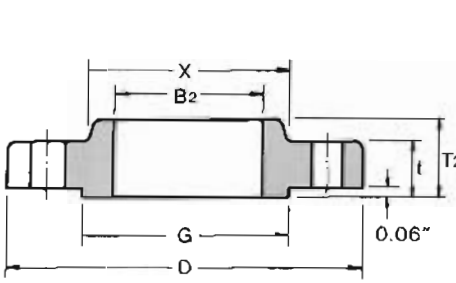
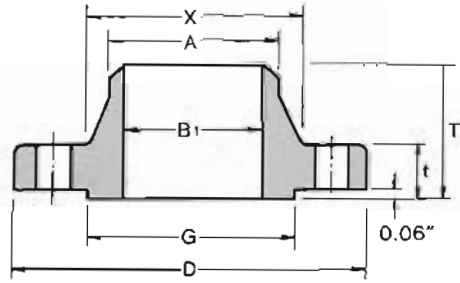


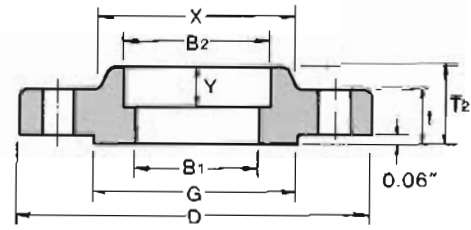
CLASS 150 FLANGES



SLIP-ON



WELDING NECK



SOCKET WELDING

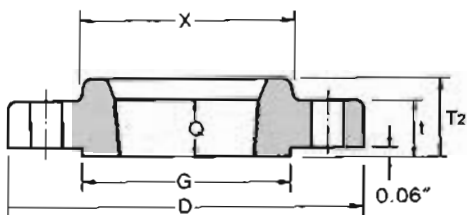
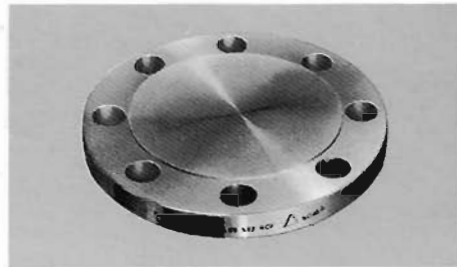
ANSI B16.5 FORGED FLANGES

Dimensions in inches

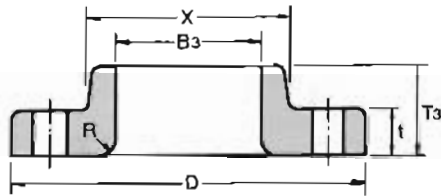
Nominal Pipe Size	Outside Diam.	Thick-ness	O.D. of Raised Face	Diam. at Base of Hub	BORE			LENGTH THRU HUB			Diam. of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket Welding	Slip-on Socket Welding	Lap Joint	Welding Neck	Slip-on Threaded Socket Welding	Lap Joint			
					B ₁	B ₂	B ₃	T ₁	T ₂	T ₃			
D	t	G	X	B ₁	B ₂	B ₃	T ₁	T ₂	T ₃	A	R	Q	
1/2 3/4 1	3.50	0.44	1.38	1.19	0.62	0.88	0.90	1.88	0.62	0.62	0.84	0.12	0.62
	3.88	0.50	1.69	1.50	0.82	1.09	1.11	2.06	0.62	0.62	1.05	0.12	0.62
	4.25	0.56	2.00	1.94	1.05	1.36	1.38	2.19	0.69	0.69	1.32	0.12	0.69
1 1/4 1 1/2 2	4.62	0.62	2.50	2.31	1.38	1.70	1.72	2.25	0.81	0.81	1.66	0.19	0.81
	5.00	0.69	2.88	2.56	1.61	1.95	1.97	2.44	0.88	0.88	1.90	0.25	0.88
	6.00	0.75	3.62	3.06	2.07	2.44	2.46	2.50	1.00	1.00	2.38	0.31	1.00
2 1/2 3 3 1/2	7.00	0.88	4.12	3.56	2.47	2.94	2.97	2.75	1.12	1.12	2.88	0.31	1.12
	7.50	0.94	5.00	4.25	3.07	3.57	3.60	2.75	1.19	1.19	3.50	0.38	1.19
	8.50	0.94	5.50	4.81	3.55	4.07	4.10	2.81	1.25	1.25	4.00	0.38	1.25
4 5 6	9.00	0.94	6.19	5.31	4.03	4.57	4.60	3.00	1.31	1.31	4.50	0.44	1.31
	10.00	0.94	7.31	6.44	5.05	5.66	5.69	3.50	1.44	1.44	5.56	0.44	1.44
	11.00	1.00	8.50	7.56	6.07	6.72	6.75	3.50	1.56	1.56	6.63	0.50	1.56
8 10 12	13.50	1.12	10.62	9.69	7.98	8.72	8.75	4.00	1.75	1.75	8.63	0.50	1.75
	16.00	1.19	12.75	12.00	10.02	10.88	10.92	4.00	1.94	1.94	10.75	0.50	1.94
	19.00	1.25	15.00	14.38	12.00	12.88	12.92	4.50	2.19	2.19	12.75	0.50	2.19
14 16 18	21.00	1.38	16.25	15.75	13.25	14.14	14.18	5.00	2.25	3.12	14.00	0.50	2.25
	23.50	1.44	18.50	18.00	15.25	16.16	16.19	5.00	2.50	3.44	16.00	0.50	2.50
	25.00	1.56	21.00	19.88	17.25	18.18	18.20	5.50	2.69	3.81	18.00	0.50	2.69
20 24	27.50	1.69	23.00	22.00	19.25	20.20	20.25	5.69	2.88	4.06	20.00	0.50	2.88
	32.00	1.88	27.25	26.12	23.25	24.25	24.25	6.00	3.25	4.38	24.00	0.50	3.25

Notes:

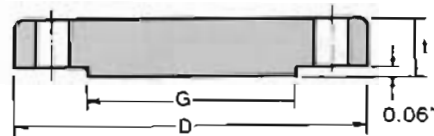
- (1) For the 'Bore' (B₁) other than Standard Wall Thickness, refer to page 61.
- (2) Class 150 flanges except Lap Joint will be furnished with 0.06" raised face, which is included in 'Thickness' (t) and 'Length through Hub' (T₁), (T₂).
- (3) For Slip-on, Threaded, Socket Welding and Lap Joint Flanges, the hubs can be shaped either vertical from base to top or tapered within the limits of 7 degrees.



THREADED



LAP JOINT



BLIND

Dimensions in inches

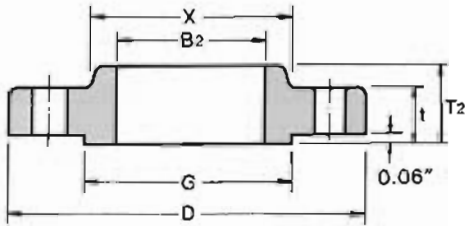
Depth of Socket Y	DRILLING			BOLTING			APPROXIMATE WEIGHT												Nominal Pipe Size	
	Bolt Circle Diam.	Number of Holes	Diam. of Holes	Diam. of Bolts	Machine Bolt Length	Stud Bolt Length		Welding Neck		Slip-on and Threaded		Lap Joint		Blind		Socket Welding				
						Raised Face	Raised Face	Ring Joint	Kg	lb.	Kg	lb.	Kg	lb.	Kg	lb.	Kg	lb.		
0.38	2.38	4	0.62	1/2	2.00	2.25	-	0.51	1.10	0.47	1.00	0.51	1.00	0.47	1.00	0.47	1.00	0.47	1.00	1/2
0.44	2.75	4	0.62	1/2	2.00	2.50	-	0.73	1.60	0.58	1.30	0.64	1.40	0.63	1.40	0.59	1.30	0.59	1.30	3/4
0.50	3.12	4	0.62	1/2	2.25	2.50	3.00	1.07	2.40	0.86	1.90	0.93	1.80	0.94	2.10	0.87	1.90	0.87	1.90	1
0.56	3.50	4	0.62	1/2	2.25	2.75	3.25	1.40	3.10	1.08	2.40	1.16	2.00	1.23	2.70	1.11	2.40	1.11	2.40	1 1/4
0.62	3.88	4	0.62	1/2	2.50	2.75	3.25	1.81	4.00	1.41	3.10	1.51	3.30	1.62	3.60	1.45	3.20	1.45	3.20	1 1/2
0.69	4.75	4	0.75	3/8	2.75	3.25	3.75	2.59	5.70	2.26	5.00	2.38	5.20	2.64	5.80	2.33	5.00	2.33	5.00	2
0.75	5.50	4	0.75	3/8	3.00	3.50	4.00	4.28	9.40	3.43	7.60	3.60	7.90	4.06	9.00	3.55	7.80	3.55	7.80	2 1/2
0.81	6.00	4	0.75	3/8	3.00	3.50	4.00	5.18	11.40	3.87	8.50	4.04	8.90	4.90	10.80	4.02	8.90	4.02	8.90	3
0.88	7.00	8	0.75	3/8	3.00	3.50	4.00	5.45	12.00	4.99	11.00	4.99	11.00	5.90	13.00	4.99	11.00	4.99	11.00	3 1/2
0.94	7.50	8	0.75	3/8	3.00	3.50	4.00	7.32	16.10	5.75	12.70	5.96	13.00	7.41	16.30	5.99	13.20	5.99	13.20	4
0.94	8.50	8	0.88	3/4	3.25	3.75	4.25	8.91	19.60	6.22	13.70	6.44	14.00	8.76	19.30	6.68	14.70	6.68	14.70	5
1.06	9.50	8	0.88	3/4	3.25	4.00	4.50	11.26	24.80	7.38	16.30	7.59	16.70	11.31	24.90	7.99	17.60	7.99	17.60	6
1.25	11.75	8	0.88	3/4	3.50	4.25	4.75	17.68	39.00	12.36	27.30	12.66	27.90	19.92	43.90	13.29	29.30	13.29	29.30	8
1.31	14.25	12	1.00	7/8	4.00	4.50	5.00	24.79	54.70	17.10	37.70	16.78	37.00	29.39	64.80	19.50	43.00	19.50	43.00	10
1.56	17.00	12	1.00	7/8	4.00	4.75	5.25	38.98	85.90	27.68	61.00	28.30	62.40	43.70	96.30	29.03	64.00	29.03	64.00	12
1.63	18.75	12	1.12	1	4.50	5.25	5.75	51.71	114.00	35.20	77.60	41.50	91.50	59.42	140.00	38.56	85.00	38.56	85.00	14
1.75	21.25	16	1.12	1	4.50	5.25	5.75	64.41	142.00	42.18	93.00	52.98	116.80	77.11	170.00	44.49	98.00	44.49	98.00	16
1.94	22.75	16	1.25	1 1/8	5.00	5.75	6.25	74.84	165.00	49.71	109.60	59.00	130.00	94.80	209.00	54.43	120.00	54.43	120.00	18
2.13	25.00	20	1.25	1 1/8	5.50	6.25	6.75	89.36	197.00	65.50	140.00	72.12	159.00	123.38	272.00	70.31	155.00	70.31	155.00	20
2.50	29.50	20	1.38	1 1/4	6.00	6.75	7.25	119.66	263.80	90.50	199.50	99.02	218.30	188.24	415.00	95.25	210.00	95.25	210.00	24

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

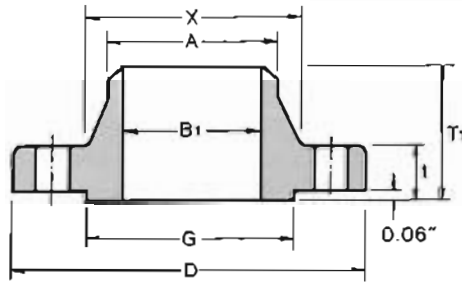
(5) The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree. To accomplish parallelism, spot facing is carried out according to MSS SP-9, without reducing thickness (t).

(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.

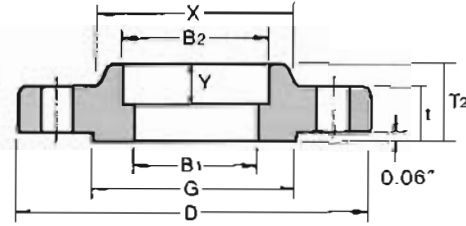
CLASS 300 FLANGES



SLIP-ON



WELDING NECK



SOCKET WELDING

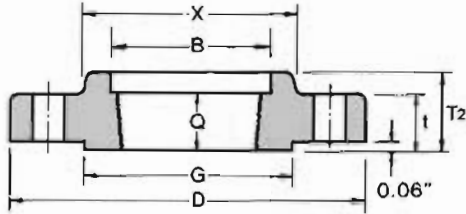
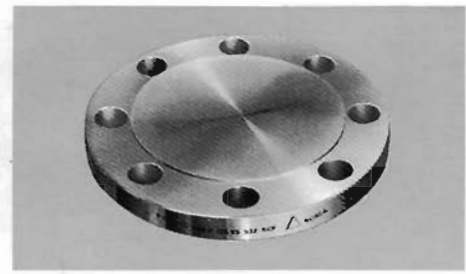
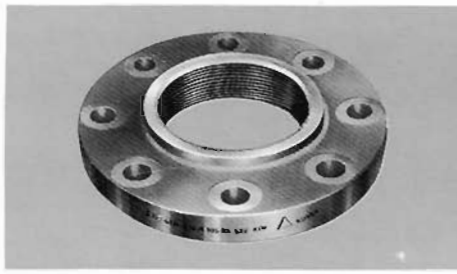
ANSI B16.5 FORGED FLANGES

Dimensions in inches

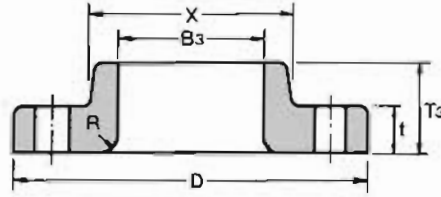
Nominal Pipe Size	Outside Diam.	Thick-ness	O.D. of Raised Face	Diam. at Base of Hub	BORE				LENGTH THRU HUB			Diam. of Hub at Bevel	Radius of Fillet	Thread Length
					Welding Neck Socket Welding	Slip-on Socket Welding	Lap Joint	Counter Bore Min. Threaded Min.	Welding Neck	Slip-on Threaded Socket Welding	Lap Joint			
					B ₁	B ₁	B ₁	B	T ₁	T ₁	T ₁			
D	t	G	X	B ₁	B ₁	B ₁	B	T ₁	T ₁	T ₁	A	R	Q	
1/2	3.75	0.56	1.38	1.50	0.62	0.88	0.90	0.93	2.06	0.88	0.88	0.84	0.12	0.62
3/4	4.62	0.62	1.69	1.88	0.82	1.09	1.11	1.14	2.25	1.00	1.00	1.05	0.12	0.62
1	4.88	0.69	2.00	2.12	1.05	1.36	1.38	1.41	2.44	1.06	1.06	1.32	0.12	0.69
1 1/4	5.25	0.75	2.50	2.50	1.38	1.70	1.72	1.75	2.56	1.06	1.06	1.66	0.19	0.81
1 1/2	6.12	0.81	2.88	2.75	1.61	1.95	1.97	1.99	2.69	1.19	1.19	1.90	0.25	0.88
2	6.50	0.88	3.62	3.31	2.07	2.44	2.46	2.50	2.75	1.31	1.31	2.38	0.31	1.12
2 1/2	7.50	1.00	4.12	3.94	2.47	2.94	2.97	3.00	3.00	1.50	1.50	2.88	0.31	1.25
3	8.25	1.12	5.00	4.62	3.07	3.57	3.60	3.63	3.12	1.69	1.69	3.50	0.38	1.25
3 1/2	9.00	1.19	5.50	5.25	3.55	4.07	4.10	4.13	3.19	1.75	1.75	4.00	0.38	1.44
4	10.00	1.25	6.19	5.75	4.03	4.57	4.60	4.63	3.38	1.88	1.88	4.50	0.44	1.44
5	11.00	1.38	7.31	7.00	5.05	5.66	5.69	5.69	3.88	2.00	2.00	5.56	0.44	1.69
6	12.50	1.44	8.50	8.12	6.07	6.72	6.75	6.75	3.88	2.06	2.06	6.63	0.50	1.81
8	15.00	1.62	10.62	10.25	7.98	8.72	8.75	8.75	4.38	2.44	2.44	8.63	0.50	2.00
10	17.50	1.88	12.75	12.62	10.02	10.88	10.92	10.88	4.62	2.62	3.75	10.75	0.50	2.19
12	20.50	2.00	15.00	14.75	12.00	12.88	12.92	12.94	5.12	2.88	4.00	12.75	0.50	2.38
14	23.00	2.12	16.25	16.75	13.25	14.14	14.18	14.19	5.62	3.00	4.38	14.00	0.50	2.50
16	25.50	2.25	18.50	19.00	15.25	16.16	16.19	16.19	5.75	3.25	4.75	16.00	0.50	2.69
18	28.00	2.38	21.00	21.00	17.25	18.18	18.20	18.19	6.25	3.50	5.12	18.00	0.50	2.75
20	30.50	2.50	23.00	23.12	19.25	20.20	20.25	20.19	6.38	3.75	5.50	20.00	0.50	2.88
24	36.00	2.75	27.25	27.62	23.25	24.25	24.25	24.19	6.62	4.19	6.00	24.00	0.50	3.25

Notes:

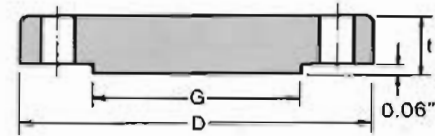
- (1) For the 'Bore' (B₁) other than Standard Wall Thickness, refer to page 61.
- (2) Class 300 flanges except Lap Joint will be furnished with 0.06" raised face, which is included in 'Thickness' (t) and 'Length through Hub' (T₁), (T₂).
- (3) For Slip-on, Threaded, Socket Welding and Lap Joint Flanges, the hubs can be shaped either vertical from base to or tapered within the limits of 7 degrees.



THREADED



LAP JOINT



BLIND

Dimensions in inches

Depth of Socket	DRILLING			BOLTING			APPROXIMATE WEIGHT										Nominal Pipe Size	
	Bolt Circle Diam.	Number of Holes	Diam. of Holes	Diam. of Bolts	Machine Bolt Length	Stud Bolt Length		Welding Neck		Slip-on and Threaded		Lap Joint		Blind		Socket Welding		
						Raised Face	Ring Joint	Kg	lb.	Kg	lb.	Kg	lb.	Kg	lb.	Kg		lb.
Y																		
0.38	2.62	4	0.62	1/2	2.25	2.50	3.00	0.78	1.70	0.62	1.40	0.61	1.30	0.62	1.40	0.62	1.40	1/2
0.44	3.25	4	0.75	5/8	2.50	3.00	3.50	1.34	3.00	1.15	2.50	1.15	2.50	1.16	2.50	1.19	2.60	3/4
0.50	3.50	4	0.75	5/8	2.50	3.00	3.50	1.64	3.60	1.39	3.10	1.38	3.00	1.42	3.00	1.44	3.20	1
0.56	3.88	4	0.75	5/8	2.75	3.25	3.75	2.06	4.50	1.67	3.70	1.66	3.70	1.79	3.90	1.73	3.80	1 1/4
0.62	4.50	4	0.88	3/4	3.00	3.50	4.00	3.06	6.70	2.53	5.60	2.52	5.60	2.68	5.90	2.62	5.80	1 1/2
0.69	5.00	8	0.75	3/4	3.00	3.50	4.00	3.40	7.50	2.80	6.20	2.79	6.20	3.09	6.80	2.94	6.50	2
0.75	5.88	8	0.88	3/4	3.25	4.00	4.50	5.31	11.70	4.25	9.40	4.22	9.30	4.75	10.50	4.49	9.90	2 1/2
0.81	6.62	8	0.88	3/4	3.50	4.25	4.75	7.32	16.10	5.81	12.80	5.78	12.70	6.79	14.90	6.20	13.70	3
0.88	7.25	8	0.88	3/4	3.75	4.25	5.00	8.17	18.00	7.72	17.00	7.72	17.00	9.53	21.00			3 1/2
0.94	7.88	8	0.88	3/4	3.75	4.50	5.00	11.30	24.90	10.13	22.30	10.07	22.20	12.00	26.50			4
0.94	9.25	8	0.88	3/4	4.25	4.75	5.25	15.12	33.30	12.58	27.70	12.52	27.60	15.96	35.20			5
1.06	10.62	12	0.88	3/4	4.25	4.75	5.50	19.68	43.40	16.04	35.40	15.95	35.20	21.20	46.70			6
1.25	13.00	12	1.00	7/8	4.75	5.50	6.00	30.48	67.20	24.50	54.00	24.37	53.70	34.80	76.30			8
1.31	15.25	16	1.12	1	5.50	6.25	6.75	43.74	96.40	34.16	75.30	39.92	88.00	55.34	122.00			10
1.56	17.75	16	1.25	1 1/8	5.75	6.75	7.25	64.41	142.00	51.26	113.00	58.70	129.40	78.90	174.00			12
1.63	20.25	20	1.25	1 1/8	6.25	7.00	7.50	88.30	194.70	72.12	159.00	83.46	184.00	107.05	236.00			14
1.75	22.50	20	1.38	1 1/4	6.50	7.50	8.00	112.94	249.00	90.40	199.30	106.14	234.00	139.25	307.00			16
1.94	24.75	24	1.38	1 1/4	6.75	7.75	8.25	138.34	305.00	109.00	240.30	133.95	295.30	176.90	396.00			18
2.13	27.00	24	1.38	1 1/2	7.25	8.00	8.75	167.37	369.00	136.00	300.00	157.65	347.60	223.17	492.00			20
2.50	32.00	24	1.62	1 1/2	8.00	9.00	10.00	235.41	519.00	204.00	449.70	240.40	530.00	342.00	754.00			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 (t).

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