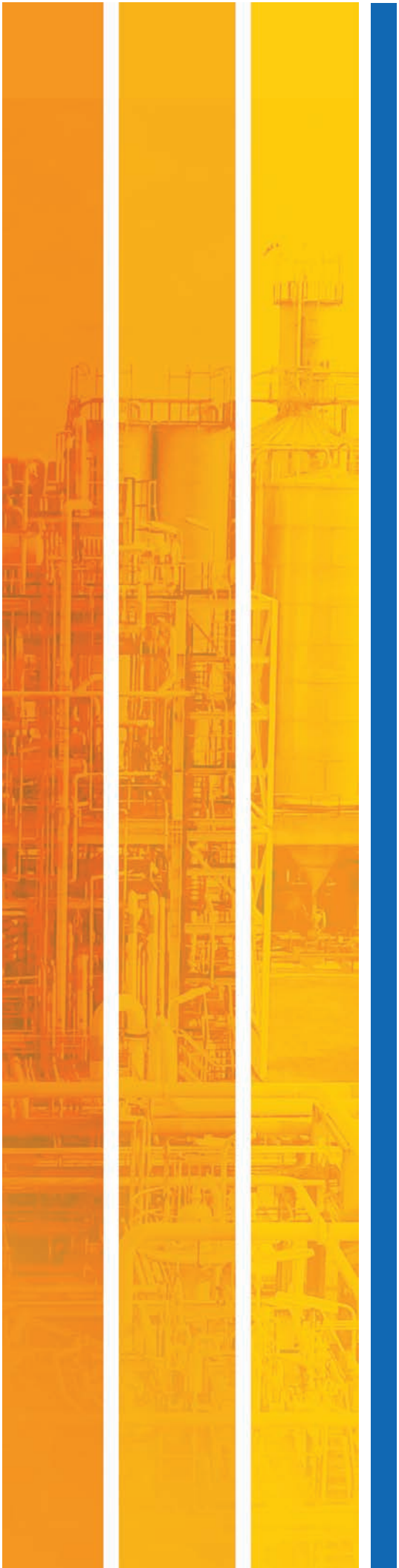
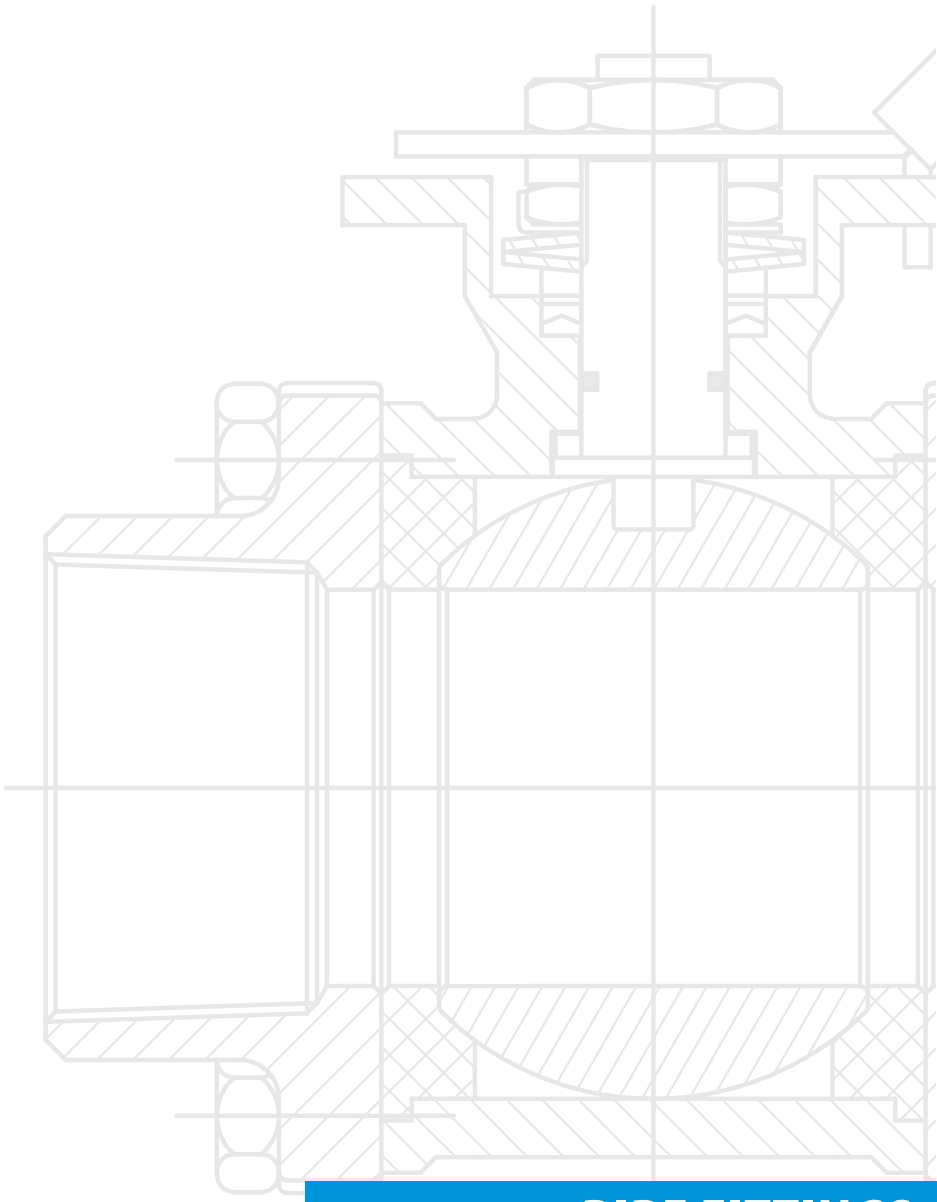


MORRIS VALVES

A CLEANER WORLD, ONE PROJECT AT A TIME



PIPE FITTINGS

www.morrisvalve.com

MORRIS VALVES

A CLEANER WORLD, ONE PROJECT AT A TIME

In 1984, our journey into the business of repairing valves and industrial instrumentation began. That journey has led us to represent and service well known American brands and companies. In early 2000, our experience and growing passion for the valve industry encouraged our decision to launch our own brand, Morris Valves. Starting with the highly requested Ball Valves, the brand has been based on the principal of quality and performance to match our customers' needs. Our high standards of production later lead us to incorporate other models such as Gate Valve and Check Valves to our production. These additions were carefully selected to match our Standard of Quality. Our success has been driven by our belief of "Tradition with Quality" in everything we do. Our products are developed with that belief which drives our growth and guides the service we provide to our customers.

Contacts

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Fax: +58(241)838-7919

Vision

Our vision is to be amongst the leading corporations in the supply of goods and services related to valves, their components and industrial equipment in general. We want to conquer new markets in conformity with international standards and remain committed to customer satisfaction, the welfare of our company and the sustainability our planet.

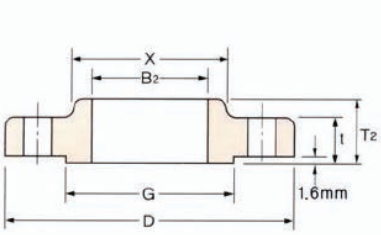
Mision

Our mission is to use our highly trained, highly focused, and extremely motivated staff to work with manufacturers who value quality and have the vision for new development and product applications to ensure the timely provision of goods and services related to valves, their components and industrial equipment in general. We maintain a rigorous standard of customer satisfaction, which will provide for the welfare of the company, the welfare of the countries we serve, and most importantly the sustainability of the planet.

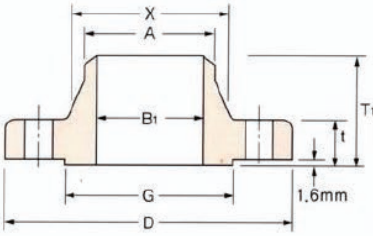
"A cleaner world, one project at a time"

CLASS 150 FLANGES

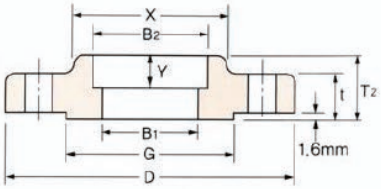
ASME B16.5



SLIP–ON



WELDING NECK



SOCKET WELDING

ASME B16.5 FORGED FLANGES

Unit:mm

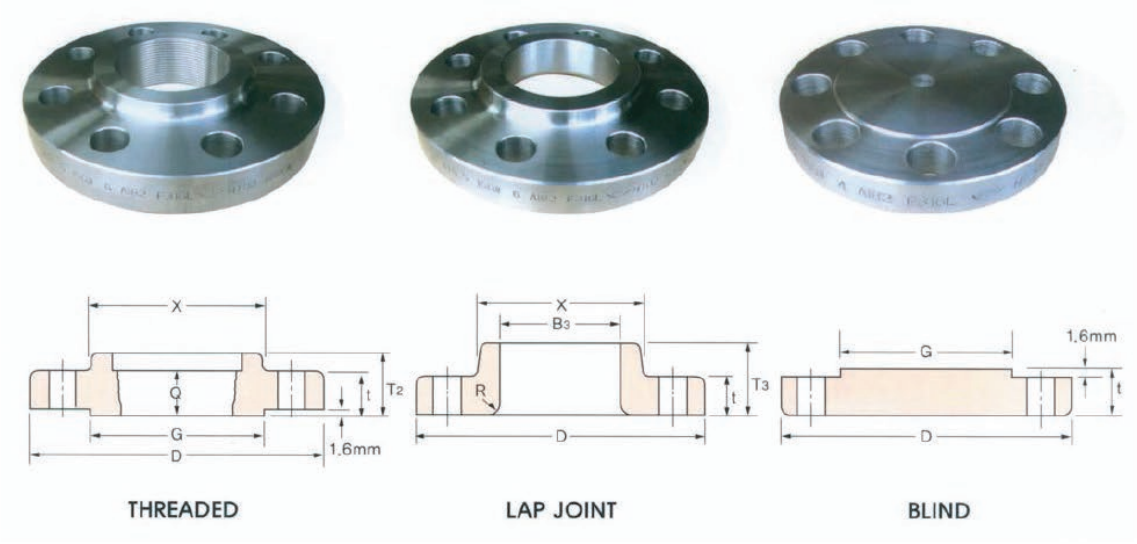
Nominal Pipe Size	Outside Diam	O.D.of Raised Face	Diam. at Base of Hub	Thickness	BORE			LENGTH THRU HUB			Diam.of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket Welding	Slip–on Socket Welding	Lap Joint	Welding Neck	Slip–on Threaded Socket Welding	Lap Joint			
	D	G	X	t	B1	B2	B3	T1	T2	T3	A	R	Q
1/2	88.9	35.1	30.2	11.2	15.7	22.4	22.9	47.8	15.7	15.7	21.3	3.0	15.7
3/4	98.6	42.9	38.1	12.7	20.8	27.7	28.2	52.3	15.7	15.7	26.7	3.0	15.7
1	108.0	50.8	49.3	14.2	26.7	34.5	35.1	55.6	17.5	17.5	33.5	3.0	17.5
1 1/4	117.3	63.5	58.7	15.7	35.1	43.2	43.7	57.2	20.6	20.6	42.2	5.0	20.6
1 1/2	127.0	73.2	65.0	17.5	40.9	49.5	50.0	62.0	22.4	22.4	48.3	6.0	22.4
2	152.4	91.9	77.7	19.1	52.6	62.0	62.5	63.5	25.4	25.4	60.5	8.0	25.4
2 1/2	177.8	104.6	90.4	22.4	62.7	74.7	75.4	69.9	28.4	28.4	73.2	8.0	28.4
3	190.5	127.0	108.0	23.9	78.0	90.7	91.4	69.9	30.2	30.2	88.9	10.0	30.2
3 1/2	215.9	139.7	122.2	23.9	90.2	103.4	104.1	71.4	31.8	31.8	101.6	10.0	31.8
4	228.6	157.2	134.9	23.9	102.4	116.1	116.8	76.2	33.3	33.3	114.3	11.0	33.3
5	254.0	185.7	163.6	23.9	128.3	143.8	144.5	88.9	36.6	36.6	141.2	11.0	36.6
6	279.4	215.9	192.0	25.4	154.2	170.7	171.5	88.9	39.6	39.6	168.4	13.0	39.6
8	342.9	269.7	246.1	28.4	202.7	221.5	222.3	101.6	44.5	44.5	219.2	13.0	44.5
10	406.4	323.9	304.8	30.2	254.5	276.4	277.4	101.6	49.3	49.3	273.1	13.0	49.3
12	482.6	381.0	365.3	31.8	304.8	327.2	328.2	114.3	55.6	55.6	323.9	13.0	55.6
14	533.4	412.8	400.1	35.1	336.6	359.2	360.2	127.0	57.2	79.2	355.6	13.0	57.2
16	596.9	469.9	457.2	36.6	387.4	410.5	411.2	127.0	63.5	87.4	406.4	13.0	63.5
18	635.0	533.4	505.0	39.6	438.2	461.8	462.3	139.7	68.3	97	457.2	13.0	68.3
20	698.5	584.2	558.8	42.9	489.0	513.1	514.4	144.5	73.2	103.1	508.0	13.0	73.2
24	812.8	692.2	663.4	47.8	590.6	616.0	616.0	152.4	82.6	111.3	609.6	13.0	82.6

Notes

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

(2)Class 150 flanges except Lap Joint will be furnished with 0.06"(1.6mm) raised face,which is included in'Thickness'(t)and 'Length through Hub'(T1),(T2).

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

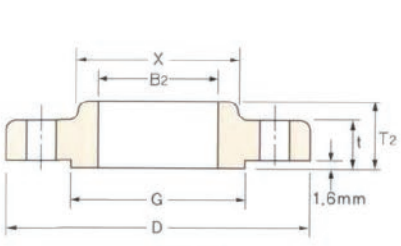


Unit:mm

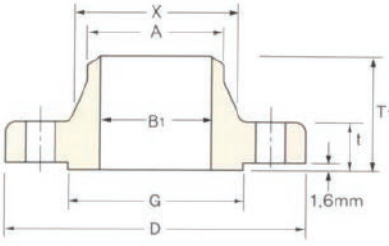
Nominal Pipe Size	Depth of Socket	DRILLING			BOLTING				APPROXIMATE WELGHT				
		Bolt Circle Diam.	Number of Holes	Diam of Holes	Diam of Bolt (inch)	Machine Bolt Length	Stud Bolt Length		Welding Neck	Slip–on and Threaded	LapJoint	Blind	Socket Welding
	Y					Raised Face	Raised Face	Ring Joint	kg	kg	kg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

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

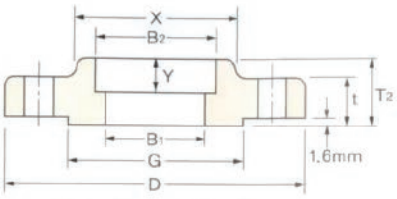
CLASS 300 FLANGES ASME B16.5



SLIP–ON



WELDING NECK



SOCKET WELDING

ASME B16.5 FORGED FLANGES

Unit:mm

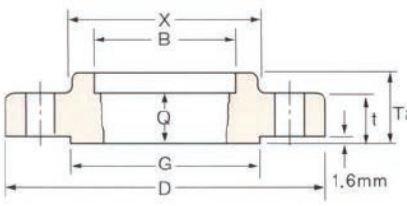
Nominal Pipe Size	Outside Diam	Diam. at Base of Hub	O.D.of Raised Face	Thickness	BORE				LENGTH THRU HUB			Diam.of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket welding	Slip–on Socket Welding	Lap Joint	Counter Bore Min.Threaded Min.	Welding Neck	Slip–on Threaded Socket welding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

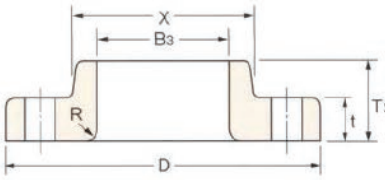
Notes

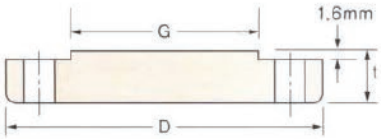
(1)For the 'Bore'(B1) other than Standard Wall Thickness, refer to page 50,51.

(2)Class 300 flanges except Lap Joint will be furnished with 0.06"(1.6mm) raised face,which is included in 'Thickness'(t)and 'Length through Hub'(T1),(T2).

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







THREADED **LAP JOINT** **BLIND**

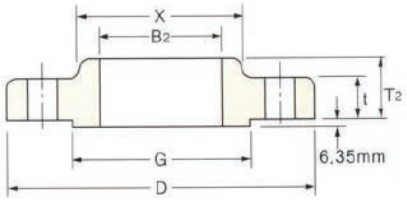
Unit:mm

Nominal Pipe Size	Depth of Socket	DRILLING			BOLTING				APPROXIMATE WEIGHT									
		Bolt Circle Diam.	Number of Holes	Diam of Holes	Diam of Bolt (inch)	Machine Bolt Length	Stud Bolt Length		Welding Neck		Slip-on and Threaded		LapJoint		Blind		Socket Welding	
	Y					Raised Face	Raised Face	Ring Joint	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
1/2	9.7	66.7	4	15.8	1/2	55	65	75	0.78	1.70	0.62	1.40	0.61	1.30	0.62	1.40	0.62	1.40
3/4	11.2	82.6	4	19.1	5/8	65	75	90	1.34	3.00	1.15	2.50	1.15	2.50	1.16	2.50	1.19	2.60
1	12.7	88.9	4	19.1	5/8	65	75	90	1.64	3.60	1.39	3.10	1.38	3.00	1.42	3.00	1.44	3.20
1 1/4	14.2	98.6	4	19.1	5/8	70	85	95	2.06	4.50	1.67	3.70	1.66	3.70	1.79	3.90	1.73	3.80
1 1/2	15.7	114.3	4	22.2	3/4	75	90	100	3.06	6.70	2.53	5.60	2.52	5.60	2.68	5.90	2.62	5.80
2	17.5	127.0	8	19.1	5/8	75	90	100	3.40	7.50	2.80	6.20	2.79	6.20	3.09	6.80	2.94	6.50
2 1/2	19.1	149.4	8	22.2	3/4	85	100	115	5.31	11.70	4.25	9.40	4.22	9.30	4.75	10.50	4.49	9.90
3	20.6	168.3	8	22.2	3/4	90	110	120	7.32	16.10	5.81	12.80	5.78	12.70	6.79	14.90	6.20	13.70
3 1/2	22.4	184.2	8	22.2	3/4	95	110	125	8.17	18.00	7.72	17.00	7.72	17.00	9.53	21.00		
4	23.9	200.2	8	22.2	3/4	95	115	125	11.30	24.90	10.13	22.30	10.07	22.20	12.00	26.50		
5	23.9	235.0	8	22.2	3/4	110	120	135	15.12	33.30	12.58	27.70	12.52	27.60	15.96	35.20		
6	26.9	269.7	12	22.2	3/4	110	120	140	19.68	43.40	16.04	35.40	15.95	35.20	21.20	46.70		
8	31.8	330.2	12	25.4	7/8	120	140	150	30.48	67.20	24.50	54.00	24.37	53.70	34.60	76.30		
10	33.3	387.4	16	28.4	1	140	160	170	43.74	96.40	34.16	75.30	39.92	88.00	55.34	122.00		
12	39.6	450.9	16	31.8	1 1/8	145	170	185	64.41	142.00	51.26	113.00	58.70	129.40	78.90	174.00		
14	41.4	514.4	20	31.8	1 1/8	160	180	190	88.30	194.70	72.12	159.00	83.46	184.00	107.05	236.00		
16	44.5	571.5	20	34.9	1 1/4	165	190	205	112.94	249.00	90.40	199.30	106.14	234.00	139.25	307.00		
18	49.3	628.7	24	34.9	1 1/4	170	195	210	138.34	305.00	109.00	240.30	133.95	295.30	176.90	396.00		
20	54.1	685.8	24	34.9	1 1/4	185	205	220	167.37	369.00	136.00	300.00	157.65	347.60	223.17	492.00		
24	63.5	812.8	24	41.1	1 1/2	205	230	255	235.41	519.00	204.00	449.70	240.40	530.00	342.00	754.00		

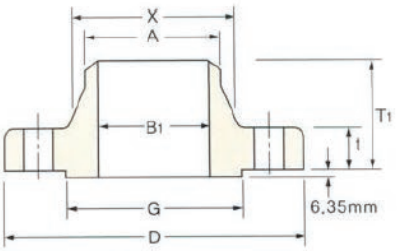
(4)Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub.
(5)The gasket surface and backside(bearing surface for bolting)are made parallel within 1 degree.To accomplish parallelism,spot facing is carried out according to MSS SP-9,without reducing thickness(t).
(6)Depth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

CLASS 400 FLANGES

ASME B16.5



SLIP–ON



WELDING NECK

ASME B16.5 FORGED FLANGES

Unit:mm

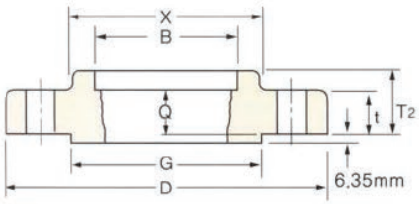
Nominal Pipe Size	Outside Diam.	Diam. at Base of Hub	O.D.of Raised Face	Thickness	BORE				LENGTH THRU HUB			Diam.of Hub at Bevel
					Welding Neck	Slip–on	Lap Joint	Counter Bore Min. Threaded Min.	Welding Neck	Slip–on Threaded	Lap Joint	
	D	X	G	t	B_1	B_2	B_3	B	T_1	T_2	T_3	A
1/2	95.3	38.1	35.1	14.2	See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

Notes

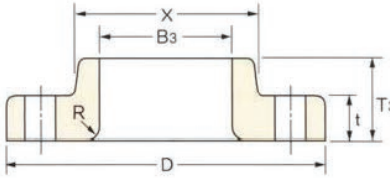
(1)For the inside diameter of pipes(corresponding to ´Bore´(B1)of Welding Neck Flanges),refer to page 50,51.

(2)Class 400 flanges except Lap Joint will be furnished with 0.25"(6.35mm) raised face,which is not included in ´Thickness´(t)and ´Length through Hub´(T1),(T2).

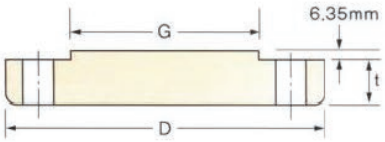
(3)For Slip–on,Threaded, Socket Welding and Lap Joint Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees.



THREADED



LAP JOINT



BLIND

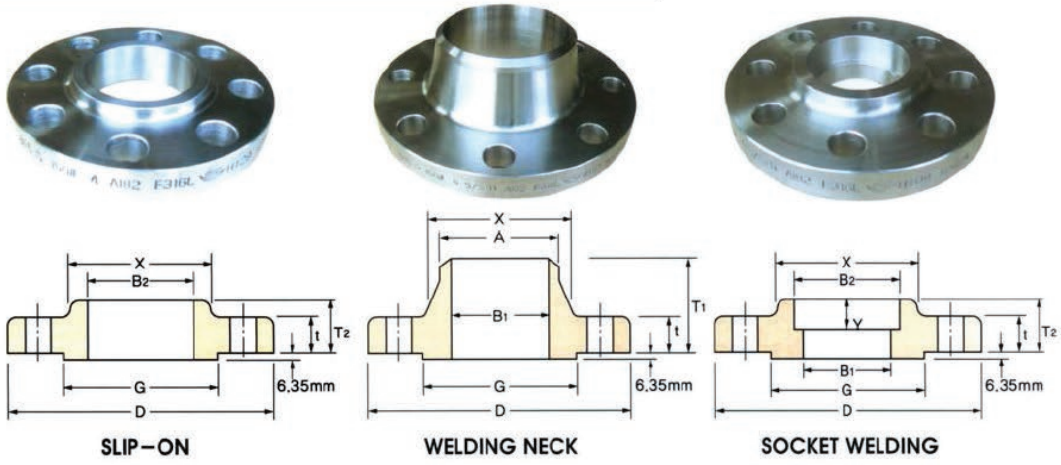
Unit:mm

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

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

CLASS 600 FLANGES

ASME B16.5



ASME B16.5 FORGED FLANGES

Unit:mm

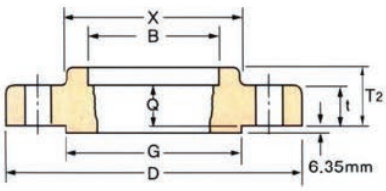
Nominal Pipe Size	Outside Diam	Diam. at Base of Hub	O.D.of Raised Face	Thickness	BORE				LENGTH THRU HUB			Diam.of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket Welding	Slip–on Socket Welding	Lap Joint	Counter Bore Min.	Welding Neck	Slip–on Threaded Socket Welding	Lap Joint			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

Notes

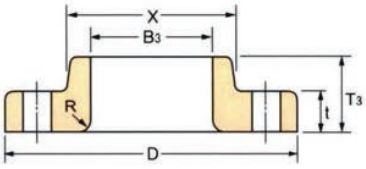
(1)For the inside diameter of pipes(corresponding to ´Bore´(B_1)of Welding Neck Flanges),refer to page 50,51.

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

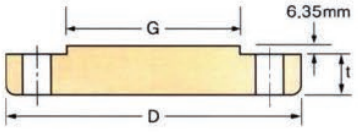
(3)For Slip–on,Threaded, Socket Welding and Lap Joint Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees.



THREADED



LAP JOINT



BLIND

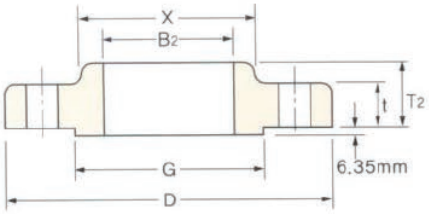
Unit:mm

Nominal Pipe Size	Depth of Socket	DRILLING			BOLTING				APPROXIMATE WEIGHT									
		Bolt Circle Diam.	Number of Holes	Diam of Holes	Diam of Bolt (inch)	Stud Bolt Length 0.25" Raised Face	Stud Bolt Length Male FemaleTongue-Groove	Ring Joint	Welding Neck		Slip-on and Threaded		Lap Joint		Blind		Socket Welding	
	Y								kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
1/2	9.7	66.7	4	15.8	1/2	75	70	75	0.90	2.00	0.91	2.00	0.80	1.80	0.91	2.00	0.91	2.00
3/4	11.2	82.6	4	19.1	5/8	90	85	90	1.59	3.50	1.40	3.00	1.36	3.00	1.40	3.00	1.36	3.00
1	12.7	88.9	4	19.1	5/8	90	85	90	1.90	4.00	1.70	3.70	1.59	3.50	1.81	4.00	1.81	4.00
1 1/4	14.2	98.6	4	19.1	5/8	95	90	95	2.49	5.50	2.27	5.00	2.04	4.50	2.40	5.30	2.60	5.70
1 1/2	15.7	114.3	4	22.2	3/4	110	100	110	3.63	8.00	3.10	6.80	2.95	6.50	3.40	7.50	3.18	7.00
2	17.5	127.0	8	19.1	5/8	110	100	110	4.54	10.00	3.63	8.00	3.63	8.00	4.40	9.70	3.90	8.60
2 1/2	19.1	149.4	8	22.2	3/4	120	115	120	6.35	14.00	5.44	12.00	4.99	11.00	6.80	15.00	5.90	13.00
3	20.6	168.1	8	22.2	3/4	125	120	125	8.16	18.00	7.26	16.00	6.35	14.00	8.90	19.60	7.40	16.30
3 1/2	22.4	184.2	8	25.4	7/8	140	135	140	11.80	26.00	9.53	21.00	9.08	20.00	13.17	29.00		
4	23.9	215.9	8	25.4	7/8	145	140	145	16.78	37.00	14.97	33.00	14.06	31.00	18.60	41.00		
5	23.9	266.7	8	28.4	1	165	160	165	30.87	68.00	28.50	62.80	27.50	60.60	30.84	68.00		
6	26.9	292.1	12	28.4	1	170	165	170	36.77	80.00	36.32	80.00	35.38	78.00	38.00	83.80		
8	31.8	349.3	12	31.8	1 1/8	190	185	195	50.80	112.00	44.00	97.00	50.80	112.00	62.20	137.00		
10	33.3	431.8	16	35.1	1 1/4	215	210	215	86.26	190.00	76.20	168.00	74.00	163.00	102.00	224.90		
12	39.6	489.0	20	35.1	1 1/4	220	215	220	102.51	226.00	97.52	215.00	108.86	240.00	132.00	291.00		
14	41.4	527.1	20	38.1	1 3/8	235	230	235	121.56	268.00	102.00	224.8/0	111.00	244.70	158.00	348.30		
16	44.5	603.3	20	41.1	1 1/2	255	250	255	177.06	290.00	149.82	330.20	165.71	365.30	224.73	495.40		
18	49.3	654.1	20	44.5	1 5/8	275	265	275	215.65	475.40	180.10	412.30	194.00	427.70	285.00	628.30		
20	54.1	723.9	24	44.5	1 5/8	285	280	290	267.86	590.50	231.54	510.50	258.78	570.50	365.00	804.70		
24	63.5	838.2	24	50.8	1 7/8	330	325	335	372.00	820.00	330.00	725.50	362.00	798.00	533.45	1176.0		

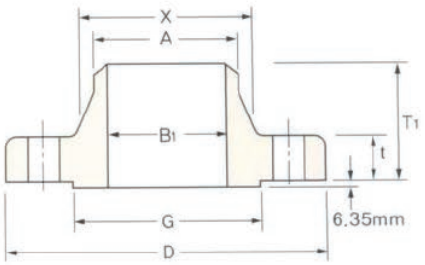
(4)Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub.
(5)The gasket surface and backside(bearing surface for bolting)are made parallel within 1 degree.To accomplish parallelism,spot facing is carried out according to MSS SP-9,without reducing thickness(t).
(6)Dimensions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

CLASS 900 FLANGES

ASME B16.5



SLIP–ON



WELDING NECK

ASME B16.5 FORGED FLANGES

Unit:mm

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

Notes

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

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

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

THREADED

LAP JOINT

BLIND

Unit:mm

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

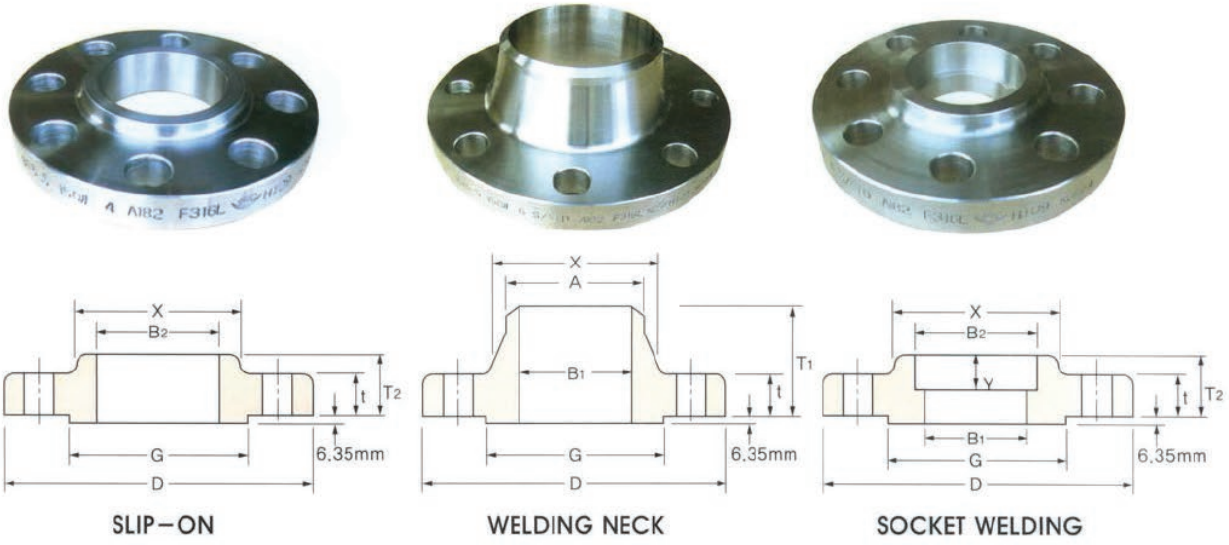
(4)Blind Flanges may be made with the same hub as that used for Slip–on Flanges or without hub.

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

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

CLASS 1500 FLANGES

ASME B16.5



SLIP–ON WELDING NECK SOCKET WELDING

ASME B16.5 FORGED FLANGES

Unit:mm

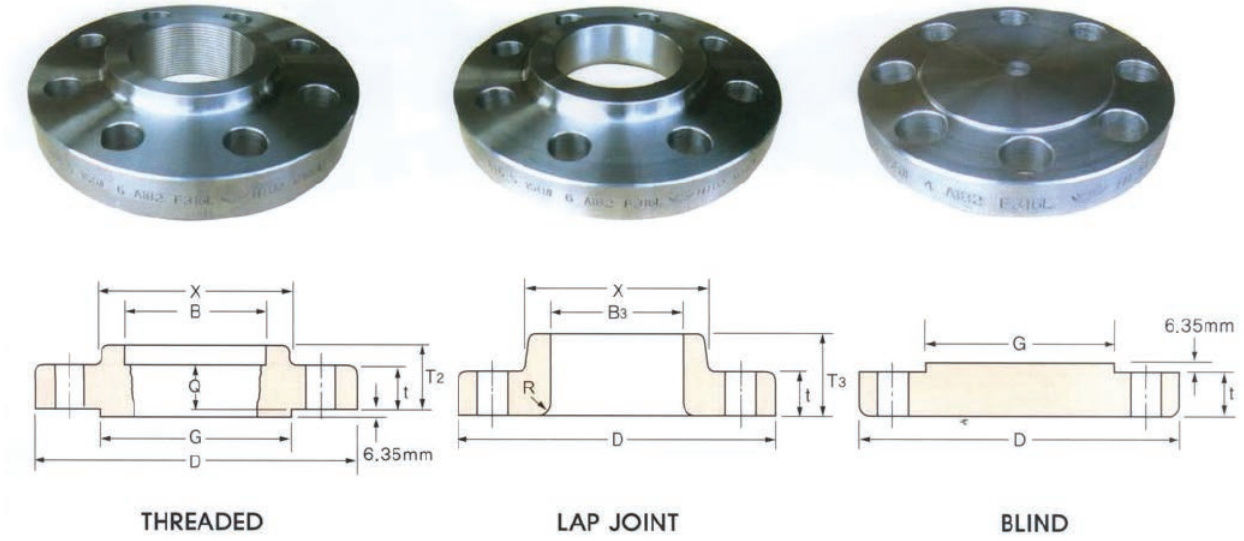
Nominal Pipe Size	OutSide Diam.	Diam. at Base of Hub	O.D.of Raised Face	Thick-ness	BORE				LENGTH THRU HUB			Diam.of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket Welding	Slip–on Socket Welding	Lap Joint	Counter Bore Min.	Welding Neck	Slip–on Thread-ed Socket Welding	Lap Joint			
	D	X	G	t	B_1	B_2	B_3	B	T_1	T_2	T_3	A	R	Q
1/2	120.7	38.1	35.1	22.4	See Note(1) To be specified by purchaser.	22.4	22.9	23.6	60.5	31.8	31.8	21.3	3.0	23.0
3/4	130.0	44.5	42.9	25.4		27.7	28.2	29.0	69.9	35.1	35.1	26.7	3.0	26.0
1	149.4	52.3	50.8	28.6		34.5	35.1	35.8	73.2	41.1	41.1	33.5	3.0	29.0
1 1/4	158.8	64.0	63.5	28.6		43.2	43.7	44.5	73.2	41.1	41.1	42.2	5.0	31.0
1 1/2	177.8	70.0	73.2	31.8		49.5	50.0	50.5	82.6	44.5	44.5	48.3	6.0	32.0
2	215.9	105.0	91.9	38.1		62.0	62.5	63.5	102.0	57.2	57.2	60.5	8.0	39.0
2 1/2	244.3	124.0	104.6	41.3		74.7	75.4	76.2	105.0	64.0	64.0	73.2	8.0	48.0
3	266.7	133.4	127.0	47.8		90.7	91.4	92.2	117.3	–	73.2	88.9	10.0	–
4	311.2	162.1	157.2	54.0		116.1	116.8	117.6	124.0	–	90.4	114.3	11.0	–
5	374.7	197.0	185.7	73.2		143.8	144.5	144.5	156.0	–	104.6	141.2	11.0	–
6	393.7	229.0	215.9	82.6		170.7	171.5	171 .5	171.5	–	119.1	168.4	13.0	–
8	482.6	292.1	269.7	92.0		221.5	222.3	222.3	213.0	–	143.0	219.2	13.0	–
10	584.2	368.3	323.9	108.0		276.4	277.4	276.4	254.0	–	178.0	273.1	13.0	–
12	673.1	451.0	381.0	124.0		327.2	328.2	328.7	283.0	–	219.0	323.9	13.0	–
14	749.3	495.3	412.8	133.4		359.2	360.2	360.4	298.5	–	241.3	355.6	13.0	–
16	825.5	552.5	469.9	146.1		410.5	411.2	411.2	311.2	–	260.4	406.4	13.0	–
18	914.4	597.0	533.4	162.1		461.8	462.3	462.0	327.2	–	276.4	457.2	13.0	–
20	984.3	641.4	584.2	177.8		513.1	514.4	51 2. 8	356. 0	–	292.1	508.0	13.0	–
24	1168.4	762.0	692.2	203.2		616.0	616.0	614.4	406.4	–	330.2	609.6	13.0	–

Notes

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

(2)Class 1500 flanges except Lap Joint will be furnished with 0.25"(6.35mm)raised face,which is not included in ˝Thickness˝(t) and˝Length through Hub˝(T_1),(T_2).

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



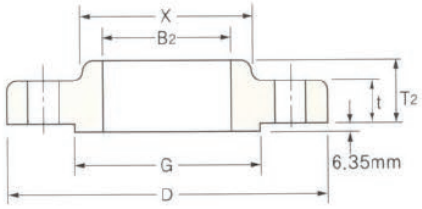
THREADED LAP JOINT BLIND

Unit:mm

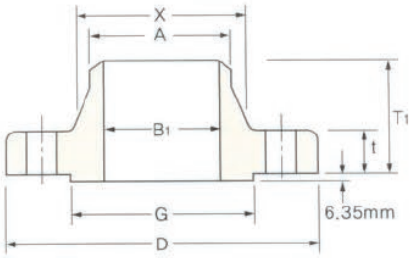
Nominal Pipe Size	Depth of Socket	DRILLING			BOLTING				APPROXIMATE WEIGHT									
					Diam. of Bolt (inch)	Stud Bolt Length			Welding Neck		Slip–on and Threaded		Lap Joint		Blind		Socket Welding	
	Y	Bolt Circle Diam.	Number of Holes	Diam. of Holes		0.25" Raised Face	Male–Female Tongue–Groove	Ring Joint	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
1/2	9.7	82.6	4	22.2	3/4	110	100	110	2.10	4.60	1.80	4.00	1.80	4.00	1.90	4.00	1.81	4.00
3/4	11.2	88.9	4	22.2	3/4	115	110	115	2.72	6.00	2.27	5.00	2.27	5.00	2.72	6.00	2.81	6.20
1	12.7	101.6	4	25.4	7/8	125	120	125	3.86	8.50	3.40	7.50	3.40	7.50	4.08	9.00	3.61	8.00
1 1/4	14.2	111.3	4	25.4	7/8	125	120	125	4.54	10.00	4.10	9.00	4.09	10.80	4.30	9.50	4.99	11.00
1 1/2	15.7	124.0	4	28.5	1	140	135	140	5.90	13.00	5.45	12.00	5.40	11.90	5.90	13.00	6.76	14.90
2	17.5	165.1	8	25.4	1 7/8	145	140	145	10.89	24.00	10.50	23.00	9.53	21.00	11.30	25.00	10.89	24.00
2 1/2	19.1	190.5	8	28.4	1	160	150	160	16.34	36.00	15.80	34.80	13.15	29.00	16.00	35.30	16.34	36.00
3	20.6	203.2	8	31.8	1 1/8	180	170	180	21.79	48.00	21.77	48.00	17.24	38.00	21.79	48.00		
4	23.9	241.3	8	35.1	1 1/4	195	190	195	31.30	69.00	31.00	68.40	29.00	63.90	33.11	73.00		
5	23.9	292.1	8	41.1	1 1/2	250	240	250	59.02	130.00	58.80	129.60	54.00	119.00	60.00	132.30		
6	26.9	317.5	12	38.1	1 3/8	260	255	265	74.91	165.00	74.00	163.00	62.00	136.70	75.00	165.30		
8	31.8	393.7	12	44.5	1 5/8	290	285	325	123.83	273.00	117.73	258.00	129.73	236.00	136.98	302.00		
10	33.3	482.6	12	50.8	1 7/8	335	330	345	205.93	454.00	197.49	435.40	220.19	485.40	229.97	507.00		
12	39.6	571.5	16	53.8	2	375	370	385	306.00	674.60	264.00	582.00	286.02	630.60	316.00	696.70		
14	41.4	635.0	16	60.5	2 1/4	405	400	425	416.00	917.00	–	–	404.06	890.80	421.00	928.00		
16	44.5	704.9	16	66.5	2 1/2	445	440	470	567.50	1250.00	–	–	522.10	1151.00	559.00	1232.70		
18	49.3	774.7	16	73.2	2 3/4	495	490	525	736.00	1622.60	–	–	669.65	1476.30	761.00	1677.70		
20	54.1	831.9	16	79.2	3	540	535	565	929.00	2048.0 0	–	–	805.85	1776.60	967.00	2131.80		
24	63.5	990.6	16	91.9	3 1/2	615	610	650	1504.00	3315.70	–	–	1285.55	2834.00	1568.00	3456.80		

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

CLASS 2500 FLANGES ASME B16.5



SLIP–ON



WELDING NECK

ASME B16.5 FORGED FLANGES

Unit:mm

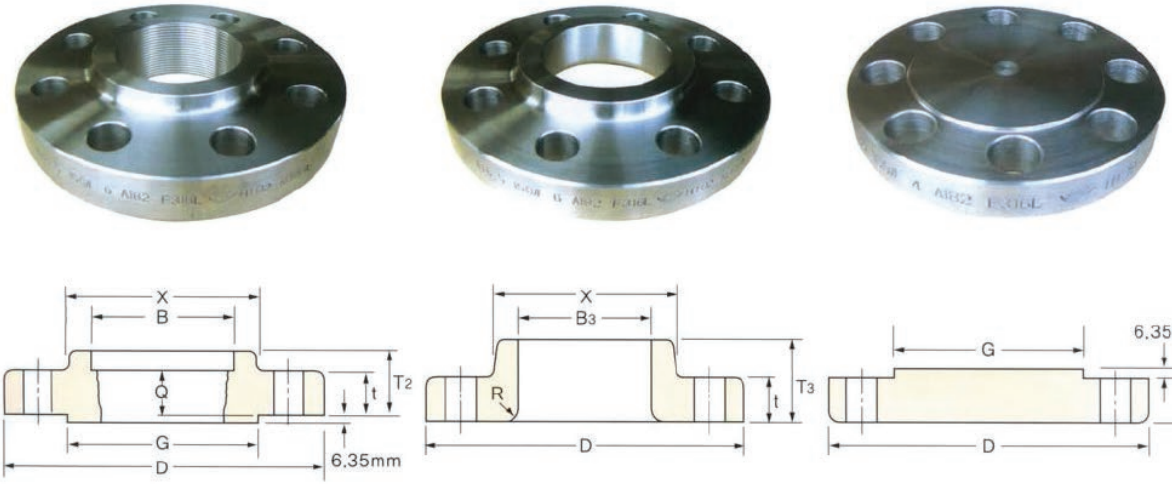
Nominal Pipe Size	OutSide Diam.	Diam. at Base of Hub	O.D.of Raised Face	Thick-ness	BORE				LENGTH THRU HUB			Diam.of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket Welding	Slip–on Socket Welding	Lap Joint	Counter Bore Min.	Welding Neck	Slip–on Thread-ed Socket Welding	Lap Joint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

Notes

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

(2)Class 2500 flanges except Lap Joint will be furnished with 0.25"(6.35mm)raised face,which is not included in ´Thickness´(t) and´Length through Hub´(T_1),(T_2).

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



THREADED LAP JOINT BLIND

Unit:mm

Nominal Pipe Size	DRILLING			BOLTING Stud Bolt Length				APPROXIMATE WEIGHT							
	Bolt Circle Diam.	Number of Holes	Diam. of Holes	Diam. of Bolt (inch)	0.25" Raised Face	Male–Female Tongue – Groove	Ring Joint	Welding Neck		Slip–on and Threaded		Lap Joint		Blind	
								kg	lb	kg	lb	kg	lb	kg	lb
1/2	88.9	4	22.2	3/4	120	115	120	3.18	7.00	3.18	7.00	3.00	6.60	3.18	7.00
3/4	95.3	4	22.2	3/4	125	120	125	4.08	9.00	4.08	9.00	3.63	8.00	4.54	10.00
1	108.0	4	25.4	7/8	140	135	140	5.45	12.00	5.44	12.00	4.99	11.00	5.44	12.00
1 1/4	130.0	4	28.4	1	150	145	150	9.07	20.00	8.16	18.00	7.26	16.00	8.16	18.00
1 1/2	146.1	4	31.8	1 1/8	170	165	170	11.35	25.00	11.00	24.30	9.99	22.00	10.44	23.00
2	171.5	8	28.4	1	180	170	180	19.07	42.00	17.25	38.00	16.80	37.00	17.71	39.00
2 1/2	196.9	8	31.8	1 1/8	195	190	205	23.61	52.00	24.97	55.00	24.06	53.00	25.42	56.00
3	228.6	8	35.1	1 1/4	220	215	230	42.68	94.00	37.68	83.00	36.32	80.00	39.04	86.00
4	273.1	8	41.1	1 1/2	255	250	260	64.00	141.00	58.00	127.90	54.48	120.00	60.38	133.00
5	323.9	8	47.8	1 3/4	300	290	310	110.68	244.00	95.25	210.00	92.53	204.00	101.15	223.00
6	368.3	8	53.8	2	345	335	355	176.46	378.00	146.51	323.00	143.01	315.30	156.63	345.30
8	438.2	12	53.8	2	380	375	395	261.27	576.00	219.99	485.00	213.38	470.40	240.62	530.50
10	539.8	12	66.5	2 1/2	490	485	510	484.43	1068.00	419.57	925.00	408.60	900.80	465.36	1026.00
12	619.3	12	73.2	2 3/4	540	535	560	692.35	1526.30	590.20	1301.00	572.95	1263.00	664.06	1464.00

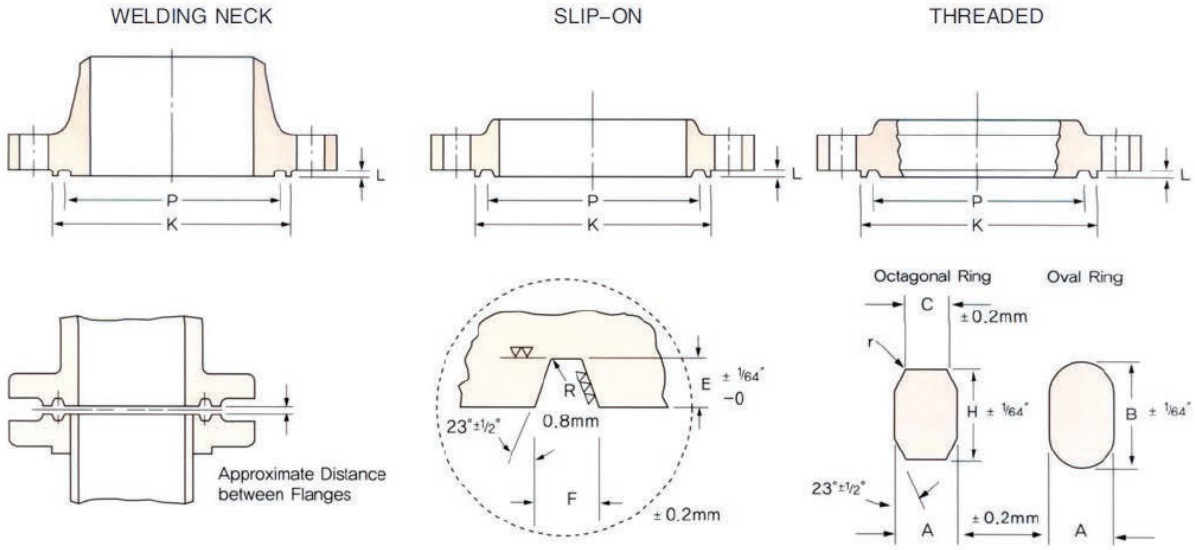
(4)Blind Flanges may be made with the same hub as that used for Slip–on Flanges or without hub.

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

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

CLASS 150 FLANGES

RING JOIN FLANGES FACING DIMENSIONS



ASME B16.5 FORGED FLANGES

Unit:mm

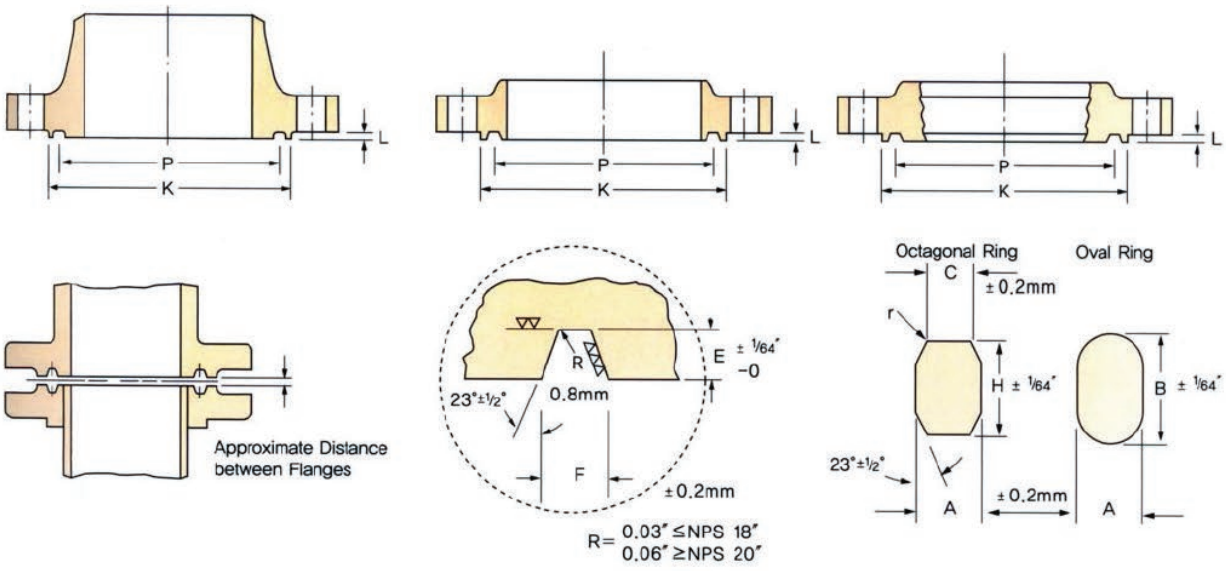
Nominal Pipe Size	Pitch Diam.of Ring and Groove	Width of Ring	HEIGHT OF RING		Width of Flat on Octagonal Ring	Width of Groove	Depth of Groove	Diameter of Raised Face for Ring Joint or Lapped	Ring Number	Approximate Distance Between Flanges of Ring Joints When Ring is Compressed
			Oval	Octagonal						
	P	A	B	H	C	F	E(L*)	K(Min)		
1	47.6	8.0	14.3	12.7	5.2	8.7	6.4	63.5	R15	4.1
1¼	57.2	8.0	14.3	12.7	5.2	8.7	6.4	73.0	R17	4.1
1½	65.1	8.0	14.3	12.7	5.2	8.7	6.4	82.5	R19	4.1
2	82.6	8.0	14.3	12.7	5.2	8.7	6.4	102.0	R22	4.1
2½	101.6	8.0	14.3	12.7	5.2	8.7	6.4	121.0	R25	4.1
3	114.3	8.0	14.3	12.7	5.2	8.7	6.4	133.4	R29	4.1
3½	131.8	8.0	14.3	21.7	5.2	8.7	6.4	154.0	R33	4.1
4	149.2	8.0	14.3	12.7	5.2	8.7	6.4	171.5	R36	4.1
5	171.5	8.0	14.3	12.7	5.2	8.7	6.4	194.0	R40	4.1
6	193.7	8.0	14.3	12.7	5.2	8.7	6.4	219.0	R43	4.1
8	247.7	8.0	14.3	12.7	5.2	8.7	6.4	273.1	R48	4.1
10	304.8	8.0	14.3	12.7	5.2	8.7	6.4	330.2	R52	4.1
12	381.0	8.0	14.3	12.7	5.2	8.7	6.4	406.4	R56	4.1
14	396.9	8.0	14.3	12.7	5.2	8.7	6.4	425.5	R59	3.0
16	454.0	8.0	14.3	12.7	5.2	8.7	6.4	483.0	R64	3.0
18	517.5	8.0	14.3	12.7	5.2	8.7	6.4	546.1	R68	3.0
20	558.8	8.0	14.3	12.7	5.2	8.7	6.4	597.0	R72	3.0
24	673.1	8.0	14.3	12.7	5.2	8.7	6.4	711.2	R76	3.0

Notes

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

CLASS 300–400–600 FLANGES

RING JOINT FLANGES FACING DIMENSIONS



ASME B16.5 FORGED FLANGES

Unit:mm

Nominal Pipe Size	Pitch Diam.of Ring and Groove	Width of Ring	HEIGHT OF RING		Width of Flat on Octagonal Ring	Width of Groove	Depth of Groove	Diameter of Raised Face for Ring Joint or Lapped	Ring Number	Approximate Distance Between Flanges of Ring Joints When Ring is Compressed		
			Oval	Octagonal						Class 300	Class 400	Class 600
	P	A	B	H	C	F	E(L*)	K(Min)				
1/2	34.1	6.4	11.1	9.5	4.3	7.1	5.6	50.8	R11	3.0	–	3.0
3/4	42.9	8.0	14.3	12.7	5.2	8.7	6.4	63.5	R13	4.1	–	4.1
1	50.8	8.0	14.3	12.7	5.2	8.7	6.4	69.9	R16	4.1	–	4.1
1 1/4	60.3	8.0	14.3	12.7	5.2	8.7	6.4	79.5	R18	4.1	–	4.1
1 1/2	68.3	8.0	14.3	12.7	5.2	8.7	6.4	90.4	R20	4.1	–	4.1
2	82.6	11.1	17.5	15.9	7.7	11.9	7.9	108.0	R23	6.0	–	5.0
2 1/2	101.6	11.1	17.5	15.9	7.7	11.9	7.9	127.0	R26	6.0	–	5.0
3	123.8	11.1	17.5	15.9	7.7	11.9	7.9	146.1	R31	6.0	–	5.0
3 1/2	131.8	11.1	17.5	15.9	7.7	11.9	7.9	158.8	R34	6.0	–	5.0
4	149.2	11.1	17.5	15.9	7.7	11.9	7.9	174.8	R37	6.0	6.0	5.0
5	181.0	11.1	17.5	15.9	7.7	11.9	7.9	209.6	R41	6.0	6.0	5.0
6	211.2	11.1	17.5	15.9	7.7	11.9	7.9	241.3	R45	6.0	6.0	5.0
8	269.9	11.1	17.5	15.9	7.7	11.9	7.9	301.8	R49	6.0	6.0	5.0
10	323.9	11.1	17.5	15.9	7.7	11.9	7.9	355.6	R53	6.0	6.0	5.0
12	381.0	11.1	17.5	15.9	7.7	11.9	7.9	412.8	R57	6.0	6.0	5.0
14	419.1	11.1	17.5	15.9	7.7	11.9	7.9	457.2	R61	6.0	6.0	5.0
16	469.9	11.1	17.5	15.9	7.7	11.9	7.9	508.0	R65	6.0	6.0	5.0
18	533.4	11.1	17.5	15.9	7.7	11.9	7.9	574.8	R69	6.0	6.0	5.0
20	584.2	12.7	19.1	17.5	8.7	13.5	9.5	635.0	R73	6.0	6.0	5.0
24	692.2	15.9	22.2	20.7	10.5	16.7	11.1	749.3	R77	6.0	6.0	6.0

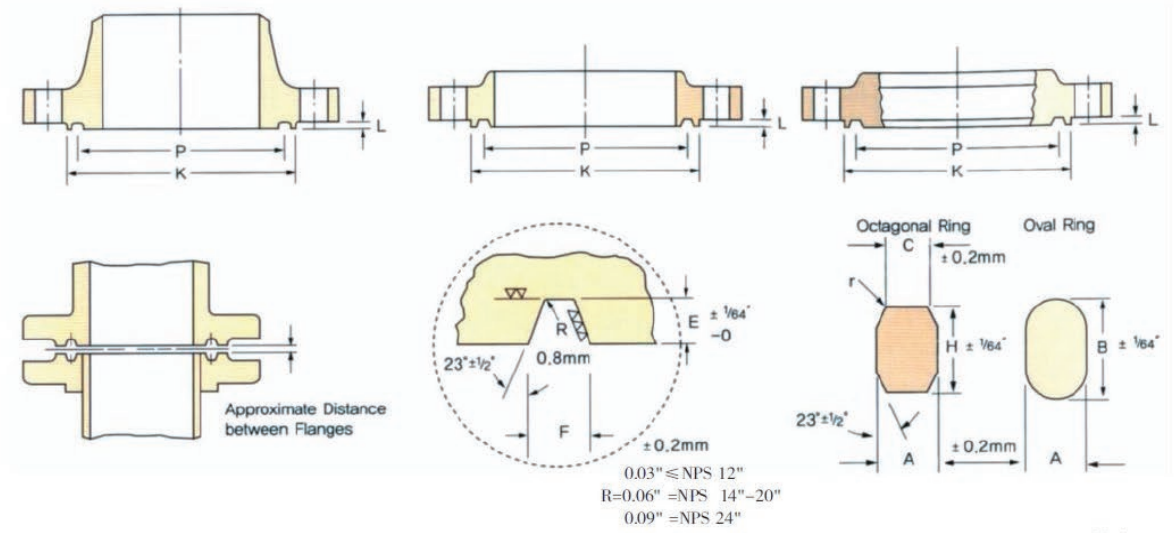
Notes

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

CLASS 900 FLANGES

RING JOINT FLANGES FACING DIMENSIONS

WELDING NECK SLIP-ON THREADED



Unit:mm

Nominal Pipe Size	Pitch Diam.of Ring and Groove	Width of Ring	HEIGHT OF RING		Width of Flat on Octagonal Ring	Width of Groove	Depth of Groove	Diameter of Raised Face for Ring Joint or Lapped	Ring Number	Approximate Distance Between Flanges of Ring Joints When Ring is Compressed
			Oval	Octagonal						
	P	A	B	H	C	F	E(L*)	K(Min)		
For size 2½ and smaller,use Class 1500 Ring joint Flanges										
3	123.8	11.1	17.5	15.9	7.7	11.9	7.9	155.4	R31	4.1
4	149.2	11.1	17.5	15.9	7.7	11.9	7.9	180.8	R37	4.1
5	181.0	11.1	17.5	15.9	7.7	11.9	7.9	215.9	R41	4.1
6	211.2	11.1	17.5	15.9	7.7	11.9	7.9	241.3	R45	4.1
8	269.9	11.1	17.5	15.9	7.7	11.9	7.9	307.8	R49	4.1
10	323.9	11.1	17.5	15.9	7.7	11.9	7.9	362.0	R53	4.1
12	381.0	11.1	17.5	15.9	7.7	11.9	7.9	419.1	R57	4.1
14	419.1	15.9	22.2	20.7	10.5	16.7	11.1	466.9	R62	4.1
16	469.9	15.9	22.2	20.7	10.5	16.7	11.1	523.7	R66	4.1
18	533.4	19.1	25.4	23.8	11.1	19.8	12.7	593.9	R70	4.8
20	584.2	19.1	25.4	23.8	12.3	19.8	12.7	647.7	R74	4.8
24	692.2	25.4	33.4	31.8	17.3	27.0	15.9	771.7	R78	5.6

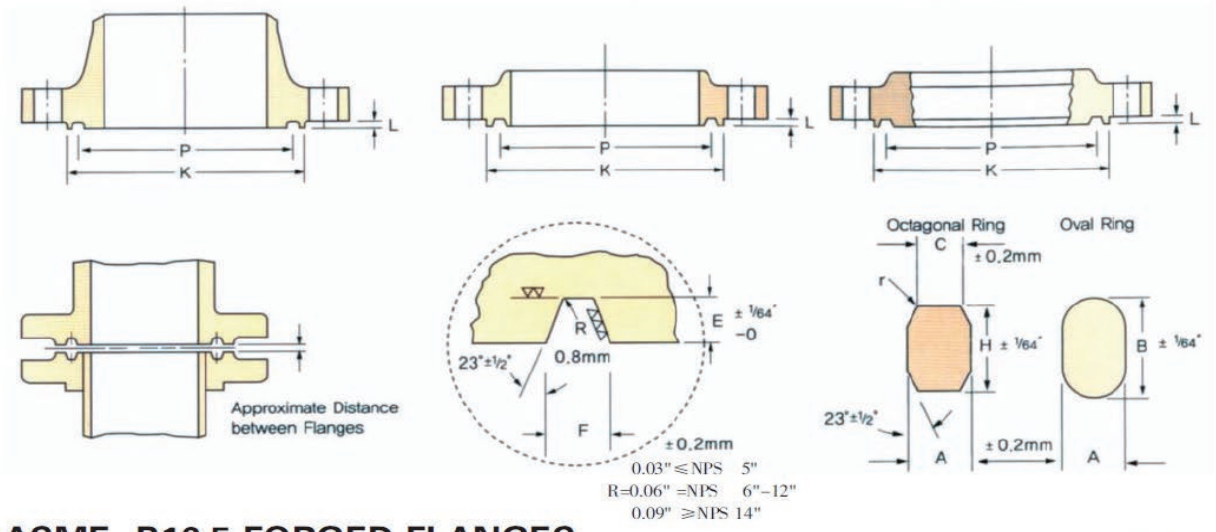
Notes

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

CLASS 1500 FLANGES

RING JOINT FLANGES FACING DIMENSIONS

WELDING NECK SLIP–ON THREADED



ASME B16.5 FORGED FLANGES

Unit:mm

Nominal Pipe Size	Pitch Diam.of Ring and Groove	Width of Ring	HEIGHT OF RING		Width of Flat on Octagonal Ring	Width of Groove	Depth of Groove	Diameter of Raised Face for Ring Joint or Lapped	Ring Number	Approximate Distance Between Flanges of Ring Joints When Ring is Compressed
			Oval	Octagonal						
	P	A	B	H	C	F	E(L*)	K(Min)		
1/2	39.7	8.0	14.3	12.7	5.2	8.7	6.4	60.5	R12	4.1
3/4	44.5	8.0	14.3	12.7	5.2	8.7	6.4	66.8	R14	4.1
1	50.8	8.0	14.3	12.7	5.2	8.7	6.4	71.4	R16	4.1
1 1/4	60.3	8.0	14.3	12.7	5.2	8.7	6.4	81.0	R18	4.1
1 1/2	68.3	8.0	14.3	12.7	5.2	8.7	6.4	92.2	R20	4.1
2	95.3	11.1	17.5	15.9	7.7	11.9	7.9	124.0	R24	3.0
2 1/2	108.0	11.1	17.5	15.9	7.7	11.9	7.9	137.0	R27	3.0
3	136.5	11.1	17.5	15.9	7.7	11.9	7.9	168.4	R35	3.0
4	161.9	11.1	17.5	15.9	7.7	11.9	7.9	194.0	R39	3.0
5	193.7	11.1	17.5	15.9	7.7	11.9	7.9	229.0	R44	3.0
6	211.2	12.7	19.1	17.5	8.7	13.5	9.5	248.0	R46	3.0
8	269.9	15.9	22.2	20.7	10.5	16.7	11.1	318.0	R50	4.1
10	323.9	15.9	22.2	20.7	10.5	16.7	11.1	371.0	R54	4.1
12	381.0	22.2	28.6	27.0	14.8	23.0	14.3	438.2	R58	5.0
14	419.1	25.4	33.4	31.8	17.3	27.0	15.9	489.0	R63	6.0
16	469.9	28.6	36.5	34.9	19.8	30.2	17.5	546.1	R67	8.0
18	533.4	28.6	36.5	34.9	19.8	30.2	17.5	613.0	R71	8.0
20	584.2	31.8	39.7	38.1	22.3	33.4	17.5	673.1	R75	10.0
24	692.2	34.9	44.5	41.3	24.8	36.5	20.6	794.0	R79	11.0

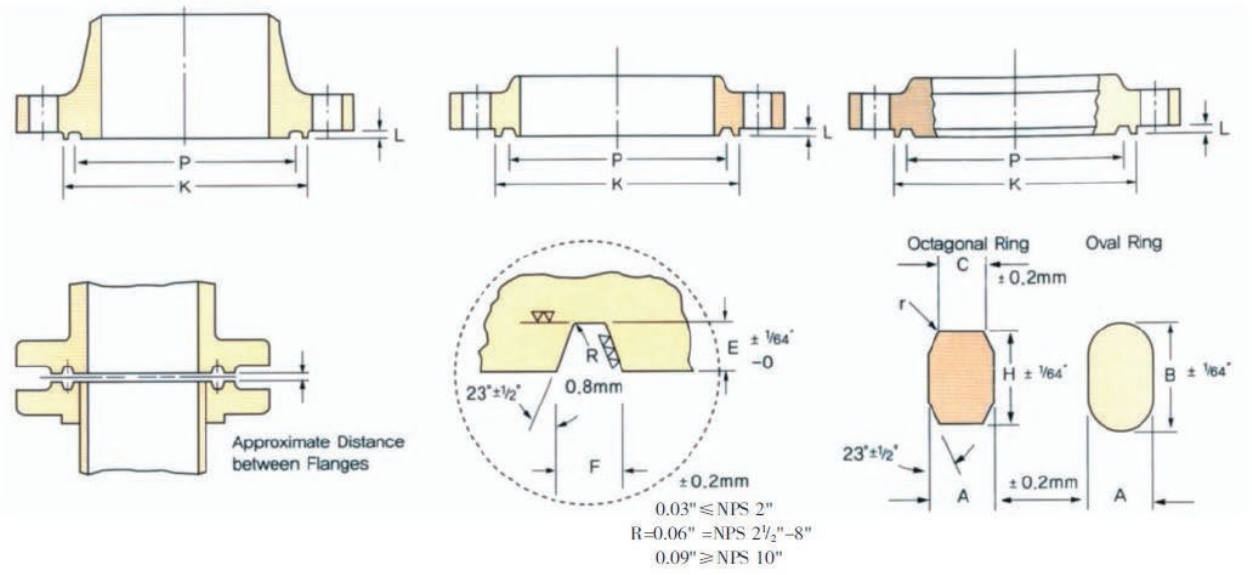
Notes

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

CLASS 2500 FLANGES

RING JOINT FLANGES FACING DIMENSIONS

WELDING NECK SLIP–ON THREADED



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

Unit:mm

Nominal Pipe Size	Pitch Diam.of Ring and Groove	Width of Ring	HEIGHT OF RING		Width of Flat on Octagonal Ring	Width of Groove	Depth of Groove	Diameter of Raised Face for Ring Joint or Lapped	Ring Number	Approximate Distance Between Flanges of Ring Joints When Ring is Compressed
			Oval	Octagonal						
	P	A	B	H	C	F	E(L*)	K(Min)		
½	42.9	8.0	14.3	12.7	5.2	8.7	6.4	65.0	R13	4.1
¾	50.8	8.0	14.3	12.7	5.2	8.7	6.4	73.2	R16	4.1
1	60.3	8.0	14.3	12.7	5.2	8.7	6.4	82.6	R18	4.1
1¼	72.2	11.1	17.5	15.9	7.7	11.9	7.9	102.0	R21	3.0
1½	82.6	11.1	17.5	15.9	7.7	11.9	7.9	114.3	R23	3.0
2	101.6	11.1	17.5	15.9	7.7	11.9	7.9	133.4	R26	3.0
2½	111.1	12.7	19.1	17.5	8.7	13.5	9.5	149.4	R28	3.0
3	127.0	12.7	19.1	17.5	8.7	13.5	9.5	168.4	R32	3.0
4	157.2	15.9	22.2	20.7	10.5	16.7	11.1	203.2	R38	4.1
5	190.5	19.1	25.4	23.8	12.3	19.8	12.7	241.3	R42	4.1
6	228.6	19.1	25.4	23.8	12.3	19.8	12.7	279.4	R47	4.1
8	279.4	22.2	28.6	27.0	14.8	23.0	14.3	340.0	R51	5.0
10	342.9	28.6	36.5	34.9	19.8	30.2	17.5	425.5	R55	6.0
12	406.4	31.8	39.7	38.1	22.3	33.4	17.5	495.3	R60	8.0

Notes

Unless otherwise specified by the customer,Ring Type Joint Flanges will be furnished in accordance with these details.

The depth of groove is added to the minimum flange thickness.

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

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

Dimension"R"is max.

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

A Tradition of Quality

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"A cleaner world, one project at a time"