	25	100	6.4	0.8	0.9	0.5	0.5
1 1/4	37	79	9.7	25	100	6.4	1.0	1.2	0.6	0.7
1 1/2	43	92	9.7	25	100	6.4	1.2	1.5	0.7	0.8
2	55	108	9.7	25	100	6.4	1.5	1.9	0.8	1.0
2 1/2	67	127	12.7	25	125	6.4	2.2	2.9	1.3	1.6
3	83	146	12.7	25	125	6.4	2.9	4.0	1.7	2.3
3 1/2	96	159	15.7	38	125	10	3.6	5.2	2.3	3.2
4	108	191	15.7	38	150	10	5.2	7.3	3.2	4.3
5	135	238	19.1	38	150	10	8.4	12.1	5.4	7.5
6	162	264	22.4	38	150	10	10.6	16.4	7.1	10.8
8	212	318	28.4	38	165	20	15.5	27.2	11.0	19.0
10	265	397	35.1	38	165	20	27.6	48.7	20.3	36.1
12	315	454	41.1	38	170	20	37.5	71.1	28.9	54.5
14	346	489	44.5	38	170	20	44.6	88.1	35.0	68.8
16	397	562	50.8	38	175	30	65.2	128.2	52.5	102.8
18	448	610	53.8	38	175	30	73.7	157.6	59.9	127.7
20	497	679	63.5	38	180	30	104.0	223.3	87.7	186.2
24	597	787	73.2	38	185	30	146.0	338.7	125.0	288.9

Notes:

(1) Thickness(dimension *t*) includes a corrosion allowance of 0.05 inch (1.3millimeters) for material groups 1.1, 1.7, 1.9, 1.10, and 1.12 Corrosion allowance is 0.00 inch for material groups 2.1, 2.2, 2.4, and 2.5.

(2) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole.

(3) The thickness of the web(or tie bar) dimension *W*t, shall be 0.25 inch (6.35millimeter) minimum, except when *t* is less than 0.25 inch, *W*t shall equal t.



PADDLE SPACER PADDLE BLANK

RING JOINT FACING

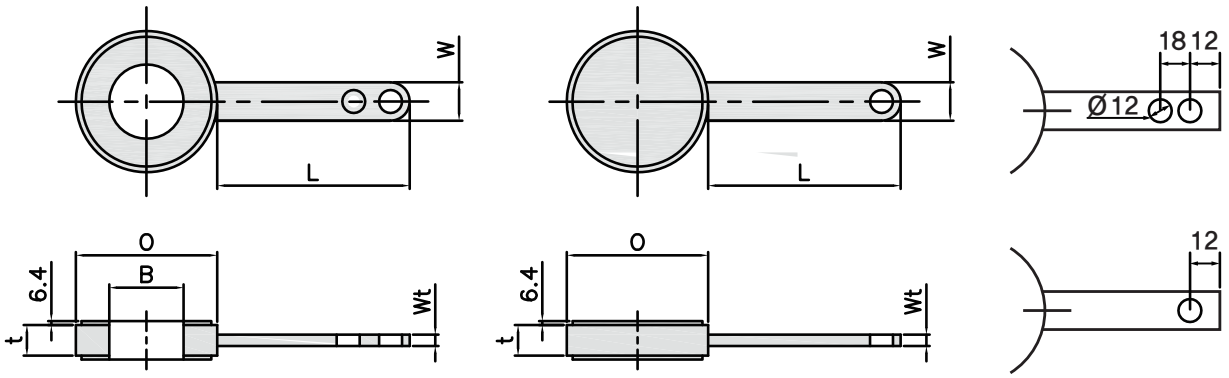
* Tolerances for facings shall be in accordance with ASME B16.5
* Thickness tolerances are
  NPS 18 and smaller : −0, +3.0mm
  NPS 20 and larger : −0, +4.8mm

Unit : mm

NPS	RING JOINT FACING										Nominal Weight	
	Inside Diameter	Outside Diameter	Thickness	Handle			RTJ			Ring No.	RTJ	
				Width	Length	Thickness min.	Pitch Diameter	Width	Depth		Spacer	Blank (Spade)
	B	O	t	W	L	Wt	P	F	E		kg	kg
1/2	21	51	19.1	25	100	10	34.14	7.14	5.56	R11	0.6	0.7
3/4	27	64	22.4	25	100	10	42.88	8.74	6.35	R13	1.0	1.1
1	34	70	22.4	25	100	10	50.80	8.74	6.35	R16	1.0	1.2
1 1/4	42	79	22.4	25	100	10	60.33	8.74	6.35	R18	1.1	1.4
1 1/2	48	90	22.4	25	100	10	68.28	8.74	6.35	R20	1.3	1.7
2	61	108	28.4	25	100	12	82.55	11.91	7.92	R23	1.9	2.6
2 1/2	73	127	31.8	25	125	20	101.60	11.91	7.92	R26	2.7	3.7
3	89	146	31.8	25	125	20	123.82	11.91	7.92	R31(4)	3.6	5.2
3 1/2	102	159	35.1	38	125	20	131.78	11.91	7.92	R34	4.4	6.7
4	114	175	35.1	38	150	20	149.22	11.91	7.92	R37	5.1	8.0
5	141	210	38.1	38	150	20	180.98	11.91	7.92	R41	7.0	11.8
6	168	241	44.5	38	150	20	211.12	11.91	7.92	R45	9.6	17.5
8	219	302	50.8	38	165	30	269.88	11.91	7.92	R49	15.0	30.3
10	273	356	57.2	38	165	30	323.85	11.91	7.92	R53	20.3	47.1
12	324	413	63.5	38	170	30	381.00	11.91	7.92	R57	27.7	69.6
14	356	457	66.5	38	170	30	419.10	11.91	7.92	R61	36.6	89.6
16	406	508	73.2	38	175	30	469.90	11.91	7.92	R65	45.2	121.0
18	457	575	79.2	38	175	30	533.40	11.91	7.92	R69	62.9	166.8
20	508	635	88.9	38	180	40	584.20	13.49	9.52	R73	83.7	227.8
24	610	749	104.6	38	185	50	692.15	16.66	11.13	R77	128.2	372.7

(4) classes 300 and 600, ring groove number R30 is used instead of R31.

CLASS 900 SPACER AND BLANKS



PADDLE SPACER PADDLE BLANK

FLAT FACE / RAISED FACE

ASME B16.48 PADDLE SPACER & BLANK

Unit : mm

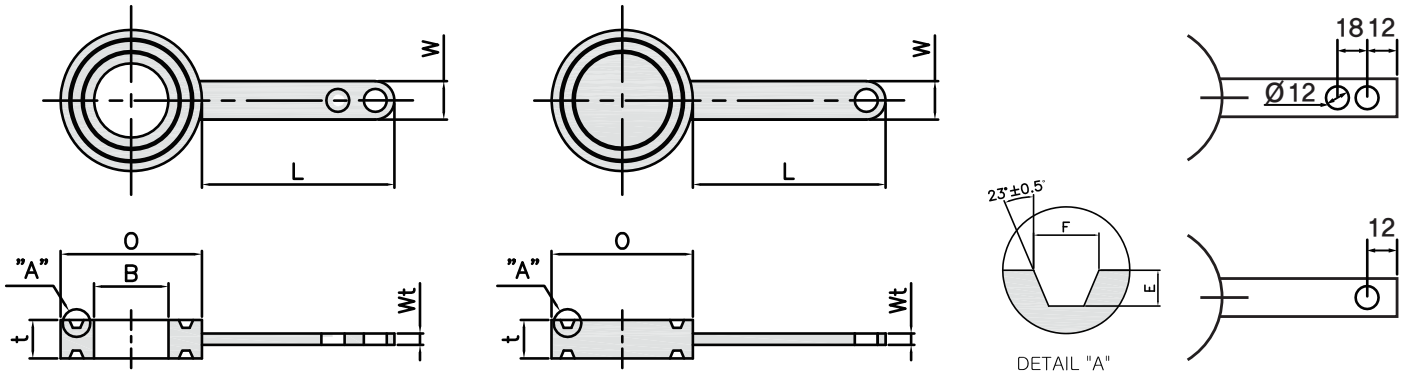
NPS	FLAT FACE / RAISED FACE						Nominal Weight			
	Inside Diameter	Outside Diameter	Thickness	Handle			RF		FF	
				Width	Length	Thickness min.	Spacer	Blank (Spade)	Spacer	Blank (Spade)
	B	O	t	W	L	Wt	kg	kg	kg	kg
1/2	16	60	6.4	25	100	6.4	0.7	0.8	0.5	0.5
3/4	21	67	6.4	25	100	6.4	0.8	0.9	0.5	0.5
1	27	76	6.4	25	100	6.4	0.9	1.0	0.5	0.6
1 1/4	37	86	9.7	25	100	6.4	1.2	1.4	0.7	0.8
1 1/2	43	95	9.7	25	100	6.4	1.3	1.6	0.8	0.9
2	55	140	12.7	25	125	6.4	3.0	3.5	1.7	1.9
2 1/2	67	162	12.7	25	125	10	4.1	4.8	2.1	2.5
3	83	165	15.7	38	150	10	4.4	5.6	2.8	3.4
4	108	203	19.1	38	150	10	6.7	9.0	4.3	5.7
5	135	244	22.4	38	150	10	10.1	14.2	6.8	9.4
6	162	286	25.4	38	165	10	14.3	20.6	9.9	14.0
8	212	356	35.1	38	165	20	25.9	39.5	19.4	29.3
10	265	432	41.1	38	170	20	40.7	64.5	31.4	46.5
12	315	495	47.8	38	170	20	57.1	94.8	45.4	75.1
14	346	518	53.8	38	175	30	64.2	114.2	52.2	92.7
16	397	572	60.5	38	175	30	80.4	153.0	66.8	126.7
18	448	635	66.5	38	180	30	103.4	203.4	87.2	171.4
20	497	696	73.2	38	185	30	131.2	264.6	112.1	225.6
24	597	835	88.9	38	190	40	222.7	450.4	195.3	394.3

Notes:

(1) Thickness(dimension *t*) includes a corrosion allowance of 0.05 inch (1.3millimeters) for material groups 1.1, 1.7, 1.9, 1.10, and 1.12 Corrosion allowance is 0.00 inch for material groups 2.1, 2.2, 2.4, and 2.5.

(2) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole.

(3) The thickness of the web(or tie bar) dimension *W*t, shall be 0.25 inch (6.35millimeter) minimum, except when *t* is less than 0.25 inch, *W*t shall equal t.



PADDLE SPACER

PADDLE BLANK

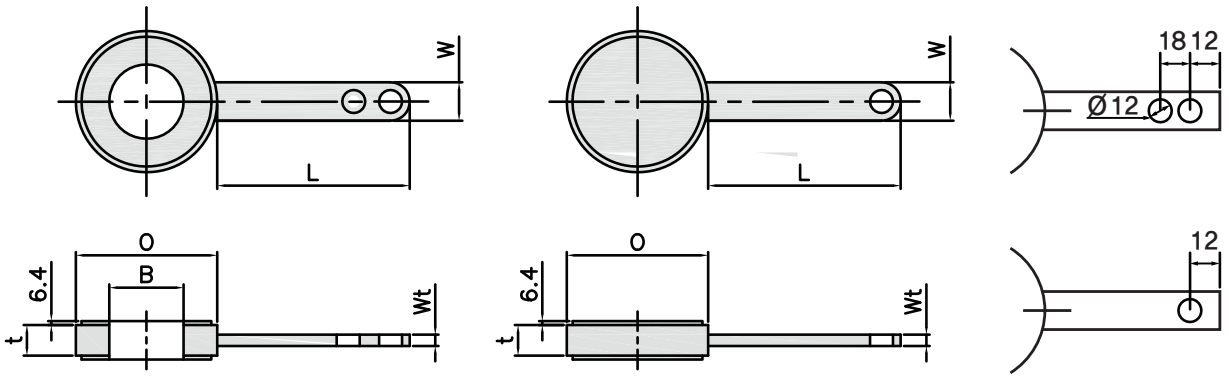
RING JOINT FACING

* Tolerances for facings shall be in accordance with ASME B16.5
* Thickness tolerances are
  NPS 18 and smaller : −0, +3.0mm
  NPS 20 and larger : −0, +4.8mm

Unit : mm

NPS	RING JOINT FACING										Nominal Weight	
	Inside Diameter	Outside Diameter	Thickness	Handle			RTJ			Ring No.	RTJ	
				Width	Length	Thickness min.	Pitch Diameter	Width	Depth		Spacer	Blank (Spade)
	B	O	t	W	L	Wt	P	F	E		kg	kg
1/2	21	61	22.4	25	100	10	39.67	8.74	6.35	R12	1.0	1.1
3/4	27	67	22.4	25	100	10	44.45	8.74	6.35	R14	1.1	1.2
1	34	71	22.4	25	100	10	50.80	8.74	6.35	R16	1.1	1.3
1 1/4	42	81	25.4	25	100	12	60.33	8.74	6.35	R18	1.3	1.6
1 1/2	48	92	25.4	25	100	20	68.28	8.74	6.35	R20	1.5	1.9
2	61	124	31.8	25	125	20	95.25	11.91	7.92	R24	2.9	3.6
2 1/2	73	137	35.1	25	125	20	107.95	11.91	7.92	R27	3.6	4.7
3	89	155	35.1	38	150	20	123.82	11.91	7.92	R31	4.6	6.3
4	114	181	41.1	38	150	20	149.22	11.91	7.92	R37	6.4	9.7
5	141	216	44.5	38	150	22	180.98	11.91	7.92	R41	8.7	14.3
6	168	241	47.8	38	165	30	211.12	11.91	7.92	R45	10.2	18.7
8	219	308	57.2	38	165	30	269.88	11.91	7.92	R49	18.4	35.7
10	273	362	63.5	38	170	30	323.85	11.91	7.92	R53	24.1	53.8
12	324	419	73.2	38	170	30	381.00	11.91	7.92	R57	34.3	82.6
14	356	467	82.6	38	175	40	419.10	16.66	11.13	R62	49.7	115.5
16	406	524	91.9	38	175	40	469.90	16.66	11.13	R66	66.0	161.1
18	457	594	101.6	38	180	50	533.40	19.84	12.70	R70	95.2	228.5
20	508	648	111.3	38	185	50	584.20	19.84	12.70	R74	116.5	296.8
24	610	772	133.4	38	190	60	692.15	26.97	15.88	R78	193.2	504.9

CLASS 1500 SPACER AND BLANKS



PADDLE SPACER PADDLE BLANK

FLAT FACE / RAISED FACE

ASME B16.48 PADDLE SPACER & BLANK

Unit : mm

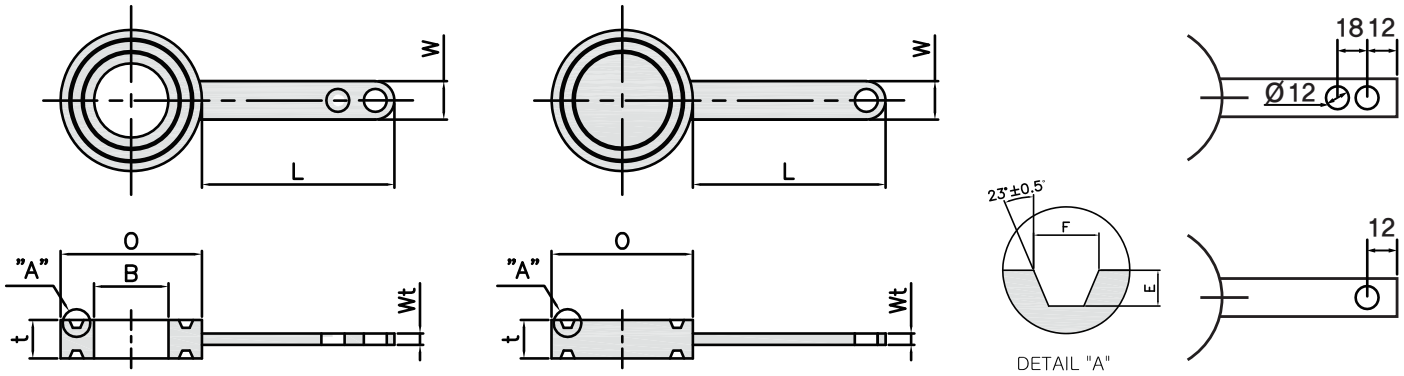
NPS	FLAT FACE / RAISED FACE						Nominal Weight			
	Inside Diameter	Outside Diameter	Thickness	Handle			RF		FF	
				Width	Length	Thickness min.	Spacer	Blank (Spade)	Spacer	Blank (Spade)
	B	O	t	W	L	Wt	kg	kg	kg	kg
1/2	16	61	6.4	25	100	6.4	0.7	0.8	0.5	0.5
3/4	21	67	9.7	25	100	6.4	0.9	1.0	0.6	0.6
1	27	76	9.7	25	100	6.4	1.0	1.1	0.6	0.7
1 1/4	35	86	9.7	25	100	6.4	1.2	1.4	0.7	0.8
1 1/2	41	95	12.7	25	100	6.4	1.5	1.8	0.9	1.1
2	53	140	12.7	25	125	6.4	3.1	3.5	1.7	1.9
2 1/2	63	162	15.7	25	125	10	4.7	5.2	2.6	3.0
3	78	172	19.1	38	150	10	5.5	6.9	3.6	4.3
4	102	206	22.4	38	150	10	8.1	10.4	5.6	7.0
5	128	251	28.4	38	165	10	13.1	17.4	9.4	12.3
6	154	279	35.1	38	165	20	17.6	24.7	13.0	18.2
8	203	349	41.1	38	170	20	28.7	42.6	22.2	32.8
10	255	432	50.8	38	170	30	50.4	76.3	40.6	61.3
12	303	518	60.5	38	175	30	83.3	125.6	39.1	104.0
14	333	575	66.5	38	175	30	112.1	167.4	94.5	140.8
16	381	638	76.2	38	180	30	149.5	230.6	128.4	197.9
18	429	702	85.9	38	185	40	195.2	309.3	170.4	269.7
20	478	752	95.3	38	190	40	233.0	387.7	205.9	342.7
24	575	899	111.3	38	200	50	379.1	636.2	340.7	571.8

Notes:

(1) Thickness(dimension *t*) includes a corrosion allowance of 0.05 inch (1.3millimeters) for material groups 1.1, 1.7, 1.9, 1.10, and 1.12 Corrosion allowance is 0.00 inch for material groups 2.1, 2.2, 2.4, and 2.5.

(2) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole.

(3) The thickness of the web(or tie bar) dimension *W*t, shall be 0.25 inch (6.35millimeter) minimum, except when *t* is less than 0.25 inch, *W*t shall equal t.



PADDLE SPACER PADDLE BLANK

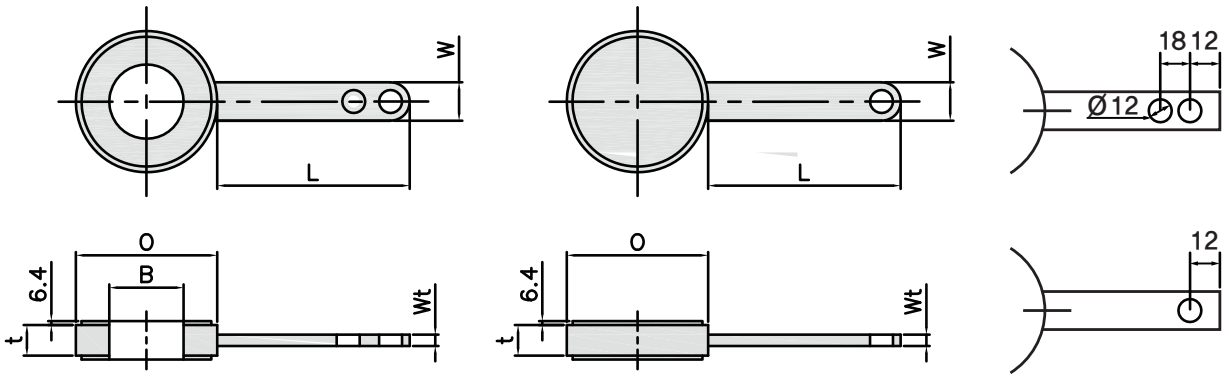
RING JOINT FACING

* Tolerances for facings shall be in accordance with ASME B16.5
* Thickness tolerances are
  NPS 18 and smaller : −0, +3.0mm
  NPS 20 and larger : −0, +4.8mm

Unit : mm

NPS	RING JOINT FACING										Nominal Weight	
	Inside Diameter	Outside Diameter	Thickness	Handle			RTJ			Ring No.	RTJ	
				Width	Length	Thickness min.	Pitch Diameter	Width	Depth		Spacer	Blank (Spade)
	B	O	t	W	L	Wt	P	F	E		kg	kg
1/2	21	61	22.4	25	100	10	39.67	8.74	6.35	R12	1.0	1.1
3/4	27	67	25.4	25	100	12	44.45	8.74	6.35	R14	1.2	1.3
1	34	71	25.4	25	100	12	50.80	8.74	6.35	R16	1.2	1.4
1 1/4	42	81	25.4	25	100	12	60.33	8.74	6.35	R18	1.3	1.6
1 1/2	48	92	28.4	25	100	12	68.28	8.74	6.35	R20	1.7	2.1
2	61	124	35.1	25	125	20	95.25	11.91	7.92	R24	3.1	3.9
2 1/2	73	137	38.1	25	125	20	107.95	11.91	7.92	R27	4.1	5.2
3	89	168	44.5	38	150	20	136.52	11.91	7.92	R35	6.9	9.1
4	114	194	47.8	38	150	22	161.92	11.91	7.92	R39	8.7	12.6
5	141	229	53.8	38	165	30	193.68	11.91	7.92	R44	12.6	19.3
6	168	248	60.5	38	165	30	211.14	13.49	9.52	R46	14.2	25.0
8	219	318	73.2	38	170	30	269.88	16.66	11.13	R50	26.4	48.5
10	273	371	82.5	38	170	40	323.85	16.66	11.13	R54	34.8	73.4
12	324	438	101.6	38	175	50	381.00	23.01	14.27	R58	57.8	124.8
14	356	489	111.3	38	175	50	419.10	26.97	15.88	R63	82.0	170.6
16	406	546	124.0	38	180	60	469.90	30.18	17.48	R67	107.3	235.6
18	457	613	133.0	38	185	60	533.40	30.18	17.48	R71	143.2	317.7
20	508	673	142.7	38	190	60	584.20	33.32	17.48	R75	179.3	410.6
24	610	794	168.1	38	200	80	692.15	36.53	20.62	R79	279.6	672.4

CLASS 2500 SPACER AND BLANKS



PADDLE SPACER　　PADDLE BLANK

FLAT FACE / RAISED FACE

ASME B16.48 PADDLE SPACER & BLANK

Unit : mm

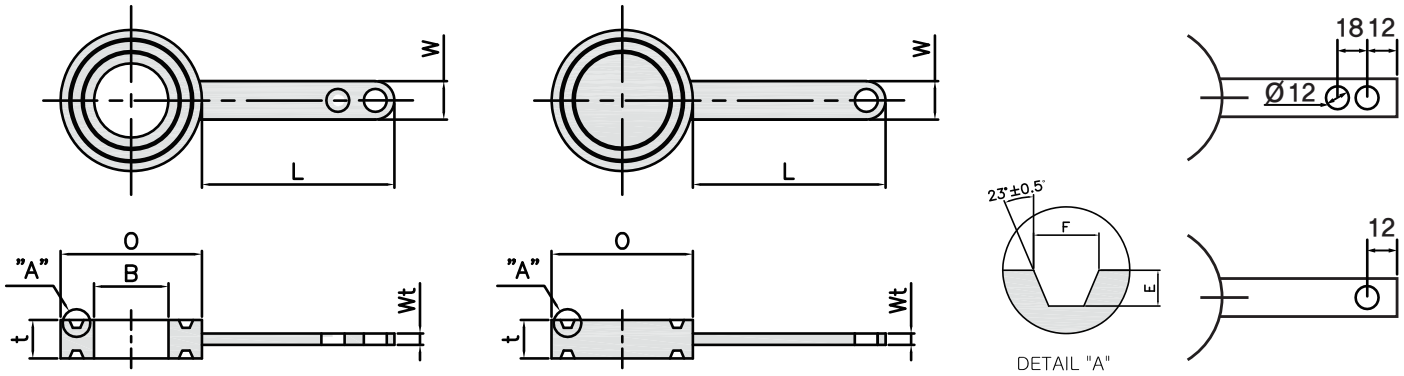
NPS	FLAT FACE / RAISED FACE						Nominal Weight			
	Inside Diameter	Outside Diameter	Thickness	Handle			RF		FF	
				Width	Length	Thickness min.	Spacer	Blank (Spade)	Spacer	Blank (Spade)
	B	O	t	W	L	Wt	kg	kg	kg	kg
1/2	16	67	9.7	25	100	6.4	0.9	1.0	0.6	0.6
3/4	21	73	9.7	25	100	6.4	1.0	1.1	0.6	0.6
1	27	83	9.7	25	125	6.4	1.2	1.3	0.7	0.7
1 1/4	35	102	12.7	25	125	10	1.8	2.0	1.1	1.2
1 1/2	41	114	15.7	25	125	10	2.5	2.8	1.6	1.7
2	53	143	15.7	25	150	10	3.6	4.1	2.2	2.5
2 1/2	63	165	19.1	25	150	10	5.3	6.0	3.2	3.7
3	78	194	22.4	38	165	10	8.0	9.4	5.5	6.4
4	102	232	28.4	38	165	20	12.3	15.0	8.8	10.7
5	128	276	35.1	38	170	20	19.3	24.2	14.2	17.9
6	154	314	41.1	38	170	20	26.9	34.9	20.9	27.0
8	198	384	53.8	38	175	30	47.2	63.6	38.5	51.7
10	248	473	66.5	38	180	30	83.2	113.6	70.2	95.8
12	289	546	79.2	38	190	30	126.7	175.0	109.8	151.0

Notes:

(1) Thickness(dimension *t*) includes a corrosion allowance of 0.05 inch (1.3millimeters) for material groups 1.1, 1.7, 1.9, 1.10, and 1.12 Corrosion allowance is 0.00 inch for material groups 2.1, 2.2, 2.4, and 2.5.

(2) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole.

(3) The thickness of the web(or tie bar) dimension *W*t, shall be 0.25 inch (6.35millimeter) minimum, except when *t* is less than 0.25 inch, *W*t shall equal t.



PADDLE SPACER

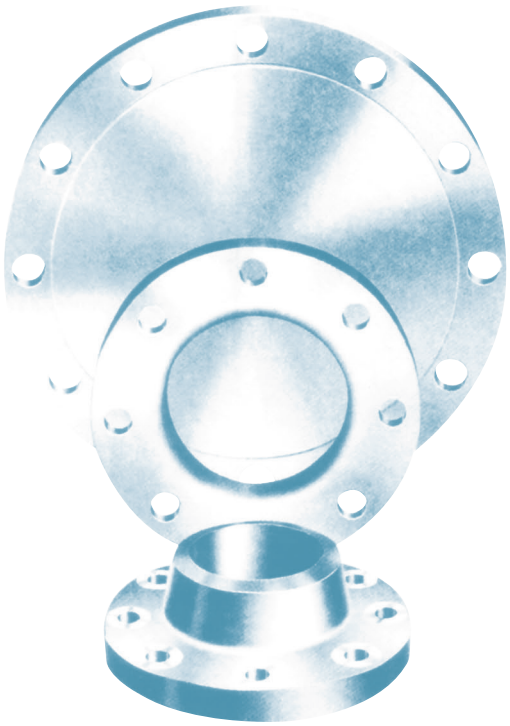
PADDLE BLANK

RING JOINT FACING

* Tolerances for facings shall be in accordance with ASME B16.5
* Thickness tolerances are
  NPS 18 and smaller : −0, +3.0mm
  NPS 20 and larger : −0, +4.8mm

Unit : mm

NPS	RING JOINT FACING (3)										Nominal Weight	
	Inside Diameter	Outside Diameter	Thickness (2)	Handle			RTJ			Ring No.	RTJ	
				Width	Length	Thickness min.	Pitch Diameter	Width	Depth		Spacer	Blank (Spade)
	B	O	t	W	L	Wt	P	F	E		kg	kg
1/2	21	65	25.4	25	100	12	42.88	8.74	6.35	R13	1.2	1.2
3/4	27	73	28.4	25	100	12	50.80	8.74	6.35	R16	1.4	1.5
1	34	83	28.4	25	125	12	60.33	8.74	6.35	R18	1.6	1.8
1 1/4	42	102	35.1	25	125	20	72.24	11.91	7.92	R21	2.5	2.9
1 1/2	48	114	38.1	25	125	20	82.55	11.91	7.92	R23	3.2	3.7
2	61	133	41.1	25	150	20	101.60	11.91	7.92	R26	4.4	5.3
2 1/2	73	149	47.8	25	150	30	111.12	13.49	9.53	R28	5.9	7.4
3	89	168	50.8	38	165	30	127.00	13.49	9.53	R32	7.8	10.3
4	114	203	63.5	38	165	30	157.18	16.66	11.13	R38	12.8	18.0
5	141	241	73.2	38	170	40	190.50	19.84	12.70	R42	19.6	28.6
6	168	279	82.5	38	170	40	228.60	19.84	12.70	R47	27.9	42.6
8	219	340	98.6	38	175	40	279.40	23.01	14.27	R51	44.4	74.1
10	273	425	117.3	38	180	50	342.90	30.18	17.48	R55	81.3	136.2
12	324	495	133.4	38	190	60	406.40	33.32	17.48	R60	121.1	209.1



DIN FLANGES

6 – BAR (DIN 2573, 2527, 2631)

10 – BAR (DIN 2576, 2527, 2632)

16 – BAR (DIN 2502, 2527, 2633)

25 – BAR (DIN 2503, 2527, 2634)

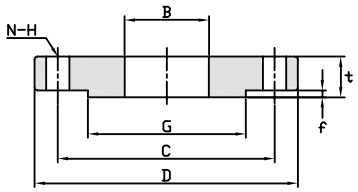
40 – BAR (DIN 2545, 2527, 2635)

63 – BAR (DIN 2527, 2636)

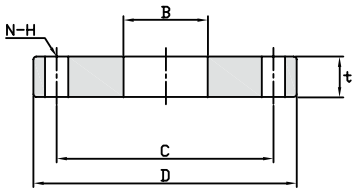
100 – BAR (DIN 2527, 2637)

PN 6 / 6 BAR / 6kg/cm²

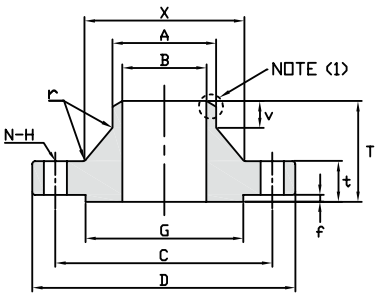
DIN 2573 SLIP-ON FLANGES / DIN 2527 BLIND FLANGES
DIN 2631 WELDING NECK FLANGES



SORF



SOFF



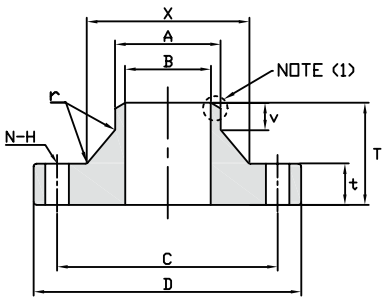
WNRF

DIN EN 1092-1 (2018) Flanges

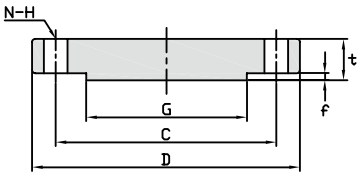
( ) : DIN Size Unit : mm

DN	Pipe OD	OD	OD of Neck	Length Thru Hub	Neck Diameter	Corner Radii	Straight Hub L.	Bore Diameters	
			WN					SO	WN
		D	A	T	X	r	v	B	
10	17.2	75	17.2	28	26	4	6	18.0 (17.7)	
15	21.3	80	21.3	30	30	4	6	22.0	
20	26.9	90	26.9	32	38	4	6	27.5 (27.6)	
25	33.7	100	33.7	35	42	4	6	34.5 (34.4)	
32	42.4	120	42.4	35	55	6	6	43.5 (43.1)	
40	48.3	130	48.3	38	62	6	7	49.5 (49)	
50	60.3	140	60.3	38	74	6	8	61.5 (61.1)	
65	76.1	160	76.1	38	88	6	9	77.5 (77.1)	
80	88.9	190	88.9	42	102	8	10	90.5 (90.3)	
100	114.3	210	114.3	45	130	8	10	116.0 (115.9)	
125	139.7	240	139.7	48	155	8	10	141.5 (141.6)	
150	168.3	265	168.3	48	184	10	12	170.5	
200	219.1	320	219.1	55	236	10	15	221.5 (221.8)	See Note(1)
250	273.0	375	273.0	60	290	12	15	276.5 (276.2)	
300	323.9	440	323.9	62	342	12	15	327.5 (327.6)	
350	355.6	490	355.6	62	385	12	15	359.5 (359.7)	
400	406.4	540	406.4	65	438	12	15	411.0	
450	457.0	595	457.0	65	492	12	15	462.0 (462.3)	
500	508.0	645	508.0	68	538	12	15	513.5 (513.6)	
600	610.0	755	610.0	70	640	12	16	616.5	
700	711.0	860	711.0	76 (70)	740	12	16	See Note(1)	
800	813.0	975	813.0	76 (70)	842	12	16		
900	914.0	1075	914.0	78 (70)	942	12	16		
1000	1016.0	1175	1016.0	82 (70)	1045	16	16		
1200	1219 (1220)	1405	1219.0 (1220)	104 (90)	1248	16	20		
1400	1422 (1420)	1630	1422.0 (1420)	114 (90)	1452	16	20		
1600	1626 (1620)	1830	1626.0 (1620)	119 (90)	1655	16	20		
1800	1829 (1820)	2045	1829.0 (1820)	133 (100)	1855	16	20		
2000	2032 (2020)	2265	2032.0 (2020)	146 (110)	2058	16	25		

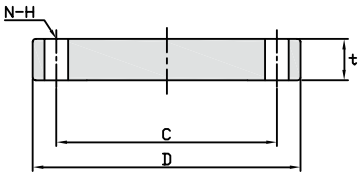
Note (1): To be specified by purchascer



WNFF



BLRF



BLFF

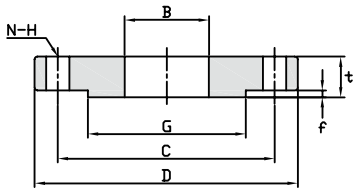
( ) : DIN Size Unit : mm

DN	Thickness			Raised Face		BCD	Diam. of Bolt Hole	Bolting		Nominal Weight (kg)		
	SO	WN	BL					Number	Size			
	t			G	f	C	H	N		SO	WN	BL
10	12	12	12	35	2	50	11	4	M10	0.36	0.35	0.38
15	12	12	12	40	2	55	11	4	M10	0.40	0.41	0.44
20	14	14	14	50	2	65	11	4	M10	0.59	0.62	0.66
25	14	14	14	60	2	75	11	4	M10	0.72	0.76	0.82
32	16	14	14	70	2	90	14	4	M12	1.16	1.11	1.18
40	16	14	14	80	3	100	14	4	M12	1.35	1.26	1.39
50	16	14	14	90	3	110	14	4	M12	1.48	1.43	1.62
65	16	14	14	110	3	130	14	4	M12	1.86	1.77	2.14
80	18	16	16	128	3	150	18	4	M16	2.95	2.88	3.43
100	18	16	16	148	3	170	18	4	M16	3.26	3.41	4.22
125	20	18	18	178	3	200	18	8	M16	4.31	4.65	6.10
150	20	18	18	202	3	225	18	8	M16	4.76	5.50	7.51
200	22	20	20	258	3	280	18	8	M16	6.88	8.60	12.3
250	24	22	22	312	3	335	18	12	M16	8.92	11.7	18.5
300	24	22	22	365	4	395	22	12	M20	11.90	15.3	25.5
350	26	22	22	415	4	445	22	12	M20	16.80	20.3	31.8
400	28	22	22	465	4	495	22	16	M20	19.80	23.1	38.5
450	30	22	24	520	4	550	22	16	M20	24.60	27.0	51.2
500	30	24	24	570	4	600	22	20	M20	26.40	30.8	60.1
600	32	30 (24)	30	670	5	705	26	20	M24	34.80	44.0	103
700	40	30 (24)	40	775	5	810	26	24	M24	–	53.7	178
800	44	30 (24)	44	880	5	920	30	24	M27	–	64.4	252
900	48	34 (26)	48	980	5	1020	30	24	M27	–	79.2	336
1000	52	38 (26)	52	1080	5	1120	30	28	M27	–	98.6	435
1200	60	42 (28)	60	1295	5	1340	33	32	M30	–	152	717
1400	72	56 (32)	68	1510	5	1560	36	36	M33	–	246	1094
1600	80	63 (34)	76	1710	5	1760	36	40	M33	–	309	1545
1800	88	69 (36)	84	1920	5	1970	39	44	M36	–	400	2131
2000	96	74 (38)	92	2125	5	2180	42	48	M39	–	516	2862

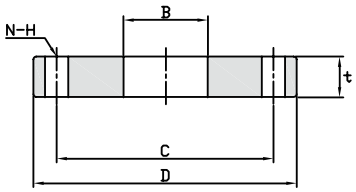
Note (1): To be specified by purchascer

PN 10 / 10 BAR / 10kg/cm²

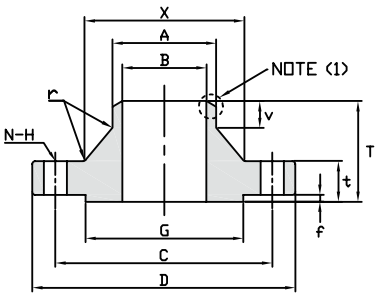
DIN 2576 SLIP-ON FLANGES / DIN 2527 BLIND FLANGES
DIN 2632 WELDING NECK FLANGES



SORF



SOFF



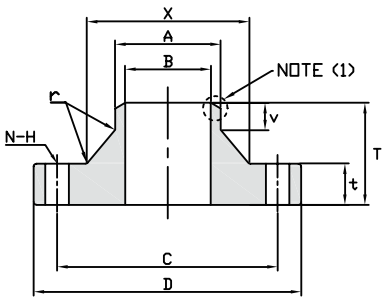
WNRF

DIN EN 1092-1 (2018) Flanges

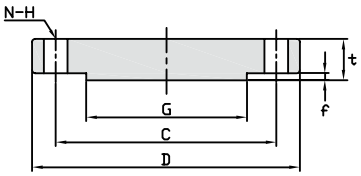
( ) : DIN Size Unit : mm

DN	Pipe OD	OD	OD of Neck	Length Thru Hub	Neck Diameter	Corner Radii	Straight Hub L.	Bore Diameters	
			WN					SO	WN
		D	A	T	X	r	v	B	
10	17.2	90	17.2	35	28	4	6	18.0 (17.7)	
15	21.3	95	21.3	38 (35)	32	4	6	22.0	
20	26.9	105	26.9	40 (38)	40	4	6	27.5 (27.6)	
25	33.7	115	33.7	40 (38)	46 (45)	4	6	34.5 (34.4)	
32	42.4	140	42.4	42 (40)	56	6	6	43.5 (43.1)	
40	48.3	150	48.3	45 (42)	64	6	7	49.5 (49)	
50	60.3	165	60.3	45	74 (75)	6	8	61.5 (61.1)	
65	76.1	185	76.1	45	92 (90)	6	10	77.5 (77.1)	
80	88.9	200	88.9	50	105	6 (8)	10	90.5 (90.3)	
100	114.3	220	114.3	52	131	8	12	116.0 (115.9)	
125	139.7	250	139.7	55	156	8	12	141.5 (141.6)	
150	168.3	285	168.3	55	184	10	12	170.5	
200	219.1	340	219.1	62	234 (235)	10	16	221.5 (221.8)	See Note(1)
250	273.0	395	273.0	68	292	12	16	276.5 (276.2)	
300	323.9	445	323.9	68	342 (344)	12	16	327.5 (327.6)	
350	355.6	505	355.6	68	385	12	16	359.5 (359.7)	
400	406.4	565	406.4	72	440	12	16	411.0	
450	457.0	615	457.0	72	488	12	16	462.0 (462.3)	
500	508.0	670	508.0	75	542	12	16	513.5 (513.6)	
600	610.0	780	610.0	82 (80)	642	12	18	616.5	
700	711.0	895	711.0	85 (80)	746 (745)	12	18		
800	813.0	1015	813.0	96 (90)	850	12	18		
900	914.0	1115	914.0	99 (95)	950	12	20	See Note(1)	
1000	1016.0	1230	1016.0	105 (95)	1052	16	20		
1200	1219 (1220)	1455	1219.0 (1220)	132 (115)	1256 (1255)	16	25		

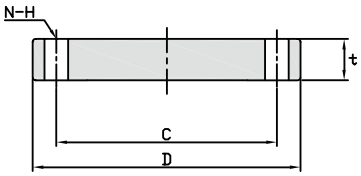
Note (1): To be specified by purchascer



WNFF



BLRF



BLFF

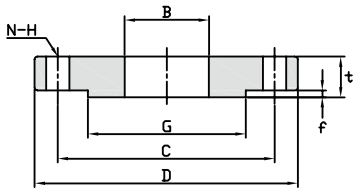
( ) : DIN Size Unit : mm

DN	Thickness			Raised Face		BCD	Diam. of Bolt Hole	Bolting		Nominal Weight (kg)		
	SO	WN	BL					Number	Size			
	t			G	f	C	H	N		SO	WN	BL
10	14	16 (14)	16 (14)	40	2	60	14	4	M12	0.60	0.68	0.72
15	14	16 (14)	16 (14)	45	2	65	14	4	M12	0.67	0.77	0.81
20	16	18 (16)	18 (16)	58	2	75	14	4	M12	0.94	1.09	1.14
25	16	18 (16)	18 (16)	68	2	85	14	4	M12	1.11	1.30	1.38
32	18 (16)	18 (16)	18 (16)	78	2	100	18	4	M16	1.82	1.91	2.03
40	18 (16)	18 (16)	18 (16)	88	3	110	18	4	M16	2.08	2.15	2.35
50	20 (18)	18	18	102	3	125	18	4	M16	2.73	2.53	2.88
65	20 (18)	18	18	122	3	145	18	**8 (4)	M16	3.16	3.03	3.51
80	20	20	20	138	3	160	18	8	M16	3.60	3.92	4.61
100	22 (20)	20	20	158	3	180	18	8	M16	4.39	4.65	5.65
125	22	22	22	188	3	210	18	8	M16	5.41	6.30	8.13
150	24 (22)	22	22	212	3	240	22	8	M20	7.14	7.81	10.5
200	24	24	24	268	3	295	22	8	M20	9.27	11.6	16.5
250	26	26	26	320	3	350	22	12	M20	11.80	15.8	24.1
300	26	26	26	370	4	400	22	12	M20	13.60	18.3	30.8
350	30 (28)	26	26	430	4	460	22	16	M20	20.40	25.3	39.6
400	32	26	26	482	4	515	26	16	M24	27.50	30.6	49.4
450	36 (38)	28	28	532	4	565	26	20	M24	33.60	35.1	63.0
500	38	28	28	585	4	620	26	20	M24	40.20	40.5	75.2
600	42	30 (28)	34	685	5	725	30	20	M27	54.50	52.9	124
700	50	35 (30)	38	800	5	840	30	24	M27	–	75.8	183
800	56	38 (32)	48	905	5	950	33	24	M30	–	102	297
900	62	38 (34)	50	1005	5	1050	33	28	M30	–	121	374
1000	70	44 (34)	54	1110	5	1160	36	28	M33	–	161	492
1200	83	55 (38)	66	1330	5	1380	39	32	M36	–	258	842

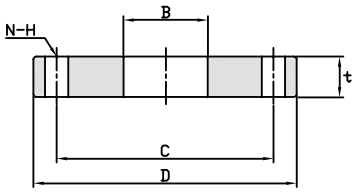
**According to EN 1092–2 (Cast iron flanges) and EN 1092–3 (Copper alloy flanges), the flanges in this DN and PN may be supplied with 4 holes.
Where steel for flanges are required with 4 holes, these may be supplied by agreement between flange manufacturer and purchaser

PN 16 / 16 BAR / 16kg/cm²

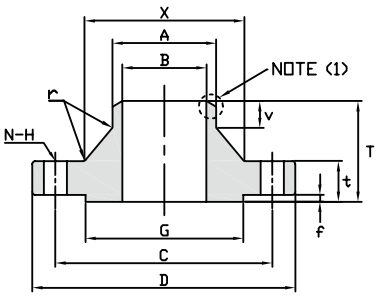
DIN 2502 SLIP-ON FLANGES / DIN 2527 BLIND FLANGES
DIN 2633 WELDING NECK FLANGES



SORF



SOFF



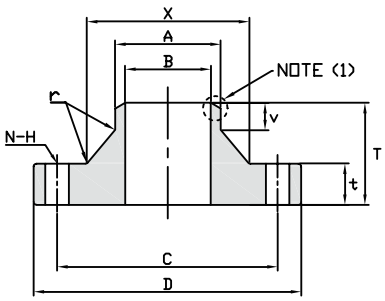
WNRF

DIN EN 1092-1 (2018) Flanges

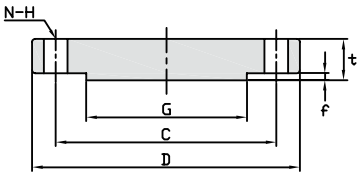
( ) : DIN Size Unit : mm

DN	Pipe OD	OD	OD of Neck	Length Thru Hub	Neck Diameter	Corner Radii	Straight Hub L.	Bore Diameters	
			WN					SO	WN
		D	A	T	X	r	v	B	
10	17.2	90	17.2	35	28	4	6	18.0 (17.7)	
15	21.3	95	21.3	38 (35)	32	4	6	22.0	
20	26.9	105	26.9	40 (38)	40	4	6	27.5 (27.6)	
25	33.7	115	33.7	40 (38)	46 (45)	4	6	34.5 (34.4)	
32	42.4	140	42.4	42 (40)	56	6	6	43.5 (43.1)	
40	48.3	150	48.3	45 (42)	64	6	7	49.5 (49)	
50	60.3	165	60.3	45	74 (75)	6	8	61.5 (61.1)	
65	76.1	185	76.1	45	92 (90)	6	10	77.5 (77.1)	
80	88.9	200	88.9	50	105	6 (8)	10	90.5 (90.3)	
100	114.3	220	114.3	52	131	8	12	116.0 (115.9)	
125	139.7	250	139.7	55	156	8	12	141.5 (141.6)	
150	168.3	285	168.3	55	184	10	12	170.5	
200	219.1	340	219.1	62	235	10	16	221.5 (221.8)	See Note(1)
250	273.0	405	273.0	70	292	12	16	276.5 (276.2)	
300	323.9	460	323.9	78	344	12	16	327.5 (327.6)	
350	355.6	520	355.6	82	390	12	16	359.5 (359.7)	
400	406.4	580	406.4	85	445	12	16	411.0	
450	457.0	640	457.0	83	490	12	16	462.0 (462.3)	
500	508.0	715	508.0	84 (90)	548	12	16	513.5 (513.6)	
600	610.0	840	610.0	88 (95)	670 (652)	12	18	616.5	
700	711.0	910	711.0	104 (100)	755	12	18	Note (6) (716)	
800	813.0	1025	813.0	108 (105)	855	12	20		
900	914.0	1125	914.0	118 (110)	955	12	20	See Note(1)	
1000	1016.0	1255	1016.0	137 (120)	1058	16	22		
1200	1219 (1220)	1485	1219.0 (1220)	160 (130)	1262	16	30	–	
1400	1422 (1420)	1685	1422.0 (1420)	177 (145)	1465	16	30	–	
1600	1626 (1620)	1930	1626.0 (1620)	204 (160)	1668	16	35	–	
1800	1829 (1820)	2130	1829.0 (1820)	218 (170)	1870	16	35	–	
2000	2032 (2020)	2345	2032.0 (2020)	238 (180)	2072	16	40	–	

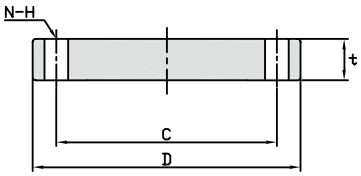
Note (1): To be specified by purchascer



WNFF



BLRF



BLFF

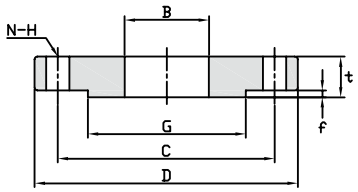
( ) : DIN Size Unit : mm

DN	Thickness			Raised Face		BCD	Diam. of Bolt Hole	Bolting		Nominal Weight (kg)		
	SO	WN	BL					Number	Size			
	t			G	f	C	H	N		SO	WN	BL
10	14	16 (14)	16 (14)	40	2	60	14	4	M12	0.60	0.68	0.72
15	14	16 (14)	16 (14)	45	2	65	14	4	M12	0.67	0.77	0.81
20	16	18 (16)	18 (16)	58	2	75	14	4	M12	0.94	1.09	1.14
25	16	18 (16)	18 (16)	68	2	85	14	4	M12	1.11	1.30	1.38
32	18 (16)	18 (16)	18 (16)	78	2	100	18	4	M16	1.82 (1.6)	1.91	2.03
40	18 (16)	18 (16)	18 (16)	88	3	110	18	4	M16	2.08 (1.9)	2.15	2.35
50	20 (18)	18	18	102	3	125	18	4	M16	2.73 (2.5)	2.53	2.88
65	20 (18)	18	18	122	3	145	18	**8 (4)	M16	3.16 (3.0)	3.03	3.51
80	20	20	20	138	3	160	18	8	M16	3.60 (3.6)	3.92	4.61
100	22 (20)	20	20	158	3	180	18	8	M16	4.39 (4.0)	4.62	5.65
125	22	22	22	188	3	210	18	8	M16	5.41	6.30	8.13
150	24 (22)	22	22	212	3	240	22	8	M20	7.14 (6.6)	7.81	10.5
200	26 (24)	24	24	268	3	295	22	12	M20	9.73 (9.0)	11.5	16.2
250	29 (26)	26	26	320	3	355	26	12	M24	14.2 (12.8)	16.7	25.0
300	32 (28)	28	28	378	4	410	26	12	M24	19.0 (16.6)	22.1	35.1
350	35 (30)	30	30	438	4	470	26	16	M24	28.2 (24.1)	32.8	48.0
400	38 (32)	32	32	490	4	525	30	16	M27	35.9 (30.2)	41.1	63.5
450	42 (38)	34	40	550	4	585	30	20	M27	46.1 (41.7)	48.5	96.6
500	46 (38)	36 (34)	44 (36)	610	4	650	33	20	M30	64.0 (52.9)	63.4	133
600	55 (42)	40 (36)	54	725	5	770	36	20	M33	102 (77.6)	94	266
700	63 (44)	40 (36)	58	795	5	840	36	24	M33	(77.1)	96.5	285
800	74 (50)	41 (38)	62	900	5	950	39	24	M36	(106.4)	122	388
900	82 (54)	48 (40)	64	1000	5	1050	39	28	M36	(125.4)	155	483
1000	90 (60)	59 (42)	68	1115	5	1170	42	28	M39	(178.0)	233	640
1200	–	78 (48)	–	1330	5	1390	48	32	M45	–	390	–
1400	–	84 (52)	–	1530	5	1590	48	36	M45	–	495	–
1600	–	102 (58)	–	1750	5	1820	56	40	M52	–	760	–
1800	–	110 (62)	–	1950	5	2020	56	44	M52	–	929	–
2000	–	124 (66)	–	2150	5	2230	62	48	M56	–	1185	–

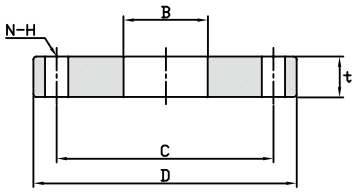
**According to EN 1092–2 (Cast iron flanges) and EN 1092–3 (Copper alloy flanges), the flanges in this DN and PN may be supplied with 4 holes.
Where steel for flanges are required with 4 holes, these may be supplied by agreement between flange manufacturer and purchaser

PN 25 / 25 BAR / 25kg/cm²

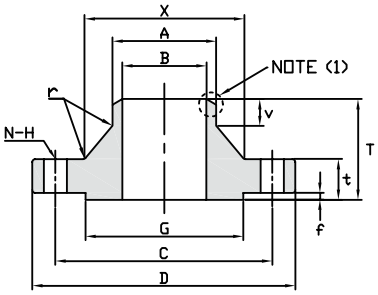
DIN 2503 SLIP-ON FLANGES / DIN 2527 BLIND FLANGES
DIN 2634 WELDING NECK FLANGES



SORF



SOFF



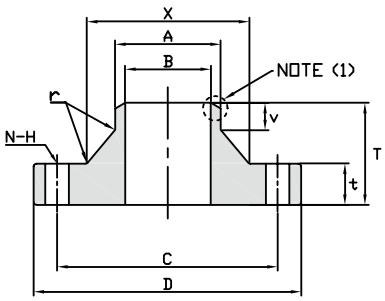
WNRF

DIN EN 1092-1 (2018) Flanges

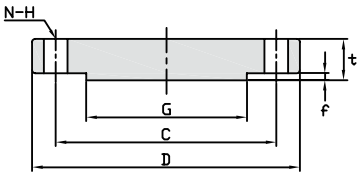
( ) : DIN Size Unit : mm

DN	Pipe OD	OD	OD of Neck	Length Thru Hub	Neck Diameter	Corner Radii	Straight Hub L.	Bore Diameters	
			WN					SO	WN
		D	A	T	X	r	v	B	
10	17.2	90	17.2	35	28	4	6	18.0 (17.7)	
15	21.3	95	21.3	38	32	4	6	22.0	
20	26.9	105	26.9	40	40	4	6	27.5 (27.6)	
25	33.7	115	33.7	40	46	4	6	34.5 (34.4)	
32	42.4	140	42.4	42	56	6	6	43.5 (43.1)	
40	48.3	150	48.3	45	64	6	7	49.5 (49)	
50	60.3	165	60.3	48	75	6	8	61.5 (61.1)	
65	76.1	185	76.1	52	90	6	10	77.5 (77.1)	
80	88.9	200	88.9	58	105	8	12	90.5 (90.3)	
100	114.3	235	114.3	65	134	8	12	116.0 (115.9)	
125	139.7	270	139.7	68	162	8	12	141.5 (141.6)	
150	168.3	300	168.3	75	192	10	12	170.5	
200	219.1	360	219.1	80	244	10	16	221.5 (221.8)	See Note(1)
250	273.0	425	273.0	88	298	12	18	276.5 (276.2)	
300	323.9	485	323.9	92	352	12	18	327.5 (327.6)	
350	355.6	555	355.6	100	398	12	20	359.5 (359.7)	
400	406.4	620	406.4	110	452	12	20	411.0	
450	457.0	670	457.0	110	500	12	20	462.0 (462.3)	
500	508.0	730	508.0	125	558	12	20	513.5 (513.6)	
600	610.0	845	610.0	125	660	12	20	616.5	
700	711.0	960	711.0	129 (125)	760	12	20	See Note(2)	
800	813.0	1085	813.0	138 (135)	864 (865)	12	22		
900	914.0	1185	914.0	148 (145)	968	12	24		
1000	1016.0	1320	1016.0	160 (155)	1070	16	24		

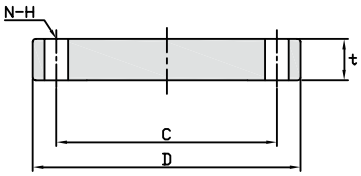
Note (1): To be specified by purchascer
Note (2): DN 1000 for SOF is not specified in EN1092-1



WNFF



BLRF



BLFF

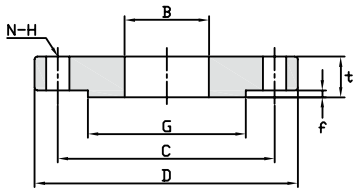
( ) : DIN Size Unit : mm

DN	Thickness			Raised Face		BCD	Diam. of Bolt Hole	Bolting		Nominal Weight (kg)		
	SO	WN	BL					Number	Size			
	t			G	f	C	H	N		SO	WN	BL
10	14 (16)	16	16	40	2	60	14	4	M12	0.60	0.68	0.72
15	14 (16)	16	16	45	2	65	14	4	M12	0.67	0.77	0.81
20	16 (18)	18	18	58	2	75	14	4	M12	0.94	1.09	1.14
25	16 (18)	18	18	68	2	85	14	4	M12	1.11	1.30	1.38
32	18	18	18	78	2	100	18	4	M16	1.82	1.91	2.03
40	18	18	18	88	3	110	18	4	M16	2.08	2.15	2.35
50	20	20	20	102	3	125	18	4	M16	2.73	2.53	2.88
65	22	22	22	122	3	145	18	8	M16	3.16	3.03	3.51
80	24	24	24	138	3	160	18	8	M16	3.60	3.92	4.61
100	26 (24)	24	24	162	3	190	22	8	M20	4.39	4.65	5.65
125	28 (26)	26	26	188	3	220	26	8	M24	5.41	6.30	8.13
150	30 (28)	28	28	218	3	250	26	8	M24	7.14	7.81	10.5
200	32 (30)	30	30	278	3	310	26	12	M24	9.27	11.6	16.5
250	35 (32)	32	32	335	3	370	30	12	M27	11.80	15.8	24.1
300	38 (34)	34	34	395	4	430	30	16	M27	13.60	18.3	30.8
350	42 (38)	38	38	450	4	490	33	16	M30	20.40	25.3	39.6
400	48 (40)	40	40	505	4	550	36	16	M33	27.50	30.6	49.4
450	54	46	50	555	4	600	36	20	M33	33.60	35.1	63.0
500	58 (44)	48 (44)	51 (45)	615	4	660	36	20	M33	40.20	40.5	75.2
600	68 (50)	48 (46)	66	720	5	770	39	20	M36	54.50	52.9	124
700	85 (52)	50 (46)	See Note(1)	820	5	875	42	24	M39	–	75.8	183
800	95 (56)	53 (50)		930	5	990	48	24	M45	–	102	297
900	Note(1) (62)	57 (54)		1030	5	1090	48	28	M45	–	121	374
1000	Note(1) (68)	63 (58)		1140	5	1210	56	28	M52	–	161	492

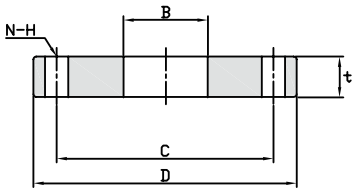
Note (1): To be specified by purchascer

PN 40 / 40 BAR / 40kg/cm²

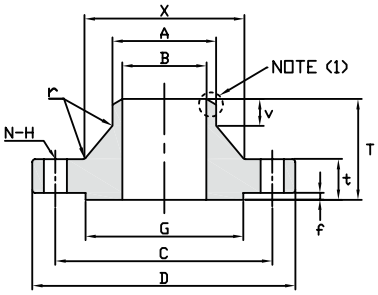
DIN 2545 SLIP-ON FLANGES / DIN 2527 BLIND FLANGES
DIN 2635 WELDING NECK FLANGES



SORF



SOFF



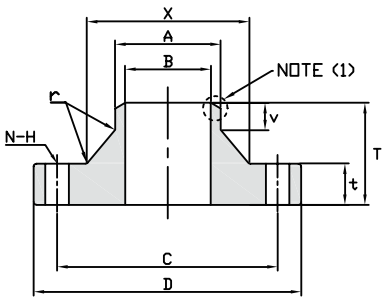
WNRF

DIN EN 1092-1 (2018) Flanges

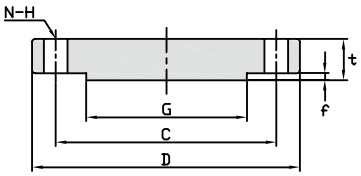
( ) : DIN Size Unit : mm

DN	Pipe OD	OD	OD of Neck	Length Thru Hub	Neck Diameter	Corner Radii	Straight Hub L.	Bore Diameters	
			WN					SO	WN
		D	A	T	X	r	v	B	
10	17.2	90	17.2	35	28	4	6	18.0 (17.7)	
15	21.3	95	21.3	38	32	4	6	22.0	
20	26.9	105	26.9	40	40	4	6	27.5 (27.6)	
25	33.7	115	33.7	40	46	4	6	34.5 (34.4)	
32	42.4	140	42.4	42	56	6	6	43.5 (43.1)	
40	48.3	150	48.3	45	64	6	7	49.5 (49)	
50	60.3	165	60.3	48	75	6	8	61.5 (61.1)	
65	76.1	185	76.1	52	90	6	10	77.5 (77.1)	
80	88.9	200	88.9	58	105	8	12	90.5 (90.3)	
100	114.3	235	114.3	65	134	8	12	116.0 (115.9)	
125	139.7	270	139.7	68	162	8	12	141.5 (141.6)	
150	168.3	300	168.3	75	192	10	12	170.5	
200	219.1	375	219.1	88	244	10	16	221.5 (221.8)	See Note(1)
250	273.0	450	273.0	105	306	12	18	276.5 (276.2)	
300	323.9	515	323.9	115	362	12	18	327.5 (327.6)	
350	355.6	580	355.6	125	408	12	20	359.5 (359.7)	
400	406.4	660	406.4	135	462	12	20	411.0	
450	457.0	685	457.0	135	500	12	20	462.0 (462.3)	
500	508.0	755	508.0	140	562	12	20	513.5 (513.6)	
600	610.0	890	610.0	150	666	12	20	616.5	

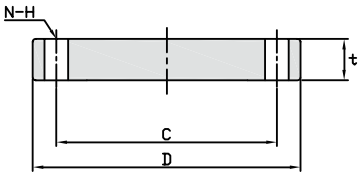
Note (1): To be specified by purchascer



WNFF



BLRF



BLFF

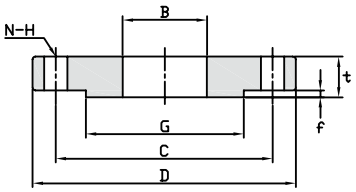
( ) : DIN Size Unit : mm

DN	Thickness			Raised Face		BCD	Diam. of Bolt Hole	Bolting		Nominal Weight (kg)		
	SO	WN	BL					Number	Size			
	t			G	f	C	H	N		SO	WN	BL
10	14 (16)	16	16	40	2	60	14	4	M12	0.60 (0.7)	0.68	0.72
15	14 (16)	16	16	45	2	65	14	4	M12	0.67 (0.8)	0.77	0.81
20	16 (18)	18	18	58	2	75	14	4	M12	0.94 (1.1)	1.09	1.14
25	16 (18)	18	18	68	2	85	14	4	M12	1.11 (1.3)	1.30	1.38
32	18	18	18	78	2	100	18	4	M16	1.82	1.91	2.03
40	18	18	18	88	3	110	18	4	M16	2.08	2.15	2.35
50	20	20	20	102	3	125	18	4	M16	2.73	2.85	3.2
65	22	22	22	122	3	145	18	8	M16	3.48	3.68	4.29
80	24	24	24	138	3	160	18	8	M16	4.32	4.78	5.54
100	26 (24)	24	24	162	3	190	22	8	M20	6.1 (5.6)	6.46	7.6
125	28 (26)	26	26	188	3	220	26	8	M24	8.2 (7.6)	8.86	10.8
150	30 (28)	28	28	218	3	250	26	8	M24	10.3 (9.6)	11.70	14.6
200	36 (34)	34	36 (34)	285	3	320	30	12	M27	17.9 (16.9)	21.0	28.8
250	42 (38)	38	38	345	3	385	33	12	M30	29.3 (26.5)	34.2	44.4
300	52 (42)	42	42	410	4	450	33	16	M30	45.1 (36.4)	47.6	64.2
350	58 (46)	46	46	465	4	510	36	16	M33	66.7 (52.8)	69.3	89.5
400	65 (50)	50	50	535	4	585	39	16	M36	97.1 (74.7)	98.0	127.0
450	Note (1)	57	57	560	4	610	39	20	M36	–	105	154.0
500	Note(1) (52)	57 (52)	57 (56)	615	4	670	42	20	M39	(86.9)	130	188
600	Note(1) (54)	72	72	735	5	795	48	20	M45	(121.9)	209	331

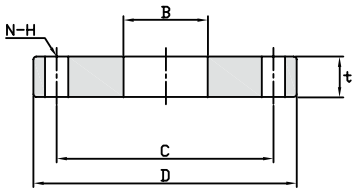
Note (1): To be specified by purchascer

PN 63 / 63 BAR / 63kg/cm²

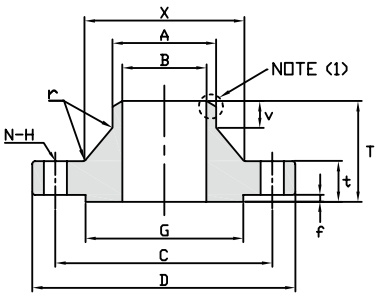
DIN SLIP-ON FLANGES / DIN 2527 BLIND FLANGES
DIN 2636 WELDING NECK FLANGES



SORF



SOFF



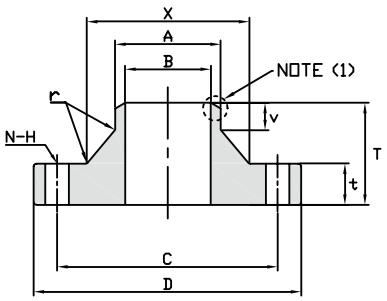
WNRF

DIN EN 1092-1 (2018) Flanges

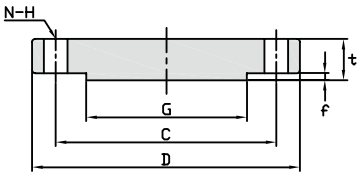
Unit : mm

DN	Pipe OD	OD	OD of Neck	Length Thru Hub	Neck Diameter	Corner Radii	Straight Hub L.	Bore Diameters	
			WN					SO	WN
		D	A	T	X	r	v	B	
10	17.2	100	17.2	45	32	4	6	18.0	See Note(1)
15	21.3	105	21.3	45	34	4	6	22.0	
20	26.9	130	26.9	48	42	4	8	27.5	
25	33.7	140	33.7	58	52	4	8	34.5	
32	42.4	155	42.4	60	62	6	8	43.5	
40	48.3	170	48.3	62	70	6	10	49.5	
50	60.3	180	60.3	62	82	6	10	61.5	
65	76.1	205	76.1	68	98	6	12	77.5	
80	88.9	215	88.9	72	112	8	12	90.5	
100	114.3	250	114.3	78	138	8	12	116.0	
125	139.7	295	139.7	88	168	8	12	141.5	
150	168.3	345	168.3	95	202	10	12	170.5	
200	219.1	415	219.1	110	256	10	16	221.5	
250	273.0	470	273.0	125	316	12	18	276.5	
300	323.9	530	323.9	140	372	12	18	327.5	
350	355.6	600	355.6	150	420	12	20	359.5	
400	406.4	670	406.4	160	475	12	20	411.0	

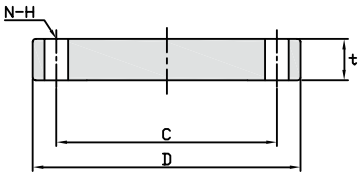
Note (1): To be specified by purchascer



WNFF



BLRF



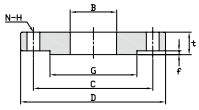
BLFF

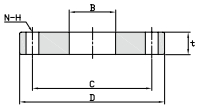
Unit : mm

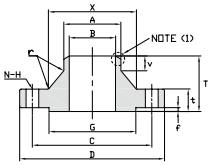
DN	Thickness			Raised Face		BCD	Diam. of Bolt Hole	Bolting		Nominal Weight (kg)		
	SO	WN	BL					Number	Size			
	t			G	f	C	H	N		SO	WN	BL
10	20	20	20	40	2	70	14	4	M12	1.00	0.68	0.72
15	20	20	20	45	2	75	14	4	M12	1.10	0.77	0.81
20	22	22	22	58	2	90	18	4	M16	1.86	1.09	1.14
25	24	24	24	68	2	100	18	4	M16	2.37	1.30	1.38
32	24	24	24	78	2	110	22	4	M20	2.79	1.91	2.03
40	26	26	26	88	3	125	22	4	M20	3.58	2.15	2.35
50	26	26	26	102	3	135	22	4	M20	4.99	4.51	4.52
65	26	26	26	122	3	160	22	8	M20	4.73	5.58	5.69
80	30	28	28	138	3	170	22	8	M20	5.90	6.68	6.89
100	32	30	30	162	3	200	26	8	M24	8.05	9.27	10.0
125	34	34	34	188	3	240	30	8	M27	11.70	14.50	15.9
150	36	36	36	218	3	280	33	8	M30	16.90	21.40	23.3
200	48	42	42	285	3	345	36	12	M33	30.50	34.1	39.2
250	55	46	46	345	3	400	36	12	M33	42.10	48.3	56.7
300	65	52	52	410	4	460	36	16	M33	59.10	67.5	81.2
350	72	56	56	465	4	525	39	16	M36	88.70	97.8	133.0
400	80	60	60	535	4	585	42	16	M39	121.00	129.0	152.0

PN 100 / 100 BAR / 100kg/cm²

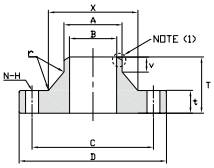
DIN SLIP-ON FLANGES / DIN 2527 BLIND FLANGES
DIN 2637 WELDING NECK FLANGES


SORF

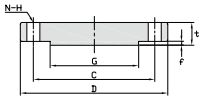

SOFF

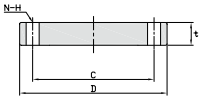


WNRF



WNFF


BLRF

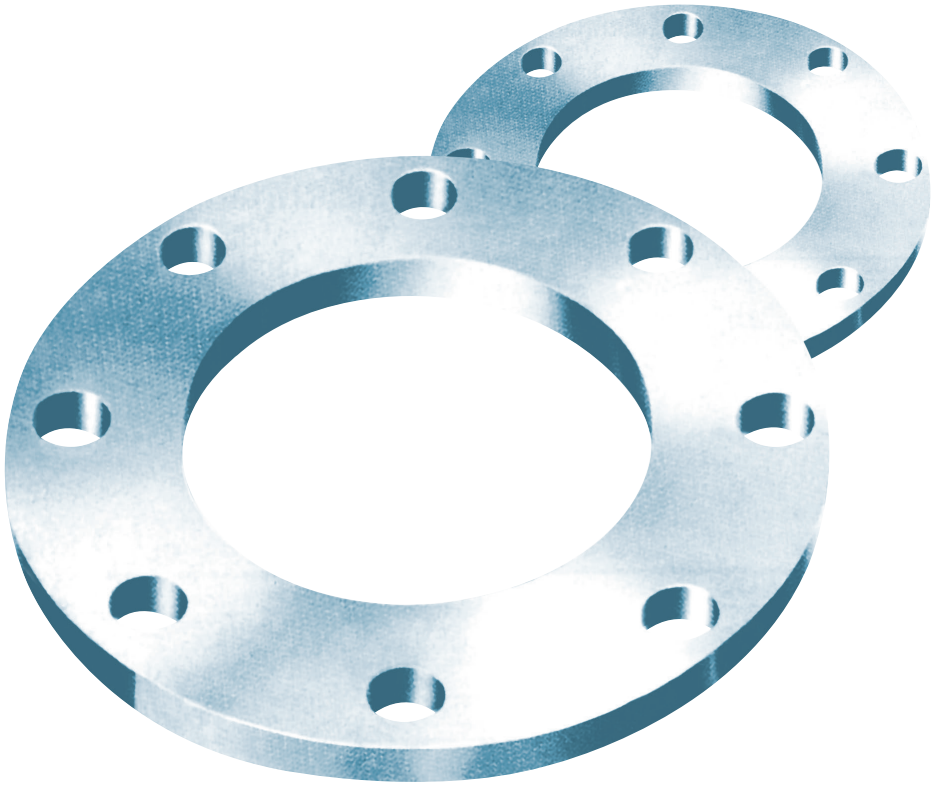

BLFF

DIN EN 1092-1 (2018) Flanges

Unit : mm

DN	Pipe OD	OD	OD of Neck	Length Thru Hub	Neck Diameter	Corner Radii	Straight Hub L.	Bore Diameters		Thickness			Raised Face		BCD	Diam. of Bolt Hole	Bolting		Nominal Weight (kg)		
			WN					SO	WN	SO	WN	BL					Number	Size			
		D	A	T	X	r	v	B		t			G	f	C	H	N		SO	WN	BL
10	17.2	100	17.2	45	32	4	6	18.0		20	20	20	40	2	70	14	4	M12	1.00	1.09	1.04
15	21.3	105	21.3	45	34	4	6	22.0		20	20	20	45	2	75	14	4	M12	1.10	1.20	1.16
20	26.9	130	26.9	48	42	4	8	27.5		22	22	22	58	2	90	18	4	M16	1.86	2.02	1.97
25	33.7	140	33.7	58	52	4	8	34.5		24	24	24	68	2	100	18	4	M16	2.37	2.63	2.54
32	42.4	155	42.4	60	62	6	8	43.5	See	24	24	24	78	2	110	22	4	M20	2.79	3.20	3.07
40	48.3	170	48.3	62	70	6	10	49.5	Note	26	26	26	88	3	125	22	4	M20	3.58	4.07	3.97
50	60.3	195	60.3	68	90	6	10	61.5	(1)	28	28	28	102	3	145	26	4	M24	4.99	5.82	5.64
65	76.1	220	76.1	76	108	6	12	77.5		30	30	30	122	3	170	26	8	M24	6.33	7.57	7.44
80	88.9	230	88.9	78	120	8	12	90.5		34	32	32	138	3	180	26	8	M24	7.72	8.82	8.85
100	114.3	265	114.3	90	150	8	12	116.0		36	36	36	162	3	210	30	8	M27	10.30	13.10	13.3
125	139.7	315	139.7	105	180	8	12	141.5		42	40	40	188	3	250	33	8	M30	17.20	21.00	21.3
150	168.3	355	168.3	115	210	10	12	170.5		48	44	44	218	3	290	33	12	M30	23.60	28.30	29.4
200	219.1	430	219.1	130	278	10	16	221.5		60	52	52	285	3	360	36	12	M33	42.90	50.2	52.7
250	273.0	505	273.0	157	340	12	18	276.5		72	60	60	345	3	430	39	12	M36	69.00	81.4	85.4
300	323.9	585	323.9	170	400	12	18	327.5		84	68	68	410	4	500	42	16	M39	104.00	118	128.0
350	355.6	655	355.6	189	460	12	20	359.5		95	74	74	465	4	560	48	16	M45	150.00	169	175.0

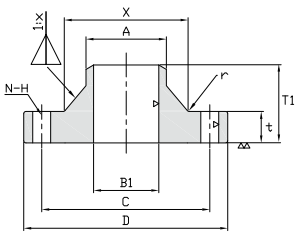
Note (1): To be specified by purchascer



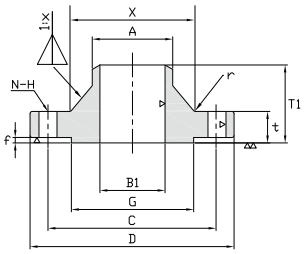
JIS & KS FLANGES

Class 5K FLANGES
Class 10K FLANGES
Class 16K FLANGES
Class 20K FLANGES
Class 30K FLANGES
Class 40K FLANGES
Class 210Kgf/cm² FLANGE FOR OIL PRESSURE
Class 280Kgf/cm² FLANGE FOR OIL PRESSURE
Class 350Kgf/cm² FLANGE FOR OIL PRESSURE
TOLERANCE FOR PIPE FLANGES

5K KS B1503 / JIS B2220

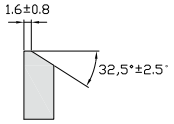


WNFF

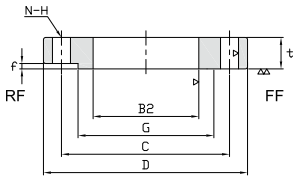


WNRF

Reference : Beveling



When particularly necessary, customers can order another beveling form the above.

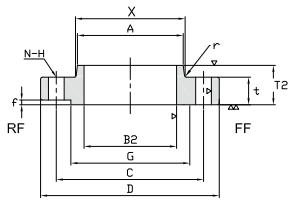


SOP
NOMINAL SIZE 10A~1500A

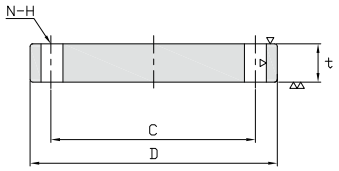
Unit : mm

DN	Pipe OD	Outside Diameter	Diam. of Hub		OD of RF	Thickness		Diam of hub at Bevel		Bore			
			WNF	SW. LJ SOH. TR		WNF SOF	BLF	WNF	SOH.TR SW.LJ	WNF (Note (1)–JIS Standard			SOF
										S/40	S/80	S/160	
		D	X		G	t		A		B1			B2
10	17.3	75	26	26	39	9	9	17.3	23	12.7	10.9	–	17.8
15	21.7	80	31	30	44	9	9	21.7	27	16.1	14.3	12.3	22.2
20	27.2	85	38	36	49	10	10	27.2	33	21.4	19.4	16.2	27.7
25	34.0	95	46	44	59	10	10	34.0	41	27.2	25.0	21.2	34.5
32	42.7	115	55	53	70	12	12	42.7	50	35.5	32.9	29.9	43.2
40	48.6	120	62	60	75	12	12	48.6	56	41.2	38.4	34.4	49.1
50	60.5	130	73	73	85	14	14	60.5	69	52.7	49.5	43.1	61.1
65	76.3	155	91	91	110	14	14	76.3	86	65.9	62.3	57.3	77.1
80	89.1	180	105	105	121	14	14	89.1	99	78.1	73.9	66.9	90.0
90	101.6	190	117	–	131	14	14	101.6	–	90.2	85.4	76.2	102.6
100	114.3	200	128	130	141	16	16	114.3	127	102.3	97.1	87.3	115.4
125	139.8	235	156	161	176	16	16	139.8	154	126.6	120.8	108.0	141.2
150	165.2	265	184	189	206	18	18	165.2	182	151.0	143.2	128.8	166.6
175	190.7	300	209	–	232	18	18	190.7	–	–	–	–	192.1
200	216.3	320	235	–	252	20	20	216.3	–	199.9	190.9	170.3	218.0
225	241.8	345	261	–	277	20	20	241.8	–	–	–	–	243.7
250	267.4	385	290	–	317	22	22	267.4	–	248.8	237.2	210.2	269.5
300	318.5	430	342	–	360	22	22	318.5	–	297.9	283.7	251.9	321.0
350	355.6	480	385	–	403	24	24	355.6	–	333.4	317.6	284.2	358.1
400	406.4	540	438	–	463	24	24	406.4	–	381.0	363.6	325.4	409.0
450	457.2	605	491	500	523	24	24	457.2	495.0	428.6	409.6	366.8	460.0
500	508.0	655	541	552	573	24	24	508.0	546.0	477.8	455.6	408.0	511.0
550	558.8	720	593	603	630	26	26	558.8	597.0	527.0	501.6	450.8	562.0
600	609.6	770	643	654	680	26	26	609.6	648.0	574.6	547.6	490.6	613.0
650	660.4	825	698	708	735	26	28	660.4	702.0	622.6	592.4	532.0	664.0
700	711.2	875	748	758	785	26	30	711.2	751.0	–	–	–	715.0
750	762.0	945	802	810	840	28	32	762.0	802.0	–	–	–	766.0
800	812.8	995	852	862	890	28	34	812.8	854.0	–	–	–	817.0
850	863.6	1045	902	912	940	28	36	863.6	904.0	–	–	–	868.0
900	914.4	1095	952	964	990	30	36	914.4	956.0	–	–	–	919.0
1000	1016.0	1195	1052	1066	1090	32	40	1016.0	1058.0	–	–	–	1021.0
1100	1117.6	1305	1162	1170	1200	32	44	1117.6	1158.0	–	–	–	1122.0
1200	1219.2	1420	1272	1272	1305	34	48	1219.2	1260.0	–	–	–	1224.0
1350	1371.6	1575	1427	1426	1460	34	54	1371.6	1414.0	–	–	–	1376.0
1500	1524.0	1730	1582	1580	1615	36	58	1524.0	1568.0	–	–	–	1529.0

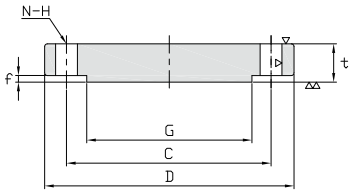
Notes: 1. Flanges of parenthesized nominal diameter had letter not be used.
2. The facing of flanges shall conform to KS B1519(JIS B2202) 1987.



SOH
NOMINAL SIZE 450A~1500A



BLFF

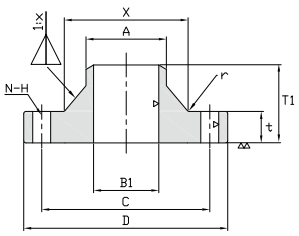


BLRF

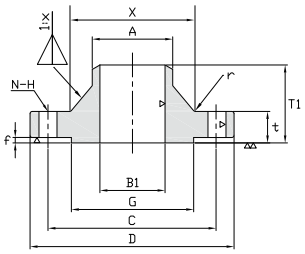
Unit : mm

DN	Length Thru Hub		Radius		Tapper of Hub (WNF)	RF	Drilling			Nominal Weight		
	WNF	SOH.TR SW.LJ	WNF	SW. LJ SOH. TR			BCD	Number of Bolt Holes	Diameter of Bolt Holes	WNF	SOF	BLF
	T1	T2	r		x	f	C	N	H	kg		
10	24	13	4	4	1.25	1	55	4	12	0.31	0.27	0.28
15	25	13	4	4	1.25	1	60	4	12	0.36	0.30	0.32
20	28	15	4	4	1.25	1	65	4	12	0.45	0.37	0.41
25	30	17	4	4	1.25	1	75	4	12	0.56	0.45	0.52
32	33	19	4	4	1.25	2	90	4	15	0.95	0.78	0.91
40	34	20	4	4	1.25	2	95	4	15	1.03	0.83	1.00
50	36	24	4	4	1.25	2	105	4	15	1.31	1.07	1.38
65	39	27	4	4	1.25	2	130	4	15	1.87	1.49	1.99
80	41	30	4	4	1.25	2	145	4	19	2.49	1.99	2.67
90	41	–	4	–	1.25	2	155	4	19	2.64	2.09	2.99
100	41	36	4	4	1.25	2	165	8	19	2.92	2.39	3.66
125	43	40	4	4	1.25	2	200	8	19	4.02	3.23	5.16
150	49	40	4	4	1.25	2	230	8	19	5.62	4.41	7.47
175	49	–	4	–	1.25	2	260	8	23	6.88	5.51	9.51
200	53	–	4	–	1.25	2	280	8	23	7.98	6.33	12.09
225	54	–	4	–	1.25	2	305	12	23	8.51	6.64	13.88
250	61	–	4	–	1.25	2	345	12	23	12.26	9.45	19.23
300	62	–	4	–	1.25	3	390	12	23	13.66	10.30	24.20
350	73	–	4	–	1.25	3	435	12	25	19.41	14.00	32.95
400	76	–	4	–	1.25	3	495	16	25	23.82	16.90	41.63
450	79	40	5	5	1.25	3	555	16	25	30.21	24.90	52.63
500	79	40	5	5	1.25	3	605	20	25	32.62	26.90	61.58
550	81	42	5	5	1.25	3	665	20	27	41.84	34.10	80.69
600	81	44	5	5	1.25	3	715	20	27	45.13	37.50	92.62
650	85	48	5	5	1.25	3	770	24	27	51.21	42.80	114.38
700	94	48	5	5	1.5	3	820	24	27	56.04	45.40	138.25
750	100	52	5	5	1.5	3	880	24	33	71.00	57.40	170.88
800	100	52	5	5	1.5	3	930	24	33	75.15	60.80	201.88
850	108	54	5	5	1.75	3	980	24	33	80.79	63.50	236.37
900	108	56	5	5	1.75	3	1030	24	33	89.23	75.30	260.10
1000	116	60	5	5	2	3	1130	28	33	103.17	88.50	344.35
1100	136	71	8	7	2	3	1240	28	33	130.52	–	453.32
1200	155	77	8	7	2	3	1350	32	33	171.56	–	585.91
1350	164	80	8	7	2	3	1505	32	33	204.31	–	813.56
1500	172	86	10	7	2	3	1660	36	33	245.11	–	1055.30

10K KS B1503 / JIS B2220

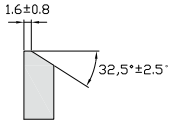


WNFF

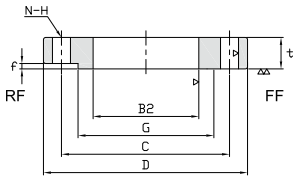


WNRF

Reference : Beveling



When particularly necessary, customers can order another beveling form the above.

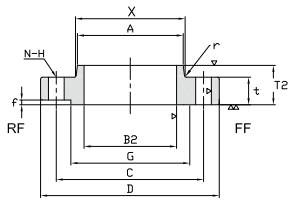


SOP
NOMINAL SIZE 10A~1500A

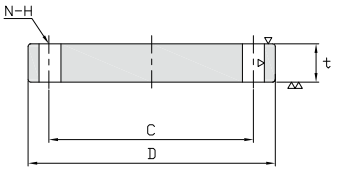
Unit : mm

DN	Pipe OD	Outside Diameter	Diam. of Hub		OD of RF	Thickness		Diam of hub at Bevel		Bore			
			WNF	SOH.SW LJ, TR		WNF SOF	BLF	WNF	SOH.SW LJ, TR	WNF (Note (1)–JIS Standard			SOF
										S/40	S/80	S/160	
		D	X		G	t		A		B1			B2
10	17.3	90	28	26	46	12	12	17.3	23	12.7	10.9	–	17.8
15	21.7	95	33	30	51	12	12	21.7	27	16.1	14.3	12.3	22.2
20	27.2	100	38	36	56	14	14	27.2	33	21.4	19.4	16.2	27.7
25	34.0	125	47	44	67	14	14	34.0	41	27.2	25.0	21.2	34.5
32	42.7	135	56	53	76	16	16	42.7	50	35.5	32.9	29.9	43.2
40	48.6	140	62	60	81	16	16	48.6	56	41.2	38.4	34.4	49.1
50	60.5	155	75	73	96	16	16	60.5	69	52.7	49.5	43.1	61.1
65	76.3	175	92	91	116	18	18	76.3	85	65.9	62.3	57.3	77.1
80	89.1	185	105	105	126	18	18	89.1	99	78.1	73.9	66.9	90.0
90	101.6	195	117	–	136	18	18	101.6	–	90.2	85.4	76.2	102.6
100	114.3	210	130	130	151	18	18	114.3	127	102.3	97.1	87.3	115.4
125	139.8	250	156	161	182	20	20	139.8	154	126.6	120.8	108.0	141.2
150	165.2	280	184	189	212	22	22	165.2	182	151.0	143.2	128.8	166.6
175	190.7	305	210	–	237	22	22	190.7	–	–	–	–	192.1
200	216.3	330	238	–	262	22	22	216.3	–	199.9	190.9	170.3	218.0
225	241.8	350	261	–	282	22	22	241.8	–	–	–	–	243.7
250	267.4	400	292	292	324	24	24	267.4	288	248.8	237.2	210.2	269.5
300	318.5	445	345	346	368	24	24	318.5	340	297.9	283.7	251.9	321.0
350	355.6	490	388	386	413	26	26	355.6	380	333.4	317.6	284.2	358.1
400	406.4	560	442	442	475	28	28	406.4	436	381.0	363.6	325.4	409.0
450	457.2	620	495	502	530	30	30	457.2	496	428.6	409.6	366.8	460.0
500	508.0	675	546	554	585	30	30	508.0	548	477.8	455.6	408.0	511.0
550	558.8	745	597	610	640	32	34	558.8	604	527.0	501.6	450.8	562.0
600	609.6	795	648	662	690	32	36	609.6	656	574.6	547.6	490.6	613.0
650	660.4	845	700	712	740	34	38	660.4	706	622.6	592.4	532.0	664.0
700	711.2	905	754	770	800	34	40	711.2	762	–	–	–	715.0
750	762.0	970	807	824	855	36	44	762.0	816	–	–	–	766.0
800	812.8	1020	858	876	905	36	46	812.8	868	–	–	–	817.0
850	863.6	1070	908	928	955	36	48	863.6	920	–	–	–	868.0
900	914.4	1120	959	979	1005	38	50	914.4	971	–	–	–	919.0
1000	1016.0	1235	1065	1081	1110	40	56	1016.0	1073	–	–	–	1021.0
1100	1117.6	1345	1174	1185	1220	42	62	1117.6	1175	–	–	–	1122.0
1200	1219.2	1465	1281	1290	1325	44	66	1219.2	1278	–	–	–	1224.0
1350	1371.6	1630	1438	1450	1480	48	74	1371.6	1432	–	–	–	1376.0
1500	1524.0	1795	1598	1605	1635	50	82	1524.0	1585	–	–	–	1529.0

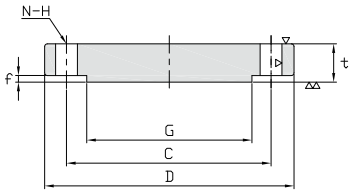
Notes: 1. Flanges of parenthesized nominal diameter had letter not be used.
2. The facing of flanges shall conform to KS B1519(JIS B2202) 1987.



SOH
NOMINAL SIZE 450A~1500A



BLFF

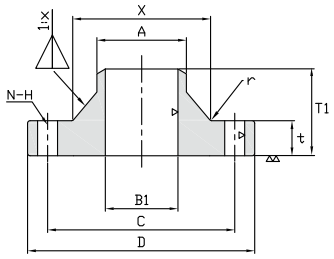


BLRF

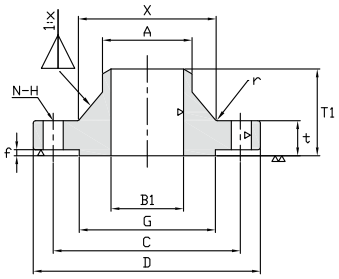
Unit : mm

DN	Length Thru Hub		Radius		Tapper of Hub (WNF)	RF	Drilling			Nominal Weight		
	WNF	SOH.SW LJ, TR	WNF	SOH.SW LJ, TR			BCD	Number of Bolt Holes	Diameter of Bolt Holes	WNF	SOF	BLF
	T1	T2	r		x	f	C	N	H	kg		
10	29	16	4	4	1.25	1	65	4	15	0.61	0.52	0.53
15	31	16	4	4	1.25	1	70	4	15	0.68	0.57	0.60
20	32	20	4	4	1.25	1	75	4	15	0.86	0.73	0.78
25	36	20	4	4	1.25	1	90	4	19	1.35	1.13	1.22
32	38	22	4	4	1.25	2	100	4	19	1.77	1.48	1.65
40	38	24	4	4	1.25	2	105	4	19	1.88	1.56	1.79
50	40	24	4	4	1.25	2	120	4	19	2.27	1.88	2.23
65	44	27	4	4	1.25	2	140	4	19	3.16	2.60	3.24
80	45	30	5	4	1.25	2	150	8	19	3.19	2.61	3.47
90	45	–	5	–	1.25	2	160	8	19	3.39	2.76	3.90
100	45	36	5	4	1.25	2	175	8	19	3.84	3.14	4.57
125	47	40	5	4	1.25	2	210	8	23	5.79	4.77	7.18
150	53	40	5	4	1.25	2	240	8	23	7.82	6.34	10.05
175	55	–	5	–	1.25	2	265	12	23	8.51	6.82	11.75
200	58	–	5	–	1.25	2	290	12	23	9.62	7.53	13.90
225	58	–	5	–	1.25	2	310	12	23	9.87	7.74	15.74
250	65	36	6	6	1.25	2	355	12	25	15.29	12.70	22.55
300	68	38	6	6	1.25	3	400	16	25	16.82	13.80	27.80
350	79	42	6	6	1.25	3	445	16	25	22.75	18.20	36.85
400	85	44	6	6	1.25	3	510	16	27	32.19	25.20	52.08
450	90	48	6	6	1.25	3	565	20	27	40.59	33.00	68.34
500	99	48	6	6	1.5	3	620	20	27	47.18	37.60	81.51
550	111	52	6	6	1.75	3	680	20	33	60.62	49.70	111.68
600	112	52	6	6	1.75	3	730	24	33	64.81	52.60	134.36
650	116	56	6	6	1.75	3	780	24	33	74.08	60.60	161.02
700	132	58	6	6	2	3	840	24	33	88.00	70.60	195.37
750	139	62	6	6	2	3	900	24	33	107.67	85.80	247.94
800	139	64	6	6	2	3	950	28	33	113.19	91.20	286.17
850	139	66	6	6	2	3	1000	28	33	119.21	98.60	329.51
900	140	70	6	6	2	3	1050	28	33	131.02	109.00	376.96
1000	151	74	6	6	2	3	1160	28	39	163.40	133.00	511.45
1100	170	95	10	8	2	3	1270	28	39	207.49	–	674.64
1200	182	101	10	8	2	3	1380	32	39	259.97	–	852.78
1350	200	110	10	8	2	3	1540	36	45	332.81	–	1177.89
1500	218	123	12	8	2	3	1700	40	45	418.95	–	1586.59

16K KS B1503 / JIS B2220

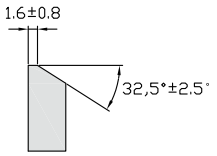


WNFF



WNRF

Reference : Beveling



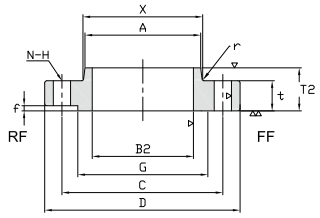
When particularly necessary, customers can order another beveling form the above.

Unit : mm

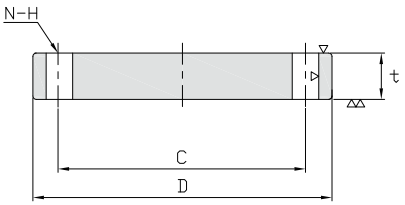
DN	Pipe OD	Outside Diameter	Diam. of Hub		OD of RF	Thickness	Diam of hub at Bevel		Bore			
			WNF	SOH,SW LJ, TR		BL, LJ WNF,TR SOH, SW	WNF	SOH,SW LJ, TR	WNF (Note (1)–JIS Standard			SOH SW
									S/40	S/80	S/160	
		D	X		G	t	A		B1			B2
10	17.3	90	29	28	46	12	17.3	26	12.7	10.9	–	17.8
15	21.7	95	34	32	51	12	21.7	30	16.1	14.3	12.3	22.2
20	27.2	100	39	42	56	14	27.2	38	21.4	19.4	16.2	27.7
25	34.0	125	47	50	67	14	34.0	46	27.2	25.0	21.2	34.5
32	42.7	135	56	60	76	16	42.7	56	35.5	32.9	29.9	43.2
40	48.6	140	62	66	81	16	48.6	62	41.2	38.4	34.4	49.1
50	60.5	155	75	80	96	16	60.5	76	52.7	49.5	43.1	61.1
65	76.3	175	92	98	116	18	76.3	94	65.9	62.3	57.3	77.1
80	89.1	200	105	112	132	20	89.1	108	78.1	73.9	66.9	90.0
90	101.6	210	118	124	145	20	101.6	120	90.2	85.4	76.2	102.6
100	114.3	225	134	138	160	22	114.3	134	102.3	97.1	87.3	115.4
125	139.8	270	162	170	195	22	139.8	164	126.6	120.8	108.0	141.2
150	165.2	305	192	202	230	24	165.2	196	151.0	143.2	128.8	166.6
200	216.3	350	244	252	275	26	216.3	244	199.9	190.9	170.3	218.0
250	267.4	430	298	312	345	28	267.4	304	248.8	237.2	210.2	269.5
300	318.5	480	352	364	395	30	318.5	354	297.9	283.7	251.9	321.0
350	355.6	540	398	408	440	34	355.6	398	333.4	317.6	284.2	358.1
400	406.4	605	452	456	495	38	406.4	446	381.0	363.6	325.4	409.0
450	457.2	675	510	514	560	40	457.2	504	428.6	409.6	366.8	460.0
500	508.0	730	561	568	615	42	508.0	558	477.8	455.6	408.0	511.0
550	558.8	795	616	622	670	44	558.8	612	527.0	501.6	450.8	562.0
600	609.6	845	670	676	720	46	609.6	666	574.6	547.6	490.6	613.0

Notes:

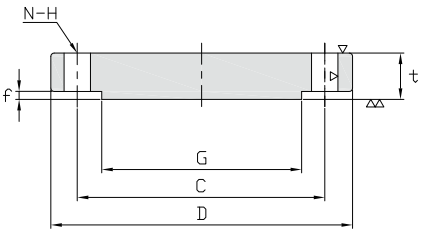
1. Flanges of parenthesized nominal diameter had letter not be used.
2. The facing of flanges shall conform to KS B1519(JIS B2202) 1987.



SOH
NOMINAL SIZE 10A~600A



BLFF

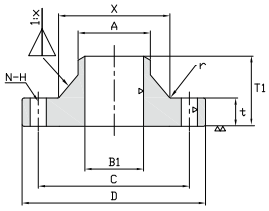


BLRF

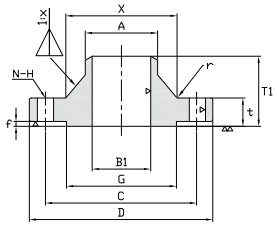
Unit : mm

DN	Length Thru Hub		Radius	Tapper of Hub (WNF)	RF	Drilling			Nominal Weight		
	WNF	SOH. SW, LJ	SOH.SW WNF LJ, TR			BCD	Number of Bolt Holes	Diameter of Bolt Holes	WNF	SOF	BLF
	T1	T2	r	x	f	C	N	H	kg		
10	31	16	4	1.25	1	65	4	15	0.61	0.52	0.53
15	32	16	4	1.25	1	70	4	15	0.68	0.58	0.60
20	34	20	4	1.25	1	75	4	15	0.88	0.75	0.78
25	36	20	4	1.25	1	90	4	19	1.37	1.16	1.22
32	39	22	5	1.25	2	100	4	19	1.80	1.53	1.65
40	39	24	5	1.25	2	105	4	19	1.91	1.64	1.79
50	40	24	5	1.25	2	120	8	19	2.15	1.83	2.08
65	46	26	5	1.25	2	140	8	19	3.08	2.58	3.08
80	49	28	6	1.25	2	160	8	23	4.30	3.66	4.41
90	50	30	6	1.25	2	170	8	23	4.59	3.95	4.91
100	56	34	6	1.25	2	185	8	23	5.75	4.94	6.29
125	60	34	6	1.25	2	225	8	25	8.53	7.00	9.20
150	69	38	6	1.25	2	260	12	25	11.68	9.62	12.64
200	73	40	6	1.25	2	305	12	25	14.84	12.10	18.42
250	81	44	6	1.25	2	380	12	27	24.83	20.00	30.38
300	88	48	8	1.25	3	430	16	27	30.28	24.40	40.42
350	104	52	8	1.25	3	480	16	33	44.17	35.00	57.42
400	115	60	10	1.25	3	540	16	33	59.52	46.20	81.60
450	126	64	10	1.25	3	605	20	33	78.54	61.90	106.90
500	128	68	10	1.25	3	660	20	33	92.71	73.25	132.24
550	135	70	10	1.25	3	720	20	39	111.61	88.10	163.06
600	141	74	10	1.25	3	770	24	39	125.34	98.80	191.98

20K KS B1503 / JIS B2220

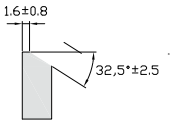


WNFF

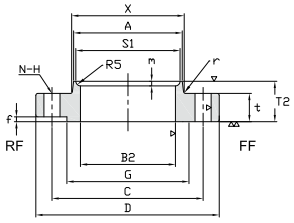


WNRF

Reference : Beveling



When particularly necessary, customers can order another beveling form the above.



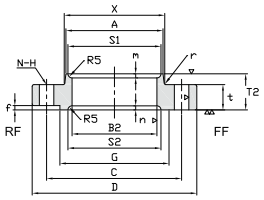
SOH TYPE A
NOMINAL SIZE 10A~600A

Unit : mm

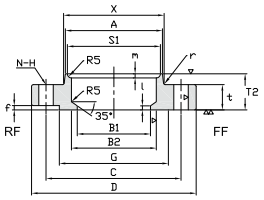
DN	Pipe OD	Outside Diameter	Diam. of Hub		OD of RF	Thickness	Diam of hub at Bevel		Bore			
			WNF	SOH.SW LJ, TR		BL, LJ WNF,TR SOH, SW	WNF	SOH.SW LJ, TR	WNF (Note (1)–JIS Standard			SOH SW
									S/40	S/80	S/160	
		D	X		G	t	A		B1			B2
10	17.3	90	29	32	46	14	17.3	30	12.7	10.9	–	17.8
15	21.7	95	34	36	51	14	21.7	34	16.1	14.3	12.3	22.2
20	27.2	100	39	42	56	16	27.2	40	21.4	19.4	16.2	27.7
25	34.0	125	47	50	67	16	34.0	48	27.2	25.0	21.2	34.5
32	42.7	135	56	60	76	18	42.7	56	35.5	32.9	29.9	43.2
40	48.6	140	62	66	81	18	48.6	62	41.2	38.4	34.4	49.1
50	60.5	155	75	80	96	18	60.5	76	52.7	49.5	43.1	61.1
65	76.3	175	92	104	116	20	76.3	100	65.9	62.3	57.3	77.1
80	89.1	200	105	117	132	22	89.1	113	78.1	73.9	66.9	90.0
90	101.6	210	118	130	145	24	101.6	126	90.2	85.4	76.2	102.6
100	114.3	225	134	142	160	24	114.3	138	102.3	97.1	87.3	115.4
125	139.8	270	162	172	195	26	139.8	166	126.6	120.8	108.0	141.2
150	165.2	305	192	202	230	28	165.2	196	151.0	143.2	128.8	166.6
200	216.3	350	244	252	275	30	216.3	244	199.9	190.9	170.3	218.0
250	267.4	430	298	312	345	34	267.4	304	248.8	237.2	210.2	269.5
300	318.5	480	352	364	395	36	318.5	354	297.9	283.7	251.9	321.0
350	355.6	540	398	408	440	40	355.6	398	333.4	317.6	284.2	358.1
400	406.4	605	452	456	495	46	406.4	446	381.0	363.6	325.4	409.0
450	457.2	675	510	514	560	48	457.2	504	428.6	409.6	366.8	460.0
500	508.0	730	561	568	615	50	508.0	558	477.8	455.6	408.0	511.0
550	558.8	795	616	622	670	52	558.8	612	527.0	501.6	450.8	562.0
600	609.6	845	670	676	720	54	609.6	666	574.6	547.6	490.6	613.0

Notes:

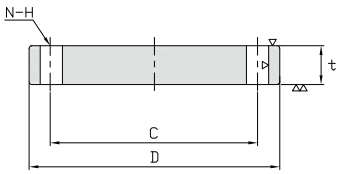
1. Flanges of parenthesized nominal diameter had letter not be used.
2. The facing of flanges shall conform to KS B1519(JIS B2202) 1987.



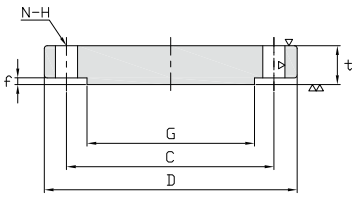
SOH TYPE B
NOMINAL SIZE 10A~50A



SOH TYPE C
NOMINAL SIZE 65A~600A



BLFF

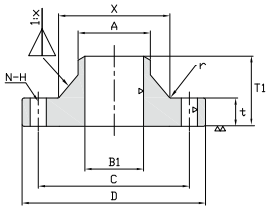


BLRF

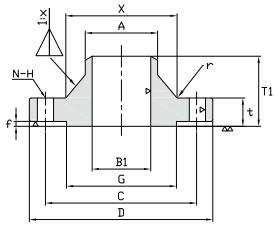
Unit : mm

DN	Length Thru Hub		Radius	Tapper of Hub (WNF)	RF	Drilling			Weld Length (Reference) (Note (2))					Nominal Weight		
	WNF	SOH. SW, LJ	SOH.SW WNF LJ, TR			BCD	Number of Bolt Holes	Diameter of Bolt Holes						WNF	SOF	BLF
	T1	T2	r	x	f	C	N	H	S1	m	S2	n	l	kg		
10	33	20	4	1.25	1	65	4	15	27	4	27	4	–	0.61	0.52	0.53
15	34	20	4	1.25	1	70	4	15	31	4	31	4	–	0.68	0.58	0.60
20	36	22	4	1.25	1	75	4	15	37	4	37	4	–	0.88	0.75	0.78
25	38	24	4	1.25	1	90	4	19	44	4	44	4.5	–	1.37	1.16	1.22
32	41	26	5	1.25	2	100	4	19	52	4	53	5	–	1.80	1.53	1.65
40	41	26	5	1.25	2	105	4	19	58	4	59	5.5	–	1.91	1.64	1.79
50	42	26	5	1.25	2	120	8	19	70	4	72	5.5	–	2.15	1.83	2.08
65	48	30	5	1.25	2	140	8	19	94	6	–	–	6	3.08	2.58	3.08
80	51	34	6	1.25	2	160	8	23	107	6	–	–	6	4.30	3.66	4.41
90	54	36	6	1.25	2	170	8	23	120	6	–	–	6	4.59	3.95	4.91
100	58	36	6	1.25	2	185	8	23	132	6	–	–	6	5.75	4.94	6.29
125	64	40	6	1.25	2	225	8	25	160	7	–	–	6	8.53	7.00	9.20
150	73	42	6	1.25	2	260	12	25	186	8	–	–	6	11.68	9.62	12.64
200	77	46	6	1.25	2	305	12	25	237	9	–	–	6	14.84	12.10	18.42
250	87	52	6	1.25	2	380	12	27	290	10	–	–	6	24.83	20.00	30.38
300	94	56	8	1.25	3	430	16	27	345	11	–	–	6	30.28	24.40	40.42
350	110	62	8	1.25	3	480	16	33	384	12	–	–	6	44.17	35.00	57.42
400	123	70	10	1.25	3	540	16	33	437	13	–	–	7	59.52	46.20	81.60
450	134	78	10	1.25	3	605	20	33	490	15	–	–	7	78.54	61.90	106.90
500	136	84	10	1.25	3	660	20	33	544	16	–	–	7	92.71	73.25	132.24
550	143	90	10	1.25	3	720	20	39	595	16	–	–	7	111.61	88.10	163.06
600	149	96	10	1.25	3	770	24	39	646	18	–	–	7	125.34	98.80	191.98

30K KS B1503 / JIS B2220

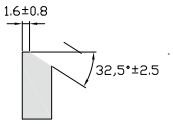


WNFF

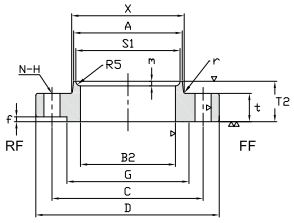


WNRF

Reference : Beveling



When particularly necessary, customers can order another beveling form the above.



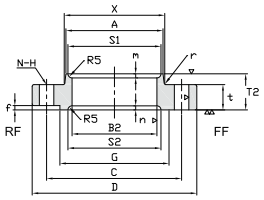
SOH TYPE A
NOMINAL SIZE 10A~600A

Unit : mm

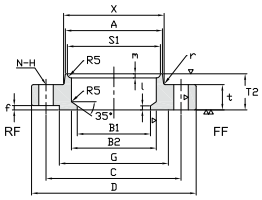
DN	Pipe OD	Outside Diameter	Diam. of Hub		OD of RF	Thickness	Diam of hub at Bevel		Bore			
			WNF	SOH.SW LJ, TR		BL, LJ WNF,TR SOH, SW	WNF	SOH.SW LJ, TR	WNF (Note (1)–JIS Standard			SOH SW
									S/40	S/80	S/160	
		D	X		G	t	A		B1			B2
10	17.3	110	–	34	52	16	–	30	12.7	10.9	–	17.8
15	21.7	115	40	40	55	18	21.7	36	16.1	14.3	12.3	22.2
20	27.2	120	44	46	60	18	27.2	42	21.4	19.4	16.2	27.7
25	34.0	130	52	54	70	20	34.0	50	27.2	25.0	21.2	34.5
32	42.7	140	62	64	80	22	42.7	60	35.5	32.9	29.9	43.2
40	48.6	160	70	70	90	22	48.6	66	41.2	38.4	34.4	49.1
50	60.5	165	84	86	105	22	60.5	82	52.7	49.5	43.1	61.1
65	76.3	200	104	106	130	26	76.3	102	65.9	62.3	57.3	77.1
80	89.1	210	118	121	140	28	89.1	115	78.1	73.9	66.9	90.0
90	101.6	230	130	134	150	30	101.6	128	90.2	85.4	76.2	102.6
100	114.3	240	142	147	160	32	114.3	141	102.3	97.1	87.3	115.4
125	139.8	275	172	172	195	36	139.8	166	126.6	120.8	108.0	141.2
150	165.2	325	202	204	235	38	165.2	196	151.0	143.2	128.8	166.6
200	216.3	370	254	256	280	42	216.3	248	199.9	190.9	170.3	218.0
250	267.4	450	312	314	345	48	267.4	306	248.8	237.2	210.2	269.5
300	318.5	515	366	370	405	52	318.5	360	297.9	283.7	251.9	321.0
350	355.6	560	406	412	450	54	355.6	402	333.4	317.6	284.2	358.1
400	406.4	630	462	468	510	60	406.4	456	381.0	363.6	325.4	409.0

Notes:

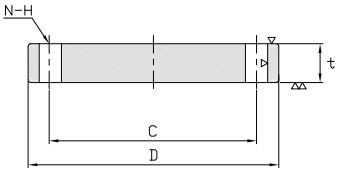
1. Flanges of parenthesized nominal diameter had letter not be used.
2. The facing of flanges shall conform to KS B1519(JIS B2202) 1987.



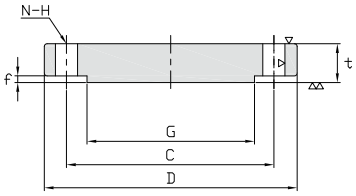
SOH TYPE B
NOMINAL SIZE 10A~50A



SOH TYPE C
NOMINAL SIZE 65A~600A



BLFF

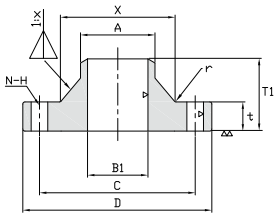


BLRF

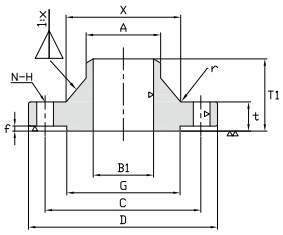
Unit : mm

DN	Length Thru Hub		Radius		Tapper of Hub (WNF)	RF	Drilling			Weld Length (Reference) (Note (2))					Nominal Weight		
	WNF	SOH. SW, LJ	WNF	SOF			BCD	Number of Bolt Holes	Diameter of Bolt Holes						WNF	SOF	BLF
	T1	T2	r		x	f	C	N	H	S1	m	S2	n	l	kg		
10	–	24	–	4	–	1	75	4	19	27	4	27	4	–	–	0.99	1.05
15	45	26	6	5	1.25	1	80	4	19	31	4	40	5	–	1.33	1.12	1.31
20	45	28	6	5	1.25	1	85	4	19	37	5	44	5	–	1.47	1.34	1.44
25	48	30	6	5	1.25	1	95	4	19	44	6	52	5	–	1.95	1.76	1.90
32	52	32	6	6	1.25	2	105	4	19	52	6	60	5	–	2.43	2.15	2.46
40	54	34	6	6	1.25	2	120	4	23	58	6	66	5	–	3.16	2.82	3.18
50	57	36	8	6	1.25	2	130	8	19	70	6.5	78	5	–	3.33	2.89	3.30
65	69	40	8	8	1.25	2	160	8	23	96	9.5	–	–	6	5.91	4.70	5.73
80	73	44	8	8	1.25	2	170	8	23	109	9.5	–	–	6	7.05	5.36	6.88
90	74	46	8	8	1.25	2	185	8	25	122	9.5	–	–	6	8.54	6.85	8.85
100	76	48	8	8	1.25	2	195	8	25	135	9.5	–	–	6	9.72	7.89	10.37
125	86	54	10	8	1.25	2	230	8	25	160	9.5	–	–	6	14.40	11.40	15.66
150	95	58	10	8	1.25	2	275	12	27	186	9.5	–	–	6	20.60	16.70	22.68
200	102	64	10	8	1.25	2	320	12	27	237	9.5	–	–	6	28.70	20.60	33.16
250	118	72	12	10	1.25	2	390	12	33	290	10	–	–	6	47.30	36.10	56.01
300	127	78	15	10	1.25	3	450	16	33	345	12	–	–	6	62.80	49.90	79.38
350	134	84	15	12	1.25	3	495	16	33	383	13	–	–	6	77.00	61.20	98.52
400	149	92	20	15	1.25	3	560	16	39	435	14	–	–	7	108.00	85.20	137.70

40K KS B1503 / JIS B2220

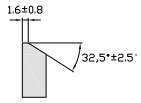


WNFF

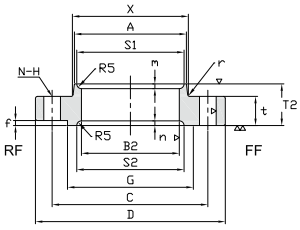


WNRF

Reference : Beveling



When particularly necessary, customers can order another beveling form the above.



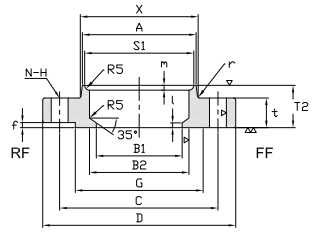
SOH TYPE B
NOMINAL SIZE 10A~50A

Unit : mm

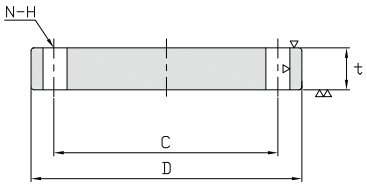
DN	Pipe OD	Outside Diameter	Diam. of Hub		OD of RF	Thickness	Diam of hub at Bevel		Bore			
			WNF	SOH.SW LJ, TR		BL, LJ WNF,TR SOH, SW	WNF	SOH.SW LJ, TR	WNF (Note (1)–JIS Standard			SOH SW
									S/40	S/80	S/160	
		D	X		G	t	A		B1			B2
10	17.3	110	–	38	52	18	–	34	12.7	10.9	–	17.8
15	21.7	115	40	43	55	20	21.7	39	16.1	14.3	12.3	22.2
20	27.2	120	45	49	60	20	27.2	45	21.4	19.4	16.2	27.7
25	34.0	130	54	59	70	22	34.0	55	27.2	25.0	21.2	34.5
32	42.7	140	62	68	80	24	42.7	64	35.5	32.9	29.9	43.2
40	48.6	160	72	74	90	24	48.6	70	41.2	38.4	34.4	49.1
50	60.5	165	87	90	105	26	60.5	86	52.7	49.5	43.1	61.1
65	76.3	200	108	110	130	30	76.3	106	65.9	62.3	57.3	77.1
80	89.1	210	119	124	140	32	89.1	118	78.1	73.9	66.9	90.0
90	101.6	230	130	–	150	34	101.6	–	90.2	85.4	76.2	–
100	114.3	250	146	151	165	36	114.3	145	102.3	97.1	87.3	115.4
125	139.8	300	186	188	200	40	139.8	182	126.6	120.8	108.0	141.2
150	165.2	355	215	208	240	44	165.2	200	151.0	143.2	128.8	166.6
200	216.3	405	270	263	290	50	216.3	255	199.9	190.9	170.3	218.0
250	267.4	475	333	318	355	56	267.4	310	248.8	237.2	210.2	269.5
300	318.5	540	380	–	410	60	318.5	–	297.9	283.7	251.9	–
350	355.6	585	425	–	455	64	355.6	–	333.4	317.6	284.2	–
400	406.4	645	466	–	515	70	406.4	–	381.0	363.6	325.4	–

Notes:

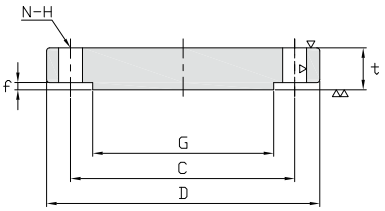
1. Flanges of parenthesized nominal diameter had letter not be used.
2. The facing of flanges shall conform to KS B1519(JIS B2202) 1987.



SOH TYPE C
NOMINAL SIZE 65A~400A



BLFF

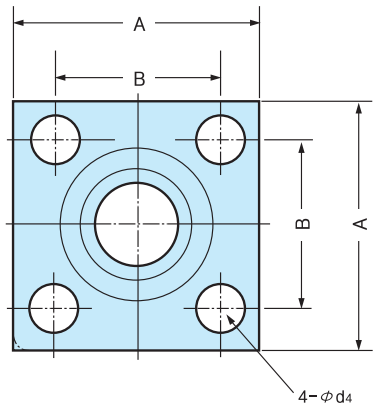


BLRF

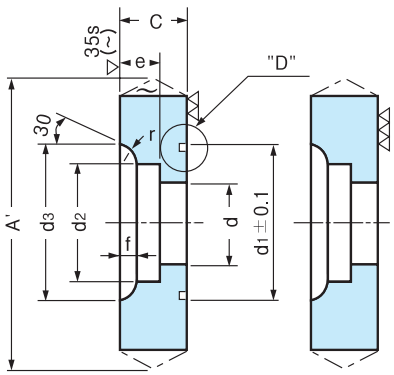
Unit : mm

DN	Length Thru Hub		Radius		Tapper of Hub (WNF)	RF	Drilling			Weld Length (Reference) (Note (2))					Nominal Weight		
	WNF	SOH. SW, LJ	WNF	SOF			BCD	Number of Bolt Holes	Diameter of Bolt Holes						WNF	SOF	BLF
	T1	T2	r		x	f	C	N	H	S1	m	S2	n	l	kg		
10	–	26	–	5	–	1	75	4	19	28.0	6	28.0	5	–	–	1.11	–
15	48	30	6	5	1.25	1	80	4	19	32.5	6	32.5	5	–	1.5	1.39	1.45
20	48	30	6	5	1.25	1	85	4	19	38.0	6	38.0	5	–	1.7	1.51	1.60
25	53	32	6	5	1.25	1	95	4	19	47.8	6	47.8	5	–	2.2	1.97	2.09
32	54	35	6	6	1.25	2	105	4	19	56.5	6	56.5	5	–	2.8	2.50	2.68
40	59	35	6	6	1.25	2	120	4	23	62.5	6	62.5	5	–	3.5	3.26	3.47
50	65	38	8	6	1.25	2	130	8	19	74.5	6	74.5	5.5	–	4.1	3.47	3.90
65	78	44	8	8	1.25	2	160	8	23	91.5	7	91.5	7	6	6.9	5.97	6.61
80	78	46	8	8	1.25	2	170	8	23	105.5	7.5	105.5	7	6	7.9	6.79	7.86
90	79	–	8	–	1.25	2	185	8	25	–	–	–	–	–	9.4	–	10.03
100	85	52	8	8	1.25	2	205	8	25	133.0	8.5	133.0	7	6	12.3	10.48	12.75
125	108	58	10	8	1.25	2	250	8	27	160.5	9.5	160.5	7	6	21.5	16.97	20.74
150	117	64	10	8	1.25	2	295	12	33	188.0	11	188.0	7	6	30.6	22.60	30.62
200	130	72	10	8	1.25	2	345	12	33	243.0	13	243.0	7	6	41.6	34.90	46.49
250	152	80	12	10	1.25	2	410	12	33	298.0	15	298.0	7	6	68.1	41.10	73.32
300	153	–	15	–	1.25	3	470	16	39	–	–	–	–	–	96.0	–	98.78
350	168	–	15	–	1.25	3	515	16	39	–	–	–	–	–	115.0	–	125.32
400	168	–	20	–	1.25	3	570	16	39	–	–	–	–	–	143.0	–	168.90

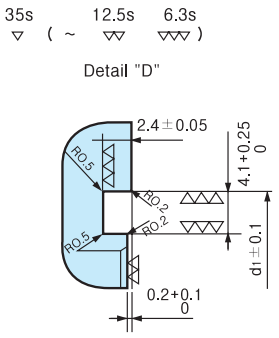
210 kgf/cm² JIS B2291/ SQUARE FLANGES FLANGE FOR OIL PRESSURE



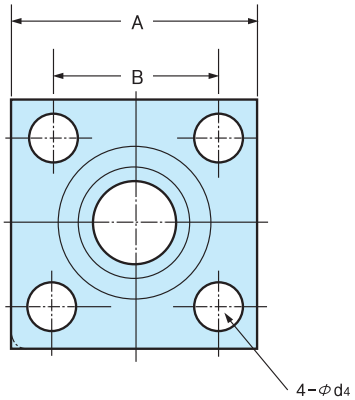
SHA SHB



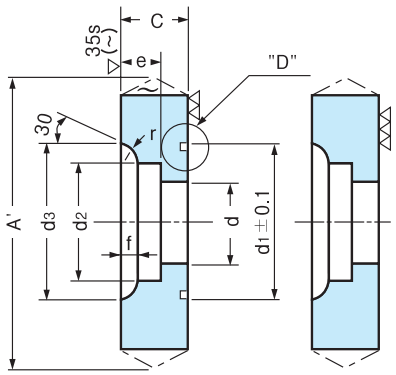
Unit : mm



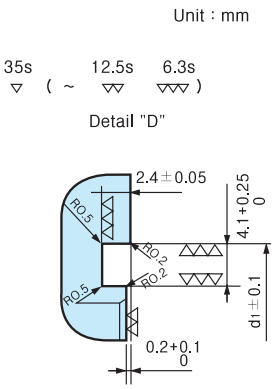
Nominal Bore	A		A' (MAX)	B		C		d	d1		d2		e	d3	d4	f	r	Weight (kg)	G계열 O링
15	63	±1	67	40	±0.2	22	0 −1	16	30	±0.1	22.2	+0.2 0	11	32	11	3.5	5	0.6	G25
20	68		72	45		22		20	35		27.7		12	38	11	4.0	5	0.7	G30
25	80	±1.2	85	53		28	0 −1.5	25	40		34.5	+0.3 0	14	45	13	4.0	5	1.2	G35
32	90		95	63		28		31.5	45		43.2		16	56	13	6.0	5	1.5	G40
40	100	±1.5	106	70	±0.4	36	0 −2	37.5	55		49.1		18	63	18	7.0	5	2.4	G50
50	112		118	80		36		47.5	65		61.1		20	75	18	7.0	5	2.8	G60
65	140	±2	148	100		45		60	80		77.1	+0.4 0	22	95	22	9.5	6	5.3	G75
80	155		163	112		45		71	90		90.0		25	108	24	11.0	6	6.2	G85



SSA SSB

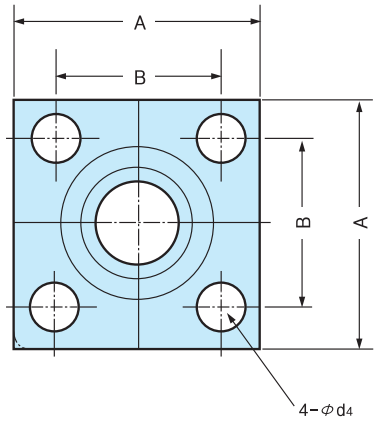


Unit : mm

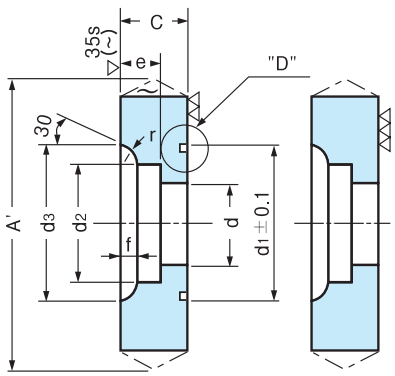


Nominal Bore	A		A' (MAX)	B		C		d	d1		d2		e	d3	d4	f	r	Weight (kg)
15	54	±1	58	36	±0.2	22	0 −1	16	30	±0.1	22.2	+0.2 0	11	32	11	3.5	5	0.5
20	58		62	40		22		20	35		27.7		12	38	11	4.0	5	0.6
25	68	±1.2	73	48		28	0 −1.5	25	40		34.5	+0.3 0	14	45	13	4.0	5	0.8
32	76		81	56		28		31.5	45		43.2		16	56	13	6.0	5	1.0
40	92	±1.5	98	65	±0.4	36	0 −2	37.5	55		49.1		18	63	18	7.0	5	1.9
50	100		106	73		36		47.5	65		61.1		20	75	18	7.0	5	2.0
65	128	±2	136	92		45		60	80		77.1	+0.4 0	22	95	22	9.5	6	4.1
80	140		148	103		45		71	90		90.0		25	108	24	11.0	6	4.7

280 kgf/cm² JIS F7806 / SQUARE FLANGES FLANGE FOR OIL PRESSURE



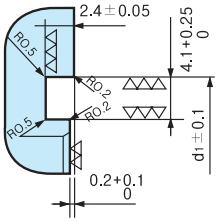
KA KB



Unit : mm

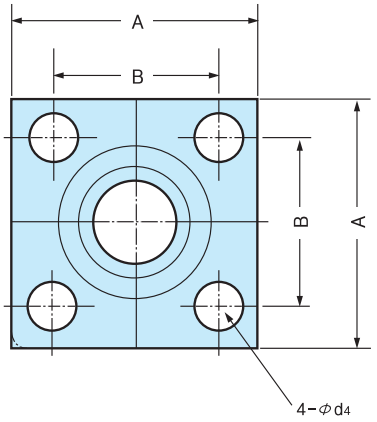
35s 12.5s 6.3s

Detail "D"

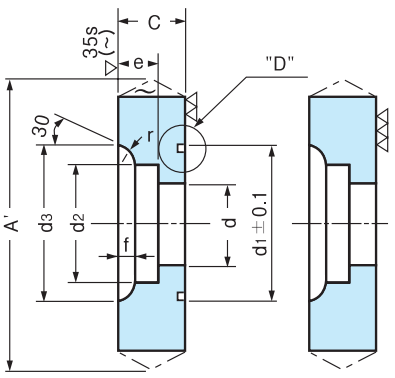


Nominal Bore	A		A' (MAX)	B		C		d	d1		d2		e	d3	d4	f	r	Weight (kg)
15	66	±1	70	43	±0.2	22	0 −1	12.3	24	±0.1	22.2	+0.2 0	12	34	11	4.0	5	0.63
20	72		76	48		25		16.2	30		27.7		12	40	11	4.5	5	0.85
25	85	±1.2	91	58		35	0 −1.5	21.2	35		34.5	+0.3 0	14	48	13.5	5.0	5	1.64
32	98		104	68		35		29.9	45		43.2		18	60	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

350 kgf/cm² JIS F7806 / SQUARE FLANGES FLANGE FOR OIL PRESSURE



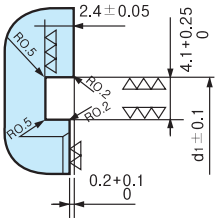
KA KB



Unit : mm

35s 12.5s 6.3s

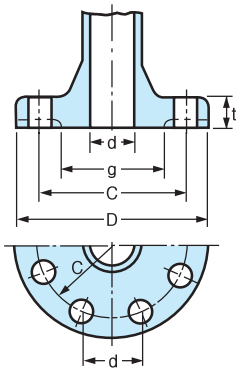
Detail "D"



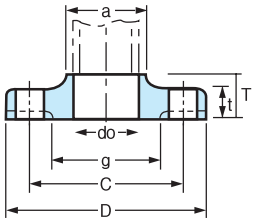
Nominal Bore	A		A' (MAX)	B		C		d	d1		d2		e	d3	d4	f	r	Weight (kg)
15	68	±1.2	73	45	±0.2	28	0 −1.5	12.3	24	±0.1	22.2	+0.2 0	12	37.5	11	4	5	0.88
20	82		87	55		30		16.2	30		27.7		12	43.5	13.5	5	5	1.34
25	95	±1.5	101	65		35		21.2	35		34.5	+0.3 0	14	53	17.5	5.5	6	2.02
32	100		106	70		35		23.3	40		43.2		18	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 KS B1502 / JIS B2220

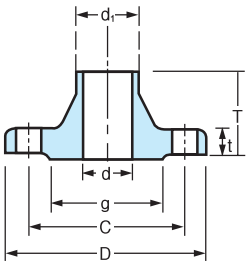
SOLID



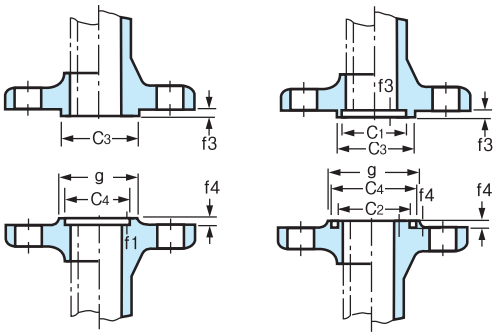
SLIP-ON



WELDING NECK



TYPE OF GASKET SURFACE



Unit : mm

Flange Section		Surface Condition	Basic Size	Dimensional Tolerance
Outside Dia. D		Finish	600 or less	±1.5
			over 600	±3
Inside Dia.	Slip-on Flange do	Finish	400 & below	+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		950 or less	±0.8
			over 950	±1.5
	Dia. of bolt hole		ALL	±0.5

Flange Section		Surface Condition	Basic Size	Dimensional Tolerance
Bolt Hole	Pitch of Hole	Drilling Hole	–	±0.8
Dia of Hub	Slip-on Flange (a) Welding Neck Flange (d1)	Finish	220 or less	+2 0
			over 220 thru 650	+4 0
			over 650	+8 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
	f4 f3	Finish		±0.2
	g	Finish	700 or less	±0.8
			over 700	±1.5
Thickness t		One-side Finish	20 & below	+1.5 0
			over 20 thru 50	+2 0
			over 50	+3 0
		Both-side Finish	20 & below	+1 0
			over 20 thru 50	+1.5 0
			over 50	+2 0
Hub Height T	SOH.SW.LJ.TR	–		±2
	WN	–	200 or less	+2 0
		–	over 200	+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) The dimensions 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 socket welding type flange illustrate the cases of large raised face flange.

API 6A
WELLHEAD AND TREE EQUIPMENT

Type 6B Flanges for 13.8MPa (2000 psi)

Type 6B Flanges for 20.7MPa (3000 psi)

Type 6B Flanges for 34.5MPa (5000 psi)

Type 6BX Large-bore Flanges for 13.8MPa (2000 psi), 20.7MPa (3000 psi), and 34.5MPa (5000 psi)

Type 6BX Flanges for 69MPa (10000 psi)

Type 6BX Flanges for 103.5MPa (15000 psi)

Type 6BX Flanges for 138MPa (20000 psi)

WELDING END CONTOURS

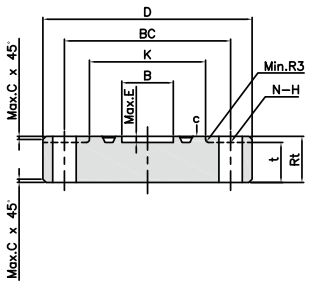
TYPE BX RING GASKETS

TYPE R RING GASKETS

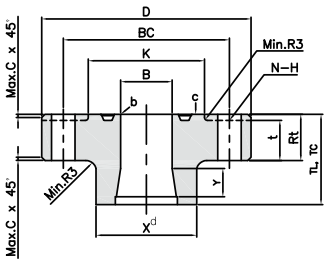
ROUGH MACHINING FOR GROOVE

API 6A CODE SUMMARY

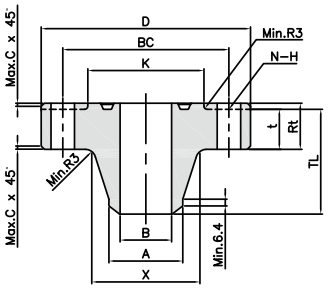
API 6A FLANGE 21st Edition



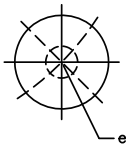
Blind Flange



Threaded Flange



Welding Neck Flange



Type 6B WN Flanges for 13.8Mpa(2000 psi)

Dimensions in millimeters unless noted otherwise

Nominal Size (inch)	Basic flange dimensions										Bolting dimensions					
	Max. Bore	OD of flange	Max. chamfer	Raised face Diam.	Rim Total Thick.	Rim Thick.	Total Length	Hub Diameter at Bevel		Diam. of Hub	Bolt Circle Diam.	No. of Bolts	Bolt Holes Diameter		Ring No.	Bolt Size and TPI
	B Max.	D As noted	C Max.	K Min.	Rt +3 −0	t Min.	TL ±1.5	A	Tole–rance	X +0 −3.0	BC ±1.6	N	H	Tolerance	R	(inch) Refer–ence
2 1/16	53.1	165±2	3	108	33.3	25.4	73	60.3	+2/–1	84.1	127.0	8	20	+2/–0.5	23	5/8–11
2 9/16	65.8	191±2	3	127	36.6	28.4	79	73.0	+2/–1	100.1	149.4	8	23	+2/–0.5	26	3/4–10
3 1/8	81.8	210±2	3	146	39.6	31.8	83	88.9	+2/–1	117.2	168.1	8	23	+2/–0.5	31	3/4–10
4 1/16	108.7	273±2	3	175	46.0	38.1	102	114.3	+2/–1	152.4	215.9	8	26	+2/–0.5	37	7/8–9
5 1/8	131.1	330±2	3	210	52.3	44.5	114	141.3	+3/–1	189.0	266.7	8	29	+2/–0.5	41	1–8
7 1/16	181.9	356±3	6	241	55.6	47.8	117	168.3	+3/–1	222.3	292.1	12	29	+2/–0.5	45	1–8
9	229.4	419±3	6	302	63.5	55.6	133	219.1	+3/–1	273.1	349.3	12	32	+2/–0.5	49	1 1/8–8
11	280.2	508±3	6	356	71.4	63.5	152	273.0	+3/–1	342.9	431.8	16	35	+2/–0.5	53	1 1/4–8
13 5/8	347.0	559±3	6	413	74.7	66.5	155	323.8	+3/–1	400.1	489.0	20	35	+2/–0.5	57	1 1/4–8
16 3/4	426.2	686±3	6	508	84.1	76.2	178	406.4	+3/–1	495.3	603.2	20	42	+2.5/–0.5	65	1 1/2–8
21 1/4	540.5	813±3	6	635	98.6	88.9	190	508.0	+3/–1	609.6	723.9	24	45	+2.5/–0.5	73	1 5/8–8

Type 6B BL Flanges for 13.8Mpa(2000 psi)

Nominal size and bore of flange	Basic flange dimensions
	Counter Bore Depth
	E +0.5 / −0
2 1/16	7.9
2 9/16	7.9
3 1/8	7.9
4 1/16	7.9
5 1/8	7.9
7 1/16	7.9
9	7.9
11	7.9
13 5/8	7.9
16 3/4	7.9
21 1/4	9.7

Foot Notes:

a. Ring groove shall be concentric with bore B within 0.25mm diameterical runout.
b. Break sharp corner.
c. Raised face K and counter bore E are optional features.
d. Diameter X is a reference dimension.

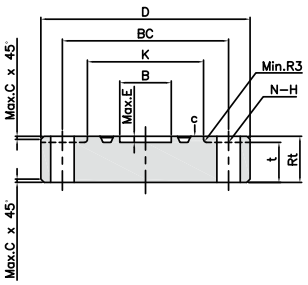
Type 6B THRD Flanges for 13.8Mpa(2000 psi)

Nominal size (inch	Hub Length		Ref. Information	
	Line Pipe Flange	Casing Flange	Thread Length	Tool
	TL Min.	TC Min.	Y Min.	FNPT
2 1/16	44	–	29	2
2 9/16	49	–	32	2 1/2
3 1/8	54	–	35	3
4 1/16	62	89	42	4
5 1/8	68	102	48	5
7 1/16	75	114	51	6
9	84	127	58	8
11	94	133	66	10
13 5/8	100	100	70	12
16 3/4	114	114	78	16
21 1/4	137	137	83	20

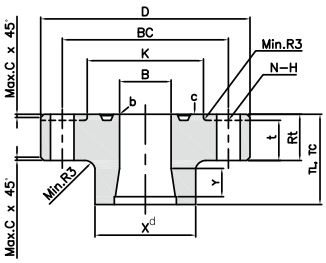
Notes:

(1) Refer to page 148 for bevel end type.
(2) Bore size to be specified by customer, but not greater than max. bore size in table.

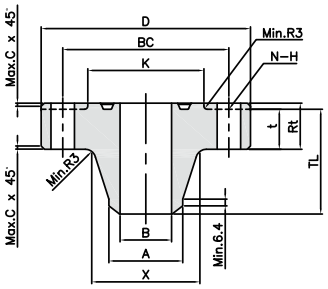
API 6A FLANGE 21st Edition



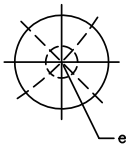
Blind Flange



Threaded Flange



Welding Neck Flange



Type 6B WN FLANGES for 20.7MPa(3000 psi)

Dimensions in millimeters unless noted otherwise

Nominal Size (inch)	Basic flange dimensions										Bolting dimensions					
	Max. Bore	OD of flange	Max. chamfer	Raised face Diam.	Rim Total Thick.	Rim Thick.	Total Length	Hub Diameter at Bevel		Diam. of Hub	Bolt Circle Diam.	No. of Bolts	Bolt Holes Diameter		Ring No.	Bolt Size and TPI
	B Max.	D As noted	C Max.	K Min.	Rt +3 −0	t Min.	TL ±1.5	A	Tole-rance	X +0 −3.0	BC ±1.6	N	H	Tolerance	R	(inch) Refer-ence
2 1/16	53.1	216±2	3	124	46.0	38.1	102	60.5	+2/−1	104.6	165.1	8	26	+2/−0.5	24	7/8–9
2 9/16	65.8	244±2	3	137	49.3	41.1	105	73.2	+2/−1	124.0	190.5	8	29	+2/−0.5	27	1–8
3 1/8	81.8	241±2	3	155	46.0	38.1	102	88.9	+2/−1	127.0	190.5	8	26	+2/−0.5	31	7/8–9
4 1/16	108.7	292±2	3	181	52.4	44.4	114	114.3	+2/−1	158.8	235.0	8	32	+2/−0.5	37	1 1/8–8
5 1/8	131.1	349±2	3	216	58.7	50.8	127	141.2	+3/−1	190.5	279.4	8	35	+2/−0.5	41	1 1/4–8
7 1/16	181.9	381±3	6	241	63.5	55.6	140	168.4	+3/−1	235.0	317.5	12	32	+2/−0.5	45	1 1/8–8
9	229.4	470±3	6	308	71.4	63.5	162	219.2	+3/−1	298.5	393.7	12	39	+2/−0.5	49	1 3/8–8
11	280.2	546±3	6	362	77.8	69.9	184	273.0	+3/−1	368.3	469.9	16	39	+2/−0.5	53	1 3/8–8
13 5/8	347.0	610±3	6	419	87.4	79.2	200	323.8	+3/−1	419.1	533.4	20	39	+2/−0.5	57	1 3/8–8
16 3/4	426.2	705±3	6	524	100.1	88.9	216	406.4	+3/−1	508.0	616.0	20	45	+2.5/−0.5	66	1 5/8–8
20 3/4	527.8	857±3	6	648	120.7	108.0	248	508.0	+3/−1	622.3	749.3	20	54	+2.5/−0.5	74	2–8

Type 6B BL Flanges for 20.7Mpa(3000 psi)

Nominal size and bore of flange	Basic flange dimensions
	Counter Bore Depth
	E +0.5 / −0
2 1/16	7.9
2 9/16	7.9
3 1/8	7.9
4 1/16	7.9
5 1/8	7.9
7 1/16	7.9
9	7.9
11	7.9
13 5/8	7.9
16 3/4	11.2
20 3/4	12.7

Foot Notes:

a. Ring groove shall be concentric with bore B within 0.25mm diameterical runout.
b. Break sharp corner.
c. Raised face K and counter bore E are optional features.
d. Diameter X is a reference dimension.

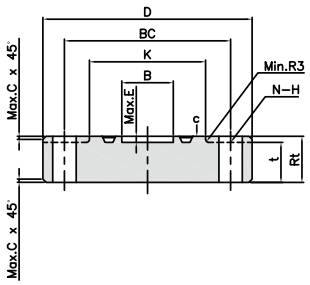
Type 6B THRD Flanges for 20.7Mpa(3000 psi)

Nominal size (inch	Hub Length			Ref. Information	
	Line Pipe Flange	Casing Flange	Tubing Flange	Thread Length	Tool
	TL Min.	TC Min.	LT Min.	Y Min.	FNPT
2 1/16	65.0	–	65.0	39	2
2 9/16	71.4	–	71.4	48	2 1/2
3 1/8	62.0	–	74.7	42	3
4 1/16	77.7	88.9	88.9	48	4
5 1/8	87.4	101.6	–	54	5
7 1/16	93.7	114.3	–	58	6
9	109.5	127.0	–	64	8
11	115.8	133.4	–	72	10
13 5/8	125.5	125.5	–	77	12
16 3/4	128.5	144.5	–	86	16
20 3/4	171.5	171.5	–	93	20

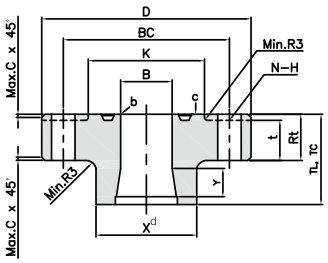
Notes:

(1) Refer to page 148 for bevel end type.
(2) Bore size to be specified by customer, but not greater than max. bore size in table.

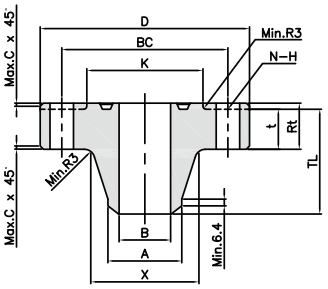
API 6A FLANGE 21st Edition



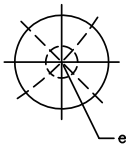
Blind Flange



Threaded Flange



Welding Neck Flange



Type 6B WN FLANGES for 34.5MPa(5000 psi)

Dimensions in millimeters unless noted otherwise

Nominal Size (inch)	Basic flange dimensions										Bolting dimensions					
	Max. Bore	OD of flange	Max. chamfer	Raised face Diam.	Rim Total Thick.	Rim Thick.	Total Length	Hub Diameter at Bevel		Diam. of Hub	Bolt Circle Diam.	No. of Bolts	Bolt Holes Diameter		Ring No.	Bolt Size and TPI
	B Max.	D As noted	C Max.	K Min.	Rt +3 −0	t Min.	TL ±1.5	A	Tole-rance	X +0 −3.0	BC ±1.6	N	H	Tolerance	R	(inch) Refer-ence
2 1/16	53.1	216±2	3	124	46.0	38.1	102	60.5	+2/−1	104.6	165.1	8	26	+2/−0.5	24	7/8–9
2 9/16	65.8	244±2	3	137	49.3	41.1	105	73.2	+2/−1	124.0	190.5	8	29	+2/−0.5	27	1–8
3 1/8	81.8	267±2	3	168	55.7	47.8	117	88.9	+2/−1	133.3	203.2	8	32	+2/−0.5	35	1 1/8–8
4 1/16	108.7	311±2	3	194	62.0	53.8	124	114.3	+2/−1	162.1	241.3	8	35	+2/−0.5	39	1 1/4–8
5 1/8	131.1	375±2	3	229	81.0	73.2	155	141.2	+3/−1	196.8	292.1	8	42	+2.5/−0.5	44	1 1/2–8
7 1/16	181.9	394±3	6	248	92.0	82.6	171	168.4	+3/−1	228.6	317.5	12	39	+2/−0.5	46	1 3/8–8
9	229.4	483±3	6	318	103.2	91.9	213	219.2	+3/−1	292.1	393.7	12	45	+2.5/−0.5	50	1 5/8–8
11	280.2	584±3	6	371	119.2	108.0	254	273.0	+3/−1	368.3	482.6	12	51	+2.5/−0.5	54	1 7/8–8

Type 6B BL Flanges for 34.5Mpa(5000 psi)

Nominal size and bore of flange	Basic flange dimensions
	Counter Bore Depth
	E +0.5 / −0
2 1/16	7.9
2 9/16	7.9
3 1/8	7.9
4 1/16	7.9
5 1/8	7.9
7 1/16	9.7
9	11.2
11	11.2

Type 6B THRD Flanges for 34.5Mpa(5000 psi)

Nominal size (inch	Hub Length			Ref. Information	
	Line Pipe Flange	Casing Flange	Tubing Flange	Thread Length	Tool
	TL Min.	TC Min.	LT Min.	Y Min.	FNPT
2 1/16	65.0	–	65.0	39	2
2 9/16	71.4	–	71.4	48	2 1/2
3 1/8	81.0	–	81.0	42	3
4 1/16	98.6	98.6	98.6	48	4
5 1/8	112.8	112.8	–	54	5
7 1/16	128.5	128.5	–	58	6
9	153.9	153.9	–	64	8
11	169.9	169.9	–	72	10

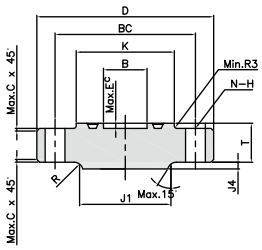
Foot Notes:

a. Ring groove shall be concentric with bore B within 0.25mm diameterical runout.
b. Break sharp corner.
c. Raised face K and counter bore E are optional features.
d. Diameter X is a reference dimension.

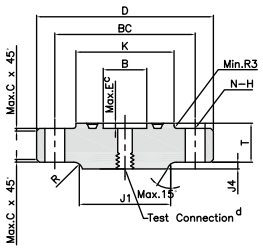
Notes:

(1) Refer to page 148 for bevel end type.
(2) Bore size to be specified by customer, but not greater than max. bore size in table.

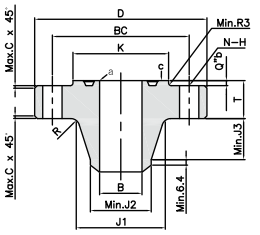
API 6A FLANGE 21st Edition

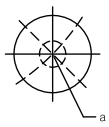


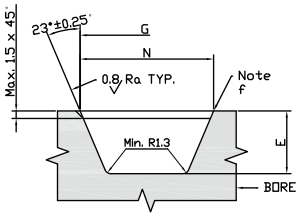
Type 6BX Blind Flange



Type 6BX Test Flange







Type 6BX Large Bore Welding Neck Flange

Type 6BX Large-bore WN FLANGES for 13.8MPa(2000 psi),20.7MPa(3000 psi), and 34.5MPa (5000 psi)

Nominal Size (inch)	Basic flange dimensions										Bolting dimensions					
	Max. Bore	OD of flange	Max. chamfer	Raised face Diam.	Total Thick.	Large Hub Diam.	Small Hub Diam.	Hub Length	Raised Face Depth	Radius of Hub	Bolt Circle Diam.	No. of Bolts	Bolt Holes Diameter		Ring No.	Bolt Size and TPI
	B Max.	D As noted	C Max.	K ±1.5	T +3 −0	J1 +0 −3.0	J2 Min.	J3 Min.	Q Max.	R ±1	BC ±1.6	N	H	Tolerance	BX	(inch) Refer-ence
13.8Mpa (2000 psi)																
26 3/4	680.2	1041±3	6	805	126.3	835.9	743.0	185.7	6.4	16	952.5	20	48	+2.5/−0.5	167	1 3/4–8
30	762.8	1122±3	6	908	134.2	931.9	833.1	196.9	6.4	16	1039.9	32	45	+2.5/−0.5	303	1 5/8–8
20.7Mpa (3000 psi)																
26 3/4	680.2	1102±3	6	832	161.1	870.0	776.2	185.7	6.4	16	1000.3	24	54	+2.5/−0.5	168	2–8
30	762.8	1186±3	6	922	167.2	970.0	871.2	196.9	6.4	16	1090.7	32	51	+2.5/−0.5	303	1 7/8–8
34.5Mpa (5000 psi)																
13 5/8	347.0	673±3	6	457	112.8	481.1	423.9	114.3	6.4	16	590.6	16	45	+2.5/−0.5	160	1 5/8–8
16 3/4	426.2	772±3	6	535	130.1	555.8	527.1	76.2	6.4	19	676.1	16	51	+2.5/−0.5	162	1 7/8–8
18 3/4	477.0	905±3	6	627	165.9	674.6	598.4	152.4	6.4	16	803.1	20	54	+2.5/−0.5	163	2–8
21 1/4	540.5	991±3	6	702	180.9	759.0	679.5	165.1	6.4	18	886.0	24	54	+2.5/−0.5	165	2–8

Dimensions in millimeters unless noted otherwise

Type 6BX Large-bore BL & Test Flanges for 13.8Mpa (2000psi), 20.7Mpa (3000psi), and 3405Mpa (5000psi)

Nominal size and bore of flange	Basic flange dimensions	
	Counter bore Depth	Hub Hight
	E Max.	J4 Min.
13.8Mpa (2000 psi)		
26 3/4	21.4	9.7
30	23.0	17.5
20.7Mpa (3000 psi)		
26 3/4	21.4	NA
30	23.0	12.7
34.5Mpa (5000 psi)		
13 5/8	14.3	23.9
16 3/4	8.3	17.5
18 3/4	18.3	19.1
21 1/4	19.1	22.4

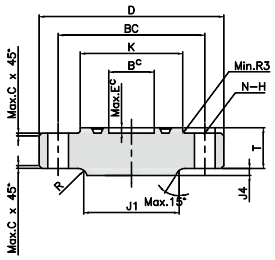
Foot Notes:

a. a. Break sharp corner.
b. Q min = 3 mm (may be omitted for studded flanges)
c. Counterbore E for blind and test flange is optional.
d. Test connection shall 1/2 NPT or per 9.3 (Figure 5 in API 6A 21st edition)
e. Ring groove shall be concentric with bore B within 0.25mm diametrical runout.
f. Break sharp coner 0.8 mm maximum at inside(ID) of the groove.

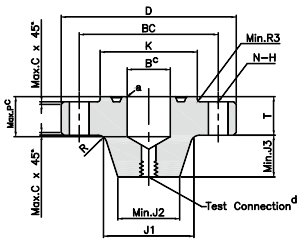
Notes:

(1) Refer to page 148 for bevel end type.
(2) Bore size to be specified by customer, but not greater than max. bore size in table.

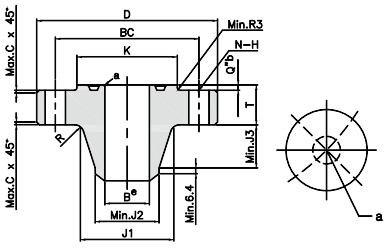
API 6A FLANGE 21st Edition



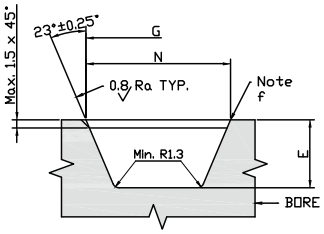
Type 6BX Blind Flange



Type 6BX Test Flange



Type 6BX Welding Neck Flange



Type 6BX WN FLANGES for 69MPa(10000 psi)

Dimensions in millimeters unless noted otherwise

Nominal Size (inch)	Basic flange dimensions										Bolting dimensions					
	Max. Bore	OD of flange	Max. chamfer	Raised face Diam.	Total Thick.	Large Hub Diam.	Small Hub Diam.	Hub Length	Raised Face Depth	Radius of Hub	Bolt Circle Diam.	No. of Bolts	Bolt Holes Diameter		Ring No.	Bolt Size and TPI
	B Max.	D As noted	C Max.	K ±1.5	T +3 −0	J1 +0 −3.0	J2 Min.	J3 Min.	Q Max.	R ±1	BC ±1.6	N	H	Tolerance	BX	(inch) Refer–ence
1 13/16	46.7	187±2	3	105	42.2	88.9	65.0	48.5	6.1	10	146.1	8	23	+2/–0.5	151	3/4–10
2 1/16	53.1	200±2	3	111	44.0	100.1	74.7	51.6	6.4	10	158.8	8	23	+2/–0.5	152	3/4–10
2 9/16	65.8	232±2	3	132	51.3	120.7	91.9	57.2	7.2	10	184.2	8	26	+2/–0.5	153	7/8–9
3 1/16	78.5	270±2	3	152	58.5	142.0	110.2	63.5	8.1	10	215.9	8	29	+2/–0.5	154	1–8
4 1/16	103.9	316±2	3	185	70.4	182.6	146.1	73.2	8.9	10	258.8	8	32	+2/–0.5	155	1 1/8–8
5 1/8	131.1	357±2	3	221	79.3	223.8	182.6	81.0	9.5	10	300.0	12	32	+2/–0.5	169	1 1/8–8
7 1/16	180.1	480±2.5	6	302	103.2	301.8	254.0	95.3	11.1	16	403.4	12	42	+2.5/–0.5	156	1 1/2–8
9	229.4	552±2.5	6	359	124.0	374.7	327.2	93.7	12.7	16	476.3	16	42	+2.5/–0.5	157	1 1/2–8
11	280.2	654±2.5	6	429	141.3	450.9	400.1	103.1	14.3	16	565.2	16	48	+2.5/–0.5	158	1 3/4–8
13 5/8	347.0	768±2.5	6	518	168.2	552.5	495.3	114.3	15.9	16	673.1	20	51	+2.5/–0.5	159	1 7/8–8
16 3/4	426.2	871±2.5	6	576	168.2	655.6	601.7	76.2	8.3	19	776.2	24	51	+2.5/–0.5	162	1 7/8–8
18 3/4	477.0	1040±2.5	6	697	223.0	752.3	674.6	155.4	18.3	16	925.6	24	61	+2.5/–0.5	164	2 1/4–8
21 1/4	540.5	1143±2.5	6	781	241.3	847.9	762.0	165.1	19.1	21	1022.4	24	67	+2.5/–0.5	166	2 1/2–8

Type 6BX BL Flanges for 69Mpa(10000 psi)

Nominal size and bore of flange	Basic flange dimensions	
	Counter Bore Depth	Hub Hight
	E. Max.	J4 Min.
1 13/16	6.1	–
2 1/16	6.4	–
2 9/16	7.2	–
3 1/16	8.1	–
4 1/16	8.9	–
5 1/8	9.5	6.4
7 1/16	11.1	9.7
9	12.7	9.7
11	14.3	14.2
13 5/8	15.9	17.5
16 3/4	8.3	30.2
18 3/4	18.3	25.4
21 1/4	19.1	31.8

Type 6BX TEST Flanges for 69Mpa(10000 psi)

Nominal size (inch)	Basic flange dimensions	
	Max. Bore	Counter bore Depth
	B. Max.	Ph Max.
1 13/16	46.7	48.0
2 1/16	53.1	51.3
2 9/16	65.8	61.5
3 1/16	78.5	71.9
4 1/16	103.9	87.6
5 1/8	131.1	98.0
7 1/16	180.1	–
9	229.4	–
11	280.2	–
13 5/8	347.0	–
16 3/4	426.2	–
18 3/4	477.0	–
21 1/4	540.5	–

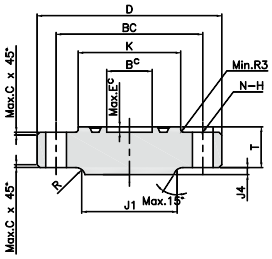
Foot Notes:

a. Break sharp corner.
b. Qmax = E; Q min = 3 mm (may be omited on studded connectors)
c. Optional feature
d. Test connection shall be 1/2 in. NPT or per 9.3 (Figure 5 in API 6A 21st edition)
e. Ring groove shall be concentric with bore B within 0.25mm diametrical runout.
f. Test flange style – applies to sizes 1 13/16 through 5 1/8 only.
g. Blind flanges style – applies to sizes 5 1/8 through 21 1/4 only.
h. If the minimum value of J3 is exceeded, the maximum depth P of the counter bore may be increased by the same amount or loss.

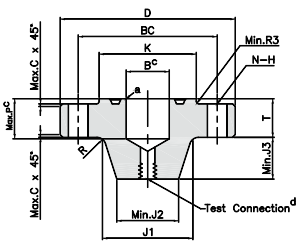
Notes:

(1) Refer to page 148 for bevel end type.
(2) Bore size to be specified by customer, but not greater than max. bore size in table.

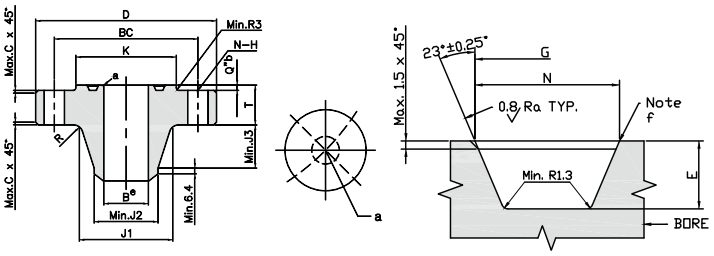
API 6A FLANGE 21st Edition



Type 6BX Blind Flange



Type 6BX Test Flange



Type 6BX Welding Neck Flange

Type 6BX WN Flanges for 103.5MPa (15000 psi)

Dimensions in millimeters unless noted otherwise

Nominal Size (inch)	Basic flange dimensions										Bolting dimensions					
	Max. Bore	OD of flange	Max. chamfer	Raised face Diam.	Total Thick.	Large Hub Diam.	Small Hub Diam.	Hub Length	Counter bore Depth	Radius of Hub	Bolt Circle Diam.	No. of Bolts	Bolt Holes Diameter		Ring No.	Bolt Size and TPI
	B Max.	D As noted	C Max.	K ±1.5	T +3 −0	J1 +0 −3.0	J2 Min.	J3 Min.	Q Max.	R ±1	BC ±1.6	N	H	Tolerance	BX	(inch) Refer–ence
1 13/16	46.7	208±2	3	106	45.3	97.5	71.4	47.8	6.0	10	160.3	8	26	+2/–0.5	151	7/8–9
2 1/16	53.1	222±2	3	114	50.8	111.3	82.5	53.8	6.4	10	174.8	8	26	+2/–0.5	152	7/8–9
2 9/16	65.8	254±2	3	133	57.2	128.5	100.1	57.2	7.2	10	200.2	8	29	+2/–0.5	153	1–8
3 1/16	78.5	287±2	3	154	64.3	153.9	122.2	63.5	8.0	10	230.1	8	32	+2/–0.5	154	1 1/8–8
4 1/16	103.9	360±2	3	194	78.5	195.3	158.7	73.2	8.8	10	290.6	8	39	+2/–0.5	155	1 3/8–8
5 1/8	131.1	419±2	3	226	98.6	244.3	200.2	81.8	9.5	16	342.9	12	42	+2.5/–0.5	169	1 1/2–8
7 1/16	180.1	505±3	6	305	119.1	325.4	276.4	91.9	11.1	16	428.7	16	42	+2.5/–0.5	156	1 1/2–8
9	229.4	648±3	6	381	146.1	431.8	349.3	124.0	12.7	16	552.4	16	51	+2.5/–0.5	157	1 7/8–8
11	280.2	813±3	6	454	187.5	584.2	427.0	235.7	14.3	16	711.2	20	54	+2.5/–0.5	158	2–8
13 5/8	347.0	886±3	6	541	204.7	595.4	528.6	114.3	15.9	25	771.7	20	61	+2.5/–0.5	159	2 1/4–8
18 3/4	477.0	1162±3	6	722	255.5	812.8	730.2	155.4	18.3	25	1016.0	20	80	+3/–0.5	164	3–8

Type 6BX BL Flanges for 103.5Mpa(15000 psi)

Nominal size and bore of flange	Basic flange dimensions	
	Counter Bore Depth	Hub Hight
	E. Max.	J4 Min.
1 13/16	6.0	–
2 1/16	6.4	–
2 9/16	7.2	–
3 1/16	8.0	–
4 1/16	8.8	–
5 1/8	9.5	6.4
7 1/16	11.1	7.9
9	12.7	14.2
11	14.3	12.7
13 5/8	15.9	17.5
18 3/4	18.3	35.1

Type 6BX TEST Flanges for 103.5Mpa(15000 psi)

Nominal size (inch)	Basic flange dimensions	
	Max. Bore	Counter bore Depth
	B. Max.	Ph Max.
1 13/16	46.7	50.3
2 1/16	53.1	60.5
2 9/16	65.8	67.3
3 1/16	78.5	77.7
4 1/16	103.9	95.8
5 1/8	131.1	118.1

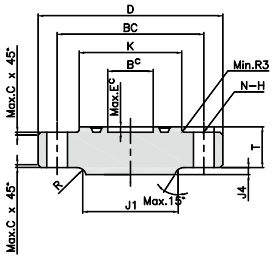
Foot Notes:

a. Break sharp corner.
b. Q"max = E; Q" min = 3 mm (may be omited on studded connectors)
c. Optional feature
d. Test connection shall be per 9.3 (Figure 5 in API 6A 21st edition)
e. Ring groove shall be concentric with bore B within 0.25mm diametrical runout.
f. Test flange style – applies to sizes 1 13/16 through 5 1/8 only.
g. Blind flanges style – applies to sizes 5 1/8 through 18 3/4 only.
h. If the minimum value of J3 is exceeded, the maximum depth P of the counter bore may be increased by the same amount or loss.

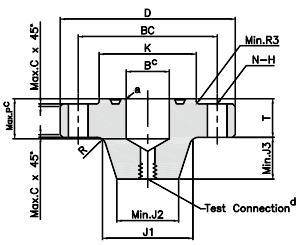
Notes:

(1) Refer to page 148 for bevel end type.
(2) Bore size to be specified by customer, but not greater than max. bore size in table.

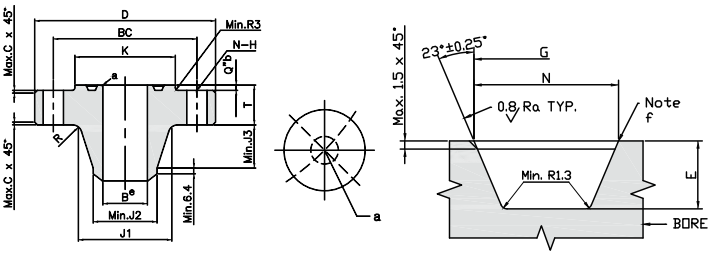
API 6A FLANGE 21st Edition



Type 6BX Blind Flange



Type 6BX Test Flange



Type 6BX Welding Neck Flange

Type 6BX WN FLANGES for 138MPa(20000 psi)

Dimensions in millimeters unless noted otherwise

Nominal Size (inch)	Basic flange dimensions										Bolting dimensions					
	Max. Bore	OD of flange	Max. chamfer	Raised face Diam.	Total Thick.	Large Hub Diam.	Small Hub Diam.	Hub Length	Raised Face Depth	Radius of Hub	Bolt Circle Diam.	No. of Bolts	Bolt Holes Diameter		Ring No.	Bolt Size and TPI
	B Max.	D As noted	C Max.	K ±1.5	T +3 −0	J1 +0 −3.0	J2 Min.	J3 Min.	Q Max.	R ±1	BC ±1.6	N	H	Tolerance	BX	(inch) Refer–ence
1 13/16	46.7	257±2	3	117	63.5	133.4	109.5	49.3	6.0	10	203.2	8	29	+2/–0.5	151	1–8
2 1/16	53.1	287±2	3	132	71.4	153.9	127.0	52.3	6.4	10	230.1	8	32	+2/–0.5	152	1 1/8–8
2 9/16	65.8	325±2	3	151	79.3	173.0	144.5	58.7	7.2	10	261.9	8	35	+2/–0.5	153	1 1/4–8
3 1/16	78.5	357±2	3	171	85.9	192.0	160.3	63.5	8.0	10	287.3	8	39	+2/–0.5	154	1 3/8–8
4 1/16	103.9	446±2	3	219	106.5	242.8	206.2	73.2	8.8	10	357.1	8	48	+2.5/–0.5	155	1 3/4–8
7 1/16	180.1	656±3	6	353	165.1	385.8	338.1	96.8	11.1	16	554.0	16	54	+2.5/–0.5	156	2–8
9	229.4	805±3	6	441	204.8	481.1	428.8	107.9	12.7	25	685.8	16	67	+2.5/–0.5	157	2 1/2–8
11	280.2	883±3	6	505	223.8	566.7	508.0	103.1	14.3	25	749.3	16	74	+2.5/–0.5	158	2 3/4–8
13 5/8	347.0	1162±3	6	614	292.1	693.7	628.6	133.3	15.9	25	1016.0	20	80	+3/–0.5	159	3–8

Type 6BX BL Flanges for 138.0Mpa(20000 psi)

Nominal size and bore of flange	Basic flange dimensions	
	Counter Bore Depth	Hub Hight
	E. Max.	J4 Min.
1 13/16	6.0	–
2 1/16	6.4	–
2 9/16	7.2	–
3 1/16	8.0	–
4 1/16	8.8	–
5 1/8	11.1	7.9
7 1/16	12.7	6.4
9	14.3	12.7
11	15.9	14.2
13 5/8	15.9	17.5

Type 6BX TEST Flanges for 138Mpa(20000 psi)

Nominal size (inch)	Basic flange dimensions	
	Max. Bore	Counter bore Depth
	B. Max.	Ph Max.
1 13/16	46.7	63.5
2 1/16	53.1	63.5
2 9/16	65.8	63.5
3 1/16	78.5	63.5
4 1/16	103.9	63.5

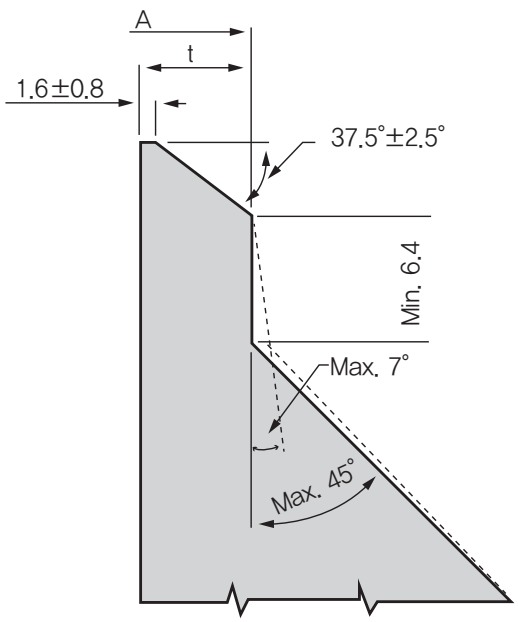
Foot Notes:

a. Break sharp corner.
b. Q"max = E; Q" min = 3 mm (may be omited on studded connectors)
c. Optional feature
d. Test connection shall be per 9.3 (Figure 5 in API 6A 21st edition), or according to PO/POS.
e. Ring groove shall be concentric with bore B within 0.25mm diametrical runout.
f. Test flange style – applies to sizes 1 13/16 through 4 1/16 only.
g. Blind flanges style – applies to sizes 7 1/16 through 13 5/8 only.
h. If the minimum value of J3 is exceeded, the maximum depth P of the counter bore may be increased by the same amount or loss.

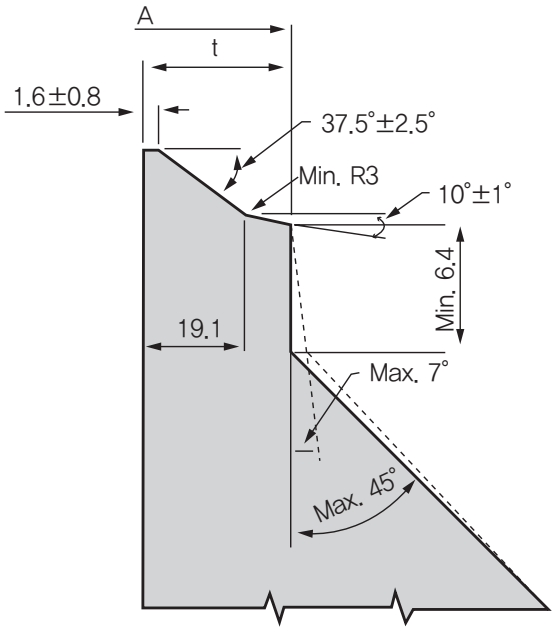
Notes:

(1) Refer to page 148 for bevel end type.
(2) Bore size to be specified by customer, but not greater than max. bore size in table.

WELDING END CONTOURS FOR 6B / 6BX WN FLANGES

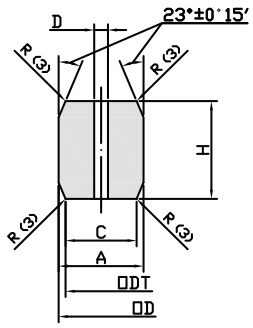


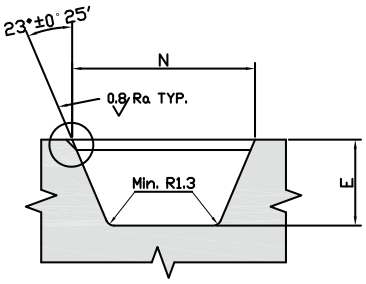
a) For neck thickness t ≤22mm

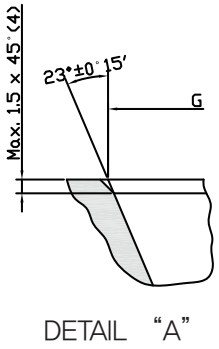


b) For neck thickness t ≤22mm

Type BX Pressure-Energized Ring Gaskets







DETAIL "A"

unit : mm

Ring Number	Nominal Size	Outside Diam. of Ring	Height of Ring	Width of Ring	Diam. of Flat	Width of Flat	Hole Size	Depth of Groove	Outside Diameter of Groove	Width of Groove
		OD 0 −0.15	H (2) +0.20 0	A (2) +0.20 0	ODT ±0.05	C +0.15 0	D ±0.5	E +0.5 0	G +0.10 0	N +0.10 0
BX150	43	72.19	9.30	9.30	70.87	7.98	1.6	5.56	73.48	11.43
BX151	46	76.40	9.63	9.63	75.03	8.26	1.6	5.56	77.77	11.84
BX152	52	84.68	10.24	10.24	83.24	8.79	1.6	5.95	86.23	12.65
BX153	65	100.94	11.38	11.38	99.31	9.78	1.6	6.75	102.77	14.07
BX154	78	116.84	12.40	12.40	115.09	10.64	1.6	7.54	119.00	15.39
BX155	103	147.96	14.22	14.22	145.95	12.22	1.6	8.33	150.62	17.73
BX156	179	237.92	18.62	18.62	235.28	15.98	3.2	11.11	241.83	23.39
BX157	228	294.46	20.98	20.98	291.49	18.01	3.2	12.70	299.06	26.39
BX158	279	352.04	23.14	23.14	348.77	19.86	3.2	14.29	357.23	29.18
BX159	346	426.72	25.70	25.70	423.09	22.07	3.2	15.88	432.64	32.49
BX160	346	402.59	23.83	13.74	399.21	10.36	3.2	14.29	408.00	19.96
BX161	425	491.41	28.07	16.21	487.45	12.24	3.2	17.07	497.94	23.62
BX162	425	475.49	14.22	14.22	473.48	12.22	1.6	8.33	478.33	17.91
BX163	476	556.16	30.10	17.37	551.89	13.11	3.2	18.26	563.50	25.55
BX164	476	570.56	30.10	24.59	566.29	20.32	3.2	18.26	577.90	32.77
BX165	540	624.71	32.03	18.49	620.19	13.97	3.2	19.05	632.56	27.20
BX166	540	640.03	32.03	26.14	635.51	21.62	3.2	19.05	647.88	34.87
BX167	679	759.36	35.87	13.11	754.28	8.03	1.6	21.43	768.33	22.91
BX168	679	765.25	35.87	16.05	760.17	10.97	1.6	21.43	774.22	25.86
BX169	130	173.51	15.85	12.93	171.27	10.69	1.6	9.53	176.66	16.92
BX170	228	218.03	14.22	14.22	216.03	12.22	1.6	8.33	220.88	17.91
BX171	279	267.44	14.22	14.22	265.43	12.22	1.6	8.33	270.28	17.91
BX172	346	333.07	14.22	14.22	331.06	12.22	1.6	8.33	335.92	17.91
BX303	762	852.75	37.95	16.97	847.37	11.61	1.6	22.62	862.30	27.38

Notes:

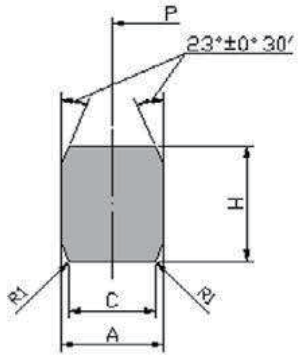
(1) Break sharp corner on inside diameter of groove (0.8 mm, max.)

(2) A plus tolerance of 0.20mm for width A and height H is permitted, provided the variation in width or height of any ring dose not exceed 0.10mm throughout its entire circumference.

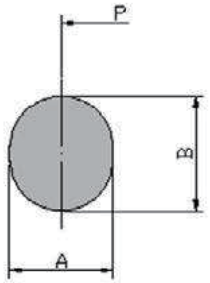
(3) The radius R shall be 8% to 12% of the gasket height, H. One pressure-passage hole per gasket is required on centreline.

(4) The 1.5 x 45 deg. chamfer is optional and only applies to the outside of the groove.

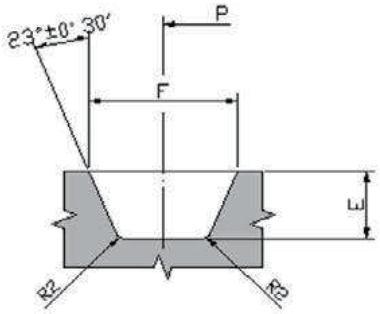
Type R Ring Gaskets



a) Octagonal



b) Oval



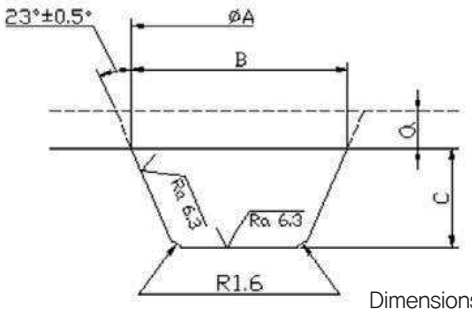
c) Groove

unit : mm

Ring Number	Pitch Diameter of Ring (Groove)	Width of Ring	Height of Octagonal Ring	Width of Flat of Octagonal Ring	Radius in Octagonal Ring	Depth of Groove	Width of Groove	Radius in Groove	Height of Oval Ring	Approx. distance between made-up flanges
	P ±0.18 (±0.13) (1)	A ±0.20	H ±0.5	C ±0.2	R1 ±0.5	E +0.5 −0	F ±0.20	R2 max.	B ±0.5	S
R20	68.28	7.95	12.7	5.23	1.5	6.4	8.74	0.8	14.3	4.1
R23	82.55	11.13	15.9	7.75	1.5	7.9	11.91	0.8	17.5	4.8
R24	95.25	11.13	15.9	7.75	1.5	7.9	11.91	0.8	17.5	4.8
R26	101.60	11.13	15.9	7.75	1.5	7.9	11.91	0.8	17.5	4.8
R27	107.95	11.13	15.9	7.75	1.5	7.9	11.91	0.8	17.5	4.8
R31	123.83	11.13	15.9	7.75	1.5	7.9	11.91	0.8	17.5	4.8
R35	136.53	11.13	15.9	7.75	1.5	7.9	11.91	0.8	17.5	4.8
R37	149.23	11.13	15.9	7.75	1.5	7.9	11.91	0.8	17.5	4.8
R39	161.93	11.13	15.9	7.75	1.5	7.9	11.91	0.8	17.5	4.8
R41	180.98	11.13	15.9	7.75	1.5	7.9	11.91	0.8	17.5	4.8
R44	193.68	11.13	15.9	7.75	1.5	7.9	11.91	0.8	17.5	4.8
R45	211.15	11.13	15.9	7.75	1.5	7.9	11.91	0.8	17.5	4.8
R46	211.15	12.70	17.5	8.66	1.5	9.7	13.49	1.5	19.1	4.8
R47	228.60	19.05	23.9	12.32	1.5	12.7	19.84	1.5	25.4	4.1
R49	269.88	11.13	15.9	7.75	1.5	7.9	11.91	0.8	17.5	4.8
R50	269.88	15.88	20.6	10.49	1.5	11.2	16.66	1.5	22.4	4.1
R53	323.85	11.13	15.9	7.75	1.5	7.9	11.91	0.8	17.5	4.8
R54	323.85	15.88	20.6	10.49	1.5	11.2	16.66	1.5	22.4	4.1
R57	381.00	11.13	15.9	7.79	1.5	7.9	11.91	0.8	17.5	4.8
R63	419.10	25.40	31.8	17.30	2.3	16.0	27.00	2.3	33.3	5.6
R65	469.90	11.13	15.9	7.75	1.5	7.9	11.91	0.8	17.5	4.8
R66	469.90	15.88	20.6	10.49	1.5	11.2	16.66	1.5	22.4	4.1
R69	533.40	11.13	15.9	7.75	1.5	7.9	11.91	0.8	17.5	4.8
R70	533.40	19.05	23.9	12.32	1.5	12.7	19.84	1.5	25.4	4.8
R73	584.20	12.70	17.5	8.66	1.5	9.7	13.49	1.5	19.1	3.3
R74	584.20	19.05	23.9	12.32	1.5	12.7	19.84	1.5	25.4	4.8
R82	57.15	11.13	15.9	7.75	1.5	7.9	11.91	0.8	–	4.8
R84	63.50	11.13	15.9	7.75	1.5	7.9	11.91	0.8	–	4.8
R85	79.38	12.70	17.5	8.66	1.5	9.7	13.49	1.5	–	3.3
R86	90.50	15.88	20.6	10.49	1.5	11.2	16.66	1.5	–	4.1
R87	100.03	15.88	20.6	10.49	1.5	11.2	16.66	1.5	–	4.1
R88	123.83	19.05	23.9	12.32	1.5	12.7	19.84	1.5	–	4.8
R89	114.30	19.05	23.9	12.32	1.5	12.7	19.84	1.5	–	4.8
R90	155.58	22.23	26.9	14.81	1.5	14.2	23.01	1.5	–	4.8
R91	260.35	31.75	38.1	22.33	2.3	17.5	33.34	2.3	–	4.1
R99	234.95	11.13	15.9	7.75	1.5	7.9	11.91	0.8	–	4.8

Notes: (1) The tolerance in brackets is the tolerance for the groove; the tolerance without the brackets is for the ring.

Rough Machining detail for corrosionresistant ring groove



Dimensions in millimeters unless otherwise indicated
Surface roughness in micrometers

unit : mm

Ring Number	Outside Diameter of Groove	Width of Groove	Depth of Groove	Ring Number	Outside Diameter of Groove	Width of Groove	Depth of Groove
	t	B	C		A	B	C
	+0.8 −0	+0.8 −0	+0.8 −0		+0.8 −0	+0.8 −0	+0.8 −0
BX150	81.8	18.3	9.1	R41	201.2	19.1	11.4
BX151	86.1	18.8	9.1	R44	213.9	19.1	11.4
BX152	94.5	19.6	9.7	R45	231.4	19.1	11.4
BX153	111.3	21.1	10.4	R46	232.9	20.6	13.2
BX154	127.3	22.4	11.2	R47	256.8	26.9	16.3
BX155	159.0	24.6	11.9	R49	290.1	19.1	11.4
BX156	250.2	30.5	14.7	R50	294.9	23.9	14.7
BX157	307.3	33.5	16.3	R53	344.2	19.1	11.4
BX158	365.5	36.1	17.8	R54	349.0	23.9	14.7
BX159	440.9	39.4	19.6	R57	401.3	19.1	11.4
BX160	416.3	26.9	17.8	R63	454.4	34.0	19.6
BX162	486.7	24.9	11.9	R65	490.2	19.1	11.4
BX163	571.8	32.5	21.8	R66	495.0	23.9	14.7
BX164	586.2	39.9	21.8	R69	553.7	19.1	11.4
BX165	640.8	34.3	22.6	R70	561.6	26.9	16.3
BX166	656.3	41.9	22.6	R73	606.0	20.6	13.2
BX167	776.7	30.0	24.9	R74	612.4	26.9	16.3
BX168	782.6	32.8	24.9	R82	77.5	19.1	11.4
BX169	185.2	23.9	13.2	R84	83.8	19.1	11.4
BX303	872.0	37.1	29.7	R85	101.3	20.6	13.2
R20 (b)	85.3	15.7	9.9	R86	115.6	23.9	14.7
R23	102.9	19.1	11.4	R87	125.0	23.9	14.7
R24	115.6	19.1	11.4	R88	152.1	26.9	16.3
R25 (b)	118.6	15.7	9.9	R89	142.5	26.9	16.3
R26	121.9	19.1	11.4	R90	186.9	30.2	17.8
R27	128.3	19.1	11.4	R91	302.0	40.4	21.1
R31	144.0	19.1	11.4	R99	255.3	19.1	11.4
R35	156.7	19.1	11.4	R201 (b)	59.9	12.7	7.6
R37	169.4	19.1	11.4	R205 (b)	71.1	12.7	10.7
R39	182.1	19.1	11.4	R210 (b)	106.7	16.8	9.9
				R215 (b)	150.4	19.1	11.4

Notes: (a) Allow 3 mm or greater for final machining of weld overlay.
(b) Segmented flanges shall not be manufactured with corrosion–resistant ring grooves.

ANSI/API Spec. 6A:Specification for Wellhead and Christmas Tree Equipment

1.Service Conditions

1.1. Pressure Ratings– Maximum rated working pressures

Mpa	psi
13.8	2000
20.7	3000
34.5	5000
69.0	10000
103.5	15000
138.0	20000

1.2. Temperature Ratings

Temperature class	Temperature Range			
	℃		℉	
	Min.	Max.	Min.	Max.
K	–60	82	–75	180
L	–46	82	–50	180
N	–46	60	–50	140
P	–29	82	–20	180
S	–18	60	0	140
T	–18	82	0	180
U	–18	121	0	250
V	2	121	35	250

Notes:
(1) Minimum Temperature : the lowest ambient temperature to which the equipment can be subjected.
(2) Maximum Temperature : the highest temperature of the fluid that can directly contact the equipment

1.3. Material Requirements

Material Class	Body, bonnet, End and Outlet Connectors	Mandrel Hangers, Valve Bore Sealing Mechanisms, Choke Trim, and Stems
AA – General service	Carbon or low–alloy steel, or stainless steel or CRA d	Carbon or low–alloy steel, or stainless steel or CRA d
BB – General service	Carbon or low–alloy steel, or stainless steel or CRA d	Stainless steel or CRA d
CC – General service	Stainless steel or CRA d	Stainless steel or CRA d
DD – Sour service a	Carbon or low–alloy steel or CRA b, d	Carbon or low–alloy steel, stainless steel, or CRA b, d
EE – Sour service a	Carbon or low–alloy steel or CRA b, d	Stainless steel or CRA b, d
FF – Sour service a	Stainless steel or CRA b, d	Stainless steel or CRA b, d
HH – Sour service a	CRA b, c, d	CRA b, c, d

Foot Notes:
a. As defined by NACE MR0175/ISO 15156.
b. In accordance with NACE MR0175/ISO 15156 and para. 4.3.3.2. of API 6A.
c. CRA required on retained fluid–wetted surfaces only; CRA cladding of low–alloy or SS is permitted. (See para. 7.5.1.2. of API 6A)
d. CRA as defined in para. 3.1.22 of API 6A; NACE MR0175/ISO 15156 definition of CRA does not apply.

1.4. Material Applicability of Product Specification Levels(PSL)

Equipment Category and Type (Reference Section of API 6A)	Applicable PSLs
Flanges (Blind, Test) [a] (see 14.1)	1, 2, 3, 4
Threaded Connectors [a] (see 14.3)	1, 2, 3, 4
Threaded Connectors [a] (see 14.3) 1, 2, 3, 4 Tees and Crosses (see 14.4)	1, 2, 3 [b], 4
Weld-Neck Flanges [a] (see J.1)	1, 2, 3, 4

Foot Notes:
a. Gas testing is not required, so PSL 3G designation is not applicable.
b. For products eligible for gas testing, PSL 3G designation and marking may apply.

1.5. Product Specification Levels (PSL)

Material Class	Rated Working Pressure					
	13.8 MPa (2000 psi)	20.7 MPa (3000 psi)	34.5 MPa (5000 psi)	69.0 MPa (10,000 psi)	103.5 MPa (15,000 psi)	138.0 MPa (20,000 psi)
AA, BB, CC	PSL 1 – 4	PSL 1 – 4	PSL 1 – 4	PSL 2 – 4	PSL 2–4	PSL 3 – 4
DD, EE, FF	PSL 1 – 4	PSL 1 – 4	PSL 1 – 4	PSL 2 – 4	PSL 3–4	PSL 3 – 4
HH, ZZ	PSL 3 – 4	PSL 3 – 4	PSL 3 – 4	PSL 3 –4	PSL 3–4	PSL 4

1.6. Design / Dimensions

1) Flanges

Flanges specified in the International Standard (API 6A) have been designed in accordance with design criteria and methods originally developed by API.

2) Tolerances

Unless otherwise specified in the appropriate table or figure, the following tolerances shall apply.

SI (Metric)		USC (Inch)	
Dimension	Tolerance mm	Dimension	Tolerance in
x.x	± 0.5	x.xx	± 0.02
x.xx	± 0.13	x.xxx	± 0.005

3) Rated working pressures and size ranges of flanges

Rated working pressure MPa (psi)	Flange Size Range (Unit : mm)	
	Type 6B	Type 6BX
13.8 (2000)	52 to 540	679 to 762
20.7 (3000)	52 to 527	679 to 762
34.5 (5000)	52 to 279	346 to 540
69.0 (10000)	–	46 to 540
103.5 (15000)	–	46 to 476
138.0 (20000)	–	46 to 346

1.7. Standard Material Property Requirements

Material designation	0.2% Yield strength Min. MPa (psi)	Tensile strength Min. MPa (psi)	El in 50mm (2in) Min. %	R/A Min. %
36K	248 (36,000)	483 (70,000)	21	No requirement
45K	310 (45,000)	483 (70,000)	19	32
60K	414 (60,000)	586 (85,000)	18	35
75K	517 (75,000)	655 (95,000)	17	35

1.8. Charpy V-Notch Impact Requirements (10 mm x 10 mm)

Temperature		Minimum Average Impact Value, J (ft-lb)			
		Transverse Direction		Longitudinal Direction	
		Wrought or Cast Material, Weld Qualification		Alternate Method for Wrought Materials Only	
Class	Test ℃ (℉)	PSL 1 and PSL 2	PSL 3 and PSL 4	PSL 1 and PSL 2	PSL 3 and PSL 4
K	-60 (-75)	20 (15)	20 (15)	27 (20)	27 (20)
L	-46 (-50)	20 (15)	20 (15)	27 (20)	27 (20)
N	-46 (-50)	20 (15)	20 (15)	27 (20)	27 (20)
P	-29 (-20)	20 (15)	20 (15)	27 (20)	27 (20)
S	-18 (0)	-	20 (15)	-	27 (20)
T	-18 (0)	-	20 (15)	-	27 (20)
U	-18 (0)	-	20 (15)	-	27 (20)
V	-18 (0)	-	20 (15)	-	27 (20)

1.8.1. Hardness Number

Material Designation	Minimum Brinell Hardness
36K	HBW 140
45K	HBW 140
60K	HBW 174
75K	HBW 197

Parts manufactured from non-standard, high-strength materials shall meet the minimum hardness requirements of the Purchaser's written specification.

1.8.2. Ring Groove Surfaces

6B Type Flange : (R or RX Type Gasket)	Max. 1.6 μ m	6BX Type Flange : (BX Type Gasket)	Max. 0.8 μ m

1.8.3. Test / Examination Requirement

For Flange Test & Examination is in accordance with Section 6, Section 10 and Table 22 in API 6A_21st Edition. (Applicable Table No & Edition may be adjusted by up-date.)

2.0. Weld Overlay on Ring Groove (Sec. 7.5 of API 6A)

2.1. Welding Procedure / Performance Qualification

2.1.2 Chemical analysis shall be performed on the weld metal in accordance with the requirements of ASME Sec. IX or ISO 15614-7. Chemical sampling of the overlay shall be performed at or less than the minimum thickness qualified. The minimum thickness qualified shall be established by the manufacturer based on the design of the finished part and within the limits specified in 7.5.1.2.2. of API 6A.
2.1.1 Qualification shall be in accordance with ASME BPVC, Sec. IX with API 6A Requirements.

2.2. Deposited Weld Metal

For the nickel-based alloy UNS N06625, the chemical composition shall meet one of the classes given in below table.

Class	Element	Composition (%mass fraction)
Fe5 Fe10	Iron Iron	5.0 Max. 10.0 Max.
For other compositions that are required to conform to the requirements of NACE MR 0175/ISO 15156, the chemical analysis of the overlay shall conform to the specification limits of the corresponding NACE MR 0175/ISO 15156 approved material(s).		

3.0. Marking Requirements and Locations

3.1. General

Flange shall be marked on the exterior surface as specified in DH API Monogram Marking Procedure (DH-QM-30) modified in accordance with Section 12 and Section 14 of API 6A.

3.2. Marking Method

3.2.1 Marking using low-stress (dot, vibration or rounded V) stamps is acceptable. Conventional sharp V-stamping is acceptable in low-stress areas, such as the outside diameter of flanges. Sharp V-stamping is not permitted in high-stress areas unless subsequently stress-relieved at 590 deg.C

3.2.2 For standard flanges, marking shall be applied to the outer diameter, where stress impact is minimal.

3.2.3 Marking shall include the following information:

a) API 6A
b) Monogram
c) License No.
d) Temperature Class
e) Material Class
f) Product Specification Level (PSL)
g) Size(NPS) & Bore Size (if required)
h) Working pressure (Class)
i) Ring gasket Type & No.
j) Date of Manufacture
k) Manufacturer's name or logo
l) Heat & Lot No.
m) Serial No. (PSL-3 only)

EX) API 6A Monogram L AA PSL3 2-1/16" 15,000PSI BX169 09-26 SB60645-5802A

Nominal Bore size with Wall Thickness (JIS & ASME)

Nominal Pipe		OD (A)		I.D Wall	Nominal Inside Diameter and Wall thickness														
					5S		5	10S		10		20		20S	30		40S	STD	
NPS	DN	ASME	JIS		ASME	JIS	ASME	ASME	JIS	ASME	JIS	ASME	JIS	JIS	ASME	JIS	ASME	ASME	
1/8	6	10.3	10.5	I.D	–	8.50	–	7.82	8.10	7.82	–	–	–	7.50	7.40	–	6.84	6.84	
				WT	–	1.00	–	1.24	1.20	1.24	–	–	–	1.50	1.45	–	1.73	1.73	
1/4	8	13.7	13.8	I.D	–	11.40	–	10.40	10.50	10.40	–	–	–	9.80	10.00	–	9.22	9.22	
				WT	–	1.20	–	1.65	1.65	1.65	–	–	–	2.00	1.85	–	2.24	2.24	
3/8	10	17.1	17.3	I.D	–	14.90	–	13.80	14.00	13.80	–	–	–	13.30	13.40	–	12.48	12.48	
				WT	–	1.20	–	1.65	1.65	1.65	–	–	–	2.00	1.85	–	2.31	2.31	
1/2	15	21.3	21.7	I.D	18.00	18.40	18.00	17.08	17.50	17.08	–	–	–	16.70	16.48	–	15.76	15.76	
				WT	1.65	1.65	1.65	2.11	2.10	2.11	–	–	–	2.50	2.41	–	2.77	2.77	
3/4	20	26.7	27.2	I.D	23.40	23.9	23.40	22.48	23.00	22.48	–	–	–	22.20	21.88	–	20.96	20.96	
				WT	1.65	1.65	1.65	2.11	2.10	2.11	–	–	–	2.50	2.41	–	2.87	2.87	
1	25	33.4	34.0	I.D	30.10	30.60	30.10	27.86	28.40	27.86	–	–	–	28.00	27.60	–	26.64	26.64	
				WT	1.65	1.65	1.65	2.77	2.80	2.77	–	–	–	3.00	2.90	–	3.38	3.38	
1 1/4	32	42.2	42.7	I.D	38.90	39.40	38.90	36.66	37.10	36.66	–	–	–	36.70	36.26	–	35.08	35.08	
				WT	1.65	1.65	1.65	2.77	2.80	2.77	–	–	–	3.00	2.97	–	3.56	3.56	
1 1/2	40	48.3	48.6	I.D	45.00	45.30	45.00	42.76	43.00	42.76	–	–	–	42.60	41.94	–	40.94	40.94	
				WT	1.65	1.65	1.65	2.77	2.80	2.77	–	–	–	3.00	3.18	–	3.68	3.68	
2	50	60.3	60.5	I.D	57.00	57.20	57.00	54.76	54.90	54.76	–	–	54.10	53.50	53.94	–	52.48	52.48	
				WT	1.65	1.65	1.65	2.77	2.80	2.77	–	–	3.20	3.50	3.18	–	3.91	3.91	
2 1/2	65	73.0	76.3	I.D	68.78	72.10	68.78	66.90	70.3	66.90	–	–	67.30	69.30	63.44	–	62.68	62.68	
				WT	2.11	2.10	2.11	3.05	3.00	3.05	–	–	4.50	3.50	4.78	–	5.16	5.16	
3	80	88.9	89.1	I.D	84.68	84.90	84.68	82.80	83.10	82.80	–	–	80.10	81.10	79.34	–	77.92	77.92	
				WT	2.11	2.10	2.11	3.05	3.00	3.05	–	–	4.50	4.00	4.78	–	5.49	5.49	
3 1/2	90	101.6	101.6	I.D	97.38	97.40	97.38	95.50	95.60	95.50	–	–	92.60	93.60	92.04	–	90.12	90.12	
				WT	2.11	2.10	2.11	3.05	3.00	3.05	–	–	4.50	4.00	4.78	–	5.74	5.74	
4	100	114.3	114.3	I.D	110.08	110.10	110.08	108.20	108.30	108.20	–	–	104.50	106.30	104.74	–	102.26	102.26	
				WT	2.11	2.10	2.11	3.05	3.00	3.05	–	–	4.90	4.00	4.78	–	6.02	6.02	
5	125	141.3	139.8	I.D	135.76	134.20	135.76	134.50	133.00	134.50	–	–	129.60	129.80	–	–	128.20	128.20	
				WT	2.77	2.80	2.77	3.40	3.40	3.40	–	–	5.10	5.00	–	–	6.55	6.55	
6	150	168.3	165.2	I.D	162.76	159.60	162.76	161.50	158.40	161.50	–	–	154.20	155.20	–	–	154.08	154.08	
				WT	2.77	2.80	2.77	3.40	3.40	3.40	–	–	5.50	5.00	–	–	7.11	7.11	
8	200	219.1	216.3	I.D	213.56	210.70	213.56	211.58	208.30	211.58	–	206.40	203.50	203.30	205.02	202.30	202.74	202.74	
				WT	2.77	2.80	2.77	3.76	4.00	3.76	–	6.35	6.40	6.50	7.04	7.00	8.18	8.18	
10	250	273.0	267.4	I.D	266.20	260.60	266.20	264.62	259.40	264.62	–	260.30	254.60	254.40	257.40	251.80	254.46	254.46	
				WT	3.40	3.40	3.40	4.19	4.00	4.19	–	6.35	6.40	6.50	7.80	7.80	9.27	9.27	
12	300	323.8	318.5	I.D	315.88	310.50	315.88	314.66	309.50	314.66	–	311.10	305.70	305.50	307.04	301.70	304.76	304.76	
				WT	3.96	4.00	3.96	4.57	4.50	4.57	–	6.35	6.40	6.50	8.38	8.40	9.52	9.52	
14	350	355.6	355.6	I.D	347.68	–	347.68	346.04	–	342.90	342.80	339.76	339.80	–	336.56	336.60	336.56	336.56	
				WT	3.96	–	3.96	4.78	–	6.35	6.40	7.92	7.90	–	9.52	9.50	9.52	9.52	
16	400	406.4	406.4	I.D	398.02	–	398.02	396.84	–	393.70	393.60	390.56	390.60	–	387.36	387.40	387.36	387.36	
				WT	4.19	–	4.19	4.78	–	6.35	6.40	7.92	7.90	–	9.52	9.50	9.52	9.52	
18	450	457.2	457.2	I.D	448.82	–	448.82	447.64	–	444.50	444.40	441.36	441.40	–	434.94	435.00	438.16	438.16	
				WT	4.19	–	4.19	4.78	–	6.35	6.40	7.92	7.90	–	11.13	11.10	9.52	9.52	
20	500	508.0	508.0	I.D	498.44	–	498.44	496.92	–	495.30	495.20	488.96	489.00	–	482.60	482.60	488.96	488.96	
				WT	4.78	–	4.78	5.54	–	6.35	6.40	9.52	9.50	–	12.70	12.70	9.52	9.52	
22	550	558.8	558.8	I.D	549.24	–	549.24	547.72	–	546.10	546.00	539.76	539.80	–	533.40	533.40	–	539.76	
				WT	4.78	–	4.78	5.54	–	6.35	6.40	9.52	9.50	–	12.70	12.70	–	9.52	
24	600	609.6	609.6	I.D	598.52	–	598.52	596.90	–	596.90	596.80	590.56	590.60	–	581.06	581.00	590.56	590.56	
				WT	5.54	–	5.54	6.35	–	6.35	6.40	9.52	9.50	–	14.27	14.30	9.52	9.52	

General Note : (1) NPS of ASME : ASME B36.10M : 2022 (Carbon Steel), ASME B36.19M : 2022 (Stainless Steel)
(2) NPS of JIS : JIS G3454 : 2012 & G3455 : 2012 (Carbon Steel), JIS G3459 : 2012 (Stainless Steel).

Nominal Inside Diameter and Wall Thickness																	I.D Wall	OD (A)		Nominal Pipe	
40		60		80S	XS	80		100		120		140		160		XXS					
ASME	JIS*1)	ASME	JIS*1)	ASME	ASME	ASME	JIS*1)	ASME	JIS*1)	ASME	JIS*1)	ASME	JIS*1)	ASME	JIS*1)	ASME		ASME	JIS	NPS	DN
6.84	7.10	–	6.10	5.48	5.48	5.48	5.70	–	–	–	–	–	–	–	–	–	I.D	10.3	10.5	1/8	6
1.73	1.70	–	2.20	2.41	2.41	2.41	2.40	–	–	–	–	–	–	–	–	–	WT				
9.22	9.40	–	9.00	7.66	7.66	7.66	7.80	–	–	–	–	–	–	–	–	–	I.D	13.7	13.8	1/4	8
2.24	2.20	–	2.40	3.02	3.02	3.02	3.00	–	–	–	–	–	–	–	–	–	WT				
12.48	12.70	–	11.70	10.70	10.70	10.70	10.90	–	–	–	–	–	–	–	–	–	I.D	17.1	17.3	3/8	10
2.31	2.30	–	2.80	3.20	3.20	3.20	3.20	–	–	–	–	–	–	–	–	–	WT				
15.76	16.10	–	15.30	13.84	13.84	13.84	14.30	–	–	–	–	–	–	11.74	12.30	6.36	I.D	21.3	21.7	1/2	15
2.77	2.80	–	3.20	3.73	3.73	3.73	3.70	–	–	–	–	–	–	4.78	4.70	7.47	WT				
20.96	21.40	–	20.40	18.88	18.88	18.88	19.40	–	–	–	–	–	–	15.58	16.20	11.06	I.D	26.7	27.2	3/4	20
2.87	2.90	–	3.40	3.91	3.91	3.91	3.90	–	–	–	–	–	–	5.56	5.50	7.82	WT				
26.64	27.20	–	26.20	24.30	24.30	24.30	25.00	–	–	–	–	–	–	20.70	21.20	15.22	I.D	33.5	34.0	1	25
3.38	3.40	–	3.90	4.55	4.55	4.55	4.50	–	–	–	–	–	–	6.35	6.40	9.09	WT				
35.08	35.50	–	33.70	32.50	32.50	32.50	32.90	–	–	–	–	–	–	29.50	29.90	22.80	I.D	42.2	42.7	1 1/4	32
3.56	3.60	–	4.50	4.85	4.85	4.85	4.90	–	–	–	–	–	–	6.35	6.40	9.70	WT				
40.94	41.20	–	39.60	38.14	38.14	38.14	38.40	–	–	–	–	–	–	34.02	34.40	27.98	I.D	48.3	48.6	1 1/2	40
3.68	3.70	–	4.50	5.08	5.08	5.08	5.10	–	–	–	–	–	–	7.14	7.10	10.16	WT				
52.48	52.70	–	50.70	49.22	49.22	49.22	49.50	–	–	–	–	–	–	42.82	43.10	38.16	I.D	60.5	60.5	2	50
3.91	3.90	–	4.90	5.54	5.54	5.54	5.50	–	–	–	–	–	–	8.74	8.70	11.07	WT				
62.68	65.90	–	64.30	58.98	58.98	58.98	62.30	–	–	–	–	–	–	53.96	57.30	44.96	I.D	73.2	76.3	2 1/2	65
5.16	5.20	–	6.00	7.01	7.01	7.01	7.00	–	–	–	–	–	–	9.52	9.50	14.02	WT				
77.92	78.10	–	75.90	73.66	73.66	73.66	73.90	–	–	–	–	–	–	66.64	66.90	58.42	I.D	88.9	89.1	3	80
5.49	5.50	–	6.60	7.62	7.62	7.62	7.60	–	–	–	–	–	–	11.13	11.10	15.24	WT				
90.12	90.20	–	87.60	85.44	85.44	85.44	85.40	–	–	–	–	–	–	–	76.20	–	I.D	101.6	101.6	3 1/2	90
5.74	5.70	–	7.00	8.08	8.08	8.08	8.10	–	–	–	–	–	–	–	12.70	–	WT				
102.26	102.30	–	100.10	97.18	97.18	97.18	97.10	–	–	92.04	92.10	–	–	87.32	87.30	80.06	I.D	114.3	114.3	4	100
6.02	6.00	–	7.10	8.56	8.56	8.56	8.60	–	–	11.13	11.10	–	–	13.49	13.50	17.12	WT				
128.20	126.60		123.60	122.26	122.26	122.26	120.80	–	–	115.90	114.40	–	–	109.54	108.00	103.20	I.D	141.2	139.8	5	125
6.55	6.60	–	8.10	9.52	9.52	9.52	9.50	–	–	12.70	12.70	–	–	15.88	15.90	19.05	WT				
154.08	151.00	–	146.60	146.36	146.36	146.36	143.20	–	–	139.76	136.60	–	–	131.78	128.80	124.40	I.D	168.4	165.2	6	150
7.11	7.10	–	9.30	10.97	10.97	10.97	11.00	–	–	14.27	14.30	–	–	18.26	18.20	21.95	WT				
202.74	199.90	198.48	195.70	193.70	193.70	193.70	190.90	188.92	186.10	182.58	179.90	177.86	175.10	173.08	170.30	174.66	I.D	219.2	216.3	8	200
8.18	8.20	10.31	10.30	12.70	12.70	12.70	12.70	15.09	15.10	18.26	18.20	20.62	20.60	23.01	23.00	22.22	WT				
254.46	248.80	247.60	242.00	247.60	247.60	242.82	237.20	236.48	231.00	230.12	224.60	222.20	216.60	215.84	210.20	222.20	I.D	273.0	267.4	10	250
9.27	9.30	12.70	12.70	12.70	12.70	15.09	15.10	18.26	18.20	21.44	21.40	25.40	25.40	28.58	28.60	25.40	WT				
303.18	297.90	295.26	289.90	298.40	298.40	288.84	283.70	280.92	275.70	273.10	267.70	266.64	261.30	257.16	251.90	273.00	I.D	323.8	318.5	12	300
10.31	10.30	14.27	14.30	12.70	12.70	17.48	17.40	21.44	21.40	25.40	25.40	28.58	28.60	33.32	33.30	25.40	WT				
333.34	333.40	325.42	325.40	330.20	330.20	317.50	317.60	307.94	308.00	300.02	300.00	292.10	292.00	284.18	284.20	–	I.D	355.6	355.6	14	350
11.13	11.10	15.09	15.10	12.70	12.70	19.05	19.00	23.83	23.80	27.79	27.80	31.75	31.80	35.71	35.70	–	WT				
381.00	381.00	373.08	373.00	381.00	381.00	363.52	363.60	354.02	354.00	344.48	344.60	333.34	333.40	325.42	325.40	–	I.D	406.4	406.4	16	400
12.70	12.70	16.66	16.70	12.70	12.70	21.44	21.40	26.19	26.20	30.96	30.90	36.53	36.50	40.49	40.50	–	WT				
428.66	428.60	419.10	419.20	431.80	431.80	409.54	409.60	398.48	398.40	387.36	387.40	377.86	377.80	366.72	366.80	–	I.D	457.2	457.2	18	450
14.27	14.30	19.05	19.00	12.70	12.70	23.83	23.80	29.36	29.40	34.92	34.90	39.67	39.70	45.24	45.20	–	WT				
477.82	477.80	466.76	466.80	482.60	482.60	455.62	455.60	442.92	443.00	431.8	431.80	419.10	419.20	407.98	408.00	–	I.D	508.0	508.0	20	500
15.09	15.10	20.62	20.60	12.70	12.70	26.19	26.20	32.54	32.50	38.10	38.10	44.45	44.40	50.01	50.00	–	WT				
–	527.00	514.40	514.40	–	533.40	501.64	501.60	488.96	489.00	476.24	476.20	463.56	463.60	450.84	450.80	–	I.D	558.8	558.8	22	550
–	15.90	22.20	22.20	–	12.70	28.58	28.60	34.92	34.90	41.28	41.30	47.62	47.60	53.98	54.00	–	WT				
574.64	574.60	560.38	560.40	584.20	584.20	547.68	547.60	531.82	531.80	517.56	517.60	504.86	504.80	490.52	490.60	–	I.D	609.6	609.6	24	600
17.48	17.50	24.61	24.60	12.70	12.70	30.96	31.00	38.89	38.90	46.02	46.00	52.37	52.40	59.54	59.50	–	WT				

NOMINAL WALL THICKNESS

NPS		OUTSIDER DIAMTER		NOMINAL WALL THICKNESS																
INCH	mm	KS(JIS)	ANSI	SPP (SGP)	S5S/S5	S10S	S10	S20	S30	S40S	STD	S40	S60	S80S	XS	S80	S100	S120	S140	S160	XXS
1/8″	6	10.5	10.3			1.24	1.24		1.45	1.73	1.73	1.73		2.41	2.41	2.41					
1/4″	8	13.8	13.7			1.65	1.65		1.85	2.24	2.24	2.24		3.02	3.02	3.02					
3/8″	10	17.3	17.1			1.65	1.65		1.85	2.31	2.31	2.31		3.20	3.20	3.20					
1/2″	15	21.7	21.3	2.80	1.65	2.11	2.11		2.41	2.77	2.77	2.77		3.73	3.73	3.73				4.78	7.47
3/4″	20	27.2	26.7	2.80	1.65	2.11	2.11		2.41	2.87	2.87	2.87		3.91	3.91	3.91				5.56	7.82
1″	25	34.0	33.4	3.20	1.65	2.77	2.77		2.90	3.38	3.38	3.38		4.55	4.55	4.55				6.35	9.09
1 1/4″	32	42.7	42.2	3.50	1.65	2.77	2.77		2.97	3.56	3.56	3.56		4.85	4.85	4.85				6.35	9.70
1 1/2″	40	48.6	48.3	3.50	1.65	2.77	2.77		3.18	3.68	3.68	3.68		5.08	5.08	5.08				7.14	10.16
2″	50	60.5	60.3	3.80	1.65	2.77	2.77		3.18	3.91	3.91	3.91		5.54	5.54	5.54				8.74	11.07
2 1/2″	65	76.3	73.0	4.20	2.11	3.05	3.05		4.78	5.16	5.16	5.16		7.01	7.01	7.01				9.52	14.02
3″	80	89.1	88.9	4.20	2.11	3.05	3.05		4.78	5.49	5.49	5.49		7.62	7.62	7.62				11.13	15.24
3 1/2″	90	101.6	101.6	4.20	2.11	3.05	3.05		4.78	5.74	5.74	5.74		8.08	8.08	8.08					
4″	100	114.3	114.3	4.50	2.11	3.05	3.05		4.78	6.02	6.02	6.02		8.56	8.56	8.56		11.13		13.49	17.12
5″	125	139.8	141.3	4.50	2.77	3.40	3.40			6.55	6.55	6.55		9.52	9.52	9.52		12.70		15.88	19.05
6″	150	165.2	168.3	5.00	2.77	3.40	3.40			7.11	7.11	7.11		10.97	10.97	10.97		14.27		18.26	21.95
8″	200	216.3	219.1	5.80	2.77	3.76	3.76	6.35	7.04	8.18	8.18	8.18	10.31	12.70	12.70	12.70	15.09	18.26	20.62	23.01	22.22
10″	250	267.4	273.0	6.50	3.40	4.19	4.19	6.35	7.80	9.27	9.27	9.27	12.70	12.70	12.70	15.09	18.26	21.44	25.40	28.58	25.40
12″	300	318.5	323.8	6.90	3.96	4.57	4.57	6.35	8.38	9.52	9.52	10.31	14.27	12.70	12.70	17.48	21.44	25.40	28.58	33.32	25.40
14″	350	355.6	355.6	7.90	3.96	4.78	6.35	7.92	9.53	9.52	9.52	11.13	15.09	12.70	12.70	19.05	23.83	27.79	31.75	35.71	
16″	400	406.4	406.4	7.90	4.19	4.78	6.35	7.92	9.53	9.52	9.52	12.70	16.66	12.70	12.70	21.44	26.19	30.96	36.53	40.49	
18″	450	457.2	457.2	7.90	4.19	4.78	6.35	7.92	11.13	9.52	9.52	14.27	19.05	12.70	12.70	23.83	29.36	34.93	39.67	45.24	
20″	500	508.0	508.0	7.90	4.78	5.54	6.35	9.52	12.70	9.52	9.52	15.09	20.62	12.70	12.70	26.19	32.54	38.10	44.45	50.01	
22″	550	558.8	558.8		4.78	5.54	6.35	9.52	12.70		9.52		22.23		12.70	28.58	34.93	41.28	47.63	53.98	
24″	600	609.6	609.6		5.54	6.35	6.35	9.52	14.27	9.52	9.52	17.48	24.61	12.70	12.70	30.96	38.89	46.02	52.37	59.54	
26″	650	660.4	660.4				7.92	12.70			9.52				12.70						
28″	700	711.2	711.2				7.92	12.70	15.88		9.52				12.70						
30″	750	762.0	762.0		6.35	7.92	7.92	12.70	15.88		9.52				12.70						
32″	800	812.8	813.0				7.92	12.70	15.88		9.52	17.48			12.70						
34″	850	863.6	864.0				7.92	12.70	15.88		9.52	17.48			12.70						
36″	900	914.4	914.0				7.92	12.70	15.88		9.52	19.05			12.70						
38″	950	965.2	965.0								9.52				12.70						
40″	1000	1016.0	1016.0								9.52				12.70						
42″	1050	1066.8	1067.0								9.52				12.70						
44″	1100	1117.6	1118.0								9.52				12.70						
46″	1500	1168.4	1168.0								9.52				12.70						
48″	1200	1219.2	1219.0								9.52				12.70						

STANDARD MARKING



CLASS	SCHEDULE		MATERIAL	LOT NO.
CL150	2"	S/40S	B16.5 A105	SB60645-5802A
DAE-HEUNG LOGO	NOMINAL PIPE SIZE		SPEC	HEAT NO.

뒷표지