

SLIP-ON

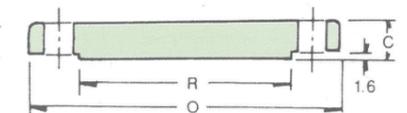
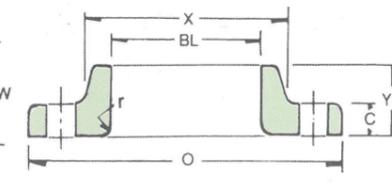
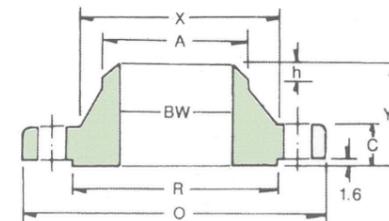
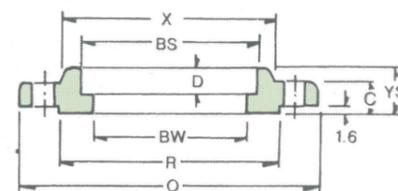
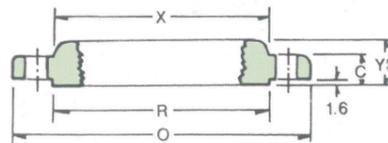
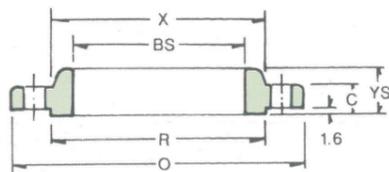
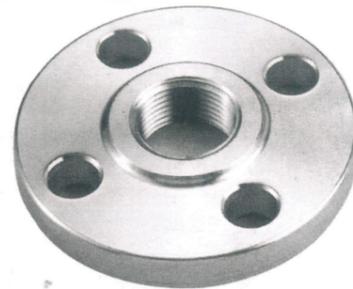
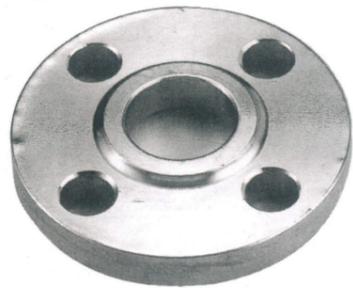
SCREWED

SOCKET WELDING

WELDING NECK

LAP JOINT

BLIND



DIMENSIONS IN MM

NOMINAL PIPE SIZE	COMMON DIMENSIONS				DIA. OF HUB AT BEVEL A	LENGTH THRU HUB			DIA. OF BORE		
	OUTSIDE DIA. OF FLANGE O	THICK. OF FLANGE C	DIA. OF HUB AT BASE X	DIA. OF RAISED FACE R		SLIP-ON, SCREWED, SOCKET Ys	WELDING NECK Yw	LAP JOINT YL	SLIP-ON, SOCKET Bs	WELDING NECK, SOCKET Bw	LAP JOINT BL
1/2	88.9	11.2	30.2	34.9	21.3	15.9	47.6	15.9	22.4	15.7	22.9
3/4	98.4	12.7	38.1	42.9	26.7	15.9	52.4	15.9	27.7	20.8	28.2
1	108.0	14.3	49.2	50.8	33.5	17.5	55.6	17.5	34.5	26.7	35.1
1 1/4	117.5	15.9	58.7	63.5	42.2	20.6	57.2	20.6	43.2	35.1	43.7
1 1/2	127.0	17.5	65.1	73.0	48.3	22.2	61.9	22.2	49.5	40.9	50.0
2	152.4	19.1	77.8	92.1	60.5	25.4	63.5	25.4	62.0	52.6	62.5
2 1/2	177.8	22.3	90.5	104.8	73.2	28.6	69.9	28.6	74.7	62.7	75.4
3	190.5	23.9	108.0	127.0	88.9	30.2	69.9	30.2	90.7	78.0	91.4
3 1/2	215.9	23.9	122.2	139.7	101.6	31.8	71.4	31.8	103.4	90.2	104.1
4	228.6	23.9	134.9	157.2	114.3	33.3	76.2	33.3	116.1	102.4	116.8
5	254.0	23.9	163.5	185.7	141.2	36.5	88.9	36.5	143.8	128.3	144.5
6	279.4	25.4	192.1	215.9	168.4	39.7	88.9	39.7	170.7	154.2	171.5
8	342.9	28.6	246.1	269.9	219.2	44.5	101.6	44.5	221.5	202.7	222.3
10	406.4	30.2	304.8	323.9	273.1	49.2	101.6	49.2	276.4	254.5	277.4
12	482.6	31.8	365.1	381.0	323.9	55.6	114.3	55.6	327.2	304.8	328.2
14	533.4	35.0	400.1	412.8	355.6	57.2	127.0	79.4	359.2	336.6	360.2
16	596.9	36.6	457.2	469.9	406.4	63.5	127.0	87.3	410.5	387.4	411.2
18	635.0	39.7	504.8	533.4	457.2	68.3	139.7	96.8	461.8	438.2	462.3
20	698.5	42.9	558.8	584.2	508.0	73.0	144.5	103.2	513.1	489.0	514.4
24	812.8	47.7	663.6	692.2	609.6	82.6	152.4	111.1	616.0	590.6	616.0

DIMENSIONS IN MM

RADIUS OF FILLET r	MINIMUM THREAD LENGTH T	DEPTH OF SOCKET D	DRILLING				LENGTH OF SYUD BOLTS			NOMINAL PIPE SIZE
			DIA. OF BOLT CIRCLE	NUMBER OF BOLTS	DIA. OF BOLTS	DIA. OF BOLT HOLES	STUD BOLTS		MACHINE BOLTS 1/16" R.F.	
							1/16" RAISED FACE	RING JOINT		
3.2	15.9	9.5	60.3	4	1/2	15.9	2 1/4	-	1 3/4	1/2
3.2	15.9	11.1	69.9	4	1/2	15.9	2 1/4	-	2	3/4
3.2	17.5	12.7	79.4	4	1/2	15.9	2 1/2	3	2	1
4.8	20.6	14.3	88.9	4	1/2	15.9	2 1/2	3	2 1/4	1 1/4
6.4	22.2	15.9	98.4	4	1/2	15.9	2 3/4	3 1/4	2 1/4	1 1/2
7.9	25.4	17.5	120.7	4	5/8	19.1	3	3 1/2	2 3/4	2
7.9	28.6	19.1	139.7	4	5/8	19.1	3 1/4	3 3/4	3	2 1/2
9.5	30.1	20.6	152.4	4	5/8	19.1	3 1/2	4	3	3
9.5	31.8	22.2	177.8	8	5/8	19.1	3 1/2	4	3	3 1/2
11.1	33.3	23.8	190.5	8	5/8	19.1	3 1/2	4	3	4
11.1	36.5	23.8	215.9	8	3/4	22.2	3 3/4	4 1/4	3 1/4	5
12.7	39.7	27.0	241.3	8	3/4	22.2	3 3/4	4 1/4	3 1/4	6
12.7	44.5	31.8	298.5	8	3/4	22.2	4	4 1/2	3 1/2	8
12.7	49.2	33.3	362.0	12	7/8	25.4	4 1/2	5	3 3/4	10
12.7	55.6	39.7	431.8	12	7/8	25.4	4 1/2	5	4	12
12.7	57.1	41.3	476.3	12	1	28.6	5	5 1/2	4 1/4	14
12.7	63.5	44.5	539.9	16	1	28.6	5 1/4	5 3/4	4 1/2	16
12.7	68.3	49.2	577.9	16	1 1/8	31.8	5 3/4	6 1/4	4 3/4	18
12.7	73.0	54.0	635.0	20	1 1/8	31.8	6	6 1/2	5 1/4	20
12.7	82.5	63.5	749.3	20	1 1/4	34.9	6 3/4	7 1/4	5 3/4	24

SLIP-ON

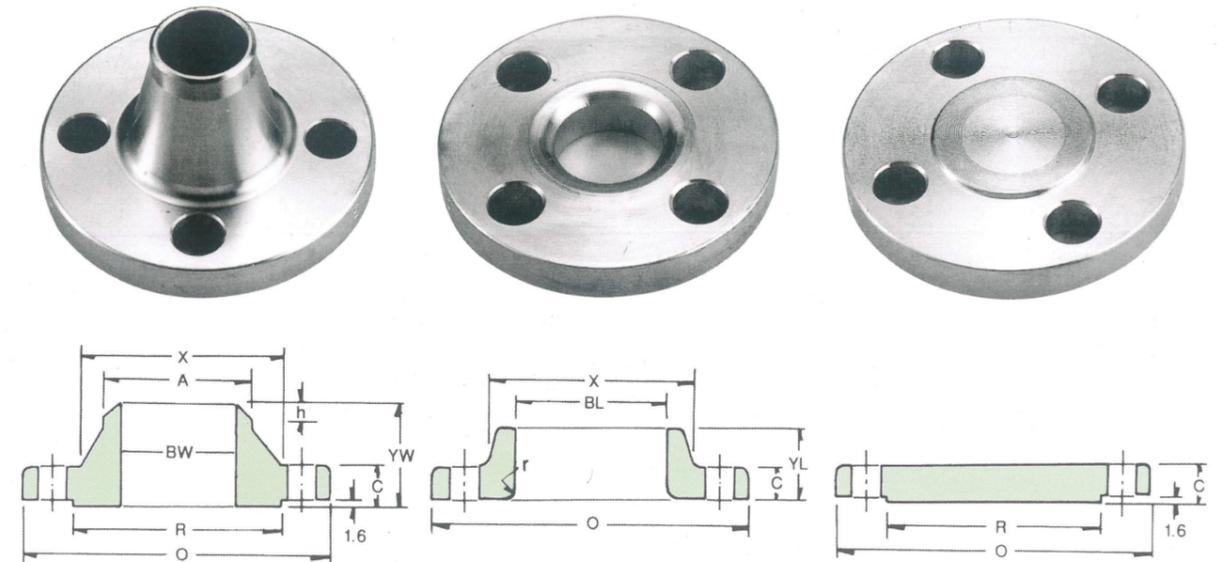
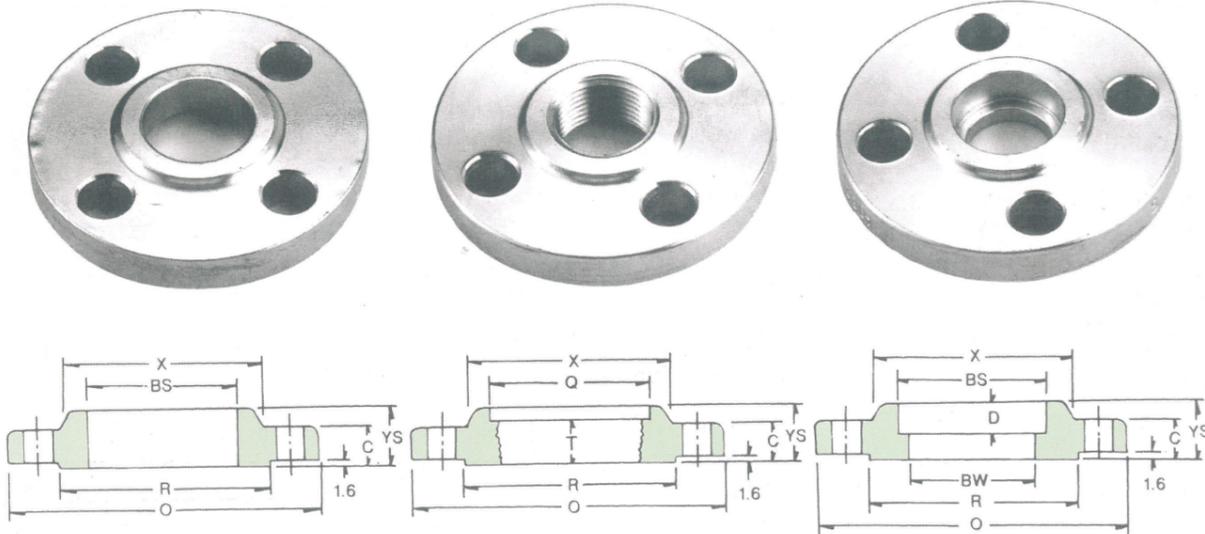
SCREWED

SOCKET WELDING

WELDING NECK

LAP JOINT

BLIND



DIMENSIONS IN MM

NOMINAL PIPE SIZE	COMMON DIMENSIONS				DIA. OF HUB AT BEVEL A	LENGTH THRU HUB			DIA. OF BORE		
	OUTSIDE DIA. OF FLANGE O	THICK. OF FLANGE C	DIA. OF HUB AT BASE X	DIA. OF RAISED FACE R		SLIP-ON, SCREWED, SOCKET Ys	WELDING NECK Yw	LAP JOINT YL	SLIP-ON, SOCKET Bs	WELDING NECK, SOCKET Bw	LAP JOINT BL
1/2	95.3	14.3	38.1	34.9	21.3	22.2	52.4	22.2	22.4	15.7	22.9
3/4	117.5	15.9	47.6	42.9	26.7	25.4	57.2	25.4	27.7	20.8	28.2
1	123.8	17.5	54.0	50.8	33.5	27.0	61.9	27.0	34.5	26.7	35.1
1 1/4	133.4	19.1	63.5	63.5	42.2	27.0	65.1	27.0	43.2	35.1	43.7
1 1/2	155.6	20.7	69.9	73.0	48.3	30.2	68.3	30.2	49.5	40.9	50.0
2	165.1	22.3	84.1	92.1	60.5	33.3	69.9	33.3	62.0	52.6	62.5
2 1/2	190.5	25.4	100.0	104.8	73.2	38.1	76.2	38.1	74.7	62.7	75.4
3	209.6	28.6	117.5	127.0	88.9	42.9	79.4	42.9	90.7	78.0	91.4
3 1/2	228.6	30.2	133.4	139.7	101.6	44.5	81.0	44.5	103.4	90.2	104.1
4	254.0	31.8	146.1	157.2	114.3	47.6	85.7	47.6	116.1	102.4	116.8
5	279.4	35.0	177.8	185.7	141.2	50.8	98.4	50.8	143.8	128.3	144.5
6	317.5	36.6	206.4	215.9	168.4	52.4	98.4	52.4	170.7	154.2	171.5
8	381.0	41.3	260.4	269.9	219.2	61.9	111.1	61.9	221.5	202.7	222.3
10	444.5	47.7	320.7	323.9	273.1	66.7	117.5	95.3	276.4	254.5	277.4
12	520.7	50.8	374.7	381.0	323.9	73.0	130.2	101.6	327.2	304.8	328.2
14	584.2	54.0	425.5	412.8	355.6	76.2	142.9	111.0	359.2	336.6	360.2
16	647.7	57.2	482.6	469.9	406.4	82.6	146.1	120.7	410.5	387.4	411.2
18	711.2	60.4	533.4	533.4	457.2	88.9	158.8	130.2	461.8	438.2	462.3
20	774.7	63.5	587.4	584.2	508.0	95.3	161.9	139.7	513.1	489.0	514.4
24	914.4	69.9	701.7	692.2	609.6	106.4	168.3	152.4	616.0	590.6	616.0

DIMENSIONS IN MM

RADIUS OF FILLET r	MINIMUM THREAD LENGTH T	DEPTH OF SOCKET D	DRILLING			LENGTH OF STUD BOLTS		COUNTER BORE SCREWED FLANGE MIN Q	NOMINAL PIPE SIZE		
			DIA. OF BOLT CIRCLE	NUMBER OF BOLTS	DIA. OF BOLTS	DIA. OF BOLT HOLES	STUD BOLTS				
							1/16" RAISED FACE			RING JOINT	MACHINE BOLTS 1/16" R.F.
3.2	15.9	9.5	66.7	4	1/2	15.9	2 1/2	3	2	23.6	1/2
3.2	15.9	11.1	82.6	4	5/8	19.1	2 3/4	3 1/4	2 1/2	29.0	3/4
3.2	17.5	12.7	88.9	4	5/8	19.1	3	3 1/2	2 1/2	35.8	1
4.8	20.6	14.3	98.4	4	5/8	19.1	3	3 1/2	2 3/4	44.5	1 1/4
6.4	22.2	15.9	114.3	4	3/4	22.2	3 1/2	4	3	50.5	1 1/2
7.9	28.6	17.5	127.0	8	5/8	19.1	3 1/4	4	3	63.5	2
7.9	31.8	19.1	149.2	8	3/4	22.2	3 3/4	4 1/2	3 1/4	76.2	2 1/2
9.5	31.8	20.6	168.3	8	3/4	22.2	4	4 3/4	3 1/2	92.2	3
9.5	36.5	-	184.2	8	3/4	22.2	4 1/4	5	3 3/4	104.9	3 1/2
11.1	36.5	-	200.0	8	3/4	22.2	4 1/4	5	3 3/4	117.6	4
11.1	42.9	-	235.0	8	3/4	22.2	4 1/2	5 1/4	4	144.5	5
12.7	46.0	-	269.9	12	3/4	22.2	4 3/4	5 1/2	4 1/4	171.5	6
12.7	50.8	-	330.2	12	7/8	25.4	5 1/4	6	4 3/4	222.3	8
12.7	55.6	-	387.4	16	1	28.6	6	6 3/4	5 1/4	276.4	10
12.7	60.3	-	450.9	16	1 1/8	31.8	6 1/2	7 1/4	5 3/4	328.7	12
12.7	63.5	-	514.4	20	1 1/8	31.8	6 3/4	7 1/2	6	360.4	14
12.7	68.3	-	571.5	20	1 1/4	34.9	7 1/4	8	6 1/2	411.2	16
12.7	69.9	-	628.7	24	1 1/4	34.9	7 1/2	8 1/4	6 3/4	462.0	18
12.7	73.0	-	685.8	24	1 1/4	34.9	8	8 3/4	7	512.8	20
12.7	82.6	-	812.8	24	1 1/2	41.3	9	10	7 3/4	614.4	24

SLIP-ON

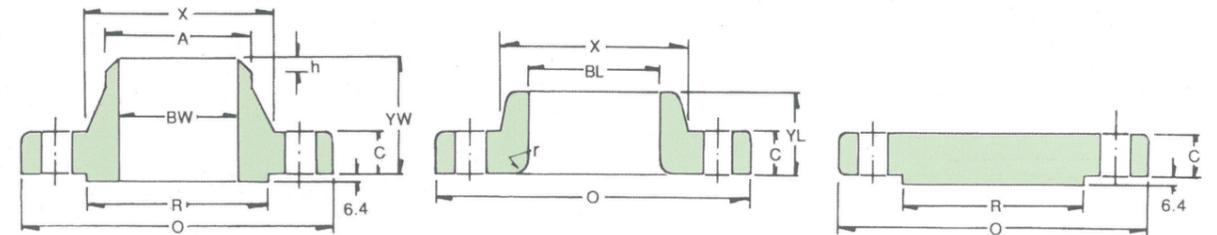
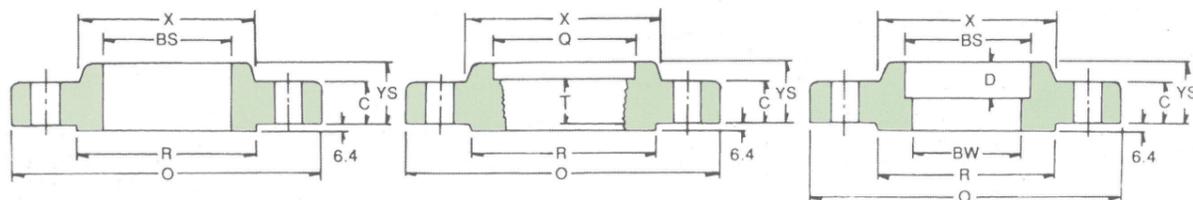
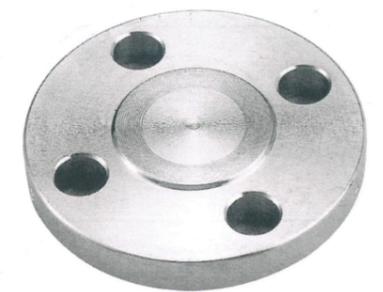
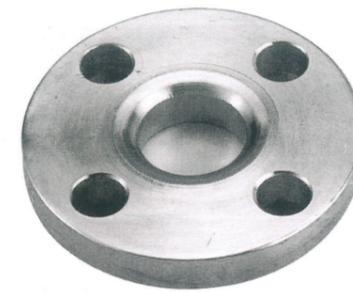
SCREWED

SOCKET WELDING

WELDING NECK

LAP JOINT

BLIND



DIMENSIONS IN MM

NOMINAL PIPE SIZE	COMMON DIMENSIONS				DIA. OF HUB AT BEVEL A	LENGTH THRU HUB			DIA. OF BORE		
	OUTSIDE DIA. OF FLANGE O	THICK. OF FLANGE C	DIA. OF HUB AT BASE X	DIA. OF RAISED FACE R		SLIP-ON, SCREWED, SOCKET Ys	WELDING NECK Yw	LAP JOINT YL	SLIP-ON, SOCKET Bs	WELDING NECK, SOCKET Bw	LAP JOINT BL
1/2	95.3	14.3	38.1	34.9	21.3	22.2	52.4	22.2	22.4	14.0	22.9
3/4	117.5	15.9	47.6	42.9	26.7	25.4	57.2	25.4	27.7	18.8	28.2
1	123.8	17.5	54.0	50.8	33.5	27.0	61.9	27.0	34.5	24.4	35.1
1 1/4	133.4	20.7	63.5	63.5	42.2	28.6	66.7	28.6	43.2	32.5	43.7
1 1/2	155.6	22.3	69.9	73.0	48.3	31.8	69.9	31.8	49.5	38.1	50.0
2	165.1	25.4	84.1	92.1	60.5	36.5	73.0	36.5	62.0	49.3	62.5
2 1/2	190.5	28.6	100.0	104.8	73.2	41.3	79.4	41.3	74.7	58.9	75.4
3	209.6	31.8	117.5	127.0	88.9	46.0	82.6	46.0	90.7	73.7	91.4
3 1/2	228.6	35.0	133.4	139.7	101.6	49.2	85.7	49.2	103.4	85.3	104.1
4	254.0	35.0	146.1	157.2	114.3	50.8	88.9	50.8	116.1	97.3	116.8
5	279.4	38.1	177.8	185.7	141.2	54.0	101.6	54.0	143.8	122.2	144.5
6	317.5	41.3	206.4	215.9	168.4	57.2	103.2	57.2	170.7	146.3	171.5
8	381.0	47.7	260.4	269.9	219.2	68.3	117.5	68.3	221.5	193.8	222.3
10	444.5	54.0	320.7	323.9	273.1	73.0	123.8	101.6	276.4	247.7	277.4
12	520.7	57.2	374.7	381.0	323.9	79.4	136.5	108.0	327.2	298.5	328.2
14	584.2	60.4	425.5	412.8	355.6	84.1	149.2	117.5	359.2	330.2	360.2
16	647.7	63.5	482.6	469.9	406.4	93.7	152.4	127.0	410.5	381.0	411.2
18	711.2	66.7	533.4	533.4	457.2	98.4	165.1	136.5	461.8	431.8	462.3
20	774.7	69.9	587.4	584.2	508.0	101.6	168.3	146.1	513.1	482.6	514.4
24	914.4	76.2	701.7	692.2	609.6	114.3	174.6	158.8	616.0	584.2	616.0

DIMENSIONS IN MM

RADIUS OF FILLET r	MINIMUM THREAD LENGTH T	DEPTH OF SOCKET D	DRILLING				LENGTH OF STUD BOLTS			COUNTER BORE SCREWED FLANGE MIN Q	NOMINAL PIPE SIZE
			DIA. OF BOLT CIRCLE	NUMBER OF BOLTS	DIA. OF BOLTS	DIA. OF BOLT HOLES	STUD BOLTS		MALE & FEMALE ALSO TONGUE & GROOVE		
								1/4" RAISED FACE		RING JOINT	
3.2	15.9	-	66.7	4	1/2	15.9	3	3	2 3/4	23.6	1/2
3.2	15.9	-	82.6	4	5/8	19.1	3 1/4	3 1/4	3	29.0	3/4
3.2	17.5	-	88.9	4	5/8	19.1	3 1/2	3 1/2	3 1/4	35.8	1
4.8	20.6	-	98.4	4	5/8	19.1	3 3/4	3 3/4	3 1/2	44.5	1 1/4
6.4	22.2	-	114.3	4	3/4	22.2	4	4	3 3/4	50.5	1 1/2
7.9	28.6	-	127.0	8	5/8	19.1	4	4 1/4	3 3/4	63.5	2
7.9	31.8	-	149.2	8	3/4	22.2	4 1/2	4 3/4	4 1/4	76.2	2 1/2
9.5	34.9	-	168.3	8	3/4	22.2	4 3/4	5	4 1/2	92.2	3
9.5	39.7	-	184.2	8	7/8	25.4	5 1/4	5 1/2	5	104.9	3 1/2
11.1	36.5	-	200.0	8	7/8	25.4	5 1/4	5 1/2	5	117.6	4
11.1	42.9	-	235.0	8	7/8	25.4	5 1/2	5 3/4	5 1/4	144.5	5
12.7	46.0	-	269.9	12	7/8	25.4	5 3/4	6	5 1/2	171.5	6
12.7	50.8	-	330.2	12	1	28.6	6 1/2	6 3/4	6 1/4	222.3	8
12.7	55.6	-	387.4	16	1 1/8	31.8	7 1/4	7 1/2	7	276.4	10
12.7	60.3	-	450.9	16	1 1/4	34.9	7 3/4	8	7 1/2	328.7	12
12.7	63.5	-	514.4	20	1 1/4	34.9	8	8 1/4	7 3/4	360.4	14
12.7	68.3	-	571.5	20	1 3/8	38.1	8 1/2	8 3/4	8 1/4	411.2	16
12.7	69.9	-	628.7	24	1 3/8	38.1	8 3/4	9	8 1/2	462.0	18
12.7	73.0	-	685.8	24	1 1/2	41.3	9 1/2	9 3/4	9 1/4	512.8	20
12.7	82.6	-	812.8	24	1 3/4	47.6	10 1/2	11	10 1/4	614.4	24

SLIP-ON

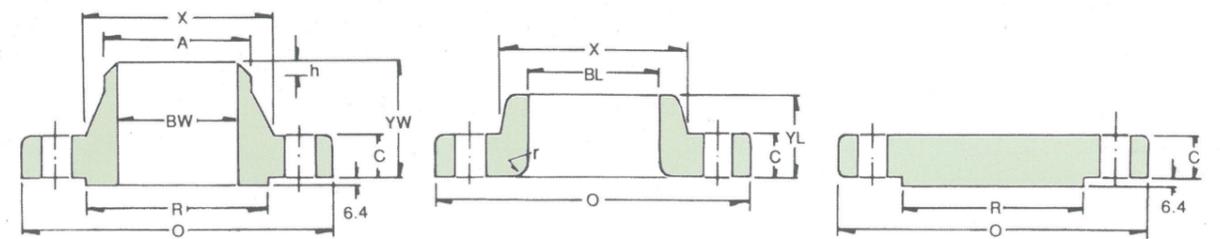
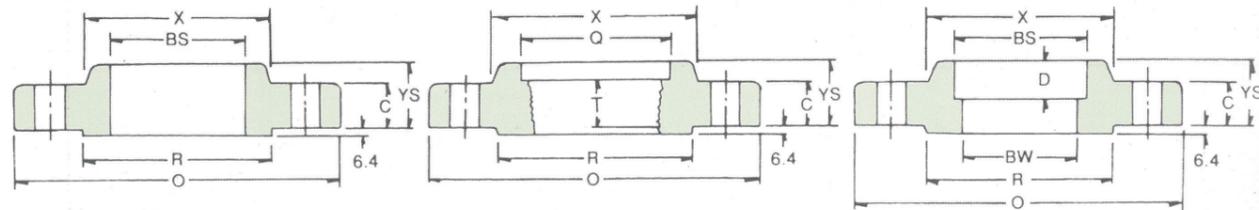
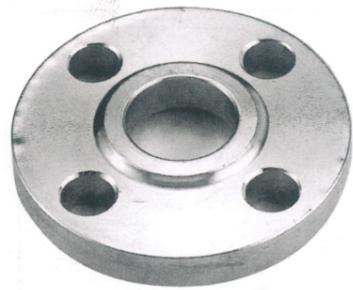
SCREWED

SOCKET WELDING

WELDING NECK

LAP JOINT

BLIND



DIMENSIONS IN MM

NOMINAL PIPE SIZE	COMMON DIMENSIONS				DIA. OF HUB AT BEVEL A	LENGTH THRU HUB			DIA. OF BORE		
	OUTSIDE DIA. OF FLANGE O	THICK. OF FLANGE C	DIA. OF HUB AT BASE X	DIA. OF RAISED FACE R		SLIP-ON, SCREWED, SOCKET Ys	WELDING NECK Yw	LAP JOINT YL	SLIP-ON, SOCKET Bs	WELDING NECK, SOCKET Bw	LAP JOINT BL
1/2	95.3	14.3	38.1	34.9	21.3	22.2	52.4	22.2	22.4	14.0	22.9
3/4	117.5	15.9	47.6	42.9	26.7	25.4	57.2	25.4	27.7	18.8	28.2
<b>1</b>	123.8	17.5	54.0	50.8	33.5	27.0	61.9	27.0	34.5	24.4	35.1
<b>1 1/4</b>	133.4	20.7	63.5	63.5	42.2	28.6	66.7	28.6	43.2	32.5	43.7
<b>1 1/2</b>	155.6	22.3	69.9	73.0	48.3	31.8	69.9	31.8	49.5	38.1	50.0
<b>2</b>	165.1	25.4	84.1	92.1	60.5	36.5	73.0	36.5	62.0	49.3	62.5
<b>2 1/2</b>	190.5	28.6	100.0	104.8	73.2	41.3	79.4	41.3	74.7	58.9	75.4
<b>3</b>	209.6	31.8	117.5	127.0	88.9	46.0	82.6	46.0	90.7	73.7	91.4
<b>3 1/2</b>	228.6	35.0	133.4	139.7	101.6	49.2	85.7	49.2	103.4	85.3	104.1
<b>4</b>	273.1	38.1	152.4	157.2	114.3	54.0	101.6	54.0	116.1	97.3	116.8
<b>5</b>	330.2	44.5	188.9	185.7	141.2	60.3	114.3	60.3	143.8	122.2	144.5
<b>6</b>	355.6	47.7	222.3	215.9	168.4	66.7	117.5	66.7	170.7	146.3	171.5
<b>8</b>	419.1	55.6	273.1	269.9	219.2	76.2	133.4	76.2	221.5	193.8	222.3
<b>10</b>	508.0	63.5	342.9	323.9	273.1	85.7	152.4	111.1	276.4	247.7	277.4
<b>12</b>	558.8	66.7	400.1	381.0	323.9	92.1	155.6	117.5	327.2	298.5	328.2
<b>14</b>	603.3	69.9	431.8	412.8	355.6	93.7	165.1	127.0	359.2	-	360.2
<b>16</b>	685.8	76.2	495.3	469.9	406.4	106.4	177.8	139.7	410.5	-	411.2
<b>18</b>	743.0	82.6	546.1	533.4	457.2	117.5	184.2	152.4	461.8	-	462.3
<b>20</b>	812.8	88.9	609.6	584.2	508.0	127.0	190.5	165.1	513.1	-	514.4
<b>24</b>	939.8	101.6	717.6	692.2	609.6	139.7	203.2	184.2	616.0	-	616.0

DIMENSIONS IN MM

RADIUS OF FILLET r	MINIMUM THREAD LENGTH T	DEPTH OF SOCKET D	DRILLING			LENGTH OF STUD BOLTS			COUNTER BORE SCREWED FLANGE MIN Q	NOMINAL PIPE SIZE	
			DIA. OF BOLT CIRCLE	NUMBER OF BOLTS	DIA. OF BOLTS	DIA. OF BOLT HOLES	1/4" RAISED FACE	RING JOINT			MALE & FEMALE ALSO TONGUE & GROOVE
3.2	15.9	9.5	66.7	4	1/2	15.9	3	3	2 3/4	23.6	1/2
3.2	15.9	11.1	82.6	4	5/8	19.1	3 1/4	3 1/4	3	29.0	3/4
3.2	17.5	12.7	88.9	4	5/8	19.1	3 1/2	3 1/2	3 1/4	35.8	<b>1</b>
4.8	20.6	14.3	98.4	4	5/8	19.1	3 3/4	3 3/4	3 1/2	44.5	<b>1 1/4</b>
6.4	22.2	15.9	114.3	4	3/4	22.2	4	4	3 3/4	50.5	<b>1 1/2</b>
7.9	28.6	17.5	127.0	8	5/8	19.1	4	4 1/4	3 3/4	63.5	<b>2</b>
7.9	31.8	19.1	149.2	8	3/4	22.2	4 1/2	4 3/4	4 1/4	76.2	<b>2 1/2</b>
9.5	34.9	20.6	168.3	8	3/4	22.2	4 3/4	5	4 1/2	92.2	<b>3</b>
9.5	39.7	22.2	184.2	8	7/8	25.4	5 1/4	5 1/2	5	104.9	<b>3 1/2</b>
11.1	41.3	-	215.9	8	7/8	25.4	5 1/2	5 3/4	5 1/4	117.6	<b>4</b>
11.1	47.6	-	266.7	8	1	28.6	6 1/4	6 1/2	6	144.5	<b>5</b>
12.7	50.8	-	292.1	12	1	28.6	6 1/2	6 3/4	6 1/4	171.5	<b>6</b>
12.7	57.2	-	349.3	12	1 1/8	31.8	7 1/2	7 3/4	7 1/4	222.3	<b>8</b>
12.7	65.1	-	431.8	16	1 1/4	34.9	8 1/4	8 1/2	8	276.4	<b>10</b>
12.7	69.9	-	489.0	20	1 1/4	34.9	8 1/2	8 3/4	8 1/4	328.7	<b>12</b>
12.7	73.0	-	527.1	20	1 3/8	38.1	9	9 1/4	8 3/4	360.4	<b>14</b>
12.7	77.8	-	603.3	20	1 1/2	41.3	9 3/4	10	9 1/2	411.2	<b>16</b>
12.7	79.4	-	654.1	20	1 5/8	44.5	10 1/2	10 3/4	10 1/4	462.0	<b>18</b>
12.7	82.6	-	723.9	24	1 5/8	44.5	11 1/4	11 1/2	11	512.8	<b>20</b>
12.7	92.1	-	838.2	24	1 7/8	50.8	12 3/4	13 1/4	12 1/2	614.4	<b>24</b>

SLIP-ON

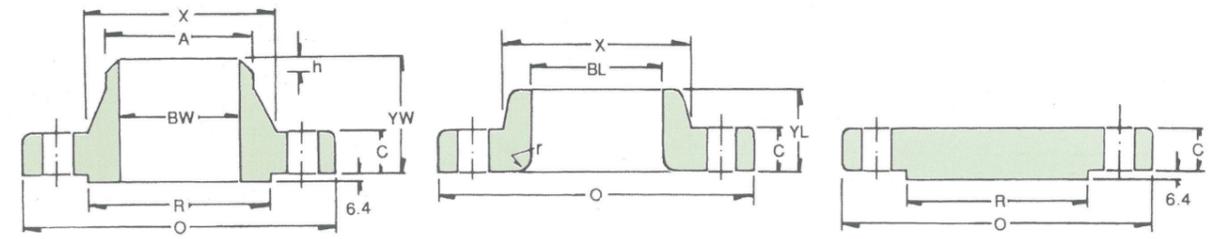
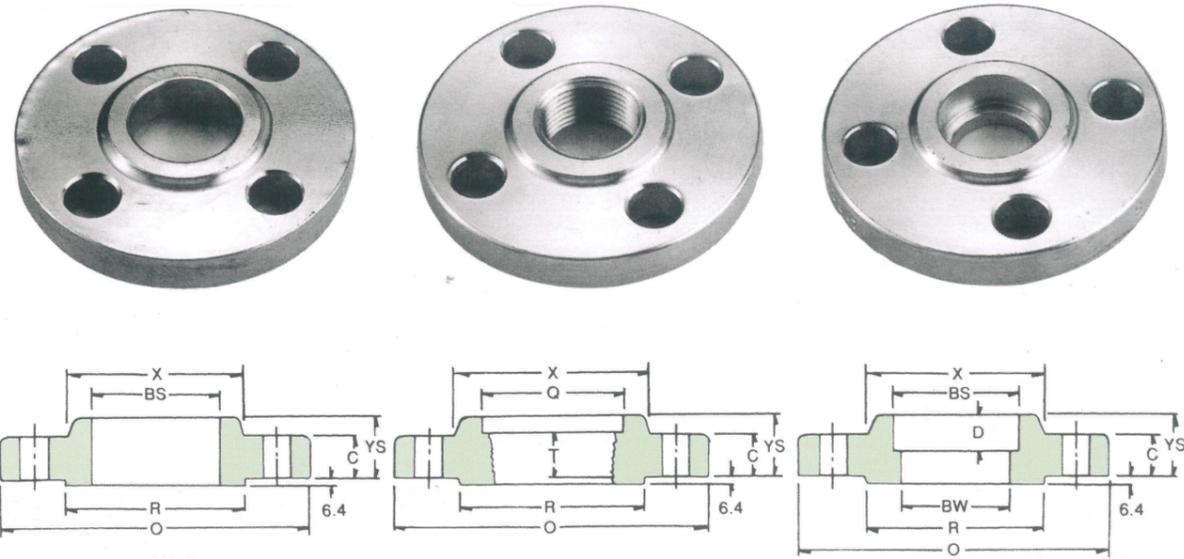
SCREWED

SOCKET WELDING

WELDING NECK

LAP JOINT

BLIND



DIMENSIONS IN MM

NOMINAL PIPE SIZE	COMMON DIMENSIONS				DIA. OF HUB AT BEVEL A	LENGTH THRU HUB			DIA. OF BORE		
	OUTSIDE DIA. OF FLANGE O	THICK. OF FLANGE C	DIA. OF HUB AT BASE X	DIA. OF RAISED FACE R		SLIP-ON, SCREWED, SOCKET Ys	WELDING NECK Yw	LAP JOINT YL	SLIP-ON, SOCKET Bs	WELDING NECK, SOCKET Bw	LAP JOINT BL
1/2	120.7	22.3	38.1	34.9	21.3	31.8	60.3	31.8	22.4	22.9	
3/4	130.2	25.4	44.5	42.9	26.7	34.9	69.9	34.9	27.7	28.2	
I	149.2	28.6	52.4	50.8	33.5	41.3	73.0	41.3	34.5	35.1	
I 1/4	158.8	28.6	63.5	63.5	42.2	41.3	73.0	41.3	43.2	43.7	
I 1/2	177.8	31.8	69.9	73.0	48.3	44.5	82.6	44.5	49.5	50.0	
2	215.9	38.1	104.8	92.1	60.5	57.2	101.6	57.2	62.0	62.5	
2 1/2	244.5	41.3	123.8	104.8	73.2	63.5	104.8	63.5	74.7	75.4	
3	241.3	38.1	127.0	127.0	88.9	54.0	101.6	54.0	90.7	91.4	
4	292.1	44.5	158.8	157.2	114.3	69.9	114.3	69.9	116.1	116.8	
5	349.3	50.8	190.5	185.7	141.2	79.4	127.0	79.4	143.8	144.5	
6	381.0	55.6	235.0	215.9	168.4	85.7	139.7	85.7	170.7	171.5	
8	469.9	63.5	298.5	269.9	219.2	101.6	161.9	114.3	221.5	222.3	
10	546.1	69.9	368.3	323.9	273.1	108.0	184.2	127.0	276.4	277.4	
12	609.6	79.4	419.1	381.0	323.9	117.5	200.0	142.9	327.2	328.2	
14	641.4	85.8	450.9	412.8	355.6	130.2	212.7	155.6	359.2	360.2	
16	704.9	88.9	508.0	469.9	406.4	133.4	215.9	165.1	410.5	411.2	
18	787.4	101.6	565.2	533.4	457.2	152.4	228.6	190.5	461.8	462.3	
20	857.3	108.0	622.3	584.2	508.0	158.8	247.7	209.6	513.1	514.4	
24	1041.4	139.7	749.3	692.2	609.6	203.2	292.1	266.7	616.0	616.0	

To be specified by purchaser

DIMENSIONS IN MM

RADIUS OF FILLET r	MINIMUM THREAD LENGTH T	DEPTH OF SOCKET D	DRILLING				LENGTH OF STUD BOLTS			COUNTER BORE SCREWED FLANGE MIN Q	NOMINAL PIPE SIZE
			DIA. OF BOLT CIRCLE	NUMBER OF BOLTS	DIA. OF BOLTS	DIA. OF BOLT HOLES	1/14" RAISED FACE	RING JOINT	MALE & FEMALE ALSO TONGUE & GROOVE		
3.2	22.2	-	82.6	4	3/4	22.2	4	4	3 3/4	23.6	1/2
3.2	25.4	-	88.9	4	3/4	22.2	4 1/4	4 1/4	4	29.0	3/4
3.2	28.6	-	101.6	4	7/8	25.4	4 3/4	4 3/4	4 1/2	35.8	I
4.8	30.2	-	111.1	4	7/8	25.4	4 3/4	4 3/4	4 1/2	44.5	I 1/4
6.4	31.8	-	123.8	4	1	28.6	5 1/4	5 1/4	5	50.5	I 1/2
7.9	38.1	-	165.1	8	7/8	25.4	5 1/2	5 3/4	5 1/4	63.5	2
7.9	47.6	-	190.5	8	1	28.6	6	6 1/4	5 3/4	76.2	2 1/2
9.5	41.3	-	190.5	8	7/8	25.4	5 1/2	5 3/4	5 1/4	92.2	3
11.1	47.6	-	235.0	8	1 1/8	31.8	6 1/2	6 3/4	6 1/4	117.6	4
11.1	54.0	-	279.4	8	1 1/4	34.9	7 1/4	7 1/2	7	144.5	5
12.7	57.2	-	317.5	12	1 1/8	31.8	7 1/2	7 1/2	7 1/4	171.5	6
12.7	63.5	-	393.7	12	1 3/8	38.1	8 1/2	8 3/4	8 1/4	222.3	8
12.7	71.4	-	469.9	16	1 3/8	38.1	9	9 1/4	8 3/4	276.4	10
12.7	76.2	-	533.4	20	1 3/8	38.1	9 3/4	10	9 1/2	328.7	12
12.7	82.6	-	558.8	20	1 1/2	41.3	10 1/2	11	10 1/4	360.4	14
12.7	85.7	-	616.0	20	1 5/8	44.5	11	11 1/2	10 3/4	411.2	16
12.7	88.9	-	685.8	20	1 7/8	50.8	12 3/4	13 1/4	12 1/2	462.0	18
12.7	92.1	-	749.3	20	2	54.0	13 1/2	14	13 1/4	512.8	20
12.7	101.6	-	901.7	20	2 1/2	66.7	17	17 3/4	16 3/4	614.4	24

SLIP-ON

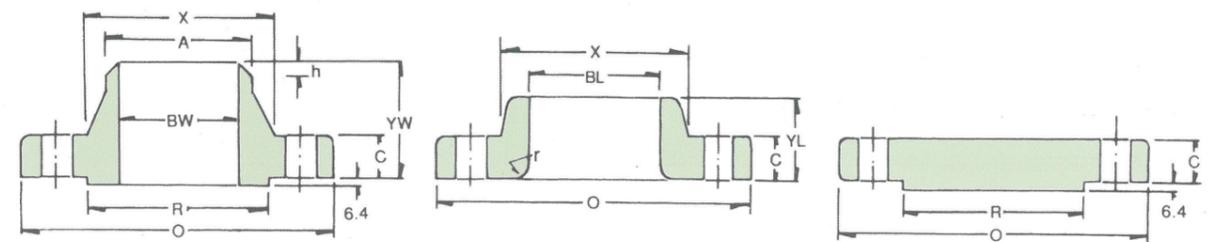
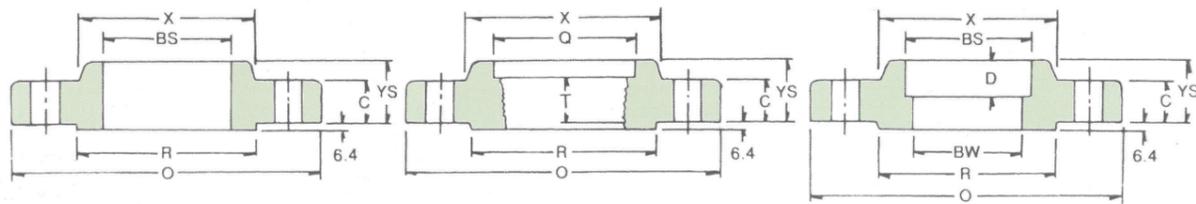
SCREWED

SOCKET WELDING

WELDING NECK

LAP JOINT

BLIND



DIMENSIONS IN MM

NOMINAL PIPE SIZE	COMMON DIMENSIONS					LENGTH THRU HUB			DIA. OF BORE		
	OUTSIDE DIA. OF FLANGE O	THICK. OF FLANGE C	DIA. OF HUB AT BASE X	DIA. OF RAISED FACE R	DIA. OF HUB AT BEVEL A	SLIP-ON, SCREWED, SOCKET Ys	WELDING NECK Yw	LAP JOINT YL	SLIP-ON, SOCKET Bs	WELDING NECK, SOCKET Bw	LAP JOINT BL
1/2	120.7	22.3	38.1	34.9	21.3	31.8	60.3	31.8	22.4		22.9
3/4	130.2	25.4	44.5	42.9	26.7	34.9	69.9	34.9	27.7		28.2
1	149.2	28.6	52.4	50.8	33.5	41.3	73.0	41.3	34.5		35.1
1 1/4	158.8	28.6	63.5	63.5	42.2	41.3	73.0	41.3	43.2		43.7
1 1/2	177.8	31.8	69.9	73.0	48.3	44.5	82.6	44.5	49.5		50.0
2	215.9	38.1	104.8	92.1	60.5	57.2	101.6	57.2	62.0		62.5
2 1/2	244.5	41.3	123.8	104.8	73.2	63.5	104.8	63.5	74.7		75.4
3	266.7	47.7	133.4	127.0	88.9	73.0	117.5	73.0	90.7		91.4
4	311.2	54.0	161.9	157.2	114.3	90.5	123.8	90.5	116.1		116.8
5	374.7	73.1	196.9	185.7	141.2	104.8	155.6	104.8	143.8		144.5
6	393.7	82.6	228.6	215.9	168.4	119.1	171.5	119.1	170.7		171.5
8	482.6	92.1	292.1	269.9	219.2	142.9	212.7	142.9	221.5		222.3
10	584.2	108.0	368.3	323.9	273.1	158.8	254.0	177.8	276.4		277.4
12	673.1	123.9	450.9	381.0	323.9	181.0	282.6	219.1	327.2		328.2
14	749.3	133.4	495.3	412.8	355.6	-	298.5	241.3	359.2		360.2
16	825.5	146.1	552.5	469.9	406.4	-	311.2	260.4	410.5		411.2
18	914.4	162.0	596.9	533.4	457.2	-	327.0	276.2	461.8		462.3
20	984.3	177.8	641.4	584.2	508.0	-	355.6	292.1	513.1		514.4
24	1168.4	203.2	762.0	692.2	609.6	-	406.4	330.2	616.0		616.0

To be specified by purchaser

DIMENSIONS IN MM

RADIUS OF FILLET r	MINIMUM THREAD LENGTH T	DEPTH OF SOCKET D	DRILLING			LENGTH OF BOLTS			COUNTER BORE SCREWED FLANGE MIN Q	NOMINAL PIPE SIZE	
			DIA. OF BOLT CIRCLE	NUMBER OF BOLTS	DIA. OF BOLTS	DIA. OF BOLT HOLES	1/4" RAISED FACE	RING JOINT			MALE & FEMALE ALSO TONGUE & GROOVE
3.2	22.2	9.5	82.6	4	3/4	22.2	4	4	3 3/4	23.6	1/2
3.2	25.4	11.1	88.9	4	3/4	22.2	4 1/4	4 1/4	4	29.0	3/4
3.2	28.6	12.7	101.6	4	7/8	25.4	4 3/4	4 3/4	4 1/2	35.8	1
4.8	30.2	14.3	111.1	4	7/8	25.4	4 3/4	4 3/4	4 1/2	44.5	1 1/4
6.4	31.8	15.9	123.8	4	1	28.6	5 1/4	5 1/4	5	50.5	1 1/2
7.9	38.1	17.5	165.1	8	7/8	25.4	5 1/2	5 3/4	5 1/4	63.5	2
7.9	47.6	19.1	190.5	8	1	28.6	6	6 1/4	5 3/4	76.2	2 1/2
9.5	50.8	-	203.2	8	1 1/8	31.8	6 3/4	7	6 1/2	92.2	3
11.1	57.2	-	241.3	8	1 1/4	34.9	7 1/2	7 3/4	7 1/4	117.6	4
11.1	63.5	-	292.1	8	1 1/2	41.3	9 1/2	9 3/4	9 1/4	144.5	5
12.7	69.9	-	317.5	12	1 3/8	38.1	10	10 1/4	9 3/4	171.5	6
12.7	76.2	-	393.7	12	1 5/8	44.5	11 1/4	11 3/4	11	222.3	8
12.7	84.1	-	482.6	12	1 7/8	50.8	13 1/4	13 1/2	13	276.4	10
12.7	92.1	-	571.5	16	2	54.0	14 3/4	15 1/4	14 1/2	328.7	12
12.7	-	-	635.0	16	2 1/4	60.3	16	16 3/4	15 3/4	360.4	14
12.7	-	-	704.9	16	2 1/2	66.7	17 1/2	18 1/2	17 1/4	411.2	16
12.7	-	-	774.7	16	2 3/4	73.0	19 1/4	20 1/4	19	462.0	18
12.7	-	-	831.9	16	3	79.4	21	22 1/4	20 3/4	512.8	20
12.7	-	-	990.6	16	3 1/2	92.1	24	25 1/2	23 3/4	614.4	24

SLIP-ON

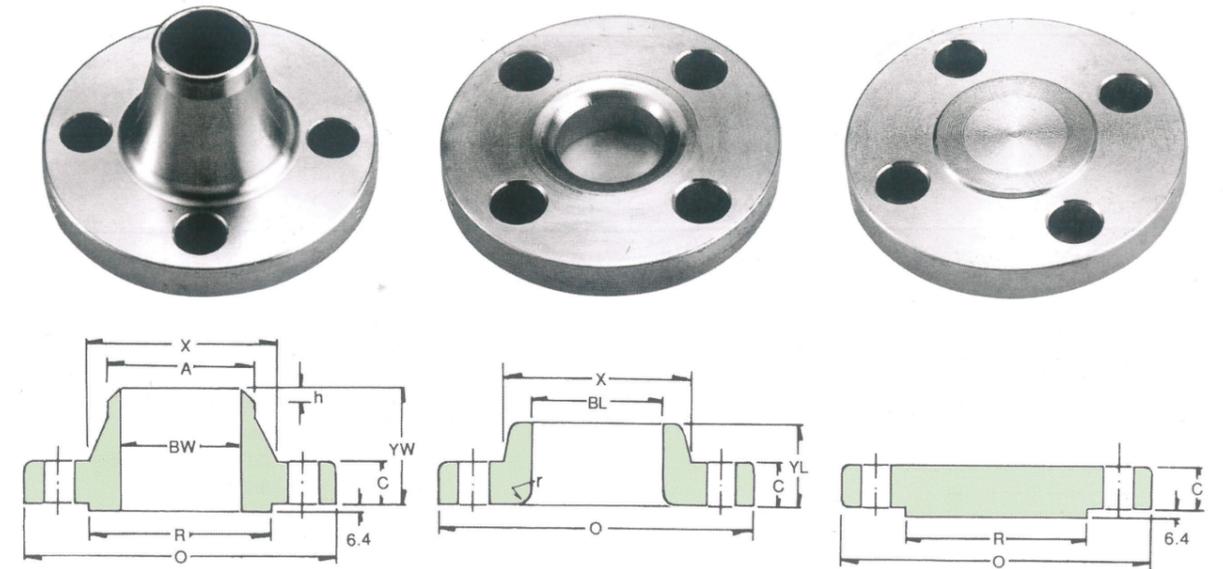
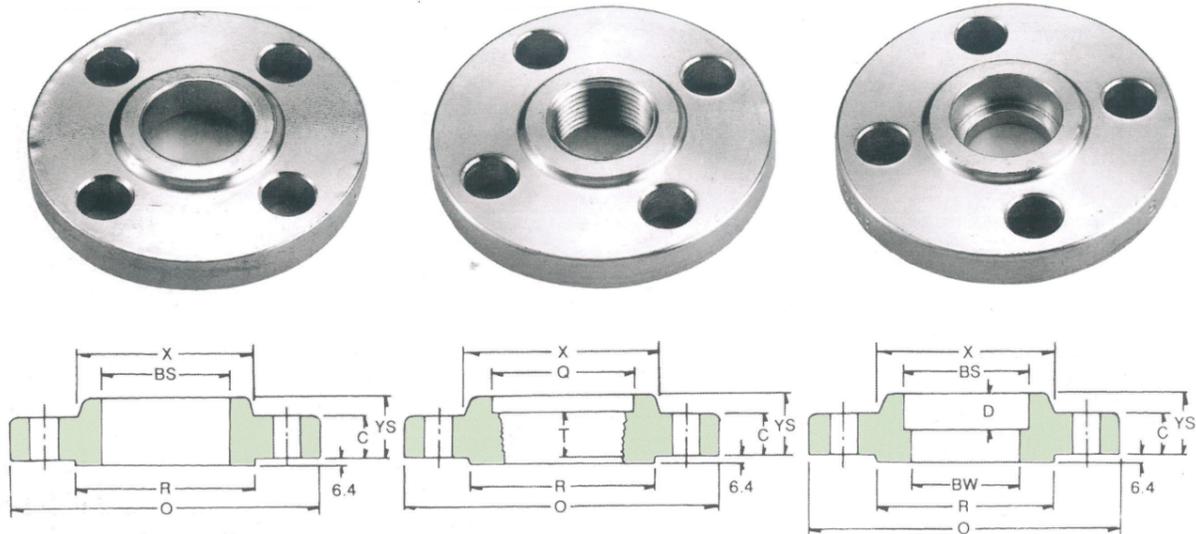
SCREWED

SOCKET WELDING

WELDING NECK

LAP JOINT

BLIND



DIMENSIONS IN MM

NOMINAL PIPE SIZE	COMMON DIMENSIONS				DIA. OF HUB AT BEVEL A	LENGTH THRU HUB			DIA. OF BORE		
	OUTSIDE DIA. OF FLANGE O	THICK. OF FLANGE C	DIA. OF HUB AT BASE X	DIA. OF RAISED FACE R		SLIP-ON, SCREWED, SOCKET Ys	WELDING NECK Yw	LAP JOINT YL	SLIP-ON, SOCKET Bs	WELDING NECK, SOCKET Bw	LAP JOINT BL
1/2	133.4	30.2	42.9	34.9	21.3	39.7	73.0	39.7	22.4	22.9	
3/4	139.7	31.8	50.8	42.9	26.7	42.9	79.4	42.9	27.7	28.2	
1	158.8	35.0	57.2	50.8	33.5	47.6	88.9	47.6	34.5	35.1	
1 1/4	184.2	38.1	73.0	63.5	42.2	52.4	95.3	52.4	43.2	43.7	
1 1/2	203.2	44.5	79.4	73.0	48.3	60.3	111.1	60.3	49.5	50.0	
2	235.0	50.8	95.3	92.1	60.5	69.9	127.0	69.9	62.0	62.5	
2 1/2	266.7	57.2	114.3	104.8	73.2	79.4	142.9	79.4	74.7	75.4	
3	304.8	66.7	133.4	127.0	88.9	92.1	168.3	92.1	90.7	91.4	
4	355.6	76.2	165.1	157.2	114.3	108.0	190.5	108.0	116.1	116.8	
5	419.1	92.1	203.2	185.7	141.2	130.2	228.6	130.2	143.8	144.5	
6	482.6	108.0	235.0	215.9	168.4	152.4	273.1	152.4	170.7	171.5	
8	552.5	127.0	304.8	269.9	219.2	177.8	317.5	177.8	221.5	222.3	
10	673.1	165.1	374.7	323.9	273.1	228.6	419.1	228.6	276.4	227.4	
12	762.0	184.2	441.3	381.0	323.9	254.0	463.6	254.0	327.2	328.2	

To be specified by purchaser

DIMENSIONS IN MM

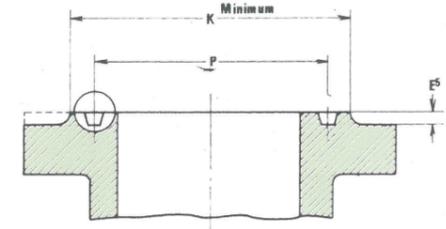
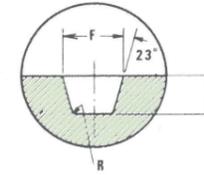
RADIUS OF FILLET r	MINIMUM THREAD LENGTH T	DEPTH OF SOCKET D	DRILLING			LENGTH OF BOLTS STUD BOLTS			COUNTER BORE SCREWED FLANGE MIN Q	NOMINAL PIPE SIZE	
			DIA. OF BOLT CIRCLE	NUMBER OF BOLTS	DIA. OF BOLTS	DIA. OF BOLT HOLES	1/4" RAISED FACE	RING JOINT			MALE & FEMALE ALSO TONGUE & GROOVE
3.2	28.6	9.6	88.9	4	3/4	22.2	4 3/4	4 3/4	4 1/2	23.6	1/2
3.2	31.8	11.1	95.3	4	3/4	22.2	4 3/4	4 3/4	4 1/2	29.0	3/4
3.2	34.9	12.7	108.0	4	7/8	25.4	5 1/4	5 1/4	5	35.8	1
4.8	38.1	14.3	130.2	4	1	28.6	5 3/4	6	5 1/2	44.5	1 1/4
6.4	44.5	16.0	146.1	4	1 1/8	31.8	6 1/2	6 3/4	6 1/4	50.5	1 1/2
7.9	50.8	17.5	171.5	8	1	28.6	6 3/4	7	6 1/2	63.5	2
7.9	57.2	19.0	196.9	8	1 1/8	31.8	7 1/2	7 3/4	7 1/4	76.2	2 1/2
9.5	63.5	-	228.6	8	1 1/4	34.9	8 1/2	8 3/4	8 1/4	92.2	3
11.1	69.9	-	273.1	8	1 1/2	41.3	9 3/4	10 1/4	9 1/2	117.6	4
11.1	76.2	-	323.9	8	1 3/4	47.6	11 1/2	12 1/4	11 1/4	144.5	5
12.7	82.6	-	368.3	8	2	54.0	13 1/2	14	13 1/4	171.5	6
12.7	95.3	-	438.2	12	2	54.0	15	15 1/2	14 3/4	222.3	8
12.7	108.0	-	539.8	12	2 1/2	66.7	19	20	18 3/4	276.4	10
12.7	120.7	-	619.1	12	2 3/4	73.0	21	22	20 3/4	328.7	12

# DIMENSIONS OF RING-JOINT FACINGS



### TOLERANCES

- E (depth)  $+1/64$   
 $-0$
- F (width)  $\pm .008$
- P (pitch diam)  $\pm .005$
- R (radius at bottom) Max
- 23° (angle)  $\pm 1/2^\circ$



### DIMENSIONS IN INCHES

NOMINAL PIPE SIZE							GROOVE NUMBER	GROOVE DIMENSIONS				DIAMETER OF RAISED PORTION K				
150 PSI	300 PSI	400 PSI	600 PSI	900 PSI	1500 PSI	2500 PSI		PITCH DIAMETER P	DEPTH E	WIDTH F	RADIUS AT BOTTOM R	150 PSI	300 400 600 PSI	900 PSI	1500 PSI	2500 PSI
-	1/2	-	1/2	-	-	-	R11	1 11/32	7/32	9/32	1/32	-	2	-	-	-
-	-	-	-	-	1/2	-	12	1 9/16	1/4	11/32	1/32	-	2 1/2	2 3/8	2 3/8	-
-	3/4	-	3/4	-	-	1/2	13	1 11/16	1/4	11/32	1/32	-	-	-	-	2 9/16
1	-	-	-	-	3/4	-	14	1 3/4	1/4	11/32	1/32	-	-	2 5/8	2 5/8	-
-	-	-	-	-	-	-	15	1 7/8	1/4	11/32	1/32	2 1/2	-	-	-	-
-	1	-	1	-	1	3/4	16	2	1/4	11/32	1/32	-	2 3/4	2 13/16	2 13/16	2 7/8
1 1/4	-	-	-	-	-	-	17	2 1/4	1/4	11/32	1/32	2 7/8	-	-	-	-
-	1 1/4	-	1 1/4	-	1 1/4	1	18	2 3/8	1/4	11/32	1/32	-	3 1/8	3 3/16	3 3/16	3 1/4
1 1/2	-	-	-	-	-	-	19	2 9/16	1/4	11/32	1/32	3 1/4	-	-	-	-
-	1 1/2	-	1 1/2	-	1 1/2	-	20	2 11/16	1/4	11/32	1/32	-	3 9/16	3 5/8	3 5/8	-
-	-	-	-	-	-	1 1/4	21	2 27/32	5/16	15/32	1/32	-	-	-	-	4
2	-	-	-	-	-	-	22	3 1/4	1/4	11/32	1/32	-	-	-	-	-
-	2	-	2	-	-	1 1/2	23	3 1/4	5/16	15/32	1/32	4	4 1/4	-	-	4 1/2
-	-	-	-	-	2	-	24	3 3/4	5/16	15/32	1/32	-	-	4 7/8	4 7/8	-
2 1/2	-	-	-	-	-	-	25	4	1/4	11/32	1/32	4 3/4	-	-	-	-
-	2 1/2	-	2 1/2	-	-	2	26	4	5/16	15/32	1/32	-	5	-	-	5 1/4
-	-	-	-	-	2 1/2	-	27	4 1/4	5/16	15/32	1/32	-	-	-	5 3/8	-
-	-	-	-	-	-	2 1/2	28	4 3/8	3/8	17/32	1/16	-	-	-	-	5 7/8
3	-	-	-	-	-	-	29	4 1/2	1/4	11/32	1/32	5 1/4	-	-	-	-
-	-	-	-	-	-	-	30	4 5/8	5/16	15/32	1/32	-	-	-	-	-
-	3	-	3	3	-	3	31	4 7/8	5/16	15/32	1/32	-	5 3/4	6 1/8	-	-
-	-	-	-	-	-	-	32	5	3/8	17/32	1/16	-	-	-	-	6 5/8
3 1/2	-	-	-	-	-	-	33	5 3/16	1/4	11/32	1/32	6 1/16	-	-	-	-
-	3 1/2	-	3 1/2	-	-	-	34	5 3/16	5/16	15/32	1/32	-	6 1/4	-	-	-
-	-	-	-	-	3	-	35	5 3/8	5/16	15/32	1/32	-	-	6 5/8	-	-
4	-	-	-	-	-	-	36	5 7/8	1/4	11/32	1/32	6 3/4	-	-	-	-
-	4	-	4	4	-	4	37	5 7/8	5/16	15/32	1/32	-	6 7/8	-	-	-
-	-	-	-	-	-	-	38	6 3/16	7/16	21/32	1/16	-	-	7 1/8	-	8
-	-	-	-	-	4	-	39	6 3/8	5/16	15/32	1/32	-	-	-	7 5/8	-
5	-	-	-	-	-	-	40	6 3/4	1/4	11/32	1/32	7 5/8	-	-	-	-
-	5	5	5	5	-	-	41	7 1/8	5/16	15/32	1/32	-	8 1/4	8 1/2	-	-
-	-	-	-	-	-	5	42	7 1/2	1/2	25/32	1/16	-	-	-	-	9 1/2
-	-	-	-	-	-	-	43	7 5/8	1/4	11/32	1/32	8 5/8	-	-	-	-
-	-	-	-	-	5	-	44	7 5/8	5/16	15/32	1/32	-	-	9	-	-
-	6	6	6	6	-	-	45	8 5/16	5/16	15/32	1/32	-	9 1/2	9 1/2	-	-

### DIMENSIONS IN INCHES

NOMINAL PIPE SIZE							GROOVE NUMBER	GROOVE DIMENSIONS				DIAMETER OF RAISED PORTION K				
150 PSI	300 PSI	400 PSI	600 PSI	900 PSI	1500 PSI	2500 PSI		PITCH DIAMETER P	DEPTH E	WIDTH F	RADIUS AT BOTTOM R	150 PSI	300 400 600 PSI	900 PSI	1500 PSI	2500 PSI
-	-	-	-	-	6	-	R46	8 5/16	3/8	17/32	1/16	-	-	-	9 3/4	-
-	-	-	-	-	-	6	47	9	1/2	25/32	1/16	-	-	-	-	11
8	-	-	-	-	-	-	48	9 3/4	1/4	11/32	1/32	10 3/4	-	-	-	-
-	8	8	8	8	-	-	49	10 5/8	5/16	15/32	1/32	-	11 7/8	12 1/8	-	-
-	-	-	-	-	8	-	50	10 5/8	7/16	21/32	1/16	-	-	-	12 1/2	-
-	-	-	-	-	-	8	51	11	9/16	29/32	1/16	-	-	-	-	13 3/8
10	-	-	-	-	-	-	52	12	1/4	11/32	1/32	13	-	-	-	-
-	10	10	10	10	10	-	53	12 3/4	5/16	15/32	1/32	-	14	14 1/4	-	-
-	-	-	-	-	10	-	54	12 3/4	7/16	21/32	1/16	-	-	-	14 5/8	-
-	-	-	-	-	-	-	55	13 1/2	11/16	1 3/16	3/32	-	-	-	-	16 3/4
12	-	-	-	-	-	-	56	15	1/4	11/32	1/32	16	-	-	-	-
-	12	12	12	12	12	-	57	15	5/16	15/32	1/32	-	16 1/4	16 1/2	-	-
-	-	-	-	-	12	-	58	15	9/16	29/32	1/16	-	-	-	17 1/4	-
14	-	-	-	-	-	-	59	15 5/8	1/4	11/32	1/32	16 3/4	-	-	-	-
-	-	-	-	-	-	12	60	16	11/16	1 5/16	3/32	-	-	-	-	19 1/2
-	14	14	14	-	-	-	61	16 1/2	5/16	15/32	1/32	-	18	-	-	-
-	-	-	-	14	-	-	62	16 1/2	7/16	21/32	1/16	-	-	18 3/8	-	-
-	-	-	-	-	14	-	63	16 1/2	5/8	1 1/16	3/32	-	-	-	19 1/4	-
16	-	-	-	-	-	-	64	17 7/8	1/4	11/32	1/32	19	-	-	-	-
-	16	16	16	-	-	-	65	18 1/2	5/16	15/32	1/32	-	20	-	-	-
-	-	-	-	16	-	-	66	18 1/2	7/16	21/32	1/16	-	-	20 5/8	-	-
18	-	-	-	-	16	-	67	18 1/2	11/16	1 3/16	3/32	-	-	-	21 1/2	-
-	-	-	-	-	-	-	68	20	3/8	11/32	1/32	21 1/2	-	-	-	-
-	18	18	18	-	-	-	69	21	5/16	15/32	1/32	-	22 5/8	-	-	-
-	-	-	-	18	-	-	70	21	1/2	25/32	1/16	-	-	23 3/8	-	-
-	-	-	-	-	18	-	71	21	11/16	1 3/16	3/32	-	-	-	24 1/8	-
-	-	-	-	-	-	-	72	22	1/4	11/33	1/32	23 1/2	-	-	-	-
-	20	20	20	-	-	-	73	23	3/8	17/32	1/16	-	25	-	-	-
-	-	-	20	20	-	-	74	23	1/2	25/32	1/16	-	-	25 1/2	-	-
-	-	-	-	-	20	-	75	23	11/16	1 5/16	3/32	-	-	-	26 1/2	-
24	-	-	-	-	-	-	76	26 1/2	1/4	11/32	1/32	28	-	-	-	-
-	24	24	24	-	-	-	77	27 1/4	7/16	21/32	1/16	-	-	29 1/2	-	-
-	-	-	-	24	-	-	78	27 1/4	5/8	1 1/16	3/32	-	-	30 3/8	-	-
-	-	-	-	-	24	-	79	27 1/4	13/16	1 1/16	3/32	-	-	-	31 1/4	-

**OUTSIDE DIAMETER**

When O.D. is 24" or less.....± 1/16"  
 When O.D. IS over 24".....± 1/8"

**INSIDE DIAMETER**

**Threaded**  
 To Standard Gauge Limits  
**Slip-On,Lap Joint**  
 10" and smaller.....+1/32"- 0"  
 12" and Larger.....+1/16"- 0"  
**Welding Neck, Long Welding Neck**  
 10" and smaller.....± 1/32"  
 12" to 18".....± 1/16"  
 20" and larger.....+1/8"-1/16"

**DIAMETER OF CONTACT FACE**

1/16" Raised Face..... ± 1/32"  
 1/4" Raised Face, Tongue and Groove,  
 Male or Female.....± 1/64"

**DIAMETER OF COUNTERBORE**

**Threaded**  
 10" and smaller.....+1/32"- 0"  
 12" and larger.....+1/16"- 0"

**FLANGE THICKNESS**

18" and smaller.....+1/8"- 0"  
 Over 18".....+3/16"-0"

**HUB**

**Welding Neck**  
**Outside Diameter of Hub at Point of Weld**  
 5" and smaller.....+3/32"- 1/32"  
 6" and larger.....+5/32"- 1/32"  
**Thickness of Hub at Point of Weld**  
 Not less than 87.5% of the nominal  
 thickness of the pipe to which the  
 flange is to be attached.  
**Long Welding Neck**  
**Outside Diameter of Neck**  
 10" and smaller.....+3/32"- 1/32"  
 12" and larger.....+3/32"- 1/16"

**DRILLING**

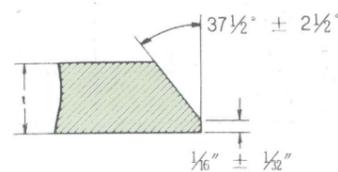
Bolt circle..... ± 1/16"  
 Bolt Hole Spacing..... ± 1/32"  
 Eccentricity of Bolt Circle and Facing  
 With respect to bore..... 1/32"Max

**OVERALL HEIGHT**

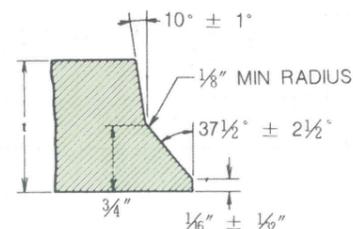
**Threaded, Slip-On,Lap Joint,Blind**  
 All sizes..... ± 1/16"  
**Welding Neck,Long Welding Neck**  
 10" and smaller..... ± 1/16"  
 12 "and larger..... ± 1/8"

**WELDING BEVEL STANDARDS**

For wall thickness "t" 3/16" to 3/4" inch



For wall thickness "t" greater than 3/4"



ANSI-B36.10 and B36.19

DIMENSIONS IN INCHES

NOMINAL PIPE SIZE	OUT SIDE DIA.	NOMINAL WALL THICKNESS FOR														
		SCHED. 5S	SCHED. 10S	SCHED. 10	SCHED. 20	SCHED. 30	STAND. ARD (STD)	SCHED. 40	SCHED. 60	EXTRA (XH)	SCHED. 80	SCHED. 100	SCHED. 120	SCHED. 140	SCHED. 160	XX STRONG (XXH)
1/8	0.405	-	0.049	-	-	-	0.068	0.068	-	0.095	0.095	-	-	-	-	-
1/4	0.540	-	0.065	-	-	-	0.088	0.088	-	0.119	0.119	-	-	-	-	-
3/8	0.675	-	0.065	-	-	-	0.091	0.091	-	0.126	0.126	-	-	-	-	-
1/2	0.840	0.065	0.083	-	-	-	0.109	0.109	-	0.147	0.147	-	-	-	0.187	0.294
3/4	1.050	0.065	0.083	-	-	-	0.113	0.113	-	0.154	0.154	-	-	-	0.218	0.308
1	1.315	0.065	0.109	-	-	-	0.133	0.133	-	0.179	0.179	-	-	-	0.250	0.358
1 1/4	1.660	0.065	0.109	-	-	-	0.140	0.140	-	0.191	0.191	-	-	-	0.250	0.382
1 1/2	1.900	0.065	0.109	-	-	-	0.145	0.145	-	0.200	0.200	-	-	-	0.281	0.400
2	2.375	0.065	0.109	-	-	-	0.154	0.154	-	0.218	0.218	-	-	-	0.343	0.436
2 1/2	2.875	0.083	0.120	-	-	-	0.203	0.203	-	0.276	0.276	-	-	-	0.375	0.552
3	3.500	0.083	0.120	-	-	-	0.216	0.216	-	0.300	0.300	-	-	-	0.438	0.600
3 1/2	4.000	0.083	0.120	-	-	-	0.226	0.226	-	0.318	0.318	-	-	-	-	-
4	4.500	0.083	0.120	-	-	-	0.237	0.237	-	0.337	0.337	-	0.438	-	0.531	0.674
5	5.563	0.109	0.134	-	-	-	0.258	0.258	-	0.375	0.375	-	0.500	-	0.625	0.750
6	6.625	0.109	0.134	-	-	-	0.280	0.280	-	0.432	0.432	-	0.562	-	0.718	0.864
8	8.625	0.109	0.148	-	0.250	0.277	0.322	0.322	0.406	0.500	0.500	0.593	0.718	0.812	0.906	0.875
10	10.750	0.134	0.165	-	0.250	0.307	0.365	0.365	0.500	0.500	0.593	0.718	0.843	1.000	1.125	1.000
12	12.750	0.156	0.180	-	0.250	0.330	0.375	0.406	0.562	0.500	0.687	0.843	1.000	1.125	1.312	1.000
140.D.	14.0	0.156	0.188	0.250	0.312	0.375	0.375	0.438	0.593	0.500	0.750	0.937	1.093	1.250	1.406	-
160.D.	16.0	0.165	0.188	0.250	0.312	0.375	0.375	0.500	0.656	0.500	0.843	1.031	1.218	1.438	1.593	-
180.D.	18.0	0.165	0.188	0.250	0.312	0.438	0.375	0.562	0.750	0.500	0.937	1.156	1.375	1.562	1.781	-
200.D.	20.0	0.188	0.218	0.250	0.375	0.500	0.375	0.593	0.812	0.500	1.031	1.281	1.500	1.750	1.968	-
220.D.	22.0	0.188	0.218	0.250	0.375	0.500	0.375	-	0.875	0.500	1.125	1.375	1.625	1.875	2.125	-
240.D.	24.0	0.218	0.250	0.250	0.375	0.562	0.375	0.687	0.968	0.500	1.128	1.531	1.812	2.062	2.343	-
260.D.	26.0	-	-	0.312	0.500	-	0.375	-	-	0.500	-	-	-	-	-	-
280.D.	28.0	-	-	0.312	0.500	0.625	0.375	-	-	0.500	-	-	-	-	-	-
300.D.	30.0	0.250	0.312	0.312	0.500	0.625	0.375	-	-	0.500	-	-	-	-	-	-
320.D.	32.0	-	-	0.312	0.500	0.625	0.375	0.688	-	0.500	-	-	-	-	-	-
340.D.	34.0	-	-	0.312	0.500	0.625	0.375	0.688	-	0.500	-	-	-	-	-	-
360.D.	36.0	-	-	0.312	0.500	0.625	0.375	0.750	-	0.500	-	-	-	-	-	-
420.D.	42.0	-	-	-	-	-	0.375	-	-	0.500	-	-	-	-	-	-

# MATERIAL SPECIFICATIONS (ASTM)

ASTM	GRADE	CLASSIFICATION	CHEMISTRY												
			C %	Mn %	P %	S %	SI %	NI %	Cr %	Mo %	T.S. Min psi (kg/mm)	Y.S. Min psi (kg/mm)	EL Min %	RED. Min %	HB MAX
A-105		Carbon Steel	MAX 0.35	MAX 1.05	MAX 0.040	MAX 0.050	MAX 0.35	MAX 0.40	MAX 0.30	MAX 0.12	70.000 (49.2)	36.000 (25.3)	22	30	137~187
A-181	I	"	" 0.35	" 1.10	" 0.050	" 0.050	0.10~0.35				60.000 (49.2)	30.000 (21.1)	22	35	
"	II	"	" 0.35	" 1.10	" 0.050	" 0.050	0.10~0.35				70.000 (49.2)	36.000 (25.3)	18	24	
A-182	F1	Carbon Molybdenum	" 0.28	0.6~0.90	" 0.045	" 0.045	0.15~0.35			0.44~0.65	70.000 (42.2)	40.000 (28.1)	25	35	143~192
"	F5	4To.6%cr	" 0.15	0.30~0.60	0.030	" 0.030	MAX 0.50	MAX 0.50	4.0~6.0	0.44~0.65	60.000 (49.2)	30.000 (21.1)	22	50	143~217
"	F5a	4To.6%cr	" 0.25	MAX 0.6	" 0.040	" 0.030	" 0.50	" 0.50	4.0~6.0	0.44~0.65	90.000 (63.3)	65.000 (45.7)	22	50	187~248
"	F6	13.cr	" 0.12	" 1.00	" 0.040	" 0.030	" 1.00	" 0.50	11.5~13.5		85.000 (59.76)	55.000 (38.7)	25	60	241
"	F7	7cr.1/2Mo	" 0.15	0.30~0.60	" 0.030	" 0.030	0.5~1.00		6.0~8.0	0.44~0.65	60.000 (42.2)	36.000 (42.2)	22	50	201
"	F9	9cr.1/2Mo	" 0.15	0.30~0.60	" 0.030	" 0.030	0.5~1.00		8.0~10.0	0.90~1.10	100.000 (70.3)	70.000 (49.2)	20	40	262
"	F11	11/4cr.1/2Mo	0.10~0.20	0.30~0.80	" 0.040	" 0.040	0.5~1.00		1.00~1.50	0.44~0.65	70.000 (49.2)	40.000 (28.1)	20	30	143~207
"	F12	1cr.1/2Mo	0.10~0.20	0.30~0.80	" 0.040	" 0.040	0.1~0.6		0.8~1.25	0.44~0.65	70.000 (49.2)	40.000 (28.1)	20	30	143~207
"	F22	21/4cr.1Mo	0.05~0.15	0.30~0.60	" 0.040	" 0.040	MAX 0.50		2.00~2.50	0.87~1.13	70.000 (49.2)	40.000 (28.1)	20	30	156~207
"	F304	18cr-8Ni	" 0.08	MAX 2.00	" 0.040	" 0.030	" 1.00	8.00~11.00	18.00~20.00		75.000 (52.7)	30.000 (21.1)	45	50	
"	F304L	18cr-8Ni Low	" 0.035	" 2.00	" 0.040	" 0.030	" 1.00	8.00~13.00	18.00~20.00		65.000 (45.7)	25.000 (17.6)	30	50	
"	F316	18cr-8Ni Mo	" 0.08	" 2.00	" 0.040	" 0.030	" 1.00	10.00~14.00	16.00~18.00	2.00~3.00	75.000 (52.7)	30.000 (21.1)	45	50	
"	F316L	18cr-8Ni	MAX 0.035	MAX 2.00	MAX 0.040	MAX 0.030	MAX 1.00	10.0~15.0	16.00~18.00	2.00~3.00	70374 (49.5)	24667 (17.3)	30	50	
"	F317L	19cr-13Ni-3.5Mo	MAX 0.03	MAX 2.00	MAX 0.045	MAX 0.030	MAX 1.00	11.0~15.0	18.00~20.00	3.0~4.0	74727 (52.5)	29746 (17.3)	30	50	
"	F317	19cr-13Ni-3.5Mo	MAX 0.08	MAX 2.00	MAX 0.045	MAX 0.030	MAX 1.00	11.0~15.0	18.00~20.00	3.0~4.0	70374 (49.5)	24667 (17.3)	30	50	
"	F321	18cr-8Ni Ti	" 0.08	" 2.00	" 0.040	" 0.030	" 1.00	9.00~12.00	Min 17.00		75.000 (52.7)	30.000 (21.1)	45	50	
"	F347	18cr-8Ni Cb	" 0.08	" 2.00	" 0.040	" 0.030	" 1.00	9.00~13.00	17.00~20.00		75.000 (52.7)	30.000 (21.1)	45	50	
A-350	LF1	Carbon Steel	" 0.30	0.60~1.35	" 0.035	" 0.040	0.15~0.30	0.40	0.30	0.12	60.000 (42.2)	30.000 (21.1)	25	38	197
"	LF2	"	" 0.30	0.60~1.35	0.035~0.040	" 0.040	0.15~0.30	0.40	0.30	0.12	70.000 (49.2)	36.000 (25.3)	22	30	197
"	LF3	31/2Ni	" 0.20	" 0.90	" 0.035	" 0.040	0.20~0.35	3.3~3.7	0.30	0.12	70.000 (49.2)	40.000 (28.1)	25	50	197
MSS SP44	F52	Carbon Steel	" 0.30	" 1.35	" 0.040	" 0.050					52.000 (36.6)	66.000 (46.4)	20		197
A-694	F52	Carbon Steel	" 0.30	" 1.5	" 0.030	" 0.030	0.13~0.37				52.000 (36.6)	66.000 (46.4)	20		197

# ANSI B 16.5 FORGED FLANGES APPROX. WEIGHT LIST



CLASS	NOMINAL PIPE SIZE	SLIP ON TYPE				UNIT POUND AND(KG)	
		SLIP ON	SCREWED	SOCKET	LAP JOINT	BLIND	WELDING NECK
150lb	1/2	1 (0.45)	1 (0.45)	2 (0.91)	2 (0.91)	2 (0.91)	2 (0.91)
	3/4	1 1/2 (0.68)	1 1/2 (0.68)	2 (0.91)	2 1/2(0.91)	2 (0.91)	2 (0.91)
	I	2 (0.91)	2 (0.91)	2 (0.91)	2 (0.91)	2 (0.91)	2 1/2(1.14)
	I 1/4	2 1/2(1.14)	2 1/2(1.14)	3 (1.36)	3 1/2(1.36)	3 (1.36)	2 1/2(1.14)
	I 1/2	3 (1.36)	3 (1.36)	3 (1.36)	3 (1.36)	3 (1.36)	4 (1.81)
	2	5 (2.18)	5 (2.27)	5 (2.27)	5 (2.27)	4 (1.82)	6 (2.72)
	2 1/2	8 (3.45)	8 (3.63)	7 (3.18)	8 (3.63)	7 (3.18)	10 (4.45)
	3	9 (4.01)	10 (4.54)	8 (3.63)	9 (4.09)	9 (4.09)	11 1/2(5.22)
	3 1/2	11 (4.99)	12 (5.45)	11 (4.99)	11 (4.99)	13 (5.90)	12 (5.45)
	4	13 (5.63)	13 (5.90)	13 (5.90)	13 (5.90)	17 (7.72)	16 1/2 (7.49)
	5	15 (6.74)	15 (6.81)	15 (6.81)	15 (6.81)	20 (9.08)	21 (9.53)
	6	17 (7.90)	19 1/2 (8.85)	19 (8.63)	19 (8.63)	27 (12.26)	26 (11.80)
	8	28 (12.90)	30 (13.62)	30 (13.62)	30 (13.62)	47 (21.34)	42 (19.07)
	10	40 (17.60)	41 (18.61)	43 (19.52)	43 (19.52)	67 (30.42)	54 (24.52)
	12	61 (27.69)	65 (29.51)	64 (29.06)	64 (29.06)	123 (45.00)	88 (39.95)
	14	83 (37.68)	85 (38.59)	85 (38.59)	99 (44.95)	139 (63.11)	114 (51.76)
	16	106 (48.12)	93 (42.22)	93 (42.22)	128 (58.11)	187 (84.90)	142 (64.47)
	18	109 (49.49)	120 (54.48)	120 (54.48)	146 (66.28)	217 (98.52)	165 (74.90)
20	148 (67.19)	155 (70.37)	155 (70.37)	185 (83.99)	283 (128.48)	197 (89.44)	
24	204 (92.62)	210 (95.34)	210 (95.34)	260 (118.04)	415 (188.41)	268 (121.67)	
300lb	1/2	1 1/2 (0.68)	1 1/2 (0.68)	3 (1.36)	3 (1.36)	2 (0.91)	2 (0.91)
	3/4	2 1/2 (1.14)	2 1/2 (1.14)	3 (1.36)	3 (1.36)	3 (1.36)	3 (1.36)
	I	3 (1.36)	3 (1.36)	3 (1.36)	3 (1.36)	4 (1.82)	4 (1.82)
	I 1/4	4 1/2 (2.04)	4 1/2 (2.04)	4 (1.82)	4 1/2(2.04)	6 (2.72)	5 (2.27)
	I 1/2	6 1/2 (2.95)	6 1/2 (2.95)	6 (2.72)	6 1/2(2.95)	7 (3.18)	7 (3.18)
	2	7 (3.18)	7 (3.18)	7 (3.18)	7 (3.18)	8 (3.63)	8 (3.63)
	2 1/2	10 (4.54)	10 (4.54)	10 (4.54)	10 (4.54)	12 (5.45)	12 (5.45)
	3	13 (5.90)	14 (6.36)	13 (5.90)	14 1/2(6.58)	16 (7.26)	18 (8.17)
	3 1/2	16 (7.26)	16 (7.26)	17 (7.72)	17 (7.72)	21 (9.53)	20 (9.1)
	4	23 1/2 (10.67)	24 (10.90)	22 (9.99)	24 (10.90)	28 (12.71)	26 1/2(12.03)
	5	29 (13.17)	31 (14.07)	-	28 (12.71)	37 (16.80)	36 (16.34)
	6	36 (16.34)	36 (16.34)	-	39 (17.71)	48 (21.79)	45 (20.43)
	8	56 (25.42)	56 (25.42)	-	58 (26.33)	79 (35.87)	69 (31.33)
	10	77 (34.96)	80 (36.32)	-	91 (41.31)	122 (55.39)	100 (45.4)
	12	113 (51.30)	110 (49.94)	-	139 (63.11)	183 (83.08)	142 (64.47)
	14	159 (72.19)	164 (74.46)	-	189 (85.81)	241 (109.41)	206 (93.52)
	16	210 (95.34)	220 (99.88)	-	240 (108.96)	315 (143.01)	249 (113.05)
	18	253 (114.86)	280 (127.12)	-	305 (138.47)	414 (187.96)	306 (138.92)
20	307 (139.38)	325 (147.55)	-	375 (170.25)	515 (233.81)	369 (167.53)	
24	490 (222.46)	490 (222.46)	-	530 (240.62)	800 (363.2)	519 (235.63)	

# ANSI B 16.5 FORGED FLANGES APPROX. WEIGHT LIST



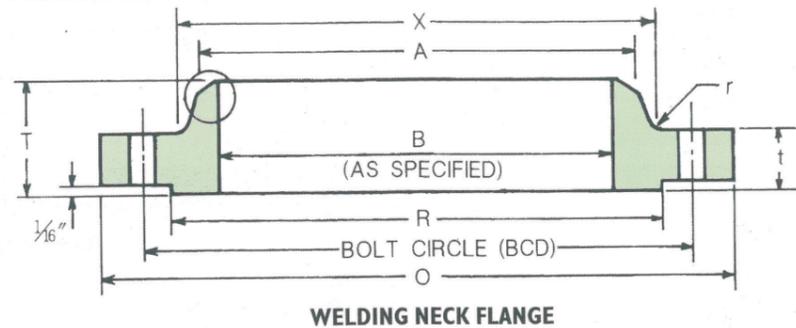
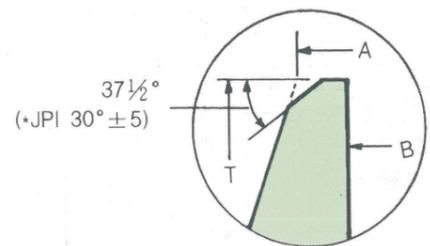
UNIT POUND AND(KG)

CLASS	NOMINAL PIPE SIZE	SLIP ON TYPE			BLIND	WELDING NECK
		SLIP ON	SCREWED	LAP JOINT		
400lb	1/2	2 (0.91)	2 (0.91)	3 (1.36)	2 (0.91)	3 (1.36)
	3/4	3 (1.36)	3 (1.36)	3 (1.36)	3 (1.36)	3 1/2 (1.59)
	<b>1</b>	3 1/2 (1.59)	3 1/2 (1.59)	4 (1.82)	4 (1.82)	4 (1.82)
	1 1/4	4 1/2 (2.04)	4 1/2 (2.04)	6 (2.72)	6 (2.72)	5 1/2 (2.50)
	1 1/2	6 1/2 (2.95)	6 1/2 (2.95)	7 (3.18)	8 (3.63)	8 (3.63)
	<b>2</b>	8 (3.63)	8 (3.63)	9 (4.09)	10 (4.54)	10 (4.54)
	2 1/2	12 (5.45)	12 (5.45)	12 (5.45)	15 (6.81)	14 (6.36)
	<b>3</b>	15 (6.81)	15 (6.81)	15 (6.81)	20 (9.08)	18 (8.17)
	3 1/2	21 (9.53)	21 (9.53)	20 (9.08)	29 (13.17)	26 (11.80)
	<b>4</b>	24 (10.9)	24 (10.9)	25 (11.35)	33 (14.98)	30 (13.62)
	<b>5</b>	31 (14.07)	31 (14.07)	29 (13.17)	44 (19.98)	39 (17.71)
	<b>6</b>	39 (17.71)	39 (17.71)	42 (19.07)	61 (27.69)	49 (22.45)
	<b>8</b>	63 (28.60)	63 (28.60)	64 (29.06)	100 (45.4)	78 (35.41)
	<b>10</b>	91 (41.31)	91 (41.31)	112 (50.85)	155 (70.37)	110 (49.94)
	<b>12</b>	129 (58.57)	129 (58.57)	152 (69.01)	226 (102.60)	160 (72.64)
	<b>14</b>	191 (86.71)	191 (86.71)	210 (95.34)	310 (140.74)	233 (105.78)
	<b>16</b>	253 (114.86)	253 (114.86)	280 (127.12)	398 (180.69)	194 (133.78)
	<b>18</b>	310 (140.74)	310 (140.74)	345 (156.63)	502 (227.91)	360 (163.44)
<b>20</b>	378 (171.61)	378 (171.61)	420 (190.68)	621 (281.93)	445 (202.03)	
<b>24</b>	539 (244.71)	539 (244.71)	615 (279.21)	936 (424.94)	640 (290.56)	
600lb	1/2	2 (0.91)	2 (0.91)	3 (1.36)	2 (0.91)	3 (1.36)
	3/4	3 (1.36)	3 (1.36)	3 (1.36)	3 (1.36)	3 1/2 (1.59)
	<b>1</b>	3 1/2 (1.59)	3 1/2 (1.59)	4 (1.82)	4 (1.82)	4 (1.82)
	1 1/4	4 1/2 (2.04)	4 1/2 (2.04)	6 (2.72)	6 (2.72)	5 1/2 (2.50)
	1 1/2	6 1/2 (2.95)	6 1/2 (2.95)	7 (3.18)	8 (3.63)	8 (3.63)
	<b>2</b>	8 (3.63)	8 (3.63)	9 (4.09)	10 (4.54)	10 (4.54)
	2 1/2	12 (5.45)	12 (5.45)	12 (5.45)	15 (6.81)	14 (6.36)
	<b>3</b>	15 (6.81)	15 (6.81)	15 (6.81)	20 (9.08)	18 (8.17)
	3 1/2	21 (9.53)	21 (9.53)	20 (9.08)	29 (13.17)	26 (11.80)
	<b>4</b>	33 (14.98)	33 (14.98)	36 (16.34)	41 (18.61)	37 (16.80)
	<b>5</b>	63 (28.60)	63 (28.60)	63 (28.60)	68 (30.87)	68 (30.87)
	<b>6</b>	80 (36.32)	80 (36.32)	78 (35.41)	86 (39.04)	73 (33.14)
	<b>8</b>	97 (44.04)	97 (44.04)	112 (50.85)	139 (63.11)	112 (50.85)
	<b>10</b>	177 (80.36)	177 (80.36)	195 (88.53)	231 (104.87)	189 (85.81)
	<b>12</b>	215 (97.61)	215 (97.61)	240 (108.96)	295 (133.93)	226 (102.60)
	<b>14</b>	259 (117.59)	259 (117.59)	290 (131.66)	378 (171.61)	347 (157.54)
	<b>16</b>	366 (166.16)	366 (166.16)	400 (181.6)	527 (239.26)	481 (218.37)
	<b>18</b>	476 (216.10)	476 (216.10)	469 (212.93)	665 (301.91)	555 (251.97)
<b>20</b>	612 (277.85)	612 (277.85)	604 (274.22)	855 (388.17)	690 (313.26)	
<b>24</b>	876 (397.70)	876 (397.70)	866 (393.16)	1175 (533.45)	977 (443.56)	

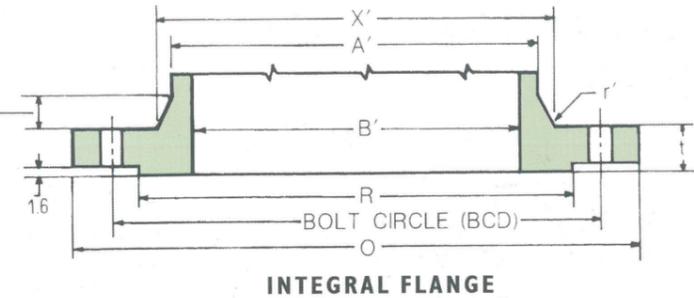
UNIT POUNDS AND (KG)

CLASS	NOMINAL PIPE SIZE	SLIP ON TYPE			BLIND	WELDING NECK	
		SLIP ON	THREADED	LAP JOINT			
900lb	1/2	6 (2.72)	6 (2.72)	9 (4.09)	4 (1.82)	7 (3.18)	
	3/4	6 (2.72)	6 (2.72)	9 (4.09)	6 (2.72)	7 (3.18)	
	<b>1</b>	7 1/2 (3.41)	7 1/2 (3.41)	9 (4.09)	9 (4.09)	8 1/2 (3.86)	
	1 1/4	10 (4.54)	10 (4.54)	10 (4.54)	10 (4.54)	10 (4.54)	
	1 1/2	14 (6.36)	14 (6.36)	14 (6.36)	14 (6.36)	14 (6.36)	
	<b>2</b>	22 (9.99)	22 (9.99)	25 (11.35)	25 (11.35)	24 (10.90)	
	2 1/2	36 (16.34)	36 (16.34)	35 (15.9)	35 (15.89)	36 (16.34)	
	<b>3</b>	31 (14.07)	31 (14.07)	20 (13.62)	32 (14.53)	29 (13.17)	
	<b>4</b>	53 (24.06)	53 (24.06)	51 (23.15)	54 (24.52)	51 (23.15)	
	<b>5</b>	83 (37.68)	83 (37.68)	81 (36.77)	87 (39.50)	86 (39.04)	
	<b>6</b>	108 (49.03)	108 (49.03)	105 (47.67)	113 (51.30)	110 (49.94)	
	<b>8</b>	172 (78.09)	172 (78.09)	188 (85.35)	197 (89.44)	187 (84.90)	
	<b>10</b>	245 (111.23)	245 (111.23)	277 (125.76)	290 (131.66)	268 (121.67)	
	<b>12</b>	326 (148.00)	326 (148.00)	371 (168.43)	413 (187.50)	372 (168.89)	
	<b>14</b>	380 (172.52)	380 (172.52)	397 (180.24)	494 (224.28)	562 (255.15)	
	<b>16</b>	459 (208.39)	459 (208.39)	488 (221.55)	619 (281.03)	685 (310.99)	
	<b>18</b>	647 (293.74)	647 (293.74)	670 (304.18)	880 (399.52)	924 (419.50)	
	<b>20</b>	792 (359.57)	792 (359.57)	868 (394.07)	1107 (502.58)	1164 (528.46)	
<b>24</b>	1480 (671.92)	1480 (671.92)	1659 (753.19)	2099 (952.95)	2107 (956.58)		
1500lb	1/2	6 (2.72)	6 (2.72)	9 (4.09)	4 (1.82)	7 (3.18)	
	3/4	6 (2.72)	6 (2.72)	9 (4.09)	6 (2.72)	7 (3.18)	
	<b>1</b>	7 1/2 (3.41)	7 1/2 (3.41)	9 (4.09)	9 (4.09)	8 1/2 (3.86)	
	1 1/4	10 (4.54)	10 (4.54)	10 (4.54)	10 (4.54)	10 (4.54)	
	1 1/2	14 (6.36)	14 (6.36)	14 (6.36)	14 (6.36)	14 (6.36)	
	<b>2</b>	22 (9.99)	22 (9.99)	25 (11.35)	25 (11.35)	24 (10.90)	
	2 1/2	36 (16.34)	36 (16.34)	35 (15.9)	35 (15.89)	36 (16.34)	
	<b>3</b>	48 (21.79)	48 (21.79)	47 (21.3)	48 (21.79)	48 (21.79)	
	<b>4</b>	73 (33.14)	73 (33.14)	75 (34.05)	73 (33.14)	69 (31.33)	
	<b>5</b>	132 (59.93)	132 (59.93)	138 (62.65)	142 (64.47)	132 (59.93)	
	<b>6</b>	164 (74.46)	164 (74.46)	170 (77.18)	159 (72.19)	164 (74.46)	
	<b>8</b>	258 (117.13)	258 (117.13)	286 (129.84)	302 (137.11)	273 (123.94)	
	<b>10</b>	436 (197.94)	436 (197.94)	485 (220.19)	507 (230.18)	454 (206.12)	
	<b>12</b>	667 (302.82)	667 (302.82)	749 (340.05)	775 (351.85)	690 (313.26)	
	2500lb	1/2	7 (3.18)	7 (3.18)	7 (3.18)	7 (13.18)	8 (3.63)
		3/4	9 (4.09)	9 (4.09)	8 (3.63)	10 (4.54)	9 (4.09)
		<b>1</b>	12 (5.45)	12 (5.45)	12 (5.45)	12 (5.45)	13 (5.90)
		1 1/4	18 (8.17)	18 (8.17)	17 (7.72)	18 (8.17)	20 (9.08)
1 1/2		25 (11.35)	25 (11.35)	24 (10.90)	25 (11.35)	28 (12.71)	
<b>2</b>		38 (17.25)	38 (17.25)	37 (16.80)	39 (17.71)	42 (19.07)	
2 1/2		55 (24.97)	55 (24.97)	53 (24.06)	56 (25.42)	52 (23.61)	
<b>3</b>		83 (37.68)	83 (37.68)	80 (36.32)	86 (39.04)	94 (42.68)	
<b>4</b>		127 (57.66)	127 (57.66)	122 (55.39)	133 (60.38)	146 (66.28)	
<b>5</b>		210 (95.34)	210 (95.34)	204 (92.62)	223 (101.24)	244 (110.78)	
<b>6</b>		323 (146.64)	323 (146.64)	314 (142.56)	345 (156.63)	378 (171.61)	
<b>8</b>		485 (220.19)	485 (220.19)	471 (213.83)	533 (241.98)	576 (261.50)	
<b>10</b>		925 (419.95)	925 (419.95)	897 (407.24)	1025 (465.35)	1068 (484.87)	
<b>12</b>		1300 (590.2)	1300 (590.2)	1262 (572.95)	1464 (664.66)	1608 (730.03)	

**API 605  
WELDING NECK & INTEGRAL FLANGES  
(Large Diameter)**



57.2 FOR 300 PSI  
28.6 FOR 150 PSI  
0 FOR 75PSI



**75lbs. Nominal Rating**

DIMENSIONS IN MM

NOMINAL SIZE	WELDING NECK AND INTEGRAL FLANGES								
	FLANGE OUTSIDE DIAMETER	FLANGE THICKNESS	RAISED-FACE DIAMETER	DRILLING			BOLT LENGTH		
				BOLT-CIRCLE DIAMETER (BCD)	NUMBER OF BOLTS	BOLT DIAMETER (INCHES)	BOLT-HOLE DIAMETER	MACHINE BOLT L	STUD BOLT L
O	C	R							
26	762	33.3	704.8	723.9	36	5/8	19.0	102	114
28	813	33.3	755.6	774.7	40	5/8	19.0	102	114
30	864	33.3	806.4	825.5	44	5/8	19.0	102	114
32	914	34.9	857.2	876.3	48	5/8	19.0	108	121
34	965	34.9	908.0	927.1	52	5/8	19.0	108	121
36	1033	36.5	965.2	992.2	40	3/4	22.2	114	127
38	1084	38.1	1016.0	1043.0	40	3/4	22.2	114	133
42	1186	39.7	1117.6	1144.6	48	3/4	22.2	121	133
48	1353	46.0	1276.4	1304.9	44	7/8	25.4	140	152
54	1508	49.2	1428.8	1460.5	48	7/8	25.4	146	159
60	1676	55.6	1587.5	1622.4	44	1	28.6	159	178

**150lbs. Nominal Rating**

26	786	41.3	711.2	744.5	36	3/4	22.2	121	140
28	837	44.4	762.0	795.3	40	3/4	22.2	127	146
30	887	44.4	812.8	846.1	44	3/4	22.2	127	146
32	941	46.0	863.6	900.1	48	3/4	22.2	133	146
34	1005	49.2	920.8	957.3	40	7/8	25.4	146	159
36	1057	52.4	971.6	1009.6	44	7/8	25.4	152	165
42	1226	58.7	1130.3	1171.6	48	1	28.6	165	184
48	1392	65.1	1289.0	1335.1	44	1 1/8	31.8	184	203
54	1549	71.4	1441.4	1492.2	56	1 1/8	31.8	197	216
60	1726	76.2	1600.2	1662.1	52	1 1/4	34.9	210	235

**300lbs. Nominal Rating**

26	867	88.9	736.6	803.3	32	1 1/4	34.9	235	260
28	921	88.9	787.4	857.2	36	1 1/4	34.9	235	260
30	991	93.7	844.6	920.8	36	1 3/8	38.1	248	273
32	1054	103.2	901.7	977.9	32	1 1/2	41.3	273	298
34	1108	103.2	952.5	1031.9	36	1 1/2	41.3	273	298
36	1172	103.2	1009.6	1089.0	32	1 5/8	44.4	273	305
42	1334	119.1	1168.4	1244.6	36	1 3/4	47.6	311	343
48	1511	128.6	1327.2	1416.0	40	1 7/8	50.8	330	368
54	1673	136.5	1479.6	1578.0	48	1 7/8	50.8	349	387
60	1878	150.8	1651.0	1763.7	40	2 1/4	60.3	387	432

**TOLERANCE**

Dimension	Tolerance millimeters
Outside diameter of raised face (R)	± 0.8
Flange thickness (C) <sup>a</sup>	+ 4.8,-0
Overall hub length (Y)	± 3.2
Inside diameter of welding-neck flange (B)	± 0.8
Back-to-face parallelism of flange <sup>a</sup>	+ 3.2,-16

**I.GENERAL**

\*The 3/16-in. tolerance on flange thickness applies, either with or without back-facing or spot-facing, to the thickness at any point on the nut bearing surface

**75lbs. Nominal Rating**

DIMENSIONS IN MM

NOMINAL SIZE	WELDING NECK FLANGES				INTEGRAL FLANGES			
	DIAMETER OF LARGE END OF HUB	DIAMETER OF SMALL END OF HUB	OVERALL LENGTH	FILLET RADIUS	DIAMETER OF LARGE END OF NECK	DIAMETER OF SMALL END OF NECK	INSIDE DIAMETER	FILLET RADIUS
	X	A	T	R	X'	A'	B <sup>c</sup>	r <sup>c</sup>
26	676.3	662.0	58.7	7.9	676.3	676.3	644.5	9.5
28	727.1	712.8	61.9	7.9	727.1	727.1	695.3	9.5
30	777.9	763.6	65.1	7.9	777.9	777.9	746.1	9.5
32	828.7	814.4	69.8	7.9	828.7	828.7	795.3	9.5
34	879.5	865.2	73.0	7.9	879.5	879.5	844.6	12.7
36	935.0	916.0	85.7	9.5	935.0	935.0	895.4	12.7
42	1087.4	1068.4	95.2	9.5	1087.4	1087.4	1046.2	12.7
48	1241.4	1220.8	111.1	9.5	1241.4	1241.4	1195.4	12.7
54	1397.0	1373.2	125.4	9.5	1397.0	1397.0	1347.8	15.9
60	1552.6	1525.6	144.5	11.1	1552.6	1552.6	1498.6	15.9

**150lbs. Nominal Rating**

26	684.2	662.0	88.9	9.5	687.4	676.3	642.9	12.7
28	735.0	712.8	95.2	9.5	738.2	727.1	690.6	12.7
30	787.4	763.6	100.0	9.5	789.0	777.9	739.8	12.7
32	839.8	814.4	108.0	9.5	843.0	831.8	792.2	12.7
34	892.2	865.2	110.3	9.5	893.8	882.6	839.8	12.7
36	944.6	916.0	117.5	9.5	946.2	935.0	890.6	12.7
42	1101.7	1070.0	133.4	11.1	1101.7	1090.6	1038.2	15.9
48	1257.3	1222.4	149.2	11.1	1258.9	1247.8	1187.4	15.9
54	1412.9	1374.8	161.9	11.1	1416.0	1404.9	1339.8	15.9
60	1570.0	1527.2	179.4	14.3	1573.2	1562.1	1485.9	19.0

**300lbs. Nominal Rating**

26	701.7	665.2	144.5	14.3	714.4	689.0	635.0	15.9
28	755.6	716.0	149.2	14.3	768.4	743.0	685.8	15.9
30	812.8	768.4	158.0	14.3	825.5	800.1	736.6	15.9
32	863.6	819.2	168.3	15.9	876.3	850.9	781.0	19.0
34	917.6	870.0	173.0	15.9	930.3	904.9	831.8	19.0
36	965.2	920.8	181.0	15.9	981.1	955.7	876.3	19.0
42	1117.6	1074.7	204.8	15.9	1130.3	1101.7	1022.4	19.0
48	1277.9	1227.1	223.8	15.9	1295.4	1266.8	1168.4	19.0
54	1435.1	1379.5	239.7	15.9	1457.3	1428.8	1314.4	22.2
60	1598.6	1531.9	271.5	17.5	1624.0	1692.3	1460.5	22.2

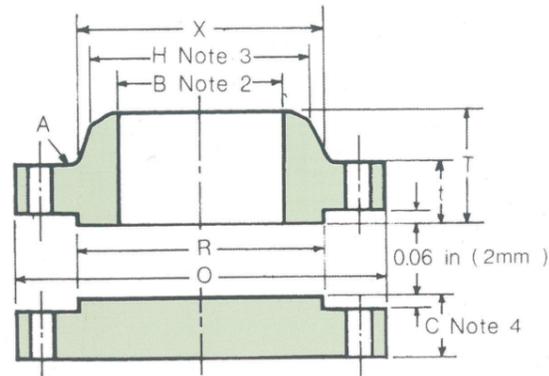
The 0.03-in. Tolerance applies, either with or without back-facing or spot-facing, to the parallelism between the flange face and nut bearing surface on back of flange.

**I.GENERAL**

Tolerances for the welding end of a welding neck flange shall be in conformance with ANSI B16.5

# 150lb.

## MSS SP-44 MSS LARGE DIAMETER FLANGES



### Class 150

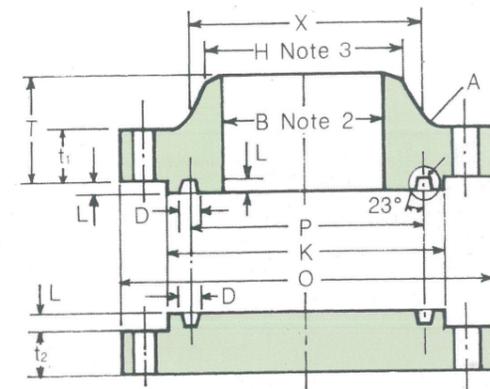
DIMENSIONS IN MM

PIPE SIZE	FLANGE DIMENSIONS			HUB DIMENSIONS		RAISED FACE DIA.			FILLET RADIUS (MIN)
	OD OF FLANGE	THICK OF FLANGE (MIN)	LENGTH THRU HUB	OD LARGE END HUB	NO OF BOLT HOLES	DIA. OF BOLT HOLES	DIA. OF BOLT CIRCLE	R	
12	483	32.0	114	365	12	25	432	381	10
14	535	35.0	127	400	12	29	476	413	10
16	595	36.5	127	457	16	29	540	470	10
18	635	39.5	140	505	16	32	578	533	10
20	700	43.0	144	560	20	32	635	584	10
22	750	46.0	149	610	20	35	692	641	10
24	815	47.5	152	665	20	35	749	692	10
26	870	68.5	121	675	24	35	806	749	10
28	925	71.5	125	725	28	35	863	800	11
30	985	74.5	137	780	28	35	914	857	11
32	1060	81.0	144	830	28	41	978	914	11
34	1110	82.5	149	880	32	41	1029	965	13
36	1170	90.5	157	935	32	41	1086	1022	13
38	1240	87.5	157	990	32	41	1150	1073	13
40	1290	90.5	164	1040	36	41	1200	1124	13
42	1345	97.5	171	1090	36	41	1257	1194	13
44	1405	102.0	178	1145	40	41	1314	1245	13
46	1455	103.0	186	1195	40	41	1365	1295	13
48	1510	108.0	192	1250	44	41	1422	1359	13
50	1570	111.0	203	1300	44	48	1480	1410	13
52	1625	116.0	210	1355	44	48	1537	1460	13
54	1685	121.0	216	1405	44	48	1594	1511	13
56	1745	124.0	229	1455	48	48	1651	1575	13
58	1805	129.0	235	1510	48	48	1708	1626	13
60	1855	132.0	240	1560	52	48	1759	1676	13

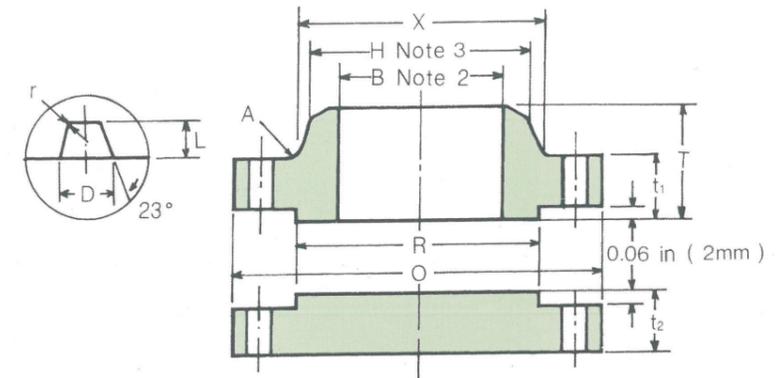
1.For machining tolerances see ANSI Standard B16.5  
2.Dimensions to be specified by customer.  
3.Thickness of Blind Flange and ring of Weld Neck Flange are equal.

# 300lb.

## MSS SP-44 MSS LARGE DIAMETER FLANGES



RING TYPE JOINT



RAISED FACE

### Class 300

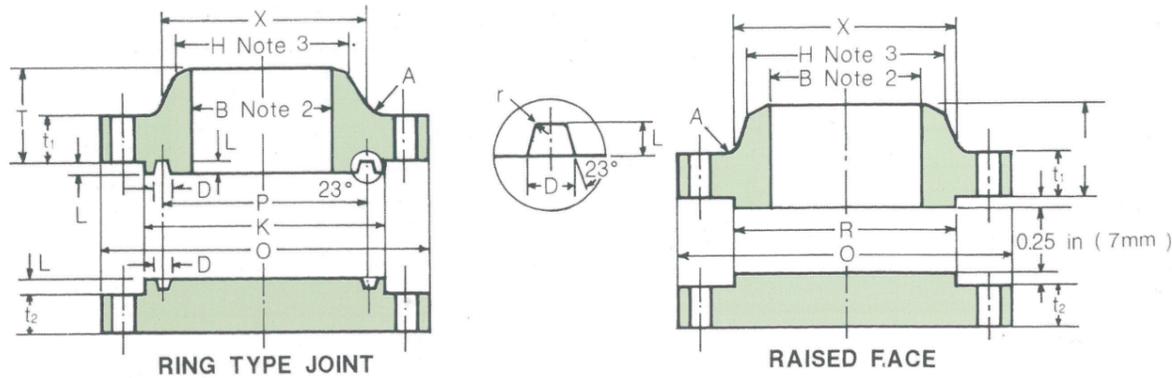
DIMENSIONS IN MM

PIPE SIZE	FLANGE DIMENSIONS				HUB DIM	DRILLING			FACING DRILLING					FILLET RADIUS (MIN)	GROOVE FILLET RADIUS		
	OD OF FLANGE	THICK OF FLANGE				OD LARGE END HUB	NO. OF BOLT HOLES	DIA. OF BOLT HOLES	DIA. OF BOLT CIRCLE	RAISED FACE DIA.	RING-TYPE JOINT						
		WELD-NECK	BLD.	LENGTH THRU HUB							FACING DIA.	DEPTH OF GROOVE	PITCH DIA.			WIDTH OF GROOVE	RING NO.
12	520	51.0	51.0	130	375	16	32	451	381	413	7.95	381.00	11.90	R57	10	1	
14	585	54.0	54.0	143	425	20	32	514	413	457	7.95	419.10	11.90	R61	10	1	
16	650	57.0	57.0	146	483	20	35	572	470	508	7.95	469.90	11.90	R65	10	1	
18	710	60.5	60.5	159	535	24	35	629	533	575	7.95	533.40	11.90	R69	10	1	
20	775	63.5	63.5	162	585	24	35	686	584	635	9.52	584.20	13.50	R73	10	2	
22	840	66.5	66.5	165	640	24	41	743	641	686	11.10	635.00	15.10	R81	10	2	
24	915	70.0	70.0	168	700	24	41	813	692	749	11.10	692.15	16.66	R77	10	2	
26	970	79.5	84.0	184	725	28	44	876	749	810	12.70	749.30	19.85	R93	10	2	
28	1035	82.5	90.5	197	775	28	44	940	800	860	12.70	800.10	19.85	R94	11	2	
30	1090	92.0	90.5	210	825	28	48	997	857	918	12.70	857.25	19.85	R95	11	2	
32	1150	98.5	100	222	880	28	51	1054	914	984	14.30	914.40	23.00	R96	11	2	
34	1205	102	105	232	935	28	51	1105	965	1035	14.30	965.20	23.00	R97	13	2	
36	1270	105	111	241	990	32	54	1168	1022	1092	14.30	1022.35	23.00	R98	13	2	
38	1170	108	108	181	995	32	41	1092	1029						13		
40	1240	114	114	194	1050	32	44	1156	1086						13		
42	1290	119	119	200	1100	32	44	1206	1137						13		
44	1355	124	124	206	1150	32	48	1264	1194						13		
46	1415	129	129	216	1205	28	51	1321	1245						13		
48	1465	133	133	224	1255	32	51	1372	1308						13		
50	1530	140	140	232	1305	32	54	1429	1359						13		
52	1580	144	144	238	1355	32	54	1480	1410						13		
54	1660	152	152	252	1410	28	60	1549	1467						13		
56	1710	154	154	260	1465	28	60	1600	1518						13		
58	1760	159	159	267	1515	32	60	1651	1575						13		
60	1810	164	164	273	1565	32	60	1702	1626						13		

1.For machining tolerances see ANSI Standard B16.5  
2.Dimensions to be specified by customer

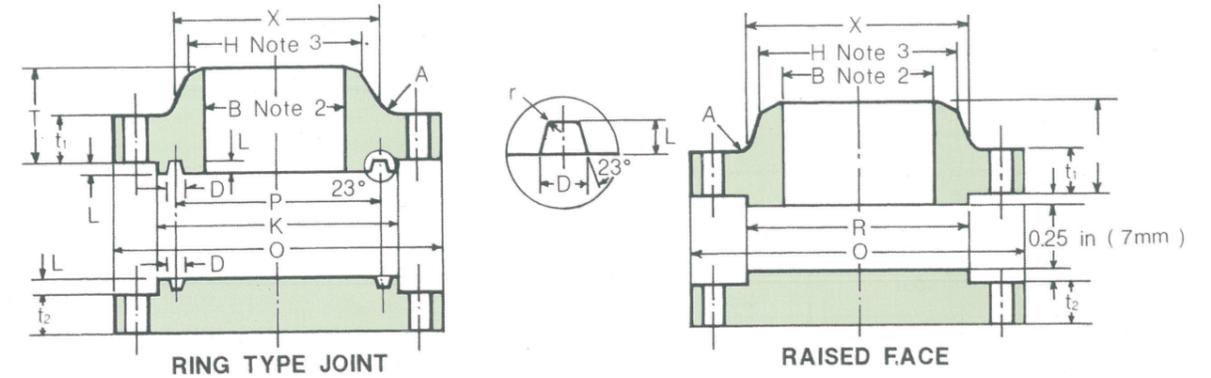
400lb.

MSS SP-44  
MSS LARGE DIAMETER FLANGES



600lb.

MSS SP-44  
MSS LARGE DIAMETER FLANGES



Class 400

DIMENSIONS IN MM

PIPE SIZE	FLANGE DIMENSIONS				HUB DIM OD LARGE END HUB X	DRILLING			FACING DRILLING					FILLET RADIUS (MIN) A	GROOVE FILLET RADIUS R	
	OD OF FLANGE O	THICK OF FLANGE				NO. OF BOLT HOLES	DIA. OF BOLT HOLES	DIA. OF BOLT CIRCLE	RAISED FACE DIA. R	RING-TYPE JOINT						
		WELD-NECK T1	BLD. T2	LENGTH THRU HUB T						FACING DIA. K	DEPTH OF GROOVE L	PITCH DIA. P	WIDTH OF GROOVE D			RING NO.
12	520	57.0	57.0	136	375	16	35	451	381	413	7.95	381.00	11.90	R57	11	1
14	585	60.5	60.5	149	425	20	35	514	413	457	7.95	419.10	11.90	R61	11	1
16	650	63.5	63.5	152	483	20	38	572	470	508	7.95	469.90	11.90	R65	11	1
18	710	66.5	66.5	165	535	24	38	629	533	575	7.95	533.40	11.90	R69	11	1
20	775	70.0	70.0	168	585	24	41	686	584	635	9.52	584.20	13.50	R73	11	2
22	840	73.0	73.0	171	640	24	44	743	641	686	11.10	635.00	15.10	R81	11	2
24	915	76.0	76.0	175	700	24	48	813	692	749	11.10	692.15	16.66	R77	11	2
26	970	89.0	98.5	194	725	28	48	876	749	810	12.70	749.30	19.85	R93	11	2
28	1035	95.0	105	206	785	28	51	940	800	860	12.70	800.10	19.85	R94	13	2
30	1090	102	111	219	835	28	54	997	857	918	12.70	857.25	19.85	R95	13	2
32	1150	108	116	232	890	28	54	1054	914	984	14.30	914.40	23.00	R96	13	2
34	1205	111	122	241	945	28	54	1105	965	1035	14.30	965.20	23.00	R97	14	2
36	1270	114	129	251	1000	32	54	1168	1022	1092	14.30	1022.35	23.00	R98	14	2
38	1205	124	124	206	1005	32	48	1118	1035						14	
40	1270	130	130	216	1055	32	51	1175	1092						14	
42	1320	133	133	224	1110	32	51	1226	1143						14	
44	1385	140	140	233	1160	32	54	1283	1200						14	
46	1440	146	146	244	1215	36	54	1340	1257						14	
48	1510	152	152	257	1265	28	60	1403	1308						14	
50	1570	157	159	268	1320	32	60	1460	1362						14	
52	1620	162	164	276	1370	32	60	1511	1413						14	
54	1700	170	171	289	1425	28	67	1581	1470						14	
56	1755	175	176	298	1480	32	67	1632	1527						14	
58	1705	178	181	306	1530	32	67	1683	1578						14	
60	1885	186	189	319	1585	32	73	1753	1635						14	

1.For machining tolerances see ANSI Standard B16.5  
2.Dimensions to be specified by customer

Class 600

DIMENSIONS IN MM

PIPE SIZE	FLANGE DIMENSIONS				HUB DIM OD LARGE END HUB X	DRILLING			FACING DRILLING					FILLET RADIUS (MIN) A	GROOVE FILLET RADIUS R	
	OD OF FLANGE O	THICK OF FLANGE				NO. OF BOLT HOLES	DIA. OF BOLT HOLES	DIA. OF BOLT CIRCLE	RAISED FACE DIA. R	RING-TYPE JOINT						
		WELD-NECK T1	BLD. T2	LENGTH THRU HUB T						FACING DIA. K	DEPTH OF GROOVE L	PITCH DIA. P	WIDTH OF GROOVE D			RING NO.
12	560	66.5	66.5	156	387	20	35	489	381	413	7.95	381.00	11.90	R57	11	1
14	605	70.0	70.0	165	432	20	38	527	413	457	7.95	419.10	11.90	R61	11	1
16	685	76.0	76.0	178	495	20	41	603	470	508	7.95	469.90	11.90	R65	11	1
18	740	82.5	82.5	184	545	20	44	654	533	575	7.95	533.40	11.90	R69	11	1
20	815	89.0	89.0	190	610	24	44	724	584	635	9.52	584.20	13.50	R73	11	2
22	870	95.0	95.0	197	665	24	47	778	641	686	11.10	635.00	15.10	R81	11	2
24	940	102	102	203	720	24	51	838	692	749	11.10	692.15	16.66	R77	11	2
26	1015	108	125	222	750	28	51	914	749	810	12.70	749.30	19.85	R93	11	2
28	1075	111	132	235	805	28	54	965	800	860	12.70	800.10	19.85	R94	13	2
30	1130	114	140	248	860	28	54	1022	857	918	12.70	857.25	19.85	R95	13	2
32	1195	117	148	260	920	28	60	1980	914	984	14.30	914.40	23.00	R96	13	2
34	1245	121	154	270	975	28	60	1130	965	1035	14.30	965.20	23.00	R97	14	2
36	1315	124	162	283	1030	28	67	1194	1022	1092	14.30	1022.35	23.00	R98	14	2
38	1270	152	156	254	1020	28	60	1162	1054						14	
40	1320	159	162	264	1075	32	60	1213	1111						14	
42	1405	168	171	279	1125	28	67	1283	1168						14	
44	1455	173	178	289	1180	32	67	1334	1226						14	
46	1510	179	186	300	1235	32	67	1391	1276						14	
48	1595	189	195	316	1290	32	73	1460	1334						14	
50	1670	197	203	329	1345	28	79	1524	1384						14	
52	1720	203	210	337	1395	32	79	1575	1435						14	
54	1780	210	217	349	1450	32	79	1632	1492						14	
56	1855	217	225	362	1500	32	86	1695	1543						16	
58	1905	222	232	370	1555	32	86	1746	1600						16	
60	1995	233	243	389	1610	28	92	1822	1657						17	

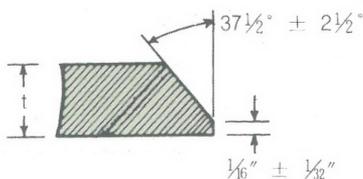
1.For machining tolerances see ANSI Standard B16.5  
2.Dimensions to be specified by customer

# DIMENSIONAL TOLERANCES ANSI B16.5-1992a

THREAD, SOCKET-WELDING, SLIP-ON, LAP JOINT AND BLIND			WELDING NECK		
<b>OUTSIDE DIAMETER</b>	When O.D. is 24" or less	$\pm 1/16"$ (1.6mm)	<b>OUTSIDE DIAMETER</b>	When O.D. is 24" or Less	$\pm 1/16"$ (1.6mm)
	When O.D. is Over 24"	$\pm 1/8"$ (3.2mm)		When O.D. is Over 24"	$\pm 1/8"$ (3.2mm)
<b>INSIDE DIAMETER</b>	Threaded	Within limits on boring gauge	<b>INSIDE DIAMETER</b>	10" and Small	$\pm 1/32"$ (0.8mm)
	Socket-Welding, Slip-on and Lap joint	10" & Smaller $+1/32"$ (0.8mm), -0" 12" & Larger $+1/16"$ (1.6mm), -0"		12" thru 18"	$\pm 1/16"$ (1.6mm)
20" and Larger				$+1/8"$ (3.2mm) $-1/16"$ (1.6mm)	
<b>OUTSIDE DIAMETER OF HUB</b>	12" and Small	$+3/32"$ (2.4mm) $-1/16"$ (1.6mm)	<b>DIAMETER OF CONTACT FACE</b>	1/16" Raised Face	$\pm 1/32"$ (0.8mm)
	14" and Larger	$\pm 1/8"$ (3.2mm)		1/4"/raised Face Tongue & Groove Male, Female	$\pm 1/64"$ (0.4mm)
<b>DIAMETER OF CONTACT FACE</b>	1/16" Raised Face	$\pm 1/32"$ (0.8mm)	<b>DIAMETER OF HUB AT BASE</b>	When Hub Base is 24" or Smaller	$\pm 1/16"$ (1.6mm)
	1/4"/raused Face Tongue & Groove Male, Female	$\pm 1/64"$ (0.4mm)		When Hub Base is Over 24"	$\pm 1/8"$ (3.2mm)
<b>DIAMETER OF COUNTERBORE</b>	Same as for Inside Diameter		<b>DIAMETER OF HUB AT POINT OF WELDING</b>	5" and Smaller	$+3/32"$ (2.4mm) $-1/32"$ (0.8mm)
				6" and Larger	$+5/32"$ (4.0mm) $-1/32"$ (0.8mm)
<b>DRILLING</b>	Bolt Circle	$\pm 1/16"$ (1.6mm)	<b>DRILLING</b>	Bolt Circle	$\pm 1/16"$ (1.6mm)
	Bolt hole spacing	$\pm 1/32"$ (0.8mm)		Bolt hole spacing	$\pm 1/32"$ (0.8mm)
	Eccentricity of Bolt Circle with Respect to Facing	2 1/2" & Smaller $1/32"$ (0.8mm) max 3" & Larger $1/16"$ (1.6mm) max		Eccentricity of Bolt Circle with Respect to Facing	2 1/2" & Smaller $1/32"$ (0.8mm) max 3" & Larger $1/16"$ (1.6mm) max
<b>THICKNESS</b>	18" and Smaller	$+1/8"$ (3.2mm), -0"	<b>THICKNESS</b>	18" and Smaller	$+1/8"$ (3.2mm), -0"
	20" and Larger	$+3/16"$ (4.8mm), -0"		20" and Larger	$+3/16"$ (4.8mm), -0"
<b>LINGTH THRR HUB</b>	18" and Smaller	$+1/8"$ (3.2mm), -1/32(0.8mm)	<b>LINGTH THRR HUB</b>	10" and Smaller	$\pm 1/16"$ (1.6mm)
	20" and Larger	$+3/16"$ (4.8mm), -1/16"(1.6mm)		12" and Larger	$\pm 1/8"$ (3.2mm)

## WELDING BEVEL STANDARDS

For wall thickness "t" 3/16" to 3/4" incl



For wall thickness "t" greater than 3/4"

