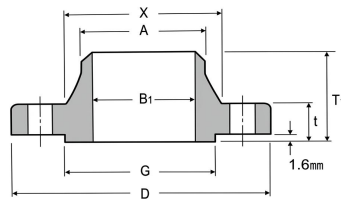
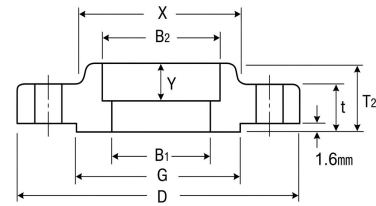


SLIP-ON



WELDING NECK



SOCKET WELDING

CLASS 150 FLANGES

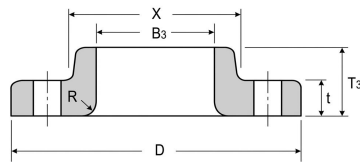
ANSI B16.5 FORGED FLANGES

Unit: mm

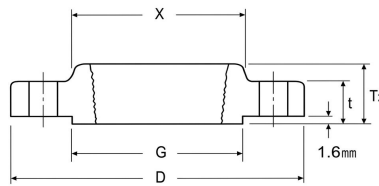
Nominal Pipe Size	Outside Diam.	Diam. at Base of Hub	O.D. of Raised Face	Thick-ness	Bore			Length Thru Hub			Diam. of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket Welding	Slip-On Socket Welding	Lap Joint	Welding Neck	Slip-On Threaded Socket Welding	Lap Joint			
					B1	B2	B3	T1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

Notes:

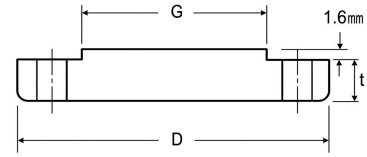
- (1) For the 'Bore/B1 other than Standard Wall Thickness, refer to [here](#).
- (2) Class 150 flanges except Lap Joint will be furnished with 0.06" 1.6mm raised face, which is included in 'Thickness' t and 'Length through Hub' T1, T2.
- (3) For Slip-on, Threaded, Socket Welding and Lap Joint Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees.



LAP JOINT



THREADED



BLIND

CLASS 150 FLANGES

ANSI B16.5 FORGED FLANGES

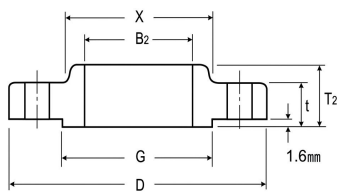
Unit: mm

Nominal Pipe Size	Depth of Socket Y	Drilling			Bolting				Approximate Weight						
		Bolt Circle Diam	Number of Holes	Diam of Holes	Diam of Bolts (inch)	Machine Bolt Length			Welding Neck			Slip-on and Threaded	Lap Joint	Blind	Socket Welding
						Raised Face	Raised Face	Ring Joint	SCH40	SCH80	SCH160				
1/2	9.7	60.5	4	15.7	1/2	50.8	57.2	-	0.6	0.6	0.6	0.41	0.4	0.43	0.41
3/4	11.2	69.9	4	15.7	1/2	50.8	63.5	-	0.9	0.9	0.9	0.58	0.58	0.63	0.58
1	12.7	79.2	4	15.7	1/2	57.2	63.5	76.2	1.14	1.18	1.24	0.8	0.8	0.89	0.8
1 1/4	14.2	88.9	4	15.7	1/2	57.2	69.9	82.6	1.41	1.48	1.54	1.07	1.07	1.2	1.07
1 1/2	15.7	98.6	4	15.7	1/2	63.5	69.9	82.6	1.81	1.9	2.01	1.37	1.37	1.58	1.37
2	17.5	120.7	4	19.1	5/8	69.9	82.6	95.3	2.72	2.84	3.07	2.21	2.21	2.39	2.21
2 1/2	19.1	139.7	4	19.1	5/8	76.2	88.9	101.6	4.45	4.7	4.98	3.32	3.34	4.07	3.32
3	20.6	152.4	4	19.1	5/8	76.2	88.9	101.6	5.22	5.54	5.9	3.83	3.83	4.92	3.83
3 1/2	22.4	177.8	8	19.1	5/8	76.2	88.9	101.6	6.4	6.76	7.46	5.2	5.2	5.9	5.2
4	23.9	190.5	8	19.1	5/8	76.2	88.9	101.6	7.49	7.96	8.9	5.4	5.4	7.13	5.9
5	23.9	215.9	8	22.4	3/4	82.6	95.3	108	9.53	10.54	12.04	6.26	6.26	8.72	6.8
6	26.9	241.3	8	22.4	3/4	82.6	101.6	114.3	11.8	13.12	15.11	7.5	7.5	11.4	8.6
8	31.8	298.5	8	22.4	3/4	88.9	108	120.7	19.1	21.38	25.84	12.3	12.4	20.1	13.6
10	33.3	362	12	25.4	7/8	101.6	114.3	127	24.5	28.85	35.74	17.1	17.1	28.7	19.5
12	39.6	431.8	12	25.4	7/8	101.6	120.7	133.4	39.9	46.8	58.01	26.5	26.5	43.8	29.1
14	41.4	476.3	12	28.4	1	114.3	133.4	146.1	51.8	62.58	77.6	34.5	38.5	58.2	40.9
16	44.5	539.8	16	28.4	1	114.3	133.4	146.1	64.5	79.42	98.82	45.5	51.2	77.4	44.5
18	49.3	577.9	16	31.8	1 1/8	127	146.1	158.8	74.9	97.63	124.32	55.5	55.7	94	59
20	54.1	635	20	31.8	1 1/8	139.7	158.8	171.5	89.4	120.44	154.18	61.8	70.2	122.7	74.9
24	63.5	749.3	20	35.1	1 1/4	152.4	171.5	184.2	121.7	169.37	223.92	87.7	98.7	187	99.9

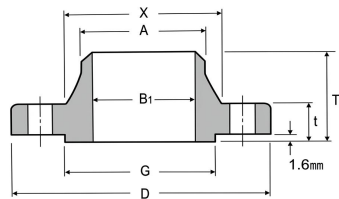
(4) Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub.

(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).

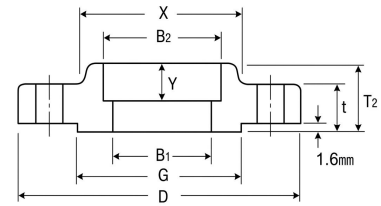
(6) Depth of Socket (Y) is covered by ANSI B16.5 only in sizes through 3 inch, over 3 inch is at the manufacturer's option.



SLIP-ON



WELDING NECK



SOCKET WELDING

CLASS 300 FLANGES

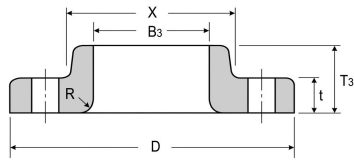
ANSI B16.5 FORGED FLANGES

Unit: mm

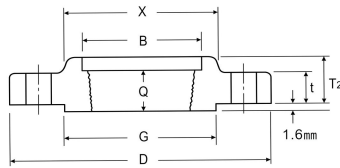
Nominal Pipe Size	Outside Diam.	Diam. at Base of Hub	O.D. of Raised Face	Thick-ness	Bore				Length Thru Hub			Diam. of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck	Slip-On	Lap Joint	Counter Bore Min. Thread ed Min.	Welding Neck	Slip-On Threaded	Lap Joint			
					Socket Welding	Socket Welding			Socket Welding	Socket Welding				
D	X	G	t	B1	B2	B3	B	T1	T2	T3	A	R	Q	
1/2	95	38.1	35.1	14.2	15.7	22.4	22.9	23.6	52.3	22.4	22.4	21.3	3	15.7
3/4	117	47.8	42.9	15.7	20.8	27.7	28.2	29	57.2	25.4	25.4	26.7	3	15.7
1	124	53.8	50.8	17.5	26.7	34.5	35.1	35.8	62	26.9	26.9	33.5	3	17.5
1 1/4	133	63.5	63.5	19.1	35.1	43.2	43.7	44.5	65	26.9	26.9	42.2	4.8	20.6
1 1/2	155	69.9	73.2	20.6	40.9	49.5	50	50.5	68.3	30.2	30.2	48.3	6.4	22.4
2	165	84.1	91.9	22.4	52.6	62	62.5	63.5	69.9	33.3	33.3	60.5	7.9	28.4
2 1/2	191	100.1	104.6	25.4	62.7	74.7	75.4	76.2	76.2	38.1	38.1	73.2	7.9	31.8
3	210	117.3	127	28.4	78	90.7	91.4	92.2	79.2	42.9	42.9	88.9	9.7	31.8
3 1/2	229	133.4	139.7	30.2	90.2	103.4	104.1	104.9	81	44.5	44.5	101.6	9.7	36.6
4	254	146.1	157.2	31.8	102.4	116.1	116.8	117.6	85.9	47.8	47.8	114.3	11.2	36.6
5	279	177.8	185.7	35.1	128.3	143.8	144.5	144.5	98.6	50.8	50.8	141.2	11.2	42.9
6	318	206.2	215.9	36.6	154.2	170.7	171.5	171.5	98.6	52.3	52.3	168.4	12.7	46
8	381	260.4	269.7	41.1	202.7	221.5	222.3	222.3	111.3	62	62	219.2	12.7	50.8
10	445	320.5	323.9	47.8	254.5	276.4	277.4	276.4	117.3	66.5	95.3	273.1	12.7	55.6
12	521	374.7	381	50.8	304.8	327.2	328.2	328.7	130	73.2	101.6	323.9	12.7	60.5
14	584	425.5	412.8	53.8	336.6	359.2	360.2	360.4	142.7	76.2	111.3	355.6	12.7	63.5
16	648	482.6	469.9	57.2	387.4	410.5	411.2	411.2	146.1	82.6	120.7	406.4	12.7	68.3
18	711	533.4	533.4	60.5	438.2	461.8	462.3	462	158.8	88.9	130	457.2	12.7	69.9
20	775	587.2	584.2	63.5	489	513.1	514.4	512.8	162.1	95.3	139.7	508	12.7	73.2
24	914	701.5	692.2	69.9	590.6	616	616	614.4	168.1	106.4	152.4	609.6	12.7	82.6

Notes:

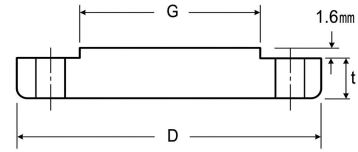
- (1) For the 'Bore'B1 other than Standard Wall Thickness, refer to [here](#).
- (2) Class 300 flanges except Lap Joint will be furnished with 0.06" 1.6mm raised face, which is included in 'Thickness' (t) and 'Length through Hub' T1, T2.
- (3) For Slip-on, Threaded, Socket Welding and Lap Joint Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees.



LAP JOINT



THREADED



BLIND

CLASS 300 FLANGES

ANSI B16.5 FORGED FLANGES

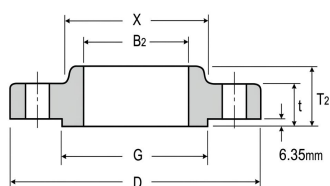
Unit: mm

Nominal Pipe Size	Depth of Socket Y	Drilling			Bolting				Approximate Weight							
		Bolt Circle Diam	Number of Holes	Diam of Holes	Diam of Bolts (Inch)	Machine Bolt Length	Stud Bolt Length			Welding Neck			Slip-on and Threaded	Lap Joint	Blind	Socket Welding
							Raised Face	Raised Face	Ring Joint	SCH40	SCH80	SCH160				
1/2	9.7	66.5	4	15.7	1/2	57.2	63.5	76.2	0.91	0.91	0.91	0.63	0.63	0.63	0.63	
3/4	11.2	82.6	4	19.1	5/8	63.5	76.2	88.9	1.36	1.36	1.36	1.16	1.16	1.15	1.16	
1	12.7	88.9	4	19.1	5/8	63.5	76.2	88.9	1.82	1.87	1.93	1.37	1.37	1.40	1.37	
1 1/4	14.2	98.6	4	19.1	5/8	69.9	82.6	95.3	2.27	2.35	2.41	1.75	1.75	1.88	1.75	
1 1/2	15.7	114.3	4	22.4	3/4	76.2	88.9	101.6	3.18	3.28	3.40	2.47	2.46	2.65	2.47	
2	17.5	127.0	8	19.1	5/8	76.2	88.9	101.6	3.36	3.49	3.75	2.90	2.88	3.22	2.90	
2 1/2	19.1	149.4	8	22.4	3/4	82.6	101.6	114.3	5.45	5.72	6.02	4.17	4.20	4.80	4.17	
3	20.6	168.1	8	22.4	3/4	88.9	108.0	120.7	8.17	8.54	8.94	5.92	5.87	6.89	5.92	
3 1/2	22.4	184.2	8	22.4	3/4	95.3	108.0	127.0	8.90	9.31	10.10	7.72	7.72	8.90		
4	23.9	200.2	8	22.4	3/4	95.3	114.3	127.0	12.10	12.62	13.69	9.73	9.66	11.60		
5	23.9	235.0	8	22.4	3/4	108.0	120.7	133.4	16.30	17.42	19.08	12.10	12.10	15.60		
6	26.9	269.7	12	22.4	3/4	108.0	120.7	139.7	20.40	21.86	24.07	16.00	15.90	21.40		
8	31.8	330.2	12	25.4	7/8	120.7	139.7	152.4	31.30	33.75	38.69	23.90	23.80	34.10		
10	33.3	387.4	16	28.4	1	139.7	158.8	171.5	45.40	50.43	58.38	34.00	38.20	53.50		
12	39.6	450.9	16	31.8	1 1/8	146.1	171.5	184.2	64.50	72.35	85.10	49.10	54.90	78.30		
14	41.4	514.4	20	31.8	1 1/8	158.8	177.8	190.5	93.50	105.61	122.49	69.10	80.10	105.00		
16	44.5	571.5	20	35.1	1 1/4	165.1	190.5	203.2	113.10	130.25	152.56	88.90	103.90	138.60		
18	49.3	628.7	24	35.1	1 1/4	171.5	196.9	209.6	138.90	164.74	195.07	107.20	124.60	174.30		
20	54.1	685.8	24	35.1	1 1/4	184.2	203.2	222.3	167.50	202.32	240.17	132.90	154.40	220.40		
24	63.5	812.8	24	41.1	1 1/2	203.2	228.6	254.0	235.60	288.15	348.28	198.70	232.60	339.00		

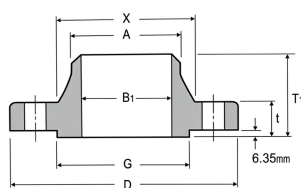
(4) Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub.

(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).

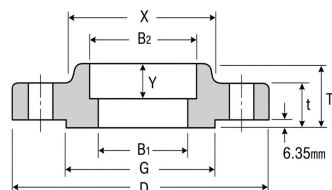
(6) Depth of Socket (Y) is covered by ANSI B16.5 only in sizes through 3 inch, over 3 inch is at the manufacturer's option.



SLIP-ON



WELDING NECK



SOCKET WELDING

CLASS 600 FLANGES

ANSI B16.5 FORGED FLANGES

Unit: mm

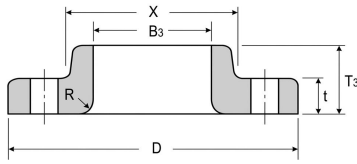
Nominal Pipe Size	Outside Diam.	Diam. at Base of Hub	O.D. of Raised Face	Thick-ness	Bore				Length Thru Hub			Diam. of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket Welding	Slip-On Socket Welding	Lap Joint	Counter Bore Min.	Welding Neck	Slip-On Threaded Socket Welding	Lap Joint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

Notes:

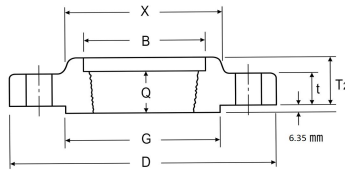
(1) For the inside diameter of pipes (corresponding to 'Bore'(B1) of Welding Neck Flange), refer to [here](#).

(2) Class 600 flanges except Lap Joint will be furnished with 0.25" (6.35mm) raised face, which is included in 'Thickness' t and 'Length through Hub' T1, T2.

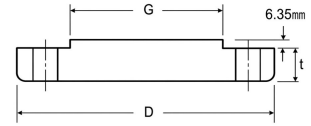
(3) For Slip-on, Threaded, Socket Welding and Lap Joint Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees.



LAP JOINT



THREADED



BLIND

CLASS 600 FLANGES

ANSI B16.5 FORGED FLANGES

Unit: mm

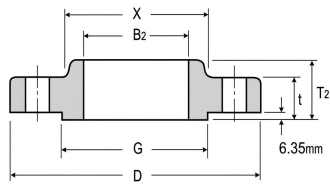
Nominal Pipe Size	Depth of Socket Y	Drilling			Bolting				Approximate Weight						
		Bolt Circle Diam	Number of Holes	Diam of Holes	Diam of Bolts (inch)	Machine Bolt Length	Stud Bolt Length		Welding Neck			Slip-on and Threaded	Lap Joint	Blind	Socket Welding
						0.25" Raised Face	Male-Female Tongue-Groove	Ring Joint	SCH40	SCH80	SCH160				
1/2	9.7	66.5	4	15.7	1/2	76.2	69.9	76.2	1.36	1.36	1.36	0.75	0.76	0.77	0.75
3/4	11.2	82.6	4	19.1	5/8	88.9	82.6	88.9	1.59	1.63	1.67	1.35	1.38	1.37	1.35
1	12.7	88.9	4	19.1	5/8	88.9	82.6	88.9	1.82	1.87	1.94	1.58	1.62	1.66	1.58
1 1/4	14.2	98.6	4	19.1	5/8	95.3	88.9	95.3	2.50	2.59	2.66	2.15	2.23	2.36	2.15
1 1/2	15.7	114.3	4	22.4	3/4	108	101.6	108	3.63	3.74	3.88	2.99	3.09	3.29	2.99
2	17.5	127	8	19.1	5/8	108	101.6	108	4.54	4.69	4.98	3.71	3.85	4.24	3.71
2 1/2	19.1	149.4	8	22.4	3/4	120.7	114.3	120.7	6.36	6.66	7.00	5.40	5.40	6.23	5.2
3	20.6	168.1	8	22.4	3/4	127	120.7	127	8.17	8.58	9.04	7.13	7.44	8.63	7.13
3 1/2	22.4	184.2	8	25.4	7/8	139.7	133.4	139.7	12.00	12.44	13.28	9.53	9.53	13.17	
4	23.9	215.9	8	25.4	7/8	146.1	139.7	146.1	16.80	17.46	18.79	14.90	15.40	17.70	
5	23.9	266.7	8	28.4	1	165.1	158.8	165.1	30.90	32.27	34.30	24.60	25.10	29.40	
6	26.9	292.1	12	28.4	1	171.5	165.1	171.5	33.10	34.93	37.69	28.70	29.80	36.20	
8	31.8	349.3	12	31.8	1 1/8	190.5	184.2	196.9	50.90	53.98	60.16	43.50	45.20	59.10	
10	33.3	431.8	16	35.1	1 1/4	215.9	209.6	215.9	85.80	92.59	103.34	70.90	80.20	98.40	
12	39.6	489	20	35.1	1 1/4	222.3	215.9	222.3	102.60	112.36	128.19	84.50	97.10	125.30	
14	41.4	527.1	20	38.1	1 3/8	235	228.6	235	121.60	136.13	156.38	99.30	116.20	152.10	
16	44.5	603.3	20	41.1	1 1/2	254	247.7	254	177.10	198.70	226.80	141.00	164.20	214.10	
18	49.3	654.1	20	44.5	1 5/8	273.1	266.7	273.1	215.70	246.66	283.01	174.80	201.80	275.40	
20	54.1	723.9	24	44.5	1 5/8	285.8	279.4	292.1	268.00	310.23	356.13	221.80	257.50	352.40	
24	63.5	838.2	24	50.8	1 7/8	330.2	323.9	336.6	372.00	495.71	512.38	313.30	367.10	536.80	

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

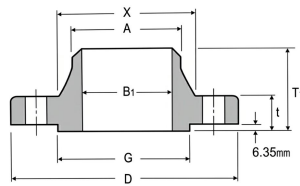
(5) The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree. To accomplish parallelism, spot facing is carried out according to MSS SP-9, without reducing thickness(t).

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

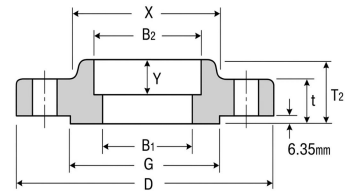
(7) Depth of Socket (Y) is covered by ANSI B16.5 only in sizes through 3 inch, over 3 inch is at the manufacture's option.



SLIP-ON



WELDING NECK



SOCKET WELDING

CLASS 900 FLANGES

ANSI B16.5 FORGED FLANGES

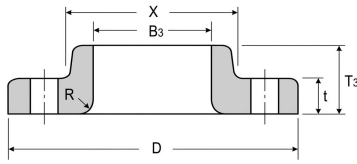
Nominal Pipe Size	Outside Diam.	Diam. at Base of Hub	O.D. of Raised Face	Thick-ness	Bore				Length Thru Hub			Diam. of Hub at Bevel
					Welding Neck	Slip-On	Lap Joint	Counter Bore Min.	Welding Neck	Slip-On Threaded	Lap Joint	
					Socket Welding	Socket Welding			Socket Welding	Socket Welding		
D	X	G	t	B1	B2	B3	B	T1	T2	T3	A	
1/2	121	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
3/4	130	44.5	42.9	25.4		27.7	28.2	29	69.9	35.1	35.1	26.7
1	149	52.3	50.8	28.4		34.5	35.1	35.8	73.2	41.1	41.1	33.5
1 1/4	159	63.5	63.5	28.4		43.2	43.7	44.5	73.2	41.1	41.1	42.2
1 1/2	178	69.9	73.2	31.8		49.5	50	50.5	82.6	44.5	44.5	48.3
2	216	104.6	91.9	38.1		62	62.5	63.5	101.6	57.2	57.2	60.5
2 1/2	244	124	104.6	41.1		74.7	75.4	76.2	104.6	63.5	63.5	73.2
3	241	127	127	38.1		90.7	91.4	92.2	101.6	53.8	53.8	88.9
4	292	158.8	157.2	44.5		116.1	116.8	117.6	114.3	69.9	69.9	114.3
5	349	190.5	185.7	50.8		143.8	144.5	144.5	127	79.2	79.2	141.2
6	381	235	215.9	55.6		170.7	171.5	171.5	139.7	85.9	85.9	168.4
8	470	298.5	269.7	63.5		221.5	222.3	222.3	162.1	101.6	114.3	219.2
10	546	368.3	323.9	69.9		276.4	277.4	276.4	184.2	108	127	273.1
12	610	419.1	381	79.2		327.2	328.2	328.7	200.2	117.3	142.7	323.9
14	641	450.9	412.8	85.9		359.2	360.2	360.4	212.9	130.3	155.4	355.6
16	705	508	469.9	88.9		410.5	411.2	411.2	215.9	133.4	165.1	406.4
18	787	565.2	533.4	101.6		461.8	462.3	462	228.6	152.4	190.5	457.2
20	857	622.3	584.2	108		513.1	514.4	512.8	247.7	158.8	209.6	508
24	1041	749.3	692.2	139.7		616	616	614.4	292.1	203.2	266.7	609.6

Notes:

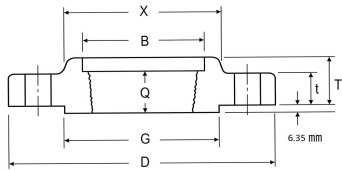
(1) For the inside diameter of pipes(corresponding to 'Bore'(B1) of Welding Neck Flange), refer to [here](#).

(2) Class 900 flanges except Lap Joint will be furnished with 0.25" (6.35mm) 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.



LAP JOINT



THREADED



BLIND

CLASS 900 FLANGES

ANSI B16.5 FORGED FLANGES

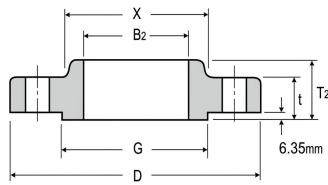
Unit: mm

Nominal Pipe Size	Radius of fillet	Thread Length	Drilling			Bolting				Approximate Weight					
			Bolt Circle Diam	Number of Holes	Diam of Holes	Diam of Bolts (inch)	Stud Bolt Length			Welding Neck			Slip-on and Threaded	Lap Joint	Blind
	R	Q					0.25" Raised Face	Male-Female Tongue-Groove	Ring Joint	SCH40	SCH80	SCH160			
1/2	3	3	22.4	82.6	4	22.4	3/4	108	101.6	108	3.10	3.10	3.10	1.75	1.80
3/4	3	3	25.4	88.9	4	22.4	3/4	114.3	108	114.3	3.18	3.18	3.18	2.35	2.35
1	3	3	28.4	101.6	4	25.4	7/8	127	120.7	127	3.86	3.92	4.00	3.50	3.60
1 1/4	4.8	4.8	30.2	111.3	4	25.4	7/8	127	120.7	127	4.54	4.64	4.71	4.01	4.10
1 1/2	6.4	6.4	31.8	124	4	28.4	1	139.7	133.4	139.7	6.36	6.49	6.65	5.52	5.40
2	7.9	7.9	38.1	165.1	8	25.4	7/8	146.1	139.7	146.1	10.90	11.10	11.50	9.81	9.81
2 1/2	7.9	7.9	47.8	190.5	8	28.4	1	158.8	152.4	158.8	16.30	16.69	17.14	13.50	13.50
3	9.7	9.7	41.1	190.5	8	25.4	7/8	146.1	139.7	146.1	15.00	15.50	16.10	11.50	11.40
4	11.2	11.2	47.8	235	8	31.8	1 1/8	171.5	165.1	171.5	23.20	23.94	25.43	19.40	23.20
5	11.2	11.2	53.8	279.4	8	35.1	1 1/4	190.5	184.2	190.5	39.10	40.62	42.86	32.40	36.80
6	12.7	12.7	57.2	317.5	12	31.8	1.125	190.5	184.2	196.9	49.90	52.06	55.33	41.00	47.70
8	12.7	12.7	63.5	393.7	12	38.1	1.375	222.3	215.9	222.3	84.90	88.61	96.09	70.60	86.30
10	12.7	12.7	71.4	469.9	16	38.1	1 3/8	235	228.6	235	121.70	129.87	142.79	99.70	124.90
12	12.7	12.7	76.2	533.4	20	38.1	1 3/8	254	247.7	254	157.00	169.48	189.74	132.30	168.00
14	12.7	12.7	82.6	558.8	20	41.1	1 1/2	273.1	266.7	292.1	181.00	199.62	225.55	151.80	188.40
16	12.7	12.7	85.9	616	20	44.5	1 5/8	285.8	279.4	298.5	225.00	251.11	285.08	184.10	211.10
18	12.7	12.7	88.9	685.8	20	50.8	1 7/8	323.9	317.5	333.6	309.00	347.24	392.13	256.10	295.10
20	12.7	12.7	91.9	749.3	20	53.8	2	349.3	342.9	362	377.00	431.59	490.91	333.20	367.70
24	12.7	12.7	101.6	901.7	20	66.5	2 1/2	438.2	431.8	457.2	685.00	778.36	885.21	600.00	703.70

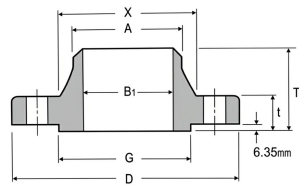
(4) Blind Flanges may be made with the same hub as that used for Slip-on Flanges or without hub.

(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).

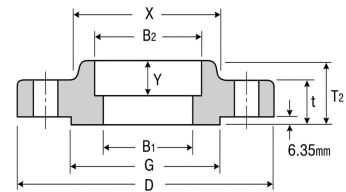
(6) Dimensions of sizes 1/2" through 2 1/2" are the same as for Class 1500 Flanges.



SLIP-ON



WELDING NECK



SOCKET WELDING

CLASS 1500 FLANGES

ANSI B16.5 FORGED FLANGES

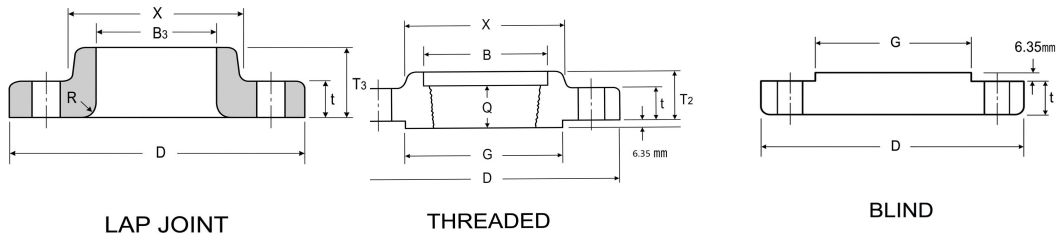
Nominal Pipe Size	Outside Diam.	Diam. at Base of Hub	O.D. of Raised Face	Thick-ness	Bore				Length Thru Hub			Diam. of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket Welding	Slip-On Socket Welding	Lap Joint	Counter Bore Min.	Welding Neck	Slip-On Threading Socket Welding	Lap Joint			
					B1	B2	B3	B	T1	T2	T3			
1/2	121.0	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	22.4
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	25.4
1	149.0	52.3	50.8	28.4		34.5	35.1	35.8	73.2	41.1	41.4	33.5	3.0	28.4
1 1/4	159.0	63.5	63.5	28.4		43.2	43.7	44.5	73.2	41.1	41.1	42.2	4.8	30.2
1 1/2	178.0	69.9	73.2	31.8		49.5	50.0	50.5	82.6	44.5	44.5	48.3	6.4	31.8
2	216.0	104.6	91.9	38.1		62.0	62.5	63.5	101.6	57.2	57.2	60.5	7.9	38.1
2 1/2	244.0	124.0	104.6	41.1		74.7	75.4	76.2	104.6	63.5	63.5	73.2	7.9	47.8
3	267.0	133.4	127.0	47.8		90.7	91.4	92.2	117.3	73.2	73.2	88.9	9.7	50.8
4	311.0	162.1	157.2	53.8		116.1	116.8	117.6	124.0	90.4	90.4	114.3	11.2	57.2
5	375.0	196.9	185.7	73.2		143.8	144.5	144.5	155.4	104.6	104.6	141.2	11.2	63.5
6	394.0	228.6	215.9	82.6		170.7	171.5	171.5	171.5	119.1	119.1	168.4	12.7	69.9
8	483.0	292.1	269.7	91.9		221.5	222.3	222.3	212.9	142.7	142.7	219.2	12.7	76.2
10	584.0	368.3	323.9	108.0		276.4	277.4	276.4	254.0	158.8	177.8	273.1	12.7	84.1
12	673.0	450.9	381.0	124.0		327.2	328.2	328.7	282.4	180.8	218.9	323.9	12.7	91.9
14	749.0	495.3	412.8	133.4		359.2	360.2	360.4	298.5	-	241.3	355.6	12.7	
16	826.0	552.5	469.9	146.1		410.5	411.2	411.2	311.2	-	260.4	406.4	12.7	
18	914.0	596.9	533.4	162.1		461.8	462.3	462.0	327.2	-	276.4	457.2	12.7	
20	984.0	641.4	584.2	177.8		513.1	514.4	512.8	355.6	-	292.1	508.0	12.7	
24	1168.0	762.0	692.2	203.2		616.0	616.0	614.4	406.4	-	330.2	609.6	12.7	

Notes:

(1) For the inside diameter of pipes (corresponding to 'Bore'(B1) of Welding Neck Flang [here](#).

(2) Class 1500 flanges except Lap Joint will be furnished with 0.25" (6.35mm) 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.



CLASS 1500 FLANGES

ANSI B16.5 FORGED FLANGES

Unit: mm

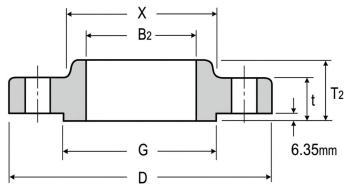
Nominal Pipe Size	Depth of Socket Y	Drilling			Bolting				Approximate Weight						
		Bolt Circle Diam	Number of Holes	Diam of Holes	Diam of Bolts (inch)	Stud Bolt Length			Welding Neck			Slip-on and Threaded	Lap Joint	Blind	Socket Welding
						0.25" Raised Face	Male-Female Tongue-Groove	Ring Joint	SCH40	SCH80	SCH160				
1/2	9.7	82.6	4	22.4	3/4	108.0	101.6	108.0	3.10	3.10	3.10	1.75	1.80	1.78	1.75
3/4	11.2	88.9	4	22.4	3/4	114.3	108.0	114.3	3.18	3.18	3.18	2.35	2.35	2.43	2.35
1	12.7	101.6	4	25.4	7/8	127.0	120.7	127.0	3.86	3.92	4.00	3.50	3.60	3.65	3.50
1 1/4	14.2	113.3	4	25.4	7/8	127.0	120.7	127.0	4.54	4.64	4.71	4.01	4.10	4.27	4.01
1 1/2	15.7	124.0	4	28.4	1	139.7	133.4	139.7	6.36	6.49	6.65	5.52	5.40	5.93	5.52
2	17.5	165.1	8	25.4	7/8	146.1	139.7	146.1	10.90	11.10	11.50	9.81	11.40	10.00	9.81
2 1/2	19.1	190.5	8	28.4	1	158.8	152.4	158.8	16.30	16.69	17.14	13.50	15.90	14.00	13.50
3	20.6	203.2	8	31.8	1 1/8	177.8	171.5	177.8	21.80	22.37	23.01	21.80	21.30	19.00	
4	23.9	241.3	8	35.1	1 1/4	196.9	190.5	196.9	31.30	32.10	33.71	33.10	34.10	29.70	
5	23.9	292.1	8	41.1	1 1/2	247.7	241.3	247.7	59.90	61.75	64.47	59.00	63.60	58.80	
6	26.9	317.5	12	38.1	1 3/8	260.4	254.0	266.7	74.50	77.13	81.12	74.90	77.20	72.50	
8	31.8	393.7	12	44.5	1 5/8	292.1	285.8	323.9	124.00	128.83	138.56	118.00	129.40	122.70	
10	33.3	482.6	12	50.8	1 7/8	336.6	330.2	342.9	206.00	217.16	234.82	197.50	220.40	211.50	
12	39.6	571.5	16	53.8	2	374.7	368.3	387.4	313.30	330.75	359.07	263.30	286.00	317.40	
14	41.4	635.0	16	60.5	2 1/4	406.4	400.1	425.5	406.00	431.88	467.94		404.10	422.70	
16	44.5	704.9	16	66.5	2 1/2	444.5	438.2	469.9	525.00	562.30	610.84		522.00	557.20	
18	49.3	774.7	16	73.2	2 3/4	495.3	489.0	527.1	687.00	741.28	790.00		670.00	760.60	
20	54.1	831.9	16	79.2	3	539.8	533.4	565.2	852.00	892.00	980.00		806.00	966.60	
24	63.5	990.6	16	91.9	3 1/2	616.0	609.6	647.7	1367.00	1430.00	1580.00		1283.00	1560.00	

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

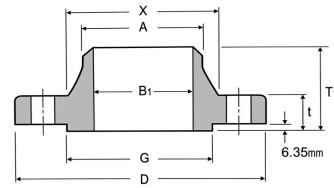
(5) The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree. To accomplish parallelism, spot facing is carried out according to MSS SP-9, without reducing thickness(t).

(6) Dimensions of sizes 1/2" through 2 1/2" are the same as for Class 900 Flanges.

(7) Depth of Socket (Y) is covered by ANSI B16.5 only in sizes through 2 1/2 inch, over 2 1/2 inch is at the manufacture's option.



SLIP-ON



WELDING NECK

CLASS 1500 FLANGES

ANSI B16.5 FORGED FLANGES

Unit: mm

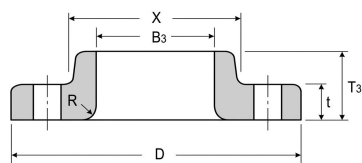
Nominal Pipe Size	Outside Diam.	Diam. at Base of Hub	O.D. of Raised Face	Thick-ness	Bore				Length Thru Hub			Diam. of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket Welding	Slip-On Socket Welding	Lap Joint	Counter Bore Min.	Welding Neck	Slip-On Threade Socket Welding	Lap Joint			
					B1	B2	B3	B	T1	T2	T3			
1/2	133	42.9	35.1	30.2	To be specified by purchaser	22.4	22.9	23.6	73.2	39.6	39.6	21.3	3.0	28.4
3/4	140	50.8	42.9	31.8		27.7	28.2	29.0	79.2	42.9	42.9	26.7	3.0	31.8
1	159	57.2	50.8	35.1		34.5	35.1	35.8	88.9	47.8	47.8	33.5	3.0	35.1
1 1/4	184	73.2	63.5	38.1		43.2	43.7	44.5	95.3	52.3	52.3	42.2	4.8	38.1
1 1/2	203	79.2	73.2	44.5		49.5	50.0	50.5	111.3	60.5	60.5	48.3	6.4	44.5
2	235	95.3	91.9	50.8		62.0	62.5	63.5	127.0	69.9	69.9	60.5	7.9	50.8
2 1/2	267	114.3	104.6	57.2		74.7	75.4	76.2	142.7	79.2	79.2	73.2	7.9	57.2
3	305	133.4	127.0	66.5		90.7	91.4	92.2	168.1	91.9	91.9	88.9	9.7	63.5
4	356	165.1	157.2	76.2		116.1	116.8	117.6	190.5	108.0	108.0	114.3	11.2	69.9
5	419	203.2	185.7	91.9		143.8	144.5	144.5	228.6	130.0	130.0	141.2	11.2	76.2
6	483	235.0	215.9	108.0		170.7	171.5	171.5	273.1	152.4	152.4	168.4	12.7	82.6
8	552	304.8	269.7	127.0		221.5	222.3	222.3	317.5	177.8	177.8	219.2	12.7	95.3
10	673	374.7	323.9	165.1		276.4	277.4	276.4	419.1	228.6	228.6	273.1	12.7	108.0
12	762	441.5	381.0	184.2		327.2	328.2	328.7	463.6	254.0	254.0	232.9	12.7	120.7

Notes:

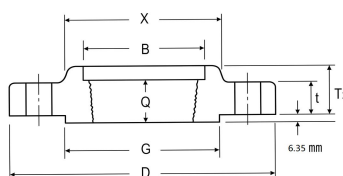
(1) For the inside diameter of pipes (corresponding to 'Bore'(B1) of Welding Neck Flang [here](#).

(2) Class 2500 flanges except Lap Joint will be furnished with 0.25" (6.35mm) raised face, which is included in 'Thickness' t and 'Length through Hub' T1, T2.

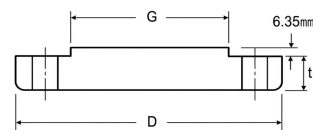
(3) For Slip-on, Threaded, Socket Welding and Lap Joint Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees.



LAP JOINT



THREADED



BLIND

CLASS 2500 FLANGES

ANSI B16.5 FORGED FLANGES

Unit: mm

Nominal Pipe Size	Drilling			Bolting			Approximate Weight				
	Bolt Circle Diam	Number of Holes	Diam of Holes	Diam of Bolts (inch)	Stud Bolt Length			Welding Neck	Slip-on and Threaded	Lap Joint	Blind
					0.25" Raised Face	Male-Female Tongue-Groove	Ring Joint				
1/2	88.9	4	22.4	3/4	120.7	114.3	120.7	3.63	3.20	3.20	3.11
3/4	95.3	4	22.4	3/4	127.0	120.7	127.0	4.09	4.08	4.08	3.56
1	108.0	4	25.4	7/8	139.7	133.4	139.7	5.90	5.44	5.44	5.50
1 1/4	130.0	4	28.4	1	152.4	146.1	152.4	9.08	8.16	8.16	7.47
1 1/2	146.1	4	31.8	1 1/8	171.5	165.1	171.5	12.70	11.00	11.00	10.60
2	171.5	8	28.4	1	177.8	171.5	177.8	19.10	17.25	17.25	15.50
2 1/2	196.9	8	31.8	1 1/8	196.9	190.5	203.2	23.60	25.00	25.00	22.40
3	228.6	8	35.1	1 1/4	222.3	215.9	228.6	42.70	37.70	37.70	34.90
4	273.1	8	41.1	1 1/2	254.0	247.7	260.4	66.30	58.00	58.00	53.80
5	323.9	8	47.8	1 3/4	298.5	292.1	311.2	110.80	95.30	95.30	91.50
6	368.3	8	53.8	2	342.9	336.6	355.6	171.60	147.00	147.00	142.50
8	438.2	12	53.8	2	381.0	374.7	393.7	261.50	220.00	220.00	211.50
10	539.8	12	66.5	2 1/2	489.0	482.6	508.0	484.50	421.00	421.00	412.60
12	619.3	12	73.2	2 3/4	539.8	533.4	558.8	730.00	590.00	590.00	588.20

(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.