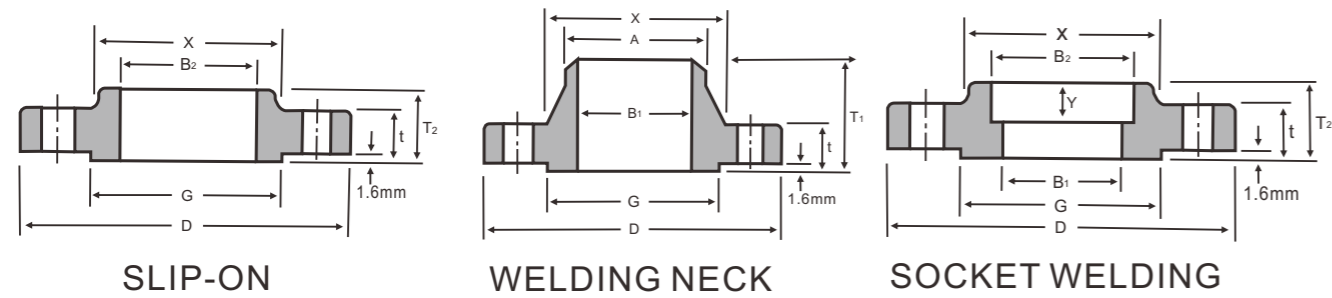
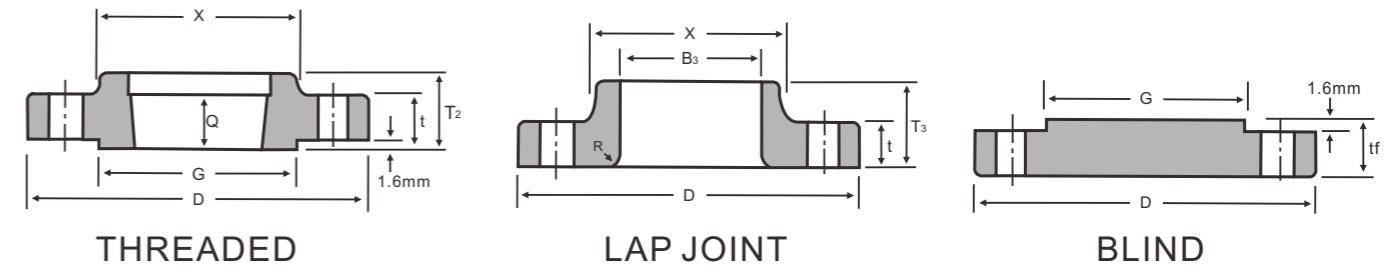


CLASS 150 FLANGE



CLASS 150 FLANGE



ANSI B16.5 FORGED FLANGE

Unit:mm

Nominal Pipe Size NPS	Outside Diameter of Flange	Thickness of Flange Min.	Thickness Lap Joint Min.	Out side Diameter of Raised Face	Diameter of Hub	Hub Diameter Beginning of Chamfer Welding Neck	Length thru hub			Thread Length Threaded Min	Bore			Corner Radius of bore of Lapped Flange and pipe	Depth of Socket
							Threaded/ Slip-on/ Socket Welding	Lapped	Welding Neck		Slip-on/ Socket Welding, Min.	Lapped Min.	Welding/ Socket/ Socket Welding.		
1/2	90.00	9.60	11.20	34.90	30.00	21.30	14.00	16.00	46.00	16.00	22.20	22.90	15.8	3.00	10.00
3/4	100.00	11.20	12.70	42.90	38.00	26.70	14.00	16.00	51.00	16.60	27.70	28.20	20.9	3.00	11.00
1	110.00	12.70	14.30	50.80	49.00	33.40	16.00	17.00	54.00	17.00	34.50	34.90	26.6	3.00	13.00
1 1/4	115.00	14.30	15.90	63.50	59.00	42.20	19.00	21.00	56.00	21.00	43.20	43.70	35.1	5.00	14.00
1 1/2	125.00	15.90	17.50	73.00	65.00	48.30	21.00	22.00	60.00	22.00	49.50	50.00	40.9	6.00	16.00
2	150.00	17.50	19.10	92.10	78.00	60.30	24.00	25.00	62.00	25.00	61.90	62.50	52.5	8.00	17.00
2 1/2	180.00	20.70	22.30	104.80	90.00	73.00	27.00	29.00	68.00	29.00	74.60	75.40	62.7	8.00	19.00
3	190.00	22.30	23.90	127.00	108.00	88.90	29.00	30.00	68.00	30.00	90.70	91.40	77.9	10.00	21.00
3 1/2	215.00	22.30	23.90	139.70	122.00	101.60	30.00	32.00	70.00	32.00	103.40	104.10	90.1	10.00	
4	230.00	22.30	23.90	157.20	135.00	114.30	32.00	33.00	75.00	33.00	116.10	116.80	102.3	11.00	
5	255.00	22.30	23.90	185.70	164.00	141.30	35.00	36.00	87.00	36.00	143.80	144.40	128.2	11.00	
6	280.00	23.90	25.40	215.90	192.00	168.30	38.00	40.00	87.00	40.00	170.70	171.40	154.1	13.00	
8	345.00	27.00	28.60	269.90	246.00	219.10	43.00	44.00	100.00	44.00	221.50	222.20	202.7	13.00	
10	405.00	28.60	30.20	323.80	305.00	273.00	48.00	49.00	100.00	49.00	276.20	277.40	254.6	13.00	
12	485.00	30.20	31.80	381.00	365.00	323.80	54.00	56.00	113.00	56.00	327.00	328.20	304.8	13.00	
14	535.00	33.40	35.00	412.80	400.00	355.60	56.00	79.00	125.00	57.00	359.20	360.20		13.00	
16	595.00	35.00	36.60	469.90	457.00	406.40	62.00	87.00	125.00	64.00	410.50	411.20	To be specified by purchaser	13.00	
18	635.00	38.10	39.70	533.40	505.00	457.00	67.00	97.00	138.00	68.00	461.80	462.30		13.00	
20	700.00	41.30	42.90	584.20	559.00	508.00	71.00	103.00	143.00	73.00	513.10	514.40		13.00	
24	815.00	46.10	47.70	692.20	663.00	610.00	81.00	111.00	151.00	83.00	616.00	616.00		13.00	

Notes:

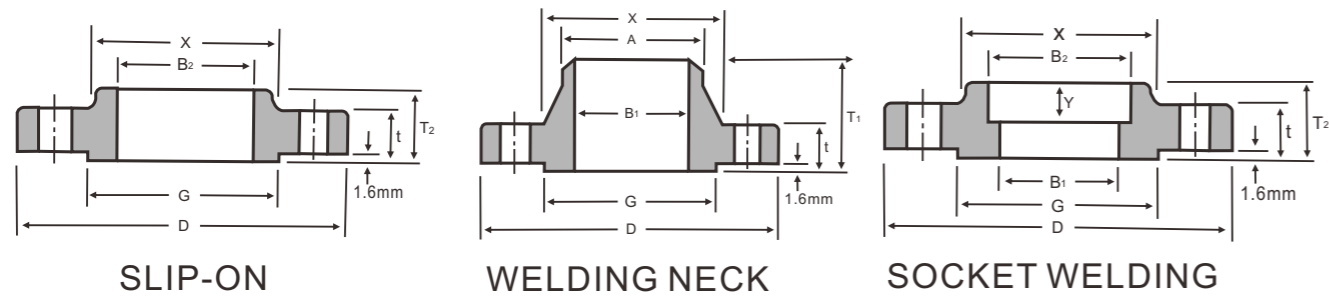
- (1) For the Bore (Bi) other than Standard Wall Thickness, refer to page 116.
- (2) Class 150 flanges except Lap Joint will be furnished with 0.06" (1.6mm) raised face, which is included in 'Thickness' (t) and Length through Hub' (T1), (T2).
- (3) For Slip-on, Threaded, Socket Welding and Lap Joint Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees.

Unit:mm

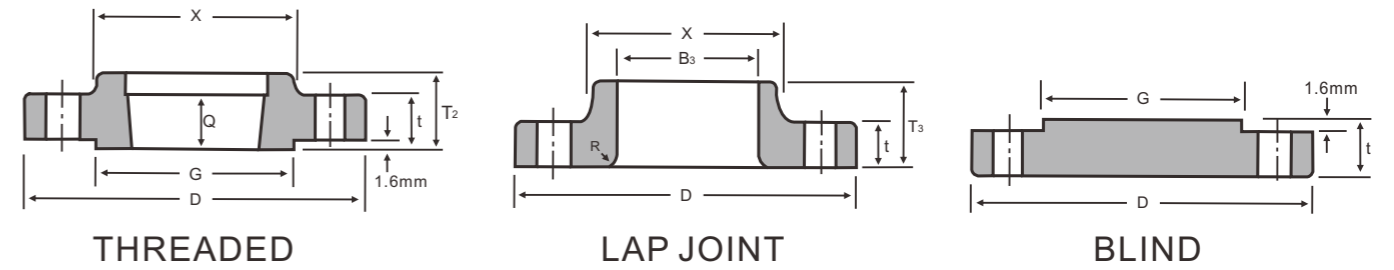
Drilling Template				Bolt Length			Approximate Weight										Nominal Pipe Size		
Diameter of Bolt Circle	Number of Holes	Diameter of Holes, in.	Diameter of bolts, in.	Machine Bolt Length	Stud bolt length			Welding Neck		Slip-on Threaded		Lap Joint		Blind		Socket Welding			
					Raised Face	Raised Face	Ring Joint	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg		Lb	
60.30	4	5/8	1/2	50.00	55.00	-	0.51	1.12	0.47	1.04	0.51	1.12	0.47	1.04	0.47	1.04	0.47	1.04	1/2
69.90	4	5/8	1/2	50.00	65.00	-	0.73	1.61	0.58	1.28	0.64	1.41	0.63	1.39	0.59	1.30	0.59	1.30	3/4
79.40	4	5/8	1/2	55.00	65.00	75.00	1.07	2.36	0.86	1.90	0.93	2.05	0.94	2.07	0.87	1.92	0.87	1.92	1
88.90	4	5/8	1/2	55.00	70.00	85.00	1.40	3.09	1.08	2.38	1.16	2.56	1.23	2.71	1.11	2.45	1.11	2.45	1 1/4
98.40	4	5/8	1/2	65.00	70.00	85.00	1.81	3.99	1.41	3.11	1.51	3.33	1.62	3.54	1.45	3.20	1.45	3.20	1 1/2
120.70	4	3/4	5/8	70.00	85.00	95.00	2.59	5.71	2.26	4.98	2.38	5.25	2.64	5.82	2.33	5.14	2.33	5.14	2
139.70	4	3/4	5/8	75.00	90.00	100.00	4.28	9.44	3.43	7.56	3.60	7.94	4.06	8.95	3.55	7.83	3.55	7.83	2 1/2
152.40	4	3/4	5/8	75.00	90.00	100.00	5.18	11.42	3.87	8.53	4.04	8.91	4.90	10.80	4.02	8.86	4.02	8.86	3
177.80	8	3/4	5/8	75.00	90.00	100.00	5.45	12.02	4.99	11.00	4.99	11.00	5.90	13.01					3 1/2
190.50	8	3/4	5/8	75.00	90.00	100.00	7.32	16.14	5.75	12.68	5.96	13.14	7.41	16.34					4
215.90	8	7/8	3/4	85.00	95.00	100.00	8.91	19.64	6.22	13.71	6.44	14.20	8.76	19.31					5
241.30	8	7/8	3/4	85.00	100.00	110.00	11.26	24.82	7.38	16.27	7.59	16.73	11.31	24.93					6
298.50	8	7/8	3/4	90.00	110.00	115.00	17.68	38.98	12.36	27.25	12.66	27.91	19.92	43.92					8
362.00	12	1	7/8	100.00	115.00	120.00	24.79	54.65	17.10	37.70	16.78	36.99	29.39	64.79					10
431.80	12	1	7/8	100.00	120.00	125.00	38.98	85.94	27.68	61.02	28.30	62.39	43.70	96.34					12
476.30	12	1 1/8	1	115.00	135.00	135.00	51.71	114.00	35.20	77.60	41.50	91.49	59.42	131.00					14
539.80	16	1 1/8	1	115.00	135.00	145.00	64.41	142.00	42.18	92.99	52.98	116.80	77.11	170.00					16
577.90	16	1 1/4	1 1/8	125.00	145.00	145.00	74.00	164.99	49.71	109.59	59.00	130.07	94.80	209.00					18
635.00	20	1 1/4	1 1/8	140.00	160.00	160.00	89.36	197.01	65.50	144.40	72.12	159.00	123.38	272.01					20
749.30	20	1 3/8	1 1/4	150.00	170.00	185.00	119.66	263.81	90.50	199.52	99.02	218.30	188.24	415.00					24

- (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 (1).
- (6) Depth of Socket (Y) is covered by ANSI B16.5 only sizes through 3 inch, over 3 inch is at the manufacturer's option.

CLASS 300 FLANGE



CLASS 300 FLANGE



ANSI B16.5 FORGED FLANGE

Unit:mm

Nominal Pipe Size NPS	Outside Diameter of Flange	Thickness of Flange Min.	Thickness Lap Joint Min.	Out side Diameter of Raised Face	Diameter of Hub	Hub Diameter Beginning of Chamfer Welding Neck	Length thru hub			Thread Length Threaded Min	Bore			Corner Radius of bore of Lapped Flange and pipe	Corner Bore Threaded Flange Min.	Depth of Socket			
							Threaded/ Slip-on/ Socket Welding	Lapped	Welding Neck		Slip-on/ Socket Welding, Min.	Lapped Min.	Welding Neck/ Socket Welding.				Corner Radius of bore of Lapped Flange and pipe	Corner Bore Threaded Flange Min.	Depth of Socket
1/2	95.00	12.70	14.30	34.90	38.00	21.30	21.00	22.00	51.00	16.00	22.20	22.90	15.8	3.00	23.6	10.00			
3/4	115.00	14.30	15.90	42.90	48.00	26.70	24.00	25.00	56.00	16.00	27.70	28.20	20.9	3.00	29.0	11.00			
1	125.00	15.90	17.50	50.80	54.00	33.40	25.00	27.00	60.00	18.00	34.50	34.90	26.6	3.00	35.8	13.00			
1 1/4	135.00	17.50	19.10	63.50	64.00	42.20	25.00	27.00	64.00	21.00	43.20	43.70	35.1	5.00	44.4	14.00			
1 1/2	155.00	19.10	20.70	73.00	70.00	48.30	29.00	30.00	67.00	23.00	49.50	50.00	40.9	6.00	50.3	16.00			
2	165.00	20.70	22.30	92.10	84.00	60.30	32.00	33.00	68.00	29.00	61.90	62.50	52.5	8.00	63.5	17.00			
2 1/2	190.00	23.90	25.40	104.80	100.00	73.00	37.00	38.00	75.00	32.00	74.60	75.40	62.7	8.00	76.2	19.00			
3	210.00	27.00	28.60	127.00	117.00	88.90	41.00	43.00	78.00	32.00	90.70	91.40	77.9	10.00	92.2	21.00			
3 1/2	230.00	28.60	30.20	139.70	133.00	101.60	43.00	44.00	79.00	37.00	103.40	104.10	90.1	10.00	104.9				
4	255.00	30.20	31.80	157.20	146.00	114.30	46.00	48.00	84.00	37.00	116.10	116.80	102.3	11.00	117.6				
5	280.00	33.40	35.00	185.70	178.00	141.30	49.00	51.00	97.00	43.00	143.80	144.40	128.2	11.00	144.4				
6	320.00	35.00	36.60	215.90	206.00	168.30	51.00	52.00	97.00	47.00	170.70	171.40	154.1	13.00	171.4				
8	380.00	39.70	41.30	269.90	260.00	219.10	60.00	62.00	110.00	51.00	221.50	222.20	202.7	13.00	222.2				
10	445.00	46.10	47.70	323.80	321.00	273.00	65.00	95.00	116.00	56.00	276.20	277.40	254.6	13.00	276.2				
12	520.00	49.30	50.80	381.00	375.00	323.80	71.00	102.00	129.00	61.00	327.00	328.20	304.8	13.00	328.6				
14	585.00	52.40	54.00	412.80	425.00	355.60	75.00	111.00	141.00	64.00	359.20	360.20		13.00	360.4				
16	650.00	55.60	57.20	469.90	483.00	406.40	81.00	121.00	144.00	69.00	410.50	411.20	To be specified	13.00	411.2				
18	710.00	58.80	60.40	533.40	533.40	457.00	87.00	130.00	157.00	70.00	461.80	462.30	by purchaser	13.00	462.0				
20	775.00	62.00	63.50	584.20	587.00	508.00	94.00	140.00	160.00	74.00	513.10	514.40		13.00	512.8				
24	915.00	68.30	69.90	692.20	702.00	610.00	105.00	152.00	167.00	83.00	616.00	616.00		13.00	614.4				

Notes:

(1) For the Bore (Bi) other than Standard Wall Thickness, refer to page 116.

(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

Drilling Template				Bolt Length			Approximate Weight										Nominal Pipe Size
Diameter of Bolt Circle	Number of Holes	Diameter of Holes, in.	Diameter of bolts, in.	Machine Bolt Length			Welding Neck		Slip-on Threaded		Lap Joint		Blind		Socket Welding		
				Raised Face	Raised Face	Ring Joint	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	
66.70	4	5/8	1/2	55.00	65.00	75.00	0.78	1.72	0.62	1.34	0.61	1.34	0.62	1.37	0.62	1.37	1/2
82.60	4	3/4	5/8	65.00	75.00	90.00	1.34	2.95	1.15	2.54	1.15	2.54	1.16	2.56	1.19	2.62	3/4
88.90	4	3/4	5/8	65.00	75.00	90.00	1.64	3.62	1.39	3.06	1.38	3.04	1.42	3.13	1.44	3.17	1
98.40	4	3/4	5/8	70.00	85.00	95.00	2.06	4.54	1.67	3.68	1.66	3.66	1.79	3.95	1.73	3.81	1 1/4
114.30	4	7/8	3/4	75.00	90.00	100.00	3.06	6.75	2.53	5.58	2.52	5.56	2.68	5.91	2.62	5.78	1 1/2
127.00	8	3/4	5/8	75.00	90.00	100.00	3.40	7.50	2.80	6.17	2.79	6.15	3.09	6.81	2.94	6.48	2
149.20	8	7/8	3/4	85.00	100.00	115.00	5.31	11.71	4.25	9.37	4.22	9.30	4.75	10.47	4.49	9.90	2 1/2
168.30	8	7/8	3/4	90.00	110.00	120.00	7.32	16.14	5.81	12.81	5.78	12.74	6.79	14.97	6.20	13.67	3
184.20	8	7/8	3/4	95.00	110.00	125.00	8.17	18.01	7.72	17.02	7.72	17.02	9.53	21.01			3 1/2
200.00	8	7/8	3/4	95.00	115.00	125.00	11.30	24.91	10.13	22.33	10.07	22.20	12.00	26.46			4
235.00	8	7/8	3/4	110.00	120.00	135.00	15.12	33.33	12.58	27.73	12.52	27.60	15.96	35.19			5
269.90	12	7/8	3/4	110.00	120.00	140.00	19.68	43.39	16.04	35.36	15.95	35.16	21.20	46.74			6
330.20	12	1	7/8	120.00	140.00	150.00	30.48	67.20	24.50	54.01	24.37	53.73	34.60	76.28			8
387.40	16	1 1/8	1	140.00	160.00	170.00	43.74	96.43	34.16	75.31	39.92	88.01	55.34	122.00			10
450.80	16	1 1/4	1 1/8	145.00	170.00	185.00	64.41	142.00	51.26	113.01	58.70	129.41	78.90	173.96			12
514.40	20	1 1/4	1 1/8	160.00	180.00	190.00	88.30	194.67	72.12	159.00	83.46	184.00	107.06	236.00			14
571.50	20	1 3/8	1 1/4	165.00	190.00	205.00	112.94	248.99	90.40	199.30	106.14	234.00	139.25	306.99			16
628.60	24	1 3/8	1 1/4	170.00	195.00	210.00	138.34	304.99	109.00	240.30	133.95	295.31	176.90	390.00			18
685.80	24	1 3/8	1 1/4	185.00	205.00	220.00	167.37	368.99	136.00	299.83	157.65	347.56	223.17	492.01			20
812.80	24	1 5/8	1 1/2	205.00	230.00	255.00	235.41	518.99	204.00	449.74	240.40	529.99	342.00	753.98			24

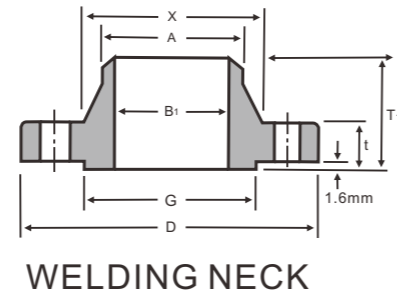
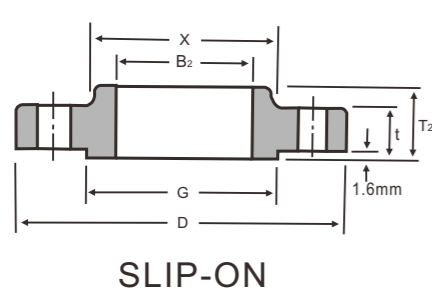
(4) Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub.

(5) The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree.

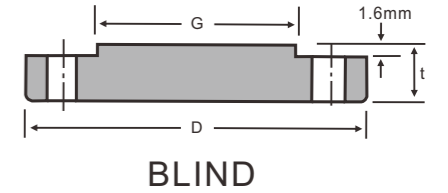
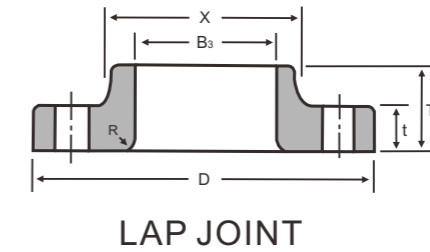
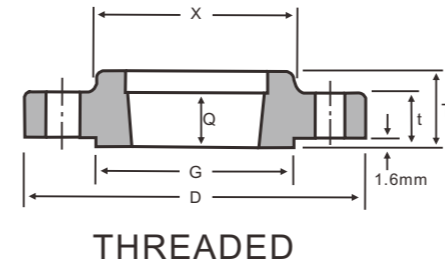
To accomplish parallelism, spot facing is carried out according to MSS SP-9, without reducing thickness(1).

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

CLASS 400 FLANGE



CLASS 400 FLANGE



ANSI B16.5 FORGED FLANGE

Unit:mm

Nominal Pipe Size NPS	Outside Diameter of Flange	Thickness Lap Joint Min.	Out side Diameter of Raised Face	Diameter of Hub	Hub Diameter Beginning of Chamfer Welding Neck	Length thru hub			Thread Length Threaded Min	Bore			Corner Radius of bore of Lapped Flange and pipe	Corner bore Threaded Flange Min.
						Threaded/ Slip-on	Lapped	Welding Neck		Slip-on/ Min.	Lapped Min.	Welding Neck		
1/2														
3/4														
1														
1 1/4														
1 1/2	Use Class 600 Dimensions in these sizes[Note(3)]													
2														
2 1/2														
3														
3 1/2														
4	255.00	35.00	157.20	146.00	114.30	51.00	51.00	89.00	37.00	116.10	116.80		11.00	117.6
5	280.00	38.10	185.70	178.00	141.30	54.00	54.00	102.00	43.00	143.80	144.50		11.00	144.4
6	320.00	41.30	215.90	206.00	168.30	57.00	57.00	103.00	46.00	170.70	171.40		13.00	171.4
8	380.00	47.70	269.90	260.00	219.10	68.00	68.00	117.00	51.00	221.50	222.20		13.00	222.2
10	445.00	54.00	323.80	321.00	273.00	73.00	102.00	124.00	56.00	276.20	277.40	To be specified by purchaser	13.00	276.2
12	520.00	57.20	381.00	375.00	323.80	79.00	108.00	137.00	61.00	327.00	328.20		13.00	328.6
14	585.00	60.40	412.80	425.00	355.60	84.00	117.00	149.00	64.00	359.20	360.20		13.00	360.4
16	650.00	63.50	469.90	483.00	406.40	94.00	127.00	152.00	69.00	410.50	411.20		13.00	411.2
18	710.00	66.70	533.40	533.00	457.00	98.00	137.00	165.00	70.00	461.80	462.30		13.00	462.0
20	775.00	69.90	584.20	587.00	508.00	102.00	146.00	168.00	74.00	513.10	514.40	13.00	512.8	
24	915.00	76.20	692.20	702.00	610.00	114.00	159.00	175.00	83.00	616.00	616.00	13.00	614.4	

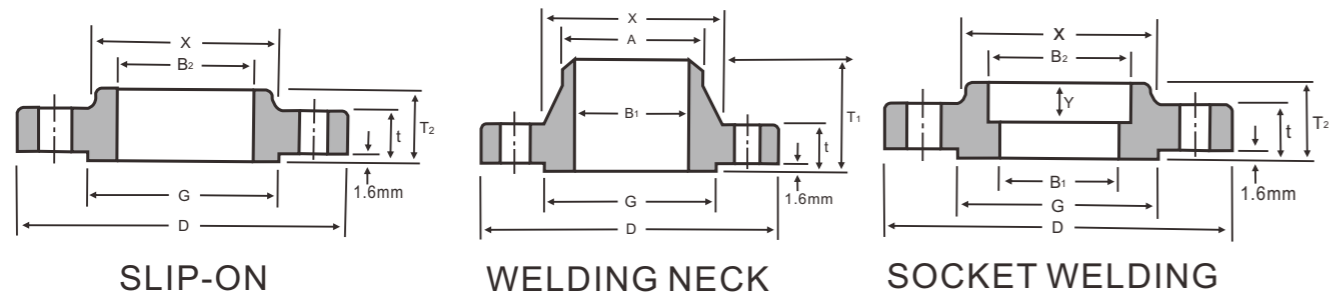
Notes:
 (1) For the Bore'(Bi) other than Standard Wall Thickness, refer to page 116.
 (2) Class 150 flanges except Lap Joint will be furnished with 0.06"(1.6mm) raised face, which is included in ' Thickness'(t) and Length through Hub'(T1),(T2).
 (3) For Slip-on, Threaded, Socket Welding and Lap Joint Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees.

Unit:mm

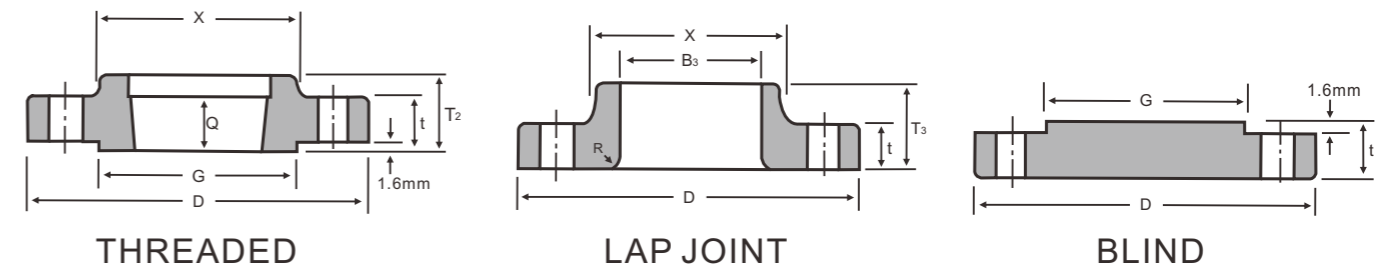
Drilling Template				Bolt Length			Approximate Weight								Nominal Pipe Size
Diameter of Bolt Circle	Number of Holes	Diameter of Holes, in.	Diameter of bolts, in.	Machine Bolt Length			Welding Neck		Slip-on Threaded		Lap Joint		Blind		
				Machine Bolt Length	Stud bolt length	Ring Joint	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	
200.00	8	1	7/8	140.00	135.00	140.00	13.61	30.00	10.89	24.01	9.98	22.00	14.40	31.75	4
235.00	8	1	7/8	145.00	135.00	145.00	17.69	39.00	14.07	31.02	13.15	28.99	19.50	42.99	5
269.90	12	1	7/8	150.00	145.00	150.00	22.23	49.01	19.98	44.05	16.78	37.00	27.67	61.00	6
330.00	12	1 1/8	1	170.00	165.00	170.00	35.38	78.00	30.40	67.01	26.16	57.67	45.36	100.00	8
387.40	16	1 1/4	1 1/8	190.00	185.00	190.00	49.89	109.99	41.28	91.01	43.09	95.00	68.00	149.91	10
450.80	16	1 3/8	1 1/4	205.00	195.00	205.00	72.57	159.99	59.02	130.12	68.95	152.01	98.00	216.05	12
514.40	20	1 3/8	1 1/4	210.00	205.00	210.00	105.69	233.01	81.72	180.16	95.25	209.99	131.66	290.26	14
571.50	20	1 1/2	1 3/8	220.00	215.00	220.00	133.36	294.01	106.69	235.21	127.00	279.99	167.00	368.17	16
628.60	24	1 1/2	1 3/8	230.00	220.00	230.00	158.90	350.31	129.39	285.26	156.49	345.00	206.57	455.41	18
685.80	24	1 5/8	1 1/2	240.00	235.00	250.00	193.00	425.41	152.00	335.10	190.51	420.00	261.00	575.41	20
812.80	24	1 7/8	1 3/4	265.00	260.00	280.00	281.48	620.56	231.54	510.46	278.96	615.00	395.00	870.83	24

(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 boling) are made parallel within 1 degree.
 To accomplish parallelism, spot facing is carried out according to MSS SP-9, without reducing thickness(1).
 (6) Depth of Socket (Y) is covered by ANSI B16.5 only sizes through 3 inch, over 3 inchis at the manufacturer's opion

CLASS 600 FLANGE



CLASS 600 FLANGE



ANSI B16.5 FORGED FLANGE

Unit:mm

Nominal Pipe Size NPS	Outside Diameter of Flange	Thickness Lap Joint Min.	Out side Diameter of Raised Face	Diameter of Hub	Hub Diameter Beginning of Chamfer Welding Neck	Length thru hub			Thread Length Threaded Min	Bore			Corner Radius of bore of Lapped Flange and pipe	Corner bore Threaded Flange Min.	Depth of Socket
						Threaded/ Slip-on/ Socket Welding	Lapped	Welding Neck		Slip-on/ Socket Welding, Min.	Lapped Min.	Welding Neck/ Socket/ Socket Welding.			
O	tf	R	X	A[Note(2)]	Y			T	B			r	Q	D	
1/2	95.00	14.30	34.90	38.00	21.30	22.00	22.00	52.00	16.00	22.20	22.90		3.00	23.6	10.00
3/4	115.00	15.90	42.90	48.00	26.70	25.00	25.00	57.00	16.00	27.70	28.20		3.00	29.0	11.00
1	125.00	17.50	50.80	54.00	33.40	27.00	27.00	62.00	18.00	34.50	34.90		3.00	35.8	13.00
1 1/4	135.00	20.70	63.50	64.00	42.20	29.00	29.00	67.00	21.00	43.20	43.70		5.00	44.4	14.00
1 1/2	155.00	22.30	73.00	70.00	48.30	32.00	32.00	70.00	23.00	49.50	50.00		6.00	50.6	16.00
2	165.00	25.40	92.10	84.00	60.30	37.00	37.00	73.00	29.00	61.90	62.50		8.00	63.5	17.00
2 1/2	190.00	28.60	104.80	100.00	73.00	41.00	41.00	79.00	32.00	74.60	75.40		8.00	76.2	19.00
3	210.00	31.80	127.00	117.00	88.90	46.00	46.00	83.00	35.00	90.70	91.40		10.00	92.2	21.00
3 1/2	230.00	35.00	139.70	133.00	101.60	49.00	49.00	86.00	40.00	103.40	104.10		10.00	104.9	
4	275.00	38.10	157.20	152.00	114.30	54.00	54.00	102.00	42.00	116.10	116.80	To be specified by purchaser	11.00	117.6	
5	330.00	44.50	185.70	189.00	141.30	60.00	60.00	114.00	48.00	143.80	144.40		11.00	144.4	
6	355.00	47.70	215.90	222.00	168.30	67.00	67.00	117.00	51.00	170.70	171.40		13.00	171.4	
8	420.00	55.60	269.90	273.00	219.10	76.00	76.00	133.00	58.00	221.50	222.20		13.00	222.2	
10	510.00	63.50	323.80	343.00	273.00	86.00	111.00	152.00	66.00	276.20	277.40		13.00	276.2	
12	560.00	66.70	381.00	400.00	323.80	92.00	117.00	156.00	70.00	327.00	328.20		13.00	328.6	
14	605.00	69.90	412.80	432.00	355.60	94.00	127.00	165.00	74.00	359.20	360.20		13.00	360.4	
16	685.00	76.20	469.90	495.00	406.40	106.00	140.00	178.00	78.00	410.50	411.20		13.00	411.2	
18	745.00	82.60	533.40	546.00	457.00	117.00	152.00	184.00	80.00	461.80	462.30		13.00	462.0	
20	815.00	88.90	584.20	610.00	508.00	127.00	165.00	190.00	83.00	513.10	514.40		13.00	512.8	
24	940.00	101.60	692.20	718.00	610.00	140.00	184.00	203.00	93.00	616.00	616.00		13.00	614.4	

Notes:

(1) For the Bore (Bi) other than Standard Wall Thickness, refer to page 116.

(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

Drilling Template				Bolt Length			Approximate Weight										Nominal Pipe Size		
Diameter of Bolt Circle	Number of Holes	Diameter of Holes, in.	Diameter of bolts, in.	Machine Bolt Length	Stud bolt length			Welding Neck		Slip-on Threaded		Lap Joint		Blind		Socket Welding			
					Raised Face	Raised Face	Ring Joint	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg		Lb	
66.70	4	5/8	1/2	75.00	70.00	75.00	0.90	1.98	0.91	2.01	0.80	1.76	0.91	2.01	0.91	2.01	0.91	2.01	1/2
82.60	4	3/4	5/8	90.00	85.00	90.00	1.59	3.51	1.40	3.09	1.36	3.00	1.40	3.09	1.36	3.00	1.36	3.00	3/4
88.90	4	3/4	5/8	90.00	85.00	90.00	1.90	4.19	1.70	3.75	1.59	3.51	1.81	3.99	1.81	3.99	1.81	3.99	1
98.40	4	3/4	5/8	95.00	90.00	95.00	2.49	5.49	2.27	5.00	2.04	4.50	2.40	5.29	2.60	5.73	2.60	5.73	1 1/4
114.30	4	7/8	3/4	110.00	100.00	110.00	3.63	8.00	3.10	6.83	2.95	6.50	3.40	7.50	3.18	7.01	3.18	7.01	1 1/2
127.00	8	3/4	5/8	110.00	100.00	110.00	4.54	10.01	3.63	8.00	3.63	8.00	4.40	9.70	3.90	8.60	3.90	8.60	2
149.20	8	7/8	3/4	120.00	115.00	120.00	6.35	14.00	5.44	11.99	4.99	11.00	6.80	14.99	5.90	13.01	5.90	13.01	2 1/2
168.30	8	7/8	3/4	125.00	120.00	125.00	8.16	17.99	7.26	16.01	6.35	14.00	8.90	19.62	7.40	16.31	7.40	16.31	3
184.20	8	1	7/8	140.00	135.00	140.00	11.80	26.01	9.53	21.01	9.08	20.02	13.17	29.03					3 1/2
215.90	8	1	7/8	145.00	140.00	145.00	16.78	36.99	14.97	33.00	14.06	31.00	18.60	41.01					4
266.70	8	1 1/8	1	165.00	160.00	165.00	30.87	68.06	28.50	62.83	27.50	60.63	30.84	67.99					5
292.10	12	1 1/8	1	170.00	165.00	170.00	36.77	81.06	36.32	80.07	35.38	78.00	38.00	83.78					6
349.20	12	1 1/4	1 1/8	190.00	185.00	195.00	50.80	111.99	44.00	97.00	50.80	111.99	62.20	137.13					8
431.80	16	1 3/8	1 1/4	215.00	210.00	215.00	86.26	190.17	76.20	167.99	74.00	163.14	102.00	224.87					10
489.00	20	1 3/8	1 1/4	220.00	215.00	220.00	102.51	226.00	97.52	214.99	108.86	240.00	132.00	291.01					12
527.00	20	1 1/2	1 3/8	235.00	230.00	235.00	121.56	267.99	102.00	224.87	111.00	244.71	158.00	348.33					14
603.20	20	1 5/8	1 1/2	255.00	250.00	255.00	177.06	390.35	149.82	330.30	165.71	365.33	224.73	495.44					16
654.00	20	1 3/4	1 5/8	275.00	265.00	275.00	215.65	475.43	180.10	397.05	195.00	427.70	285.00	628.32					18
723.90	24	1 3/4	1 5/8	285.00	280.00	290.00	267.86	590.53	231.54	510.46	258.78	570.51	365.00	804.69					20
838.20	24	2	1 7/8	330.00	325.00	335.00	372.00	820.12	330.00	727.53	362.00	798.07	533.45	1176.06					24

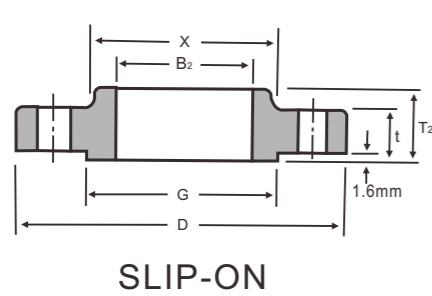
(4) Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub.

(5) The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree.

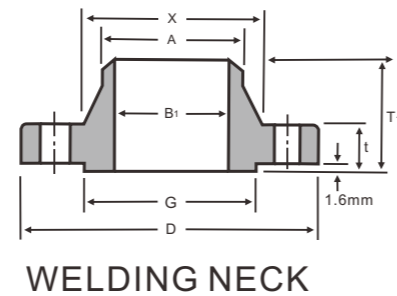
To accomplish parallelism, spot facing is carried out according to MSS SP-9, without reducing thickness(1).

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

CLASS 900 FLANGE

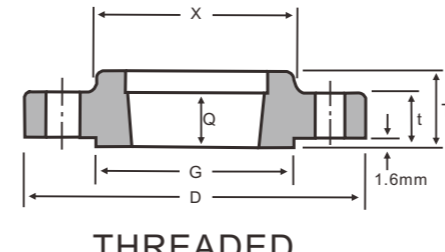


SLIP-ON

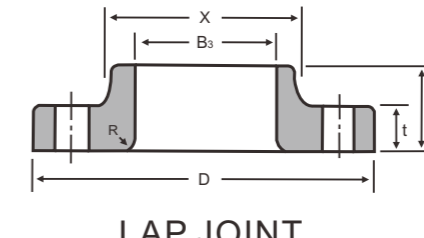


WELDING NECK

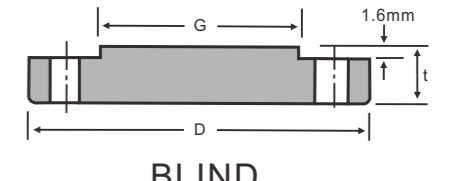
CLASS 900 FLANGE



THREADED



LAP JOINT



BLIND

ANSI B16.5 FORGED FLANGE

Unit:mm

Nominal Pipe Size NPS	Outside Diameter of Flange	Thickness Lap Joint Min.	Out side Diameter of Raised Face	Diameter of Hub	Hub Diameter Beginning of Chamfer Welding Neck	Length thru hub			Thread Length Threaded Min	Bore			Corner Radius of bore of Lapped Flange and pipe	Corner bore Threaded Flange Min.
						Threaded/ Slip-on	Lapped	Welding Neck		Slip-on/ Min.	Lapped Min.	Welding Neck		
1/2														
3/4														
1														
1 1/4	Use Class 1500 Dimensions in these sizes[Note(3)]													
1 1/2	Use Class 1500 Dimensions in these sizes[Note(3)]													
2														
2 1/2														
3	240.00	38.10	127.00	127.00	88.90	54.00	54.00	102.00	42.00	90.70	91.40		10.00	92.2
4	290.00	44.50	157.20	159.00	114.30	70.00	70.00	114.00	48.00	116.10	116.80		11.00	117.6
5	350.00	50.80	185.70	190.00	141.30	79.00	79.00	127.00	54.00	143.80	144.40		11.00	144.4
6	380.00	55.60	215.90	235.00	168.30	86.00	86.00	140.00	58.00	170.70	171.40		13.00	171.4
8	470.00	63.50	269.90	298.00	219.10	102.00	114.00	162.00	64.00	221.50	222.20		13.00	222.2
10	545.00	69.90	323.80	368.00	273.00	108.00	127.00	184.00	72.00	276.20	277.40	To be specified by purchaser	13.00	276.2
12	610.00	79.40	381.00	419.00	323.80	117.00	143.00	200.00	77.00	327.00	328.20		13.00	328.6
14	640.00	85.80	412.80	451.00	355.60	130.00	156.00	213.00	83.00	359.20	360.20		13.00	360.4
16	705.00	88.90	469.90	508.00	406.40	133.00	165.00	216.00	86.00	410.50	411.20		13.00	411.2
18	785.00	101.60	533.40	565.00	457.00	152.00	190.00	229.00	89.00	461.80	462.30		13.00	462.0
20	855.00	108.00	584.20	622.00	508.00	159.00	210.00	248.00	93.00	513.10	514.40		13.00	512.8
24	1040.00	139.70	692.20	749.00	610.00	203.00	267.00	292.00	102.00	616.00	616.00		13.00	614.4

Notes:

(1) For the Bore'(Bi) other than Standard Wall Thickness, refer to page 116.

(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

Drilling Template				Bolt Length			Approximate Weight								Nominal Pipe Size	
Diameter of Bolt Circle	Number of Holes	Diameter of Holes, in.	Diameter of bolts, in.	Machine Bolt Length	Stud bolt length			Welding Neck		Slip-on Threaded		Lap Joint		Blind		
					Raised Face	Raised Face	Ring Joint	Kg	Lb	Kg	Lb	Kg	Lb	Kg		Lb
190.50	8	1	7/8	145.00	140.00	145.00	15.00	33.07	11.80	26.01	11.34	25.00	13.17	29.03	3	
235.00	8	1 1/4	1 1/8	170.00	165.00	170.00	23.13	50.99	23.20	51.15	22.60	49.82	24.50	54.01	4	
279.40	8	1 3/8	1 1/8	190.00	185.00	190.00	38.50	84.88	37.65	83.00	36.74	81.00	39.46	86.99	5	
317.50	12	1 1/4	1 1/8	190.00	185.00	195.00	49.89	109.99	48.30	106.48	47.50	104.72	51.50	113.54	6	
393.70	12	1 1/2	1 3/8	220.00	215.00	220.00	79.45	175.16	75.00	165.35	86.00	189.60	89.00	196.21	8	
469.90	16	1 1/2	1 3/8	235.00	230.00	235.00	118.04	260.23	111.13	245.00	125.64	276.99	131.54	290.00	10	
533.40	20	1 1/2	1 3/8	255.00	250.00	255.00	157.00	346.13	146.00	321.87	167.00	368.17	187.00	412.26	12	
558.80	20	1 5/8	1 1/2	275.00	265.00	280.00	181.60	400.36	172.36	379.99	180.07	396.99	224.07	493.99	14	
616.00	20	1 3/4	1 5/8	285.00	280.00	290.00	224.73	495.44	192.95	425.39	211.11	465.42	272.40	600.54	16	
685.80	20	2	1 7/8	325.00	320.00	335.00	308.72	680.61	272.40	600.54	295.10	650.58	385.90	850.76	18	
749.30	20	2 1/8	2	350.00	345.00	360.00	376.82	830.75	331.42	730.66	367.74	810.73	488.00	1075.86	20	
901.70	20	2 5/8	2 1/2	440.00	430.00	455.00	685.00	1510.17	632.00	1393.36	700.00	1543.24	905.00	1995.18	24	

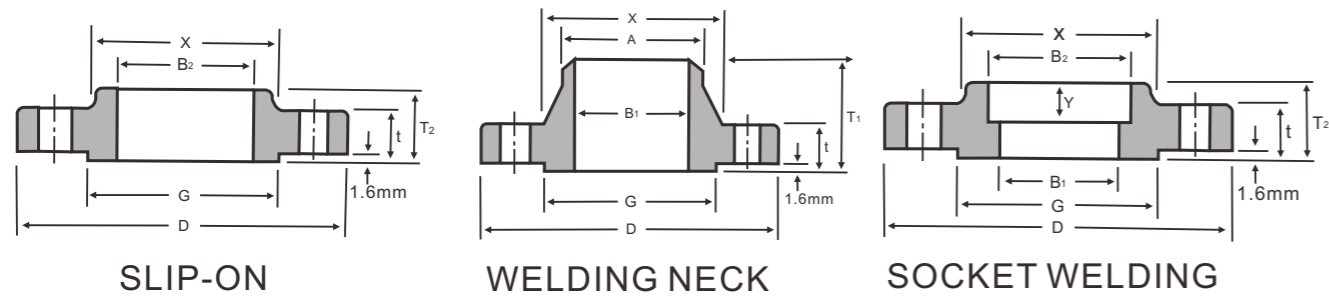
(4) Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub.

(5) The gasket surface and backside(bearing surface for boling) are made parallel within 1 degree.

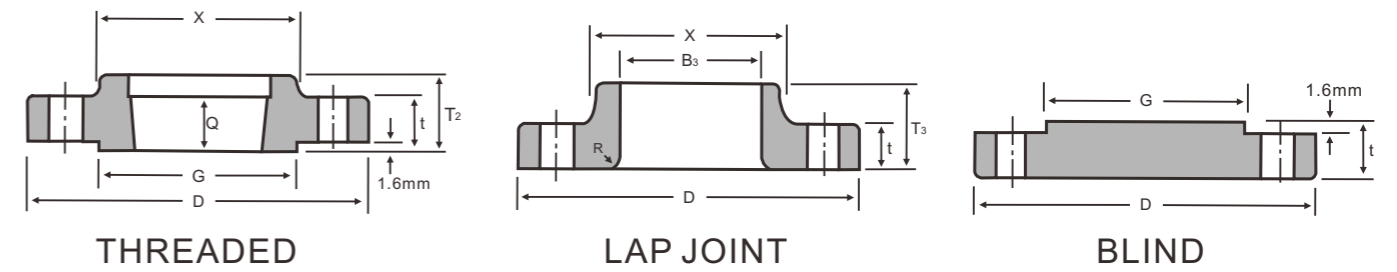
To accomplish parallelism, spot facing is carried out according to MSS SP-9, without reducing thickness(1).

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

CLASS 1500 FLANGE



CLASS 1500 FLANGE



ANSI B16.5 FORGED FLANGE

Unit:mm

Nominal Pipe Size NPS	Outside Diameter of Flange	Thickness Lap Joint Min.	Out side Diameter of Raised Face	Diameter of Hub	Hub Diameter Beginning of Chamfer Welding Neck	Length thru hub			Thread Length Threaded Min	Bore			Corner Radius of bore of Lapped Flange and pipe	Corner bore Threaded Flange Min.	Depth of Socket
						Threaded/ Slip-on/ Socket Welding	Lapped	Welding Neck		Slip-on/ Socket Welding, Min.	Lapped Min.	Welding Neck/ Socket Welding.			
O	tf	R	X	A[Note(2)]	T			D							
1/2	120.00	22.30	34.90	38.00	21.30	32.00	32.00	60.00	23.00	22.20	22.90		3.00	23.6	10.00
3/4	130.00	25.40	42.90	44.00	26.70	35.00	35.00	70.00	26.00	27.70	28.20		3.00	29.0	11.00
1	150.00	28.60	50.80	52.00	33.40	41.00	41.00	73.00	29.00	34.50	34.90		3.00	35.8	13.00
1 1/4	160.00	28.60	63.50	64.00	42.20	41.00	41.00	73.00	31.00	43.20	43.70		5.00	44.4	14.00
1 1/2	180.00	31.80	73.00	70.00	48.30	44.00	44.00	83.00	32.00	49.50	50.00		6.00	50.6	16.00
2	215.00	38.10	92.10	105.00	60.30	57.00	57.00	102.00	39.00	61.90	62.50		8.00	63.5	17.00
2 1/2	245.00	41.30	104.80	124.00	73.00	64.00	64.00	105.00	48.00	74.60	75.40		8.00	76.2	19.00
3	265.00	47.70	127.00	133.00	88.90		73.00	117.00			91.40		10.00		
4	310.00	54.00	157.20	162.00	114.30		90.00	124.00			116.80		11.00		
5	375.00	73.10	185.70	197.00	141.30		105.00	156.00			144.40	To be specified by purchaser	11.00		
6	395.00	82.60	215.90	229.00	168.30		119.00	171.00			171.40		13.00		
8	485.00	92.10	269.90	292.00	219.10		143.00	213.00			222.20		13.00		
10	585.00	108.00	323.80	368.00	273.00		178.00	254.00			277.40		13.00		
12	675.00	123.90	381.00	451.00	323.80		219.00	283.00			328.20		13.00		
14	750.00	133.40	412.80	495.00	355.60		241.00	298.00			360.20		13.00		
16	825.00	146.10	469.90	552.00	406.40		260.00	311.00			411.20		13.00		
18	915.00	162.00	533.40	597.00	457.00		276.00	327.00			462.30		13.00		
20	985.00	177.80	584.20	641.00	508.00		292.00	356.00			514.40		13.00		
24	1170.00	203.20	692.20	760.00	610.00		330.00	406.00			616.00		13.00		

Notes:

(1) For the Bore (Bi) other than Standard Wall Thickness, refer to page 116.

(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

Drilling Template				Bolt Length			Approximate Weight										Nominal Pipe Size	
Diameter of Bolt Circle	Number of Holes	Diameter of Holes, in.	Diameter of bolts, in.	Machine Bolt Length	Stud bolt length			Welding Neck		Slip-on Threaded		Lap Joint		Blind		Socket Welding		
					Raised Face	Raised Face	Ring Joint	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg		Lb
82.60	4	7/8	3/4	110.00	100.00	110.00	2.10	4.63	1.81	3.99	1.81	3.99	1.90	4.19	1.81	3.99	1/2	
88.90	4	7/8	3/4	115.00	110.00	115.00	2.72	6.00	2.40	5.29	2.30	5.07	2.70	5.95	2.81	6.19	3/4	
101.60	4	1	7/8	125.00	120.00	125.00	3.86	8.51	3.41	7.52	3.40	7.50	4.09	9.02	3.61	7.96	1	
111.10	4	1	7/8	125.00	120.00	125.00	4.54	10.01	4.10	9.04	4.09	9.02	4.54	10.01	4.99	11.00	1 1/4	
123.80	4	1 1/8	1	140.00	135.00	140.00	5.90	13.01	5.45	12.02	5.40	11.90	5.90	13.01	6.76	14.90	1 1/2	
165.10	8	1	7/8	145.00	140.00	145.00	10.89	24.01	9.98	22.00	9.53	21.01	11.34	25.00	10.89	24.01	2	
190.50	8	1 1/8	1	160.00	150.00	160.00	16.33	36.00	15.80	34.83	13.15	28.99	16.00	35.27	16.34	36.02	2 1/2	
203.50	8	1 1/4	1 1/8	180.00	170.00	180.00	21.79	48.04	21.77	47.99	17.24	39.01	21.79	48.04			3	
241.30	8	1 3/8	1 1/4	195.00	190.00	195.00	31.30	69.00	31.00	68.34	29.00	63.93	33.11	73.00			4	
292.10	8	1 5/8	1 1/2	250.00	240.00	250.00	59.02	130.12	58.80	129.63	54.00	119.05	60.00	132.28			5	
317.50	12	1 1/2	1 5/8	260.00	255.00	265.00	74.91	165.15	74.00	163.14	62.00	136.69	75.00	165.35			6	
393.70	12	1 3/4	1 5/8	290.00	285.00	325.00	123.83	273.00	117.73	259.55	129.73	286.01	136.98	301.99			8	
482.60	12	2	1 7/8	335.00	330.00	345.00	205.93	454.00	197.49	435.39	220.19	485.44	229.97	507.00			10	
571.50	16	2 1/8	2	375.00	370.00	385.00	306.00	674.61	264.00	582.02	286.02	630.57	316.00	696.66			12	
635.00	16	2 3/8	2 1/4	405.00	400.00	425.00	416.00	917.12			404.06	890.80	421.00	928.15			14	
704.80	16	2 5/8	2 1/2	445.00	440.00	470.00	567.50	1251.12			522.10	1151.03	559.00	1232.38			16	
774.70	16	2 7/8	2 3/4	495.00	490.00	525.00	736.00	1622.60			669.65	1476.33	761.00	1677.72			18	
831.80	16	3 1/8	3	540.00	535.00	565.00	929.00	2048.09			805.85	1776.60	967.00	2131.87			20	
990.60	16	3 5/8	3 1/2	615.00	610.00	650.00	1504.00	3315.75			1285.55	2834.15	1568.00	3456.85			24	

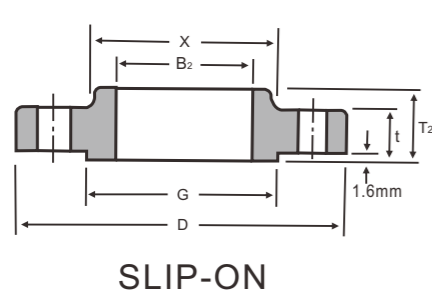
(4) Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub.

(5) The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree.

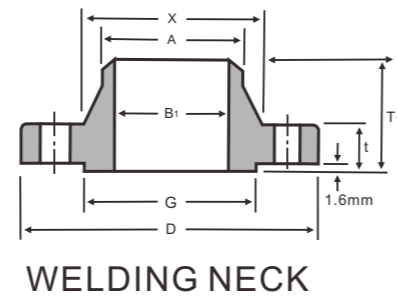
To accomplish parallelism, spot facing is carried out according to MSS SP-9, without reducing thickness(1).

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

CLASS 2500 FLANGE

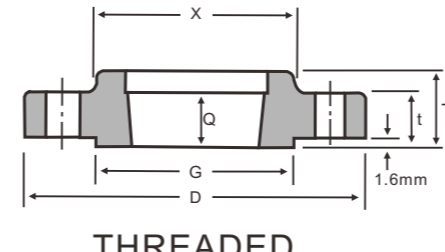


SLIP-ON

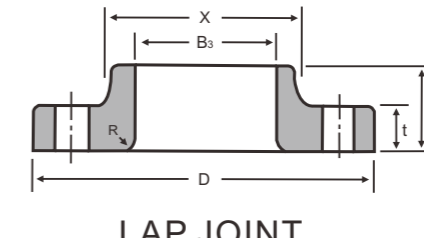


WELDING NECK

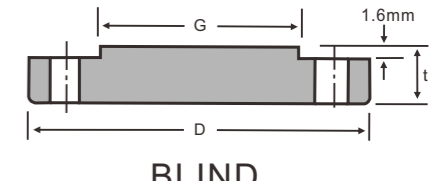
CLASS 2500 FLANGE



THREADED



LAP JOINT



BLIND

ANSI B16.5 FORGED FLANGE

Unit:mm

Nominal Pipe Size NPS	Outside Diameter of Flange	Thickness Lap Joint Min.	Out side Diameter of Raised Face	Diameter of Hub	Hub Diameter Beginning of Chamfer Welding Neck	Length thru hub			Thread Length Threaded Min	Bore		Corner Radius of bore of Lapped Flange and pipe	Corner bore Threaded Flange Min.
						Threaded/ Slip-on	Lapped	Welding Neck		Lapped Min.	Welding Neck		
1/2	135.00	30.20	34.90	43.00	21.30	40.00	40.00	73.00	29.00	22.90		3.00	23.6
3/4	140.00	31.80	42.90	51.00	26.70	43.00	43.00	79.00	32.00	28.20		3.00	29.0
1	160.00	35.00	50.80	57.00	33.40	48.00	48.00	89.00	35.00	34.90		3.00	35.8
1 1/4	185.00	38.10	63.50	73.00	42.20	52.00	52.00	95.00	39.00	43.70		5.00	44.4
1 1/2	205.00	44.50	73.00	79.00	48.30	60.00	60.00	111.00	45.00	50.00		6.00	50.6
2	235.00	50.90	92.10	95.00	60.30	70.00	70.00	127.00	51.00	62.50		8.00	63.5
2 1/2	265.00	57.20	104.80	114.00	73.00	79.00	79.00	143.00	58.00	75.40	To be specified by purchaser	8.00	76.2
3	305.00	66.70	127.00	133.00	88.90		92.00	168.00		91.40		10.00	
4	355.00	76.20	157.20	165.00	114.30		108.00	190.00		116.80		11.00	
5	420.00	92.10	185.70	203.00	141.30		130.00	229.00		144.40		11.00	
6	485.00	108.00	215.90	235.00	168.30		152.00	273.00		171.40		13.00	
8	550.00	127.00	269.90	305.00	219.10		178.00	318.00		222.20		13.00	
10	675.00	165.10	323.80	375.00	273.00		229.00	419.00		277.40		13.00	
12	760.00	184.20	381.00	441.00	323.80		254.00	464.00		328.20		13.00	

Notes:

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Unit:mm

Drilling Template				Bolt Length			Approximate Weight								Nominal Pipe Size	
Diameter of Bolt Circle	Number of Holes	Diameter of Holes, in.	Diameter of bolts, in.	Machine Bolt Length	Stud bolt length			Welding Neck		Slip-on Threaded		Lap Joint		Blind		
					Raised Face	Raised Face	Ring Joint	Kg	Lb	Kg	Lb	Kg	Lb	Kg		Lb
88.90	4	7/8	3/4	120.00	115.00	120.00	3.18	7.01	3.18	7.01	3.00	6.61	3.18	7.01	1/2	
95.20	4	7/8	3/4	125.00	120.00	125.00	4.08	8.99	4.08	8.99	3.63	8.00	4.54	10.01	3/4	
108.00	4	1	7/8	140.00	135.00	140.00	5.45	12.02	5.44	11.99	4.99	11.00	5.44	11.99	1	
130.20	4	1 1/8	1	150.00	145.00	150.00	9.07	20.00	8.16	17.99	7.26	16.01	8.16	17.99	1 1/4	
146.00	4	1 1/4	1 1/8	170.00	165.00	170.00	11.35	25.02	11.00	24.25	9.99	22.02	10.44	23.02	1 1/2	
171.40	8	1 1/8	1	180.00	170.00	180.00	19.07	42.04	17.25	38.03	16.80	37.04	17.71	39.04	2	
196.80	8	1 1/4	1 1/8	195.00	190.00	205.00	23.61	52.05	24.97	55.05	24.06	53.04	25.42	56.04	2 1/2	
228.60	8	1 3/8	1 1/4	220.00	215.00	230.00	42.68	94.09	37.68	83.07	36.32	80.07	39.04	86.07	3	
273.00	8	1 5/8	1 1/2	255.00	250.00	260.00	64.00	141.10	58.00	127.87	54.48	120.11	60.38	133.12	4	
323.80	8	1 7/8	1 3/4	300.00	290.00	310.00	110.68	244.01	95.25	209.99	92.53	203.99	101.15	223.00	5	
368.30	8	2 1/8	2	345.00	335.00	355.00	176.46	389.03	146.51	323.00	143.01	315.28	156.63	345.31	6	
438.20	12	2 1/8	2	380.00	375.00	395.00	261.27	576.00	219.99	485.00	213.38	470.42	240.62	530.48	8	
539.80	12	2 5/8	2 1/2	490.00	485.00	510.00	484.43	1067.99	419.57	924.99	408.60	900.81	465.36	1025.94	10	
619.10	12	2 7/8	2 3/4	540.00	535.00	560.00	692.35	1526.37	590.20	1301.17	572.95	1263.14	664.06	1464.00	12	

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